

## **Overkill Tuned alcohol injection package**

### **What is it?**

This is a water/alcohol injection kit that includes with it a PCM specifically tuned to compliment it.

Water/alcohol has a KR reducing effect once injected into the motor and water vapour absorbs excess heat while the alcohol increases the octane of your fuel, making race gas on the street a reality.

This is the first kit for 3800 vehicles that includes a fully customized computer to work with the injection kit. The already effective Overkill PCM is modified to work exclusively with the unique properties of water injection to deliver maximum effectiveness. The combination of the two is a potent KR reducing package.

### **The kit includes:**

- Shurflo on-demand pump rated up to 100psi pressure
- Spray nozzle with all fittings required and high pressure clamps
- Supercharger vacuum fitting plumbed to accept the spray nozzle.
- High pressure tubing, available in multiple colours
- Adjustable pressure activation switch and all related wiring.
- New intake manifold vacuum hosing (high temp silicone in multiple colours) with fittings and clamps.
- Overkill PCM custom tuned for the above water/alcohol injection kit
- Your choice of presson or ZZP modular pulley size

### **Why is it so good?**

Water/Alcohol injection has been used with mild to moderate success on forced induction systems to reduce KR and run higher boost when injected into the motor, but few kits come without extensive tuning required by the user. This makes them very hard to use right out of the box, beyond the capabilities of the average user.

Water/alcohol injection can also be used in excess, using too much fluid injection that actually begins to flood the motor with fluid causing incomplete combustion and a loss in power. Dailing the right amount of injection in can be difficult. This kit is designed for most M90 users, ranging from 2.8-3.25" pulley sizes. No guess work, no extensive testing, its been done already.

The computer is an Overkill PCM, modified exclusively to work with the unique characteristics of water injection to maximize the kit for best performance. Fuel and boost control parameters have been altered to work with the operational pattern of the system and the amount of injection the kit will produce.

Basically put, this kit takes the guesswork out of a once blackart to the point of being plug and play. This kit will reduce your KR on your existing pulley and allow a drop in pulley size of up to .2”.

### **How much is it?**

Complete kit with alcohol injection kit, tuned PCM and choice of pulley \$600

-Existing Overkill PCM users subtract \$150 to upgrade to the injection-tuned parameters.

Add a ZZP modular pulley hub \$90

### **FAQ:**

Q: How does water/alcohol injection decrease KR?

A: When water and alcohol are injected into a fine mist in the intake stream, they follow boost pressure into the cylinders. Once inside the cylinders, the water evaporates and the steam vapour created absorbs surrounding excess heat which occurs with high boost levels. This steam is then blown harmlessly out the tailpipe. The alcohol content helps the water evaporate and also raises the octane content of the A/F mixture in the cylinders, the equivalent of adding race gas.

These two factors lead to a decrease in KR and the ability to run more boost than normally possible.

Q: Is the kit a progressive kit that increases injection with boost pressure?

A: No the kit uses a single spray setting. Boost pressure does not greatly increase with engine rpm and thus you wouldn't see noticeable increase in injection spray. The system could be more appropriately set up based on engine rpm, increasing spray with rpm. Either would require controllers however that would add considerable cost to the kits.

Instead, the fueling for the engine is tuned around the constant spray of the injection system. That provides much greater consistency and ease of tuning, and eliminates cost from the kit as well.

Q: What feeds the system, a separate reservoir? What fluid is to be used?

A: The system is set up to use washer fluid for injection. Washer fluid, aside from a little colouring, is essentially a complete mix of methanol and water which is exactly the mixture we're looking for. The recommended fluid is simple blue -40°C washer fluid, found for cheap at Rona and auto parts stores.

By using the existing system we eliminate the need for mounting a separate reservoir, using a smaller capacity reservoir, and we also are able to use the low fluid warning light already built into the system to show when we need to fill up the tank before doing any full throttle blasts.

Fittings are provided to drill and install a rubber grommet and tube into the reservoir to gravity feed the pump with fluid.

Q: Is the kit upgradeable?

A: The kit will provide enough injection spray to support up to 300whp on M90 cars. A kit will be developed for higher horsepower M90ed cars, however it is recommended that at high horsepower levels that an intercooler be run instead of water/alcohol injection.

Q: Can the system be used with an intercooler?

A: The way the kit installs, it would have to spray through the core to go into the engine and this is not possible with the dense intercooler core designs being used. The fluid would act as a core cooler, however it would collect and drip into the intake manifold from there.

Q: Will the system damage the rotors?

A: Although fluid is being sprayed through the supercharger, no damage should incur with the use of this kit. The housing bearings are greased and sealed with a rubber O-ring which prevent fluid from entering the bearings, unless they are damaged and leaking grease anyhow.

Because the fluid is diluted with water and not a pure alcohol solution, and because the mist is very fine with the system for better atomization, the fluid will be moved through the rotors easier and will not strip the rotors of their coating any moreso than spinning the supercharger fast enough has shown to remove the coating anyhow.