

▶ NEW VEHICLE WARRANTIES: HOW THEY IMPACT THE AFTERMARKET

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POWER GURU GALE BANKS EXPLAINS WHY SUPERCHARGERS ARE MORE PREVALENT THAN TURBOS AMONG MUSTANG ENTHUSIASTS RUNNING A FORCED-INDUCTION SYSTEM

FORCING THE ISSUE

STORY BY CHAD SIMON



Ever wonder why superchargers are much more prominent in Mustangs than turbochargers and that somehow you might have missed the boat on a key market niche? Both types of forced induction kits provide significant power increases, so which one best suits your customers' ride? Depends on how many cylinders they're running.

Or, maybe you could use some upselling advice on which accompanying products to suggest to enthusiasts to maximize power and reliability. We talked to Gale Banks to set the record straight on the advantages of and differences between superchargers and turbochargers and how to educate employees to sell them.

TURBO PLACEMENT

Since 1958, Banks, president of Gale Banks Engineering, a premier producer of power systems located in Azusa, California, has been one of the best in the business of enhancing power for virtually any type of engine—gasoline or diesel—for any type of vehicle. Banks also builds and sells an 1,100-horsepower, twin-turbo street engine for car-building enthusiasts—from hot rods to muscle cars—throughout the world.

It all comes down to where turbos are installed in the Mustang. "The real thing is where do you put them (turbochargers)? They've gotta live somewhere," Bank says. "There are actually a few turbo kits out there (for Mustangs). One company offers two turbo kits, but they're placed underneath the car near the oil pan and adjacent to the bellhousing."

More specifically, Turbonetics is another company that offers a Ford Mustang GT turbo system. This kit makes 550 horsepower and nearly 600 lb.-ft. of torque and is actually installed underneath the throttle body.

According to Banks, power can be made with low placement near the oil pan, but,



COURTESY OF GALE BANKS ENGINEERING

because the turbos are located lower than the oil, the problem is draining it from the turbos into the pan. The oil has to be pumped from the turbochargers back into the pan or into the engine, "but if the pump fails, then you have an issue with just filling the turbochargers with oil, which will overwhelm the shaft seals in the turbocharger and cause issues with oil in the intake and out the exhaust," Banks says.

A single turbo set up for late-model Mustangs places the turbo up higher in front of the engine and off to the side. Two turbos produce cleaner emissions because exhaust runs down to the turbos back through the exhaust system. With one turbo up front, the exhaust must be routed to the front of the engine, then

out of the turbine, and back under the car.

"The late Mustang with a 4.0-liter V-6 is a no-brainer—you could turbo that thing all day long because the engine is much smaller and there's lots of room in the engine bay. But the V-8 is a problem. The blowers are much easier to find a home for and you don't have to run exhaust in and out of them," says Banks.

OFFER ACCOMPANYING POWER

To maximize power for the customer and make more money on the turbocharger or supercharger sale and installation, Banks advises retailers and installers to suggest additional power-making products, like bigger injectors. "There's some reserve you can tap with the stock injectors, but not much," Banks says.

A larger fuel pump provides higher pressure than a stock pump because when applied to the intake manifold, the fuel and boost pressure increase must be identical or the injector won't flow properly. "So, you've got to have a fuel pump that

Mustangs can be turbocharged, and this Turbonetics system proves it. As Banks points out, there is a lot of plumbing here to get the exhaust gases forward to the turbo and then through the Sperrco intercooler, but the system makes plenty of horsepower for the pony car.



COURTESY OF TURBONETICS, INC.

SUPERCHARGERS vs. TURBOCHARGERS

There are two types of superchargers—centrifugal and positive displacement. The two kinds of positive displacement are a screw type, which increases air pressure in the rotors. The other is the roots type, which does not increase air pressure in the air set, but forces more air pressure into the intake manifold.

Both types of positive displacement superchargers produce good low-end power because they pump air into the engine proportionate to engine speed. However, the centrifugal supercharger does not provide exceptional low-end power or airflow until the engine speed increases. "So, the centrifugal is good at mid-to-high speeds, but not good in the low end, like a positive displacement screw or roots," Banks says.

Turbocharging started in Europe and Japan and spread to the U.S. because of the prominence of Japanese and European cars on American streets. Few American cars are equipped for turbocharging, with the exceptions being the four-cylinder Chevrolet Cobalt and GM Ecotech. Turbochargers dominate the sport-compact market, while superchargers are preferred among V-8 enthusiasts.

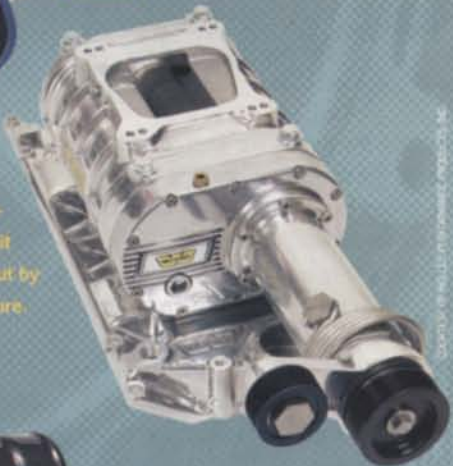
"It's specific to the four-cylinder crowd versus the eight-cylinder crowd. Eight-cylinder guys are more into the American thing—in NHRA, superchargers are the king," Banks says.

"I've been supercharging and turbocharging tens of thousands of engines for 50 years. The point is that the best-performing package in my mind for a street supercharger is positive displacement," Banks says. "My preference is always turbochargers, but in this case, a positive displacement supercharger is probably best for Mustangs. Even though I love turbochargers, I don't like the way they fit on this car."



This cut-away AT1 ProCharger shows the inner workings of a centrifugal supercharger. "Centrifugal superchargers are good at mid-to-high speeds," said Gale Banks. "However, the centrifugal supercharger is not as strong at the low end." Why? Because the centrifugal supercharger needs engine speed to work efficiently.

The polished Weiland supercharger unit shown here is a positive-displacement, roots-type supercharger. Weiland claims its 142 unit increases Chevrolet small-block engine output by 25 to 40 percent, depending on boost pressure.



Exhaust-driven turbochargers are Banks' favorite when it comes to forced induction. But, Banks agrees that owners of American V-8 engines tend to like superchargers, and in the case of Mustangs fitted with V-8 engines, there are mounting "issues" with turbochargers. That, according to Banks, is why we see more supercharger kits than turbocharger kits available for late-model Ford Mustangs.

will make higher pressure than the stock pump would make, and since you're going to make more power, it has to have higher flow. Similarly, the injectors need to be larger or calibrated for a higher flow rate," Banks says.

Blower kits—which include injectors, a proper fuel pump, and electronics—retail between \$4,000-\$7,000. Labor adds another \$1,500-\$2,500. Therefore, a high-end sale could approach \$10,000, according to Banks. For hard-core power enthusiasts looking to run higher boost levels, compression-lowering engine modifications, such as pistons and cylinder heads, are required. For those seeking even more power, a more aggressive camshaft can be installed, all of which could lead to a \$20,000 deal.

"It depends on whether or not your business does engines," Banks says. "Regardless, if you've got an installation facility, you can add superchargers or turbochargers on a stock engine."

According to Banks, educating retailers on how to upsell and close the sale is a necessary part of the business.

"I tell counter people that it's worth talking a littler longer and asking a few more questions to make this sale. If you look at the average sale at the counter in your shop and now you've got one that's 10 times the average cost, it's worth talking twice as much to get 10 times the sale," Banks says. "A lot of counter people don't want to get educated on this kind of stuff; it's too difficult. But, if I owned the shop, I'd make them do it because if you get one of these customers, you've got a good sale. And, usually, the customer's also going to buy some headers and exhaust systems to go with the set up."

Supercharging and turbocharging engines offer the most emissions-legal form of power, according to Banks. "I own two cars and a pickup. Both cars are supercharged and my pickup is turbocharged. There is absolutely nothing like the feeling of driving an engine with turbos or a supercharger, especially when you have 1,100 horsepower. It's the ultimate power statement."

For more information, call (800) 601-8072, or visit www.bankspower.com. 