

WARNING

"HOT AIR" UNDERHOOD INLET KITS

WARRANTY VOID IF THIS SUPERCHARGER IS USED WITH A "HOT AIR" UNDERHOOD INLET SYSTEM

Let's all sit back and take a deep breath of fresh air (cool air). Now, crawl under the hood of your vehicle, lay across the engine, close the hood over you and take a deep breath of all that hot air from the radiator fan (160°-200°), engine (160°-220°) and headers (up to 1000°). Who the hell would do that, you say? Well, when companies sell you a "cool air" kit with an exposed underhood filter that sucks in the same hot 200° air from that heat soaked engine compartment, how do you think your engine likes all that hot power robbing air vs. the OEM factory set up that inhales isolated ambient 70° fenderwell air? Then there's all that hot air the fan blows around. Remember the fan. It sucks hot air in off the hot radiator. Why do you think that for the last 25 years every vehicle manufacturer on the planet avoids hot underhood air and fan wash like the plague and instead draws cool dense air from the fenderwell, cowl or hood scoops?

We're not exactly inexperienced in this technology ourselves. Kenne Bell engineered and has sold thousands of functional Ram Air/Cool Air kits for the Mustang, Cobras, Buick GN's, Syclones, Dodges etc. They pull in cool air from the fenderwell, under the bumper or out of a hood scoop. In contrast is the cheapie "cool air" kit gang who proceeds to eliminate all those expensive plastic molded hoses and fittings and "sticks" a filter onto the end of a chrome or plastic pipe and calls it a "cool air," "cold air," "chiller," "hi-flo," or ??? kit.

It is, of course, your decision if you choose for your engine to suck in this hot underhood air with one of these over the counter or "custom" kits. However, these things are not good for our superchargers and we not only don't recommend them, we are warning against the use of them. Look at the facts. 10° of hotter air is equivalent to 1 psi of boost. That means the difference between the fenderwell ambient 70° system and the hot underhood air temp can be an amazing 130° (200°-70°=130°) hotter. That 130° equates to about 13 psi of additional boost (13x10°=130°). So, you thought your engine was only seeing the increased temperature of 100° from 10 psi boost (10x10°=100°). Wrong. It's 100°+130° or 230° plus the ambient. That's the air temp of 23 psi boost! Surprised? Are you getting the picture yet?

The Kenne Bell supercharger - or any supercharger - doesn't like another 130° of air temp that is the fault of someone else's product. Neither does your engine. As the old saying goes, *"Don't make your problem my problem."* Don't make those "cool air" kit problems Kenne Bell problems. We've had our fill of these things. Lose those lame excuses for an inlet system. Our warranty is void if using one - and we can tell if you did. We apologize for our frank unwavering approach, but the many warnings throughout our literature has failed to curb their use with our supercharger kits - and caused Kenne Bell some expensive warranties. Try sending your supercharger repair bill to one of these "hot air" kit manufacturers and tell them their "hot air" system killed your supercharger. Are these underhood filter kits any less liable than: 1. Tires that split or separate, 2. Wires that catch fire, 3. Sand polluted oil, 4. Spark plug tips that fall off. I think not. There's no warning in the products. They are most certainly detrimental to engine performance. If ANYONE disagrees, get a magazine writer and let's do the tests.

FILTER FAN SHROUDS

Did you know that a dyno run with the hood open vs. closed with an underhood exposed filter can be 30HP. We ran this test for 2 different magazines. Then there's the fan wash. Those who believe that "shrouds" actually solve the temperature problem must also believe in the tooth fairy. Shrouds may help the mass air meter signal from being distorted and skewing the fuel delivery to your engine, but in no way do these metal shields magically dissipate that hot underhood air. The hot air then enters the filter from the other side of the shroud.

HEADLIGHT KITS

Finally, there's the removed headlight with the filter behind it (in the hot engine compartment, of course). This is just another "hot air" system. It remains underhood and blasted by hot fan air. At best, it's a hot air - cool air mixer at high vehicle speed as it does not - and cannot - pull in only cool air. Every engineer in the universe clearly understands the disadvantages of hot air and therefore designs their inlet systems to ingest cool dense air from the fenderwell, cowl or hood. This is not rocket science. JUST SUPPLY YOUR SUPERCHARGER WITH COOL AIR 100% OF THE TIME. All Kenne Bell supercharger kits connect to the stock cool air inlet system. We may also upgrade and/or offer an optional system for higher HP applications. We even offer some "all out" 5" racing systems. And we are not condemning cool air kit products that are designed to use cool air. Many of them are functional and may be used with our kits.

THE TWIN SCREW SUPERCHARGER

The Kenne Bell Twin Screw Supercharger is essentially an air compressor and an air tank combined. That is why it is so potent and capable of generating full instant boost at the flick of the throttle at any engine rpm. It's akin to an air hose (throttle) connected to the air tank (supercharger). The handle (trigger) regulates the air flow (boost) into the engine. Engine rpm has little to do with the boost delivery. Boost is regulated with the gas pedal. A basic law of physics tell us that all air is heated when compressed, regardless of the supercharger or turbocharger type. To lower the superchargers air temperature at idle and cruise, we rely on a bypass valve which "dumps" the hot compressed air in back of the throttle body where it is "decompressed" and the temp is thereby lowered with the help of the cooler incoming ambient air flow through the throttle body. Unfortunately, at idle and cruise, the throttle body is closed or barely open thereby allowing relatively little new cool air flow into the supercharger. So, the last thing on this planet that our supercharger needs is more hot 200° air from those ridiculous, useless, power robbing underhood "hot air" systems. LOSE THEM and use a 4" or 5" hose (depending on HP level) to pull cool air out of the fenderwell just like all the OEM's, racers and the knowledgeable do.

WARNING: It's an accepted known fact that any engine makes more power on cold air than hot air. Use of this product negatively alters the "cool air" design of the stock OEM inlet system and instead inhales underhood "hot air." This device reduces air density (HP and torque), increases the engines tendency to knock/detonate/ping which can result in lost power and potential engine damage, especially with superchargers or turbos. Not recommended for Kenne Bell supercharger kits. Voids warranty.

HOW HOT AIR CAN DAMAGE YOUR SUPERCHARGER & ENGINE

DOES YOUR SUPERCHARGER & ENGINE HAVE "THE HOTS?"

Overheating your engine or supercharger will damage both. One has pistons - the other uses rotors. Both are aluminum and expand with heat. An '03 Cobra test was recently run on our dyno comparing a fenderwell filter to an open filter with the hood OPEN and a huge fan blowing on it to simulate 90 mph. The temperature difference was a whopping 45° hotter. Oops! An engine's coolant temperature is approximately 160°-200°. That is the temperature deemed "safe" by engineers for over 100 years. Obviously, higher temperatures should be avoided because excess coolant temperature expands the pistons, thereby reducing the piston to bore clearance to a critical "0". The piston then scores and/or seizes in the cylinders. Excessive heat will also cause the rotors to expand and score the supercharger case and/or seize the rotors. Both are typically ruined because of the scoring and metal transfer. Never a pretty sight.

Needless to say, you wouldn't knowingly install some lame product or concept that increases your engine water temperature 130° to a ridiculously hot 290° to 330° and cause your pistons to seize up and ruin your engine, to say nothing of the power loss from this hot air (1% power loss for every 10°). Also, there's the increased potential for detonation and more engine damage. Oops!

Would you buy some kit that removes your engine fan? How about a "concept" that advises you to drain 50% of the engine coolant - or spark plugs 6 heat ranges too hot? Of course you wouldn't. One would have to be totally and technically incompetent, ignorant or brain dead to offer products or suggestions that destroy your engine - right? Wrong, they do - and these people create big problems for the vehicle manufacturer and Kenne Bell. You would have no legitimate or ethical case for getting your engine warrantied by the factory. And you can forget about those companies who sold or recommended those products paying the tab.

Your supercharged engine doesn't like it. So why destroy your Kenne Bell supercharger - and possibly your engine - with 130° hotter air from one of these cheap HOT AIR UNDERHOOD OPEN FILTERS? "Hot Air" kits are akin to "interheaters" (the opposite of intercoolers). Don't do it! Use a SEALED filter set up that pulls cool air from the fenderwell, cowl or hood. No underhood air allowed. No half ass baffles either.

Note: Our supercharger rotors behave identically to pistons when overheated. The only difference is hotter air instead of hotter water causes the failure. 130° is equivalent to the heat generated by another 13 psi of boost. Oops! Keep in mind that we can easily determine if hot underhood air was the cause of the supercharger failure, just as an OEM can determine if his engine was overheated.

One more time. Avoid all who sell and promote these things for use with Kenne Bell supercharger kits. They obviously don't know, don't care - or both. These products can destroy your supercharger and/or engine with "the hots." **And they void your warranty.**

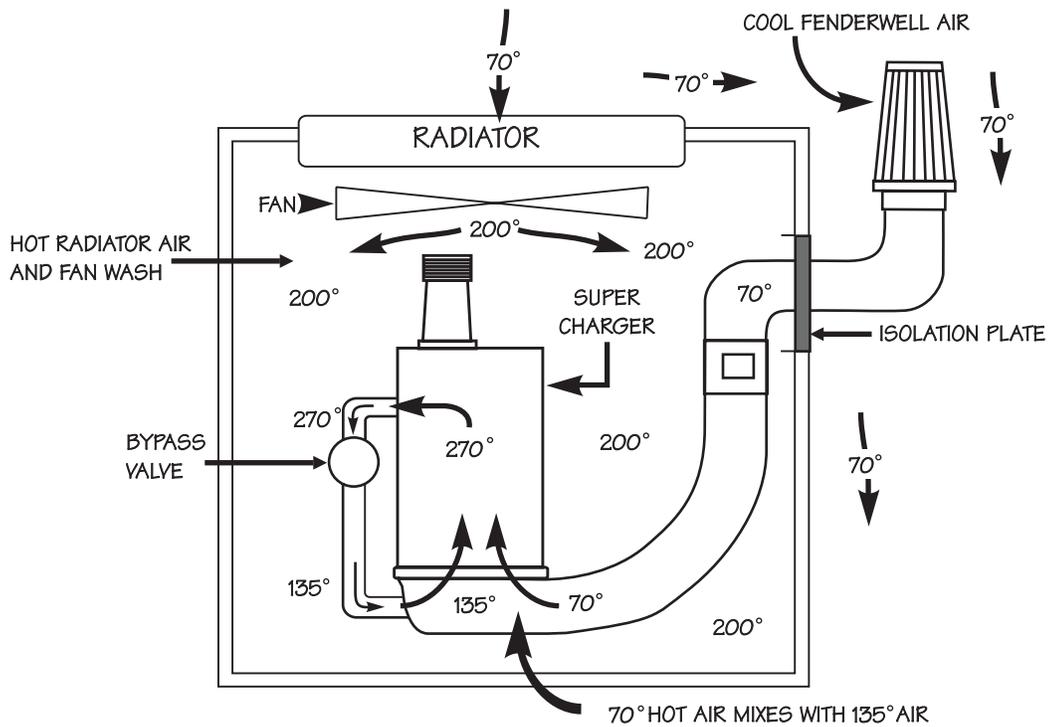
OPEN HOOD FILTER TEST ('03 Cobra) AIR MIXING & AIR TEMP SENSOR LOCATION

We recently ran a filter temperature comparison on Earl's 700HP 9 second Cobra. The hood was open with a high speed fan blowing cool air into the front of the car. The dyno room temperature remained the same for both the ① fenderwell located cool air filter and ② the hot underhood filter installed on the end of the mass air meter ("hot air" filter) located behind the headlight. However, even with the hood OPEN and the fan blowing air over the top of the filter, temperature was 45° hotter with the filter sucking hot underhood air off the end of the mass air meter. That's the equivalent of approximately 4 psi of boost and a 4% HP loss. Read on.

Did you really believe that a cylindrical filter would magically not suck that bottom hot air from the headers, radiator, etc. and NOT mix it with the "top cool air" at the filter top? Of course, the filter will average the "hot" and "cool" air, but it won't be as cool as the fenderwell air. That is why every OEM manufacturer on the planet avoids hot exposed underhood filter designs. Now, if 10° is equivalent to a 1% drop in HP (that's how you calibrate dynos), doesn't the 45° higher air temp REDUCE HP by 4.5%? Oops!

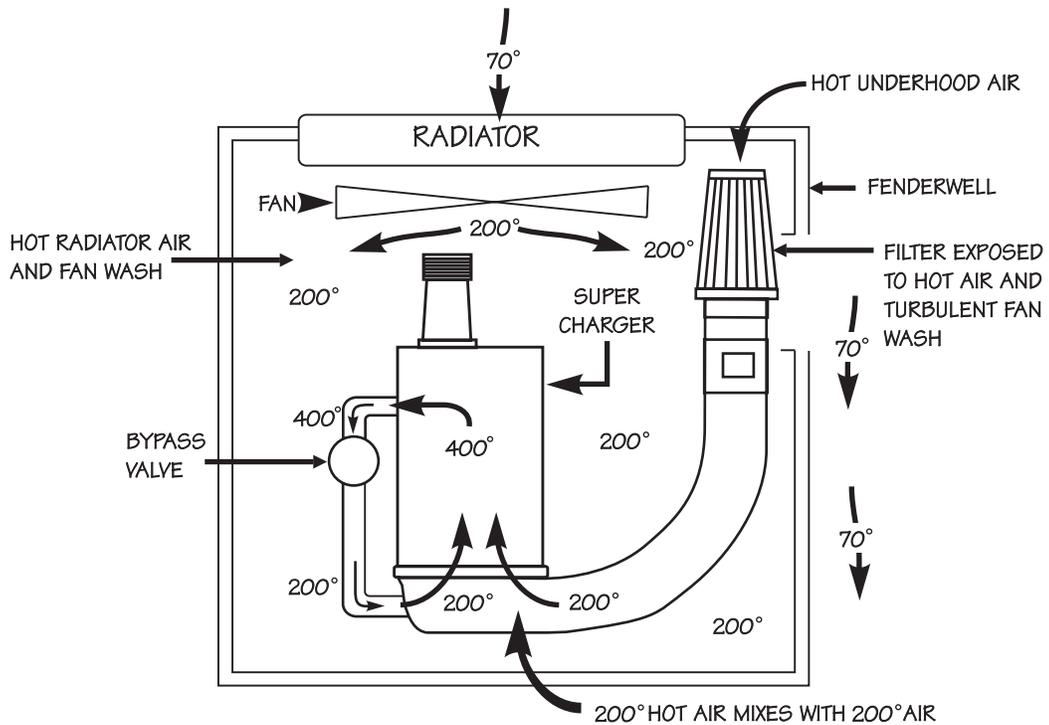
Where does your dyno tuner measure air temp? We've found that the best place to accurately increase air temp is at the entrance of the supercharger. "One of the real dangers in running a test is you are bound to get data." So if you test on a dyno, use the SAE (Society of Automotive Engineers) calibration for the particular weather conditions to insure accuracy, but you must test the RIGHT WAY and use the correct temperature that your engine sees and not the temperature at some random location in the dyno room. The engine is not using the air next to the dyno computer, is it?

It is not our desire to be critical of anyone or their test procedures. We are only pointing out a common variable in dyno testing that we at Kenne Bell have found to effect test accuracy.



COOL AIR KIT

NOTE: SUPERCHARGER AIR ASSUMED TO BE 200 DEG FROM 20 PSI BOOST (~10 DEG PER POUND OF BOOST) FOR COMPARISON.



HOT AIR KIT

A 10 DEG RISE IN AIR CHARGE TEMP. RESULTS IN A 1% LOSS IN HP.
 (example: 50 DEG = 5% = .05 x 300HP = 15HP)
 THAT'S HOW THE WORLD CALIBRATES DYNOS FOR VARYING AMBIENT TEMPERATURES. SAE IS THE MOST COMMONLY USED CONVERSION.