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ALCOHOL INJECTION SYSTEMS

Alkycontrol users guide December 2016

Thank you for your purchase. The following guide is included with your system to help you understand its use, operation, maintenance, tuning, and testing.

Operation. The Basics.

The Alkycontrol system is designed to help a performance engine achieve higher levels of power through the use of injecting a fluid into the engine. The "fluid" to use is to be set by the vehicles tuner, and will typically be a ratio of methanol alcohol mixed with water ranging from 0-100%. It is important the tuner relays this to you, "the user", as it affects the overall operation of the system. And, this fluid affects the service interval of the system.
The pump used in the system will not tolerate any oil, lubricants, or petroleum based products. Using petroleum based products will ruin the pump. This includes the M3 and M5 from VP Fuels.

Included in the system is a 2 part PAC(Progressive Alcohol Controller) . One part we will call the Main unit, the other box we will call the Gain box. There will be a clear colored LED "Turnon" led wired into the system and may/may not include a separate red led for low tank indication.

Gain Box:

The Gain box will have a dial with numbers 1-8, an led indicating system has power, and a test button. It also features an "OFF" position in case the system needs to be turned off.

The dial with the numbers 1-8 is adjusted by the tuner/shop when the system was "tuned". If this tuner set this box to lets say position 7, that's where it needs to stay "tuned". Changing this setting affects the tuning and must be consulted with the tuner of the vehicle.

The "ON" led simply indicates the system has "power" applied. This light has nothing to do as to when the system activates or is "spraying". It just indicates the Main unit has 12v.

The "TEST" button. The Test button can be used to purge the kit. To do so, it's

important the “ENGINE MUST BE RUNNING”. Purging the kit with a non running engine can hydro-lock the motor and cause sever damage. When using the TEST button pay attention to the “Turn-on” led and note its operation. Understand if the clear Turn-on led is red or green, the pump is having power applied. When you start the engine, and push the TEST button, the LED will initially activate indicating a Red color. If the pressure in the system goes over 50 psi pressure, the LED will change from Red to Green in color. The user should see a change in the way the engine runs. Typically a stumble or surging as liquid is sprayed. Users having a wide band gauge will see a drop in air fuel numbers once the system is spraying. The LED changing from red to green we’ll discuss latter in the manual.

Think of the Test button as a pre-flight test on an airplane. Its always good to know the system is working. This prevents air in lines that can delay the system building pressure properly.

When to use, the simple answer is before racing the engine hard. Example if I’m driving to a track, I’ll use the button before my first run at the track. I don’t have to use it the rest of the day racing. I use the story an old pilot friend on mine once told me.. right when he gets into the cockpit of his old plane, he checks the magneto.

Main Unit:

The Main unit is calibrated by the tuner when system was tuned. There are no user knobs to calibrate. Refer to tuning guide in case adjustment is needed.

Operation:

When the system is operating normally, the Gain box ON indicator should be on, the Turn-on indicator should be off, and the motor should be running normally. Once the engine goes under load/boost, the system’s Turn-on led will illuminate Red and then change to Green. With a Green led condition you will have confirmation there is physical pressure in the lines.

The change in color of the Turn-on LED will indicate how fast the system builds pressure as its function is physically tied into the pressure switch of the pump. It can be used to see response time from the system. In other words, if you floor the gas pedal and the led change from Red to Green takes 1 second for example, this is the time your wanting to see the change to occur. If something changes in the system, and the LED’s change from Red to Green now takes 2 seconds for example, having the system checked would be of concern. Example, the system wasn’t purged, air was in lines, now there was a delay in building pressure.

Maintenance:

The service interval is based on the fluid used and its concentration of methanol. The times set below are based on real world experiences in using one of these system. Sometimes less, sometimes more.

Straight water, no methanol. 15 years
50/50 mix water and methanol 5-7
100% methanol 2-3 years.

The higher the concentration of alcohol, the harder it is on the seals of the pump. Pumps can be sent in for rebuilding or new pumps can be purchased. Information can be found on www.alkycontrol.com

Winterizing:

If the car will sit for an extended period of time, its advisable to drain the system and fill with water/washer fluid. To perform this function, simply using a 9/16 wrench disconnect hose from nozzle, place end of hose into plastic container, and use the test button to drain the system. Once the tank has been drained, place a quart of fluid rated to the storage temp inside the tank, blue washer fluid works great, and using the test button watch until blue fluid runs out of hose. At that time system is set for storage.

Tuning:

PAC explanation
Couple things are at work.
Lets get back to the basics. One is use the methanol for knock suppression. That is rule 1. Using enough methanol to suppress the knock will result in increased power. As you increase boost/timing/load.. the methanol will be used to stop the knock sensor from increasing. The goal is to use just enough methanol to stop the knock. Simple.
The temperature drop you get from doing so "is what it is". Meaning you don't tune for IAT, you tune for knock.
The intercooler(IC) plays a major role in the way the motor sees temps. The better the IC, the lower the IAT. The better the meth works. If your IC is way too small.. pummeling the motor with meth trying to curb IAT increase is simply the wrong way. Temps below 130 degree's, the power increase is negligible.. Meaning just because the IAT is flat at 100 doesn't mean it makes any more power than if they

where at 120.. even 130.

Now.. the controls.. Inside the Main unit:

Turn-on sets at what PSI it starts to activate and spray. On MAF setups, at what frequency it starts.

Initial sets the prelim ramp from start to finish. Gain increases Slope.

Simplest analogy is a bicycle ramp.
You put 1 block on the front and 3 blocks on back.
Increasing Initial is like adding 3 blocks to both front and back of ramp.. same angle.
Increasing gain is like 1 block added to front and 4 to back of ramp. making it more aggressive.
The length of your ramp is simply the turn on point vs max signal. So if you start at 8 psi and run 20 psi.. that's 12 psi of increase. If you moved "Turnon" from 8 psi to 12 psi, now you would have the same meth at 24 than you had at 20.. moved 4 psi. Make sense?
So if you run 20 psi boost, and you activate at 8.. if you move your Turnon to 10 and stay at the same boost, you'll put in less meth since your ramp is only 10 psi long vs 12 it was before. To offset the shorter ramp simply move the Gain up to compensate.

I like to set my turn on point at 25-33% of the boost run. So 20 psi boost.. I like 7 PSI.
On MAF setups I like seeing the system activate past 3500 RPM's.
I like to see Gain settings no less than 5 as it can make the system lazy waking up.
Initial I like to see no less than 11:45-12:00.. same lazy syndrome.
If using these prelim settings its way too much.. step down nozzle sizing.

Don't worry about IAT.. worry about knock. I have never seen a datalog on a fast car that the IAT stays flat. They all climb. Its just that it climbs less with the meth.

Lastly .. the system works best when the MAP sensor is matched to the intended boost run. Meaning if the motor makes 9 psi boost, a 3 bar(30 psi) sensor is the wrong to use. In the case of 9 psi, a 2 bar would be the ticket.

Hope this helps.
Julio

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