

# Frequently Asked Questions regarding supercharging...

A supercharger system represents a significant investment. Potential supercharger buyers need to gain as much knowledge about the various types and brands of superchargers as possible before making a buying decision. The purpose of this FAQ is to answer as many questions as possible about supercharging in general and the ESS kits in particular.

## Q: What does the different ESS supercharger system designation mean?

PD1: Powerdyne based stage 1 system, non intercooled - no longer in production.

VT1: Vortech based stage 1 system, non intercooled.

VT2: Vortech based stage 2 system, intercooled.

VT3: Vortech based stage 3 system, intercooled with upgraded engine internals.

TX1: ASA TM1 based stage 1 system, non intercooled.

TX2: ASA TM1 based stage 2 system, intercooled with higher boost pressure.

TS1: Lysholm TwinScrew stage 1 system.

TS2: Lysholm TwinScrew stage 2 system with patented Laminova liquid intercooling.

TS3: Lysholm TwinScrew stage 3 system with patented Laminova liquid intercooling and upgraded engine internals

## Q: What exactly does a supercharger do?

A supercharger forces additional air and fuel into the engine under pressure. This occurs when the engine is under full throttle or under load, not at normal cruise or most normal driving. A large displacement engine makes more power than a small displacement engine because it can convert larger amounts of fuel and air into energy. A supercharger allows a smaller engine to do the same thing but only when extra power is actually needed.

## Q: What is boost?

Boost is the amount of pressure (in pounds per square inch) that the supercharger provides. The air that goes into an unblown (unsupercharged) engine is drawn in by the vacuum created when the piston goes down in the cylinder bore. This air goes into the unsupercharged engine at atmospheric pressure which at sea level is 14.7 psi (pounds per square inch). On a blown engine the boost is the amount of additional pressure the inlet charge has over atmospheric that goes into the engine. So if your blower makes six pounds of boost that means your inlet charge is atmospheric pressure (14.7 psi) plus the 6 psi of boost for a total of 20.7 psi.

## Q: How much boost can you normally run?

6-8 PSI is normally a safe level for most stock engines. Running more than this will usually require a reduction in compression ratio. Every engine is different and some engines are more tolerant of boost than others.

## Q: How difficult are ESS Supercharger systems to install?

All ESS Supercharger systems have been designed with ease of installation in mind. All systems comes with a detailed, illustrated step-by-step installation instruction, and the entire system has been designed as a 100% bolt-on system with no adjustments necessary. The installation can be performed using normal hand tools in 6-10 hours (I6 systems) and 14-20 hours (V8 systems). If you do not have good mechanical skills, it is recommended that you let a competent auto mechanic perform the installatio. Returning the car to stock status again is easy, with no evidence of the supercharger system ever being there.

## Q: Doesn't running boost on an engine put more strain on the engine's parts?

Not necessarily. RPM is what kills engine parts. Typically, an unblown engine has to run up to 7,000 or 8,000 rpm to make any real power. At these high speeds you need a special crank, rods, pistons, rocker arms, valves, valve springs, and on and on. But a blower substantially increases power and torque at much lower rpm's. You usually don't have to run a blown engine over about 6,000 rpm to make maximum power. At these speeds stock engine components are more than adequate. Additionally an engine sees maximum load on the components at the moment the piston changes speed from going up in the cylinder to going down. There is a commonly held theory, too complicated to go into here, that increasing the combustion pressure, which a supercharger does, actually reduces this maximum load when piston travel changes from up to down. Under this theory, at comparable rpm's a blown engine is easier on parts than an unblown engine. In actuality, as long as detonation is controlled, you rarely have any engine failures with a blower.

## Q: What happens if my blower drive belt breaks? How do I get home?

With a ESS Supercharger if the blower drive belt breaks the car will drive exactly like it did without the blower. It will run perfectly normal. However blower drive belt breakage is very rare. These belts typically last for 50,000 miles (80,000km) or more. These drive belts are industry standard which can be obtained at any auto parts store.

## Q: What kind of warranty does ESS provide?

ESS offers a two year, unlimited mileage warranty. For complete details please contact us.