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**SIZE DOES
MATTER**

**INSTALLING BANKS'
TECHNI-COOLER**



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TEXT AND PHOTOS: JOE BURNSIDE

SIZE DOES MATTER

INSTALLING THE BANKS TECHNI-COOLER

A LARGER, WELL-DESIGNED, CHARGED AIR cooler (or intercooler, as it is commonly referred to) and associated boost tubing will improve charged airflow and reduce intake temperature. The result is denser, more oxygenated air, which translates to longer sustained high-power output, lower exhaust gas temperature, and better fuel economy.

In this application, the charged air cooler is an air-to-air heat exchanger. That means there are two gases that don't physically touch each other, but a transfer of heat takes place between them. The heat from the charged air of the turbocharger travels through the tubes of the intercooler; these tubes have fins attached to them. The tubes heat the fins of the intercooler, and that heat is then transferred from the fins to the cooler, outside air. Air that is entering an intercooler (after exiting a turbocharger) is typically around 250 to 350 degrees, which will always be hotter than the temperature of the outside ambient air—this is true even if you are driving through Death Valley in the hottest of summer months.

The ultimate goal of the intercooler is to reduce this temperature as much as possible. As a rule of thumb, every 10-degree drop in charged air temperature results in a 1 percent increase in charge density and output power. There is almost a 1:1 relationship between lowering the intake temperature and reducing EGT. Another important component to the intercooler is the associated input and output boost tubes. The best piping would be relatively smooth on the inside, have a relatively straight path or gradual angles and transitions, and be as short as possible. This will reduce the amount of pressure required to



The process began by removing the grille and the Banks Ram-Air filter and mounting bracket.



Next, the grille support braces and headlight mounts were removed.

produce a certain amount of boost, which will increase reliability and efficiency.

The engineers at Banks have examined the stock charged air cooler system in Duramax-equipped trucks and improved it. The Banks Techni-Cooler intercooler has a larger core area and massive cast-aluminum end tanks, which help increase the air's density. These end tanks were designed utilizing computational fluid dynamics to improve the airflow over the OEM design. Another important part of the system is a much larger hot-side boost tube, which is mandrel-bent and powder-coated. This combination provides up to 25 percent more volume and a higher flow rate than the stock system. The higher volume of colder, dense air means more fuel will be burned and that means more power and lower EGT. So, size does matter. **8-LUG**

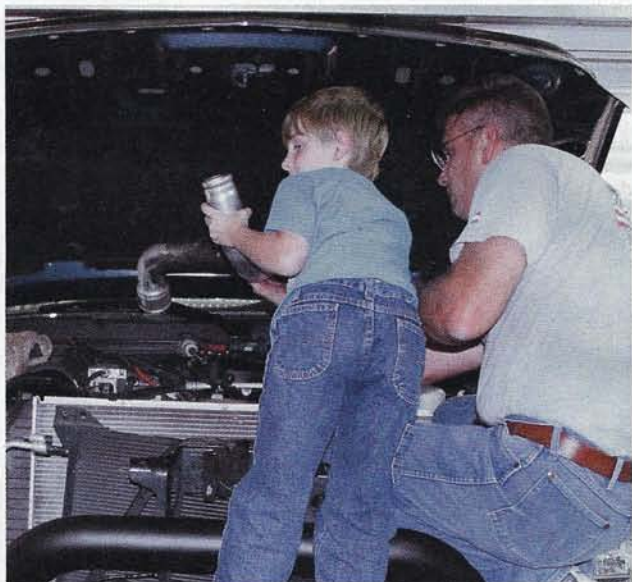


Then we removed the upper radiator support bracket.



We then loosened the intercooler boost tube T-clamps and removed the elbow.

SIZE DOES MATTER



Then it was time to remove the hot-side boost tube.



Finally, we unbolted and removed the stock intercooler from the truck.



Here's our air filter mount cutout template.

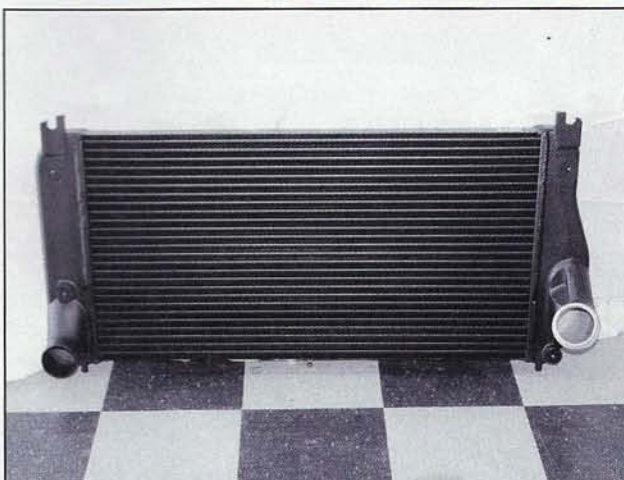
SIZE DOES MATTER



This is the finished mod for the filter box.



Here's a side-by-side comparison of the Banks Techni-Cooler (top) and OEM inter-cooler (bottom).



The Banks Techni-Cooler has a larger and thicker core and massive aluminum end tanks. When combined, that makes it 23 percent larger than stock.



Here's a look at Banks' hot-side boost tube next to the OEM version. Notice the smooth mandrel-bends and high-quality powdercoating on the Banks tube.



Size does matter. The banks tube (right) is 33 percent larger than the stock tube.



It's time to install the Banks Techni-Cooler. Like the OEM unit, it fits between the A/C condenser and radiator.



We connected the intake boost tube to the Techni-Cooler and made sure everything was clean and free of debris.



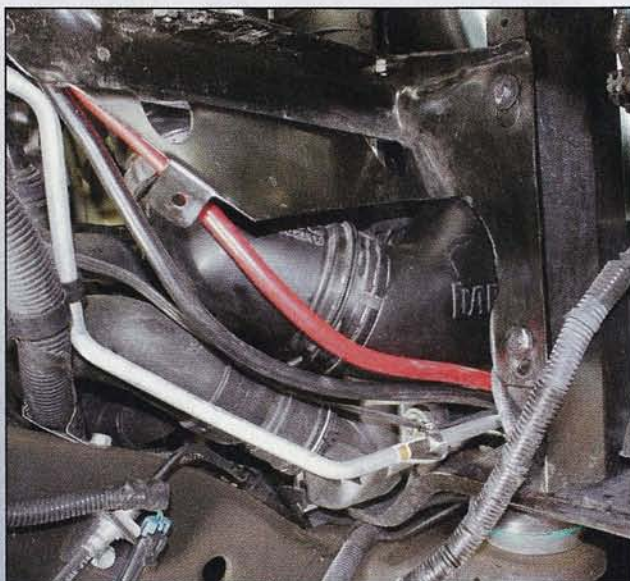
Notice the cutout from the air filter mount to allow for the larger intercooler output tube.



We installed Banks' massive boost tube and tightened the T-bolt clamps to 75 in.-lb.



Next, we installed the upper radiator brace, grille mount, and headlight brackets.



The final step was to double-check all the connections and mounting hardware.