DVS3 v1.1

Contents

Why our Alcohol Injection system is better

- Full Wiring Harness
    - Colour coded for easy installation.
    - Signal and ground wires run together.
    - Pre-wired relay.
- Fully adjustable for any horsepower level.
- Safe enough for stock engines, powerful enough for racing use.
- Standard boost version up to 40psi (up to 60psi available if required).
    - Input voltage available if required.
- *Voltage only version available.*
    - Use with external MAP, AFM, TPS etc
- Easily adjustable Pump Start (20% Duty Cycle).
- Easily adjustable Pump Full (100% Duty Cycle).
- Heavy duty pump.
- Run fluid from straight distilled water to methanol/alcohol.

How Injection Systems works

The DevilsOwn™ DVS3 Methanol/Alcohol Injection System begins with a connection to a supply tank containing a water or methanol/alcohol water mixture. A 50/50 mix is recommended, but the system is designed to be compatible with 100% methanol. We recommend DevilsOwn Brew for use with our products. This mixture is pumped at high pressure through the tubing to the nozzle holder. The amount of methanol or alcohol water mixture that is injected through the nozzle is easily adjusted by means of different sized nozzles.

Kit Contents

Standard Kit Contents

- DVS3 Controller.
- 300PSI Pump plus fittings
- 5M Nylon Hose
- Check valve
- Nozzle Holder
- 1m Silicon vacuum hose
- Silicon Hose T-Piece
- A full wiring harness with relay included.
- Electrical fittings.
- Fuse Holder.
- Tank Tap.
- Zippy Ties.

Vehicle Kit Options

Parts that must be chosen depending on specific vehicle installation

- Nozzle of the appropriate size for engine and modifications
- Tank depending on fitting and application.

Optional Kit

- On/Off Switch (placed on ignition feed).
- Level Indicator
    - Passive.
    - Active.
- Plug and Play PASSIVE Failsafe Indicator.
    - Only Indicates Low Pressure on Display LED.
    - Does **NOT** inhibit car boost system.
- Plug and Play ACTIVE Failsafe.
    - Indicates Low Pressure and Blocked Nozzle on Display LED
    - Does inhibit car boost system via inbuilt Failsafe relay.
- Stage 1
    - Solenoid
    - Dual Nozzle
- Stage 2 Solenoid.
    - Dual Nozzle
    - Direct Port

Installing Kit

Tools Needed

- Drill with 3mm (1/8”), 9mm (11/32”) and 22mm (7/8”) bits.
- 11mm (7/16”), and 14mm (9/16”) and 18mm (7/16”) spanners/wrenches.
- 1/4” socket with ratchet
- 1/8 NPT tap
- Marker
- Wire cutters
- Nylon Tube Cutter or Stanley Blade
- File
- Crimp Tool
- Electrical tape (Recommended)
- Multi-meter (Optional)

Pre-installation Guide

It’s beneficial to read this pre-installation guide fully before installing to get an understanding on working safety and any pitfalls that can occur. Not doing so can cause damage to this product or your vehicle.

Work safely:

Always wear eye protection and gloves when working with lines or hoses that contain pressurized alcohol or fuel. Never transport alcohol tanks loose in a trunk, in the back of a pick-up truck, or especially NOT within a vehicle's interior whether the tank is full OR empty. Always disconnect the GROUND side of the battery when working on any electrical components.

Current Engine Issues

Methanol/Alcohol Injection won’t fix problems you already have. Before you install your alcohol system, be sure your engine is in good mechanical condition. Intermittent wiring problems, etc., can lead to erratic system performance and possible engine damage.

Pump Pressure Switch

Never override the operation of the pumps pressure switch. It's required for proper pump pressure output. Never bypass, drill, machine, shim, deform, scratch, drop, or modify a pumps pressure switch in ANY way whatsoever!

Line Pressures

Excessive line pressures, over 200 psi, are dangerous to your alcohol/water system. Your DevilsOwn™ Alcohol/Water Injection system is calibrated and optimized to operate from 40-160 psi. Exceeding this will not improve performance. Over 250 psi also runs the danger of parts failing.

Detonation/Knock

Always avoid detonation. Although alcohol reduces the possibility of detonation. The act of adding more boost and timing on top of adding an alcohol injection kit makes detonation a factor again. This has a lot to do depending on your tune.

Spark Plugs

The factory spark plugs that come in the new vehicles are not suitable for use with any alcohol setting above 5gph. The factory spark plugs have a particularly hot heat range and tend to overheat at higher horsepower levels. The solution to the problem is to install spark plugs that have a colder heat range and proper ground strap design for alcohol use. Consult your preferred spark plug manufacturer to ensure you install the correct spark plugs for the alcohol level you choose to run. Also, due to the cooler and denser inlet air charge that alcohol creates, it may be necessary to close-up your spark plug gaps to eliminate any misfiring. In our experience, closing the gap .005 to .015 in. typically will ensure proper ignition. You may be able to run a wider gap, or you may have to close them up, just be aware of this if you start to experience an ignition misfire when you are using your alcohol system.

Engine modifications:

The DevilsOwn™ Alcohol System, out of the box, is designed to work as a bolt-on kit for stock or mildly modified vehicles. Mildly modified vehicles would include header upgrades, exhaust upgrades, air filter kits, etc. If major engine modifications have been performed a dual nozzle upgrade may be required for safe alcohol system operation. Major engine modifications would include larger turbochargers, superchargers, aftermarket cylinder heads, head porting, camshafts, intake manifolds, etc. Failure to upgrade highly modified applications may cause serious lean conditions that can result in severe engine damage.

Teflon Sealing Tape

DO NOT use Teflon sealing tape on any fittings in a DevilsOwn™ Methanol/Alcohol Injection System. It is easy for Teflon tape to get pulled into the system causing blockages that can ultimately lead to incorrect alcohol system performance and potentially engine damage. Only use liquid thread sealer for all NPT type fittings if not already applied.

Check Valve/Solenoid

This eliminates the possibility that alcohol could inadvertently accumulate in the intake manifold while the alcohol system is not being used. It's a one-way check valve or solenoid that blocks engine vacuum from siphoning your methanol mixture.

Lowest Nozzle

Start with the lowest nozzle setting and work your way up. This ensures if you have any tuning issues to work out on your vehicle, they will get sorted out with a smaller shot of alcohol that will be less likely to damage your engine. Once you have the car working well on the smaller shot, you can then safely start to step up your alcohol kit horsepower.

Accidental Injection

DO NOT attempt to start your engine if alcohol has been accidentally injected into the engine while it was not running. If this occurs, disable all the ignition coils by unplugging the leads going to them. Push the accelerator pedal to widely open throttle and hold it there. While engaging the starter, turn over the engine for several seconds to clear the alcohol from the engine, and then reconnect the coils. Failure to do this before attempting to restart the engine could lead to a dangerous intake system backfire.

Important

When system is activated, if you hear any detonation or feel anything unusual; get off the throttle. It's a lot easier to check everything over, than it is to just try to drive through it and damage expensive parts.

Don't activate or have the system activated when you hit the stock rev limiter. The stock rev limiter can be a fuel cutoff. If you cut fuel while you're injecting alcohol, you're instantly very lean. This momentary lean condition has the potential of causing engine damage.

Technical Summary

The DevilsOwn™ DVS3 Methanol/Alcohol Injection System was designed to make the system the easiest on the market to install. To accomplish this at the centre of the design is a custom 1-piece harness that has all the standard options and upgrade options available already pre-wired to make it as easy as possible with near to no design work required.

There will be some crimping of connectors required after the wiring has been installed as much of the wiring would be cut to fit.

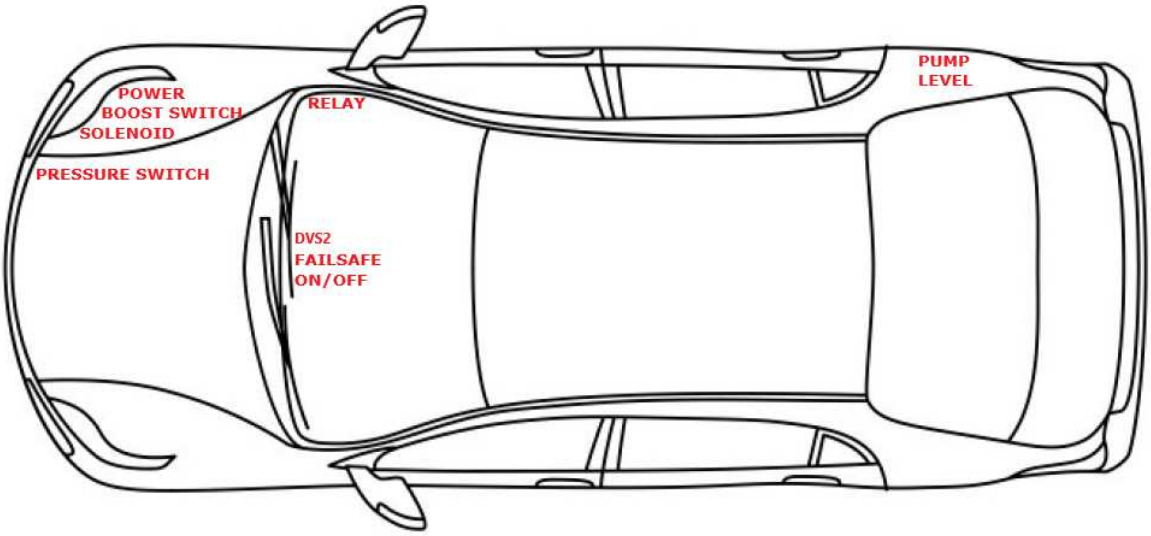
The wiring harness has the following

- High Current Power Cable.
- In-Built Relay.
- Pump Connections.
- Ignition Connection
    - Fit Switch to turn system on/off (upgrade option)
- Stage 1 Solenoid Connections (upgrade option)
- Stage 2 Solenoid Connections (upgrade option)
- Tank Level Sensor (upgrade option)
    - Passive in tank – Hole cut in tank required.
    - Active external – No cutting required.
- Pressure Monitoring Dongle (upgrade option)
    - Feedback via Failsafe LED to Indicate Low Pressure.
- Failsafe (upgrade option)
    - Controller
    - Pressure Sensor
    - Failsafe Relay Outputs

Harness Layout

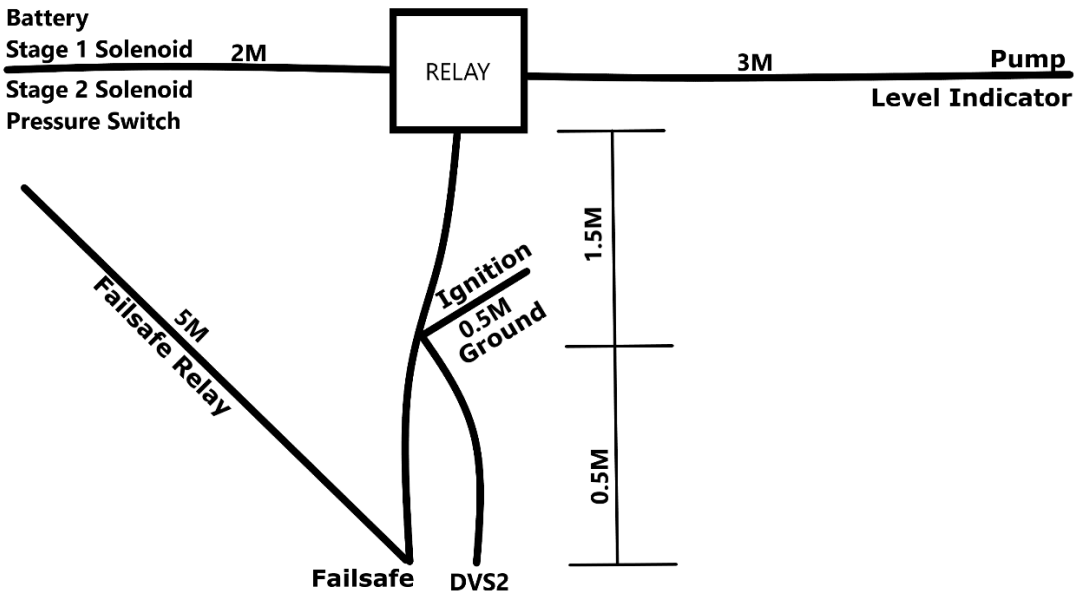
The harness has been designed and manufactured to fit a standard model with plenty of cable to make it so that that cable may be cut rather than extended and reduce the number of connections required. This is to minimise points of failure as most faults caused within DevilsOwn™ Methanol/Alcohol Injection Systems are caused by electrical/wiring faults and are outside of our control.

See the diagram below for the common setup. Note that the relay is located within the driver/passenger footwell section of the vehicle and thus is a good place to start the installation process.



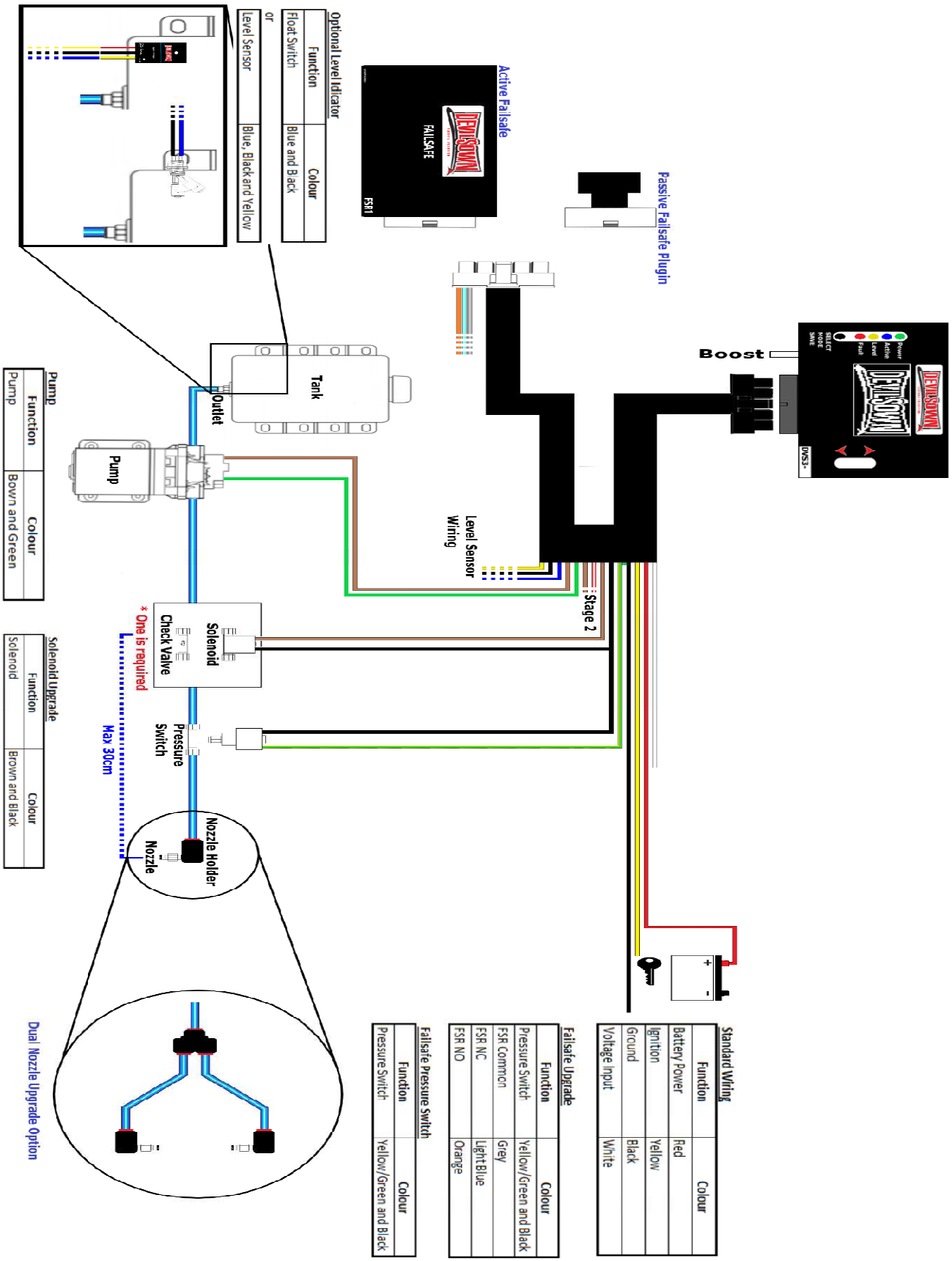
Cable Lengths

See the diagram below for the cable lengths. This can be used in conjunction with the make and model of the vehicle to see where the location of the hardware is required to minimise any harness modifications.

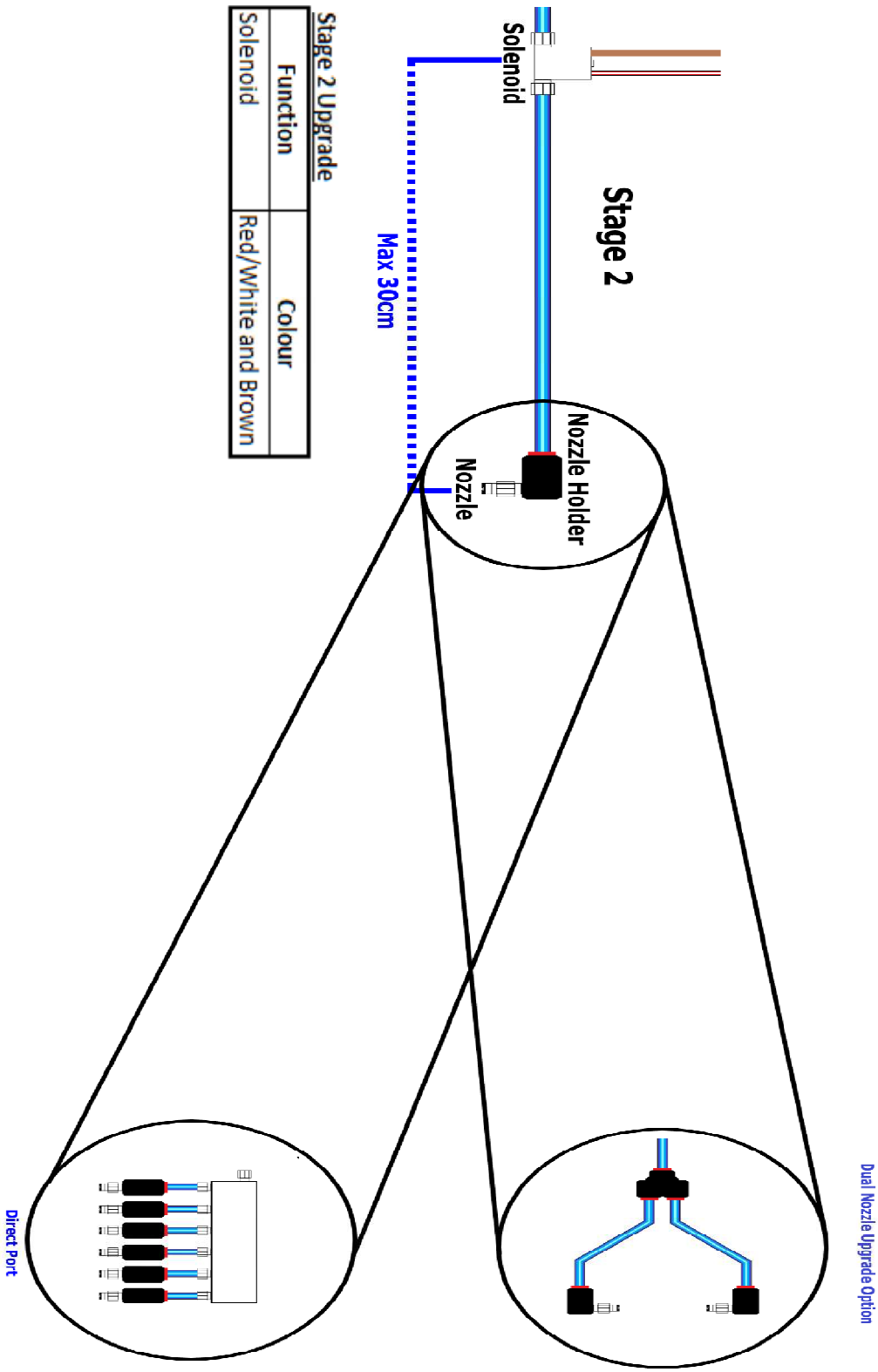


Circuit Diagram

DVS3



Stage 2


Stage 2 Upgrade
Function
Colour
Solenoid
Red/White and Brown
Solenoid
Stage 2
Max 30cm
Nozzle Holder
Nozzle
Direct Port
Dual Nozzle Upgrade Option

Colour Codes

Standard Wiring

Function	Colour
Battery Power	Red
Ignition	Yellow
Ground	Black
Voltage Input	White

Pump

Function	Colour
Pump	Brown and Green

Optional Level Idicator

Function	Colour
Float Switch	Blue and Black

or

Level Sensor	Blue, Black and Yellow

Failsafe Upgrade

Function	Colour
FSR Common	Grey
FSR NC	Light Blue
FSR NO	Orange

Failsafe Pressure Switch

Function	Colour
Pressure Switch	Yellow/Green and Black

Stage 1 Solenoid Upgrade

Function	Colour
Solenoid	Brown and Black

Stage 2 Upgrade

Function	Colour
Solenoid	Brown and Red/White

Installation

There are four parts to the installation, location, electrical, boost and fluid. The following sections describe each installation process in detail.

Location

It is good practice to understand the vehicles layout and where items are to be located. Installations may differ from the standard model Please see the index for a blank car layout which can be printed and the installation planned accordingly.

Relay

The best practice is to start with the positioning the relay in place. The relay in typically in the drivers or passenger footwell depending on easy access to a method to get the wiring into the engine bay and to the boot/trunk. Make sure it is out of the way so it cannot be knocked. It can be screwed in place via the locating tab on top of the relay. Make sure that there is no pressure on the cables leading out of the relay to prevent the relay from being pulled out of its socket.

Tank, Pump and Level Sensor

Common place is to locate these together within the truck/boot, but they can be placed in the engine bay especially if the washer bottle tank is be repurposed.

Nozzle, Nozzle Holder, Check Valve/Solenoid, and Failsafe Pressure Switch.

These will be located near the intercooling piping and inlet manifold.

Fuse and Power Cable

Run the large AWG16 Red cable to the main battery

Ignition Feed

The ignition feed can connect to a location behind the dashboard.

DVS3 Controller

This can be mounted in view of the user or tucked away in the glove box and used to setup start and end boost points, activation, monitor and fault find.

Failsafe

The failsafe does not require to be visible and can be tucked/secured away from view.

Electrical

Fuse and Power Cable

The main power feed is an AWG16 Red cable. Connect the fuse to the main battery as close to the battery as possible and then connect the fuse and power cable.

Ignition Feed

An ignition feed is required to power the relay, display, optional failsafe and optional active level sensor. Connect the ignition feed to the yellow wire and attach the black wire to the vehicle ground. An optional switch can be placed in series on the cable to provide the ability to switch the system on and off.

DVS3

The connector is prewired so it's just a case of plugging in the DVS3 to the 10-way **black** connector.

Pump

Connect the pump positive to the larger AWG16 Brown cable and the negative to the AWG16 Green cable.

Stage 1 Solenoid

The solenoid is an upgrade option that replaces the default check valve. Connect 1 side to and the other side to Black (-ve). It usually does not matter which way round the connections are made, but please check the solenoids manufacturer instructions beforehand.

Stage 2 Solenoid

The solenoid is an upgrade option that replaces the default check valve. Connect 1 side to Brown (+ve) and the other side to Red/White (-ve). It usually does not matter which way round the connections are made, but please check the solenoids manufacturer instructions beforehand.

Failsafe

The connector is prewired so it's just a case of plugging in failsafe into the 10-way **white** connector.

The failsafe relay connections are as follows: -

Relay		
FRS NORMALLY CLOSED	**SIGNAL OUTPUT**	**Light Blue**
FSR COMMON	**SIGNAL INPUT**	**Grey**
FSR NORMALLY OPEN	**AUX OUTPUT**	**Orange**

Failsafe Pressure Switch

The pressure switch needs to fitted in-between the nozzle and the check valve/solenoid. The system requires a pressure switch to only monitor a small piece of pipework and keep the system accurate. Not having a check valve/solenoid would increase time for low pressure monitoring and increase time for blocked nozzle detection. This would produce many false negatives and make the system unusable. Connect one side of the pressure switch Black (-ve) and the other side to Yellow/Green (+ve). It usually does not matter which way round the connections are made, but please check the pressure switch manufacturer instructions beforehand.

Fluid Level

There are two sensors that work with the system a passive float switch or active level sensor.

Float Switch

Connect one connection to Black cable and the other to the Blue cable.

Level Sensor

Connect Cable Black to Level Sensor Black, Cable Yellow to Level Sensor Red and Cable Blue to Level Sensor Yellow
Level Sensor Wiring

- RED – Positive Power
- BLACK – Ground
- Yellow – Signal

Whereas the cable wiring is

- Yellow – Positive Power
- BLACK – Ground
- Blue – Signal

INCORRECT WIRING OF THE ACTIVE LEVEL SENSOR CAN CAUSE IRREPARABLE DAMAGED TO THE LEVEL SENSOR

Boost

The DVS3 Boost version requires a Boost feed. Route the silicon vacuum hosing from an appropriate boost feed into the boost nipple on the DVS3.

Water/Alcohol /Methanol Fluid

Washer Bottle or Custom Tank

If using your vehicles washer bottle you may have to fully remove it to gain full access to the bottom.

- At the bottom of the washer bottle/tank, locate suitable a placement for the tank tap.
    - A flat side of the tank that is free of obstructions.
    - **DO NOT** place the tank tap in the seam line of the tank. Doing so can cause leaks.
    - At the rear of your washer bottle/tank to stop fluid starvation during acceleration.
        - This placement is for the hose that you will install later.
- Using a 9mm (11/32") drill bit, drill a hole at this location.
- Take the supplied washer and place it over the tank tap.
    - The rubber portion should face the tank, leaving the metal side facing the tank tap.
- Place a dab of silicon on the washer. (Optional).
    - Hand tighten the tank tap fitting (clockwise) until it is flush with your washer bottle.
    - **DO NOT** use any tools to tighten.

Pump

Regardless of where the tank is mounted (under hood, in trunk, etc.), we recommend mounting the pump near the tank. DevilsOwn pumps are pusher type pumps, and they work best when placed as close to the tank as possible.
Make sure to mount the pump away from heat, moisture and road debris. Because the pump will work at any angle, installation angle does not matter.

- If applicable tighten the pump connecters, 1/4 tube x 3/8” NPT fittings, with an 18mm wrench. Fittings either have sealant pre-applied or an O-ring already installed.
- Locate a placement for the pump. We suggest placing it below the washer bottle/tank, to aid in priming the pump later. Note: Flow goes in the direction of the arrows.
    - Tank >> Pump >> Check Valve or Solenoid.
    - It’s noted on the top of the pump.
- Mark the 4 mounting holes with the marker at the desired location.
- Using a 3mm (1/8") drill bit, drill a hole at these locations.
- Attach the pump securely, using a 1/4” socket/nut driver and the 4 supplied silver screws.

Check Valve or Solenoid

The check valve or solenoid must be placed within 30cm of the nozzle. Note the direction of the arrow on the check valve/solenoid.

Nozzle and Nozzle Holder

DevilsOwn strongly advises placing the nozzle AFTER the Mass Air sensor and/or an air-to-air intercooler if equipped.
On most turbocharged or CSC applications, DevilsOwn users place the nozzle in the outlet of the intercooler. If an intercooler is not present, the nozzle can be placed in any accessible location before the throttle body.

This will not damage supercharged applications with a liquid heat exchanger in the manifold. On these applications, it is recommended to put the nozzle a few inches in front of the throttle body or after it in a spacer. Remember, every car is different!

If possible, remove the component where the nozzle is to be installed from the engine. Be careful not to damage your engine during parts removal.

Using an 9mm (11/32”) drill bit, drill a hole at the selected location. If drilling through thicker metal like a throttle body or an intake manifold, use a 1/8” NPT tap. If going through thinner material, the nozzle can sometimes just thread right into it. Alternatively, you can have a 1/8” NPT bung welded in at any exhaust shop. If running dual nozzles this step will need to be repeated.

Before placing the nozzle into the intake, be sure to tighten the filter. Do not over tighten this filter screen to the nozzle housing as this will cause reduced flow from the nozzle. The filter side is the inlet side of the nozzle and the side with the small hole is the spraying side. Like before, the nozzle should turn by hand 1/2 way, then only need another 1-2 turns with a wrench to achieve a leak free seal. It is normal for the nozzle not to always seat the O-ring the first time it is put in. Every time it is loosened and tightened it will naturally tighten further.

Nylon Hose

Our fittings are all “push-to-connect,” so they take less than a second to connect. Simply insert the hose and apply a small amount of pressure on both the hose and the fitting. They should slide together.

Please see below for the nylon fluid hose fluid runs.

Standard Installation

Washer Bottle/Tank >> Pump >> Check Valve >> Nozzle Holder

Solenoid Upgrade Installation

Washer Bottle/Tank >> Pump >> Solenoid >> Nozzle Holder

Failsafe Pressure Switch Upgrade Installation

Washer Bottle/Tank >> Pump >> Check Valve/Solenoid >> Pressure Switch >> Nozzle Holder

Nylon Hose Installation

1. Run the hose from one item to the next leaving the excess at the either end.
2. Be sure to keep the hose clear of hot areas and moving parts.
3. Attach the hose into the first item fitting, applying a small amount of pressure on the hose and on the fitting.
4. On the other end mark the hose at the desired length.
5. Cut the hose - be sure the ends are cut squarely.
    - if the ends are burred you can clean them up with a file.

Repeat the process until all the nylon fluid hose is connected.

With the push-to-connect used on the DevilsOwn pumps, the tubing can be easily removed by pressing in on the sleeve and lightly pulling on the tubing.

Optional Parts

Self-Sealing Float Switch (optional)

On the side of the tank, drill a 22mm (7/8”) hole a minimum of 25mm (1”) from the bottom of tank. Place the self-sealing float switch inside the opening. Make sure the arrow on the side of the switch is pointing down. Tighten slightly past hand tight. Do not over tighten.

Active Level Indicator (optional)

This can be stuck using the sticky foam pad. anywhere on the tank, but preferable towards the front of the vehicle and above the fluid tank tap. This can be adjusted depending on usage and feedback required.

Dual nozzle (optional)

With this option the check valve is removed from the nozzle holder. It is placed before the Y fitting. Then you take the straight 1/8” npt fittings and screw them into the black 90 nozzle holders. We recommend placing both nozzles at 180 degrees. of each other.

Stage 1 Solenoid (optional)

Depending on solenoid manufacture; note the direction of the arrow on the solenoid. Place it inline as close as possible to the nozzle, maximum distance is 30cm.

Stage 2 Solenoid (optional)

Depending on solenoid manufacture; note the direction of the arrow on the solenoid. A Y-piece would be required to “tap” into the current fluid feed. Cut your tubing and place it inline as close as possible to the nozzle, maximum distance is 30cm.

Stage 2 Dual Nozzle (optional)

As per the stage 1 dual nozzle upgrade. The same process can be used to provide a dual nozzle upgrade to stage 2.

Stage 2 Direct Port (optional)

Along with the stage 2 solenoid upgrade option. The direct port can be added. A dedicated methanol manifold is required to distribute the fluid, and usually smaller sized nozzles are mounted to each port on the inlet manifold. This depends on the number of cylinders, methanol mixture and the overall power requirements. Please contact us to discuss your requirements.

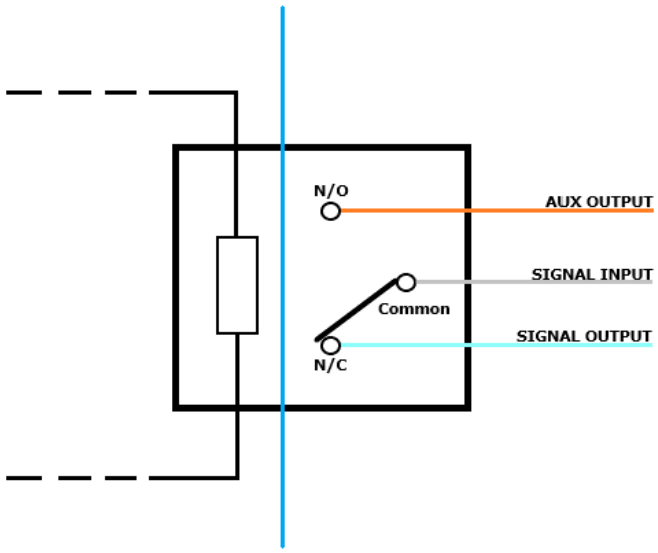
Nozzle Mounting Adapter (optional)

Drill a 14mm (9/16") hole in your intake tube. Pop it in and tighten. Has an integrated O ring to eliminate boost leaks.

Failsafe

Failsafe Relay Contacts

The system contains an internal relay that separates the failsafe hardware from the car/lorry electrical system and as such can be used in a variety of different ways. For ease and to accommodate the most common failsafe configuration the internal relay is wired as follows: -



For the system to act as a failsafe the vehicle needs to be inhibited by some method to protect the engine.

Note: When interrupting any solenoid or sensor is best practice to use the ground rather than the power supply or signal to not introduce interference into the system due to extending the cable lengths.

Example 1: Boost Cut

The easiest and most common way is to interrupt the signal to the boost solenoid/mac valve. Once this signal has interrupted the vehicle will only be able to generate boost up to the preset wastegate spring pressure, this should be well below the max boost level and easily be noted by the user.

Example 2: Sensor

Some modern cars do not have a Boost Solenoid/MAC valve to control boost so another method must be found.

Any sensor that can inhibit the cars operation can be used. This may put the car into limp mode or throw an engine warning light and should be cleared after a system reset and the vehicles power has been cycled.

The three most common sensors to use, but are not limited to, are: -

- MAP
- TPS
- AFM

Failsafe Operation

Initial startup

After the first power on when methanol system is not active, and pressure switch is high then a blocked nozzle has been detected. It is rare this will ever happen if a methanol system has not been active for some time as even a blocked nozzle will allow the pressure to decrease eventually.

First Activation

When the methanol system activates and after a preset time for the pressure to build and the pressure switch is switched on. If the Pressure switch fails to become active, then the system fails with low pressure.

Continued Activation

The system continues to monitor the pressure switch and if it ever deactivates whilst the methanol system is active then the system fails with low pressure.

Deactivation

When the system deactivates it waits a predefined time to check the pressure switch. If it fails to switch deactivate within a preset time, then the system fails with a blocked nozzle fault.

Failsafe Troubleshooting

Failsafe returns faults although methanol injection system is switched off. On/Off Switches that contain LED's can cause issues where they allow the activation signal to route through the switch LED diode. Remove the ground from the switch.

Unable to run methanol system as failsafe always activates. This can result from several issues. Using a nozzle below size 2. Increase Nozzle size. System not yet primed and thus air in the system. Remove hose from nozzle holder and force pump to run until fluid comes out of pipe. Reattached hose.

The system always fails once with low pressure when the methanol injection system first switches on. This can be caused by pump pre-pressurisation. The installed controller primes the fluid up to, but not past the valve where the failsafe pressure switch is located, to not inject fluid when not required. This is normal operation and will stop this will only occur once. After the methanol injection system has run out of fluid the system will no longer run, and the failsafe keeps generating low pressure faults. This is simply caused by air and a lack of fluid in the system. The failsafe keeps going into fault mode due to no fluid and the system can't fill the fluid as the failsafe keeps going into fault. The system will have to be primed via the controller's instructions, or the failsafe can be unplugged for a few gentle pulls to allow the system to refill all the pipe work.

Note: The gentle pulls will start by spraying no fluid and increase to normal function once primed.

Operation

The system controls the duty cycle of the pump depending on the start and end boost/voltage points. It is a linear ramp from start point 20% duty cycle to end point 100% duty cycle (pump fully on). The pump stays fully on after the end point has been surpassed. The varying duty cycle controls the pump speed which then effects the fluid pressure and finally the nozzle throughput/spray pattern. There are three operation modes *Standard*, *Configuration* and *System Configuration*.

Initial Power On

The system powers on showing the DevilsOwn™ logo the model version either DVS3-B (Boost and Voltage) or DVS3-V (Voltage Only) and the current firmware version. The system will be running in Standard Mode.

Standard Mode

The system is running and monitoring boost or voltage input.
The display shows 2 options which can be selected using the UP and down buttons and The Select/Mode/Save button.

- **Input Guage**
  - Top Bar Shows PSI Input or Voltage
    - Input Type & Range can be changed in System Configuration Menu.
  - Bottom Bar Shows Duty Cycle from 20% to 100%
- **Diagnostics**
  - Shows Boost or Voltage Value.
  - Pump Activated (Box Around “Pump”)
  - Pump Duty Cycle
  - Stage 2 Activation (if enabled Box around “Stage 2”)

Configuration Mode

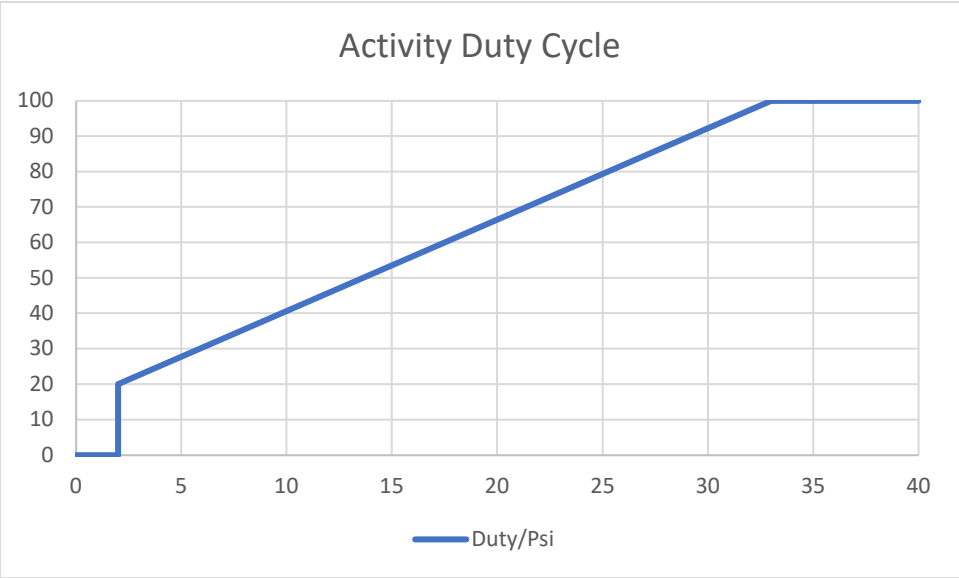
To Enter “Configuration Mode” hold down the Mode button for between 1 and 3 seconds. The system will slow Beep/Buzz three times to indicate that “Configuration Mode” has been entered.
Note: The system will not run in this mode.
The display shows 2 options to allow you to enter the start and full points of the Pump Duty Cycle.

- **Pump Start**
  - Lowest Set Value is 2psi or Voltage equivalent
  - Max Value is Pump Full value.
- **Pump Full**
  - Lowest Set Value is Pump Start Value
  - Max Value is Set within System Configuration
    - Default 40psi or Voltage equivalent
    - MAX internal sensor 60psi or Voltage equivalent
    - Max external sensor 80psi or Voltage equivalent

To Exit and Save the settings hold down the Save button between 3 and 5 seconds. All the LED’s will flash twice and the system will fast Beep/Buzz three times to indicate that the settings have been saved and “Standard Mode” has been entered.

Example 1:

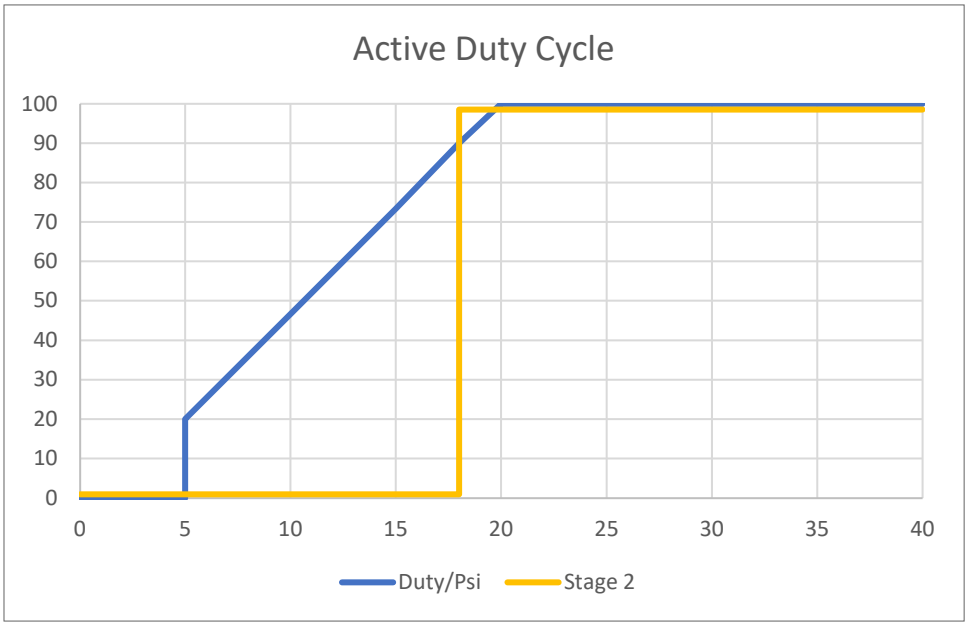
Boost Start 2psi End PSI 33psi – No Stage 2



The graph shows the linear duty to psi response.

Example 2:

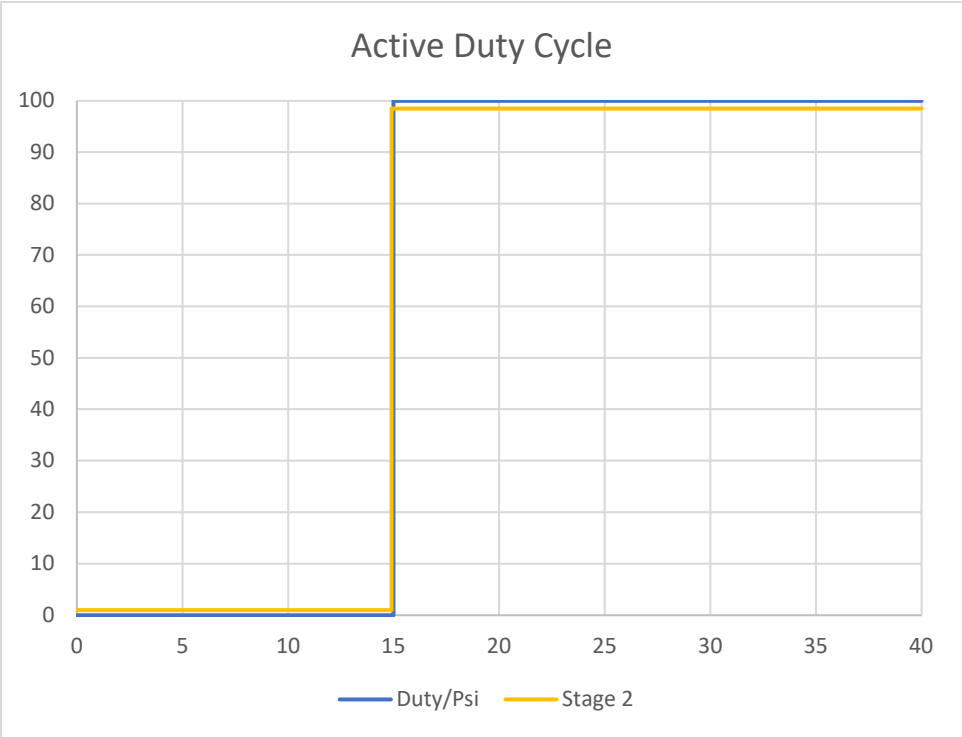
Boost Start 5psi End PSI 20psi – Stage 2 Enabled



The graph shows the linear duty to psi as well as the stage 2 starting at 90% Pump Duty Cycle/18psi.

Example3:

Boost Start 15psi End PSI 15psi – Stage 2 Enabled



With the duty cycle going from 0 to 100% at one single point the Stage 2 solenoid would activate at the same instant.

System Configuration Mode

To Enter “System Configuration Mode” hold down the Mode button for between 5 and 10 seconds from “Standard Mode”. The system will slow Beep/Buzz five times to indicate that “System Configuration Mode” has been entered.

Note: The system will not run in this mode.

The display shows 12 options to allow you to enter the start and full points of the Pump Duty Cycle.

- **Level Ind** (Level Indicator -Yellow LED requires sensor fitted)
  - Enabled
    - No (Default)
    - Yes
- **Failsafe** (Red LED requires Dongle or Failsafe FSR1 fitted)
  - Enabled
    - No (Default)
    - Yes
- **Stage 2** (Activates at 90% Duty Cycle if Enabled)
  - Disabled (Default)
  - Enabled
- **Input Type** (Internal Boost Sensor or AUX input)
  - Boost (Default)
  - AUX
- **Aux In Type** (Only Active if **Input Type** set to AUX)
  - MAP (Default System uses PSI)
  - TPS (System uses Voltage)
  - MAF (System uses Voltage)
- **Aux V Offset** (Only Active if **Input Type** set to AUX. Calibration Values)
  - 0.00 (Default)
  - The voltage offset when system not running.
  - Range 0 to 5 volts
- **Aux B Offset** (Only Active if **Input Type** set to AUX. Calibration Values)
  - Not Available when “Aux Input Type” set to MAF or TPS
  - A boost offset when an offset is required at top or bottom limit.
  - Range -10 to 10 psi
  - 0 (Default)
- **Aux Gain** (Only Active if **Input Type** set to AUX. Calibration Values)
  - The Ramp Rate or Gain required depending on MAP sensor used.
  - Range 0 to 20
  - 1.00 (Default)

- **Max Values**
    - Only Shows “5V Only” When Input Type is set to Aux and Aux Type is set to MAF or TPS.
        - 1Bar/15PSI
        - 1.5Bar/22PSI
        - 2Bar/29PSI (Default)
        - 2.5Bar/37PSI
        - 3Bar/44PSI
        - 3.5Bar/51PSI
        - 4Bar/58PSI
        - 4.5Bar/65PSI ***External Map Sensor Only***
        - 5Bar/73PSI ***External Map Sensor Only***
        - 5.5Bar/80PSI ***External Map Sensor Only***

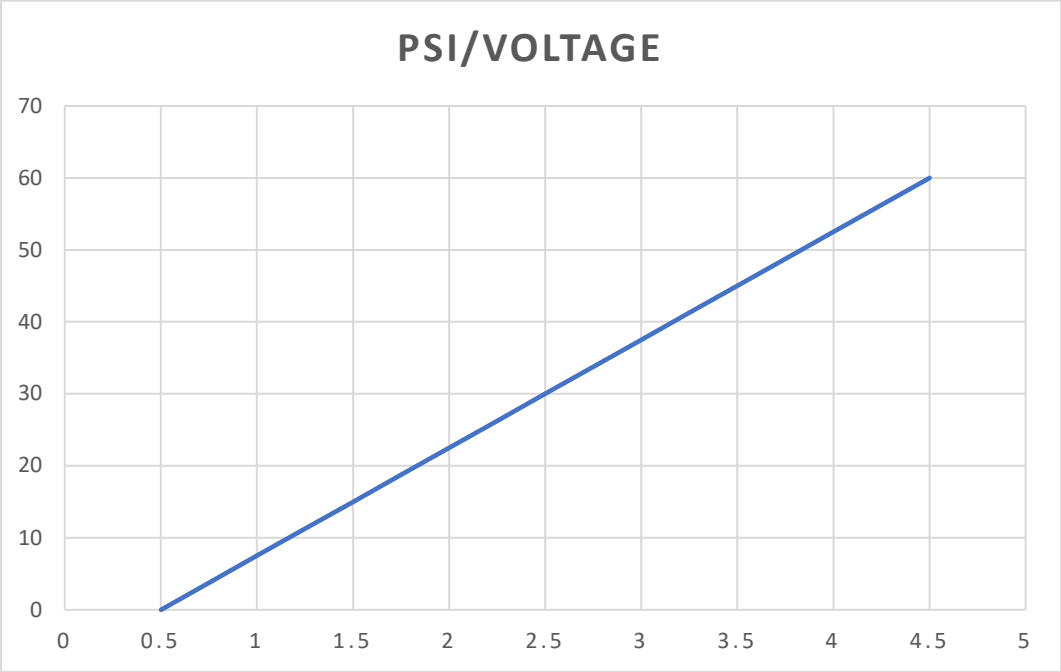
- **Calibrate** (Only Active if **Input Type** set to AUX)
    - Top half of screen is internal sensor for reference
    - Bottom half of screen is external sensor.
    - Use Internal and External to Calibrate.
    - See Below for Calibration routine
- **Test System**
    - The system Shows Module 1 and Step Count
    - Modules Activated will show a Box Around Them.
    - Increase the step count using the up down buttons to perform the following: -
        - Step 1: Relay and Pump on at 25 duty cycle.
        - Step 2: Relay and Pump on at 50 duty cycle.
        - Step 3: Relay and Pump on at 75 duty cycle.
        - Step 4: Relay and Pump on at 100 duty cycle.
        - If Stage 2 Enabled
            - Step 5: Relay and Pump on at 100 duty cycle.
            - and
            - Stage 2 Activated
    - If Level Sensor or Failsafe are enabled and Activated a Box will appear around them.
- **Rest. Def.**
    - No (Default)
    - Yes
        - On Save it will set the following defaults
            - Pump Start – 10psi
            - Pump Full – 15psi
            - Level Indicator – No
            - Failsafe – No
            - Stage 2 – Disabled
            - Input Type – Boost
            - Aux Type – N/A
            - Aux V Offset – N/A
            - Aux B Offset – N/A
            - Aux Gain – N/A
            - Max Values – 2Bar/29PSI

Calibration

If the AUX Type is set to MAP, then the top of the screen shows the generated inputs from the onboard map sensor and the bottom the external map sensor.

There is a calculated boost graph. Then under that, Input voltage value, calculated voltage value after voltage offset applied and calculated boost value.

Below is the response graph of the internal map sensor.



Note that the onboard map sensor has an offset voltage of 0.5v at 0 PSI. this is considered during the calculations. It then has a gain of 15psi/volt.

Boost = (Voltage – 0.5) * 15.

If using the same boost reference, then changing the Aux Voltage/Boost Offset and Aux Gain a direct comparison and thus calibration data can be calculated.

If the AUX Type is set to MAF or TPS a voltage gauge is shown with the AUX voltage reading, AUX offset reading and the Int generated value. There are then two static values set voltage and in settings. The Aux Voltage, Boost offset, and gain are used so the AUX voltage and int settings meet those static points at the same time.

To Exit and Save the settings hold down the Save button between 3 and 5 seconds. All the LED's will flash 4 times and the system will fast Beep/Buzz three times to indicate that the settings have been saved and "Standard Mode" has been entered.

Nozzle Selection

Start with the lowest nozzle setting and work your way up. This ensures if you have any tuning issues to work out on your vehicle, they will get sorted out using a smaller amount of alcohol and will therefore be less likely to cause engine damage. Once the car works well on the small amount, then it will be safer to try a larger nozzle. It is possible that while during driving, the vehicle will experience engine bucking. This bucking is caused by either too much fluid being injected or not enough air to accommodate what is being injected. To remedy the problem, do one of the following.

1. Adjust the Boost Switch knob to inject at a higher boost level.
2 Use a smaller injection nozzle.

DVS3

LED Operation

- Green – Power
    - LED OFF – System Off
    - LED ON – System On
- Blue – Activation
    - LED OFF – System Not Running
    - LED ON – System Running
    - LED Brightness = Duty Cycle
        - Only stage 1, brightness 100% to 100% duty cycle.
        - Stage 2 Enable, brightness 50% to 100 duty cycle + 50% when stage 2 active.
- Yellow – LED Indicator
    - LED OFF – Fluid Level OK.
    - LED Flashing – Low Fluid Level Detected.
- Red -- Failsafe
    - LED OFF – System OK.
    - LED ON – Low Pressure Detected
    - LED Flashing – Blocked Nozzle Detected (only available with Failsafe FSR1 attached)

Low Level Detection

Due to the volatile state of fluids under acceleration and deceleration the system uses a 4-strike rule over 2 seconds. It takes readings over 2 seconds and if 4 detections are made then the low-level system activates.

Fluids

Recommended

Fluids to be used with our alcohol injection system:

- Methanol M100.
- Grain alcohol.
- Ethanol E100
- Denatured alcohol.
- -20 to -30 windshield washer fluid.
- Rubbing alcohol.
- Distilled water

Not Recommended

DO NOT use the following at any time in the system:

- VP brand M3 and M5 methanol.
- Gasoline.
- Windshield washer fluid containing glycol.
- “De-Icer”.
- Tap water.

Special Notice

DevilsOwn reserves the right to, at any time or without prior notification or liability, change or improve the design of any product, add products or discontinue products. Any such acts will not give rise to an obligation to accept returns of (except those returns specifically provided for herein) or to update the design of any such prior products.

DevilsOwn Limited Warranty

DevilsOwn warrants our products 365 days from the original date of purchase to be free from defects in materials and workmanship. If, during this period, the product fails under normal use due to manufacturing defect, then DevilsOwn will replace or repair the item. To obtain repair or replacement under the terms of this warranty, notify us by email support@methanol-injection.co.uk.

For an (RMA) Returned Material Authorization. No products will be considered for warranty without a copy of the purchase receipt showing the sellers name, address, and date of purchase provided you are the original purchaser, RMA number must be labelled on all boxes as Returned Goods.
All implied warranties, including the warranty of merchantability, are limited to the same 365-day period from the date of original purchase. DevilsOwn is not liable for any direst or consequential loss or property damage arising from any use of this product. This warranty gives you specific legal rights; you may also have other rights which vary from state to state. Products returned due to misuse/neglect and products tested with no problems found are subject to a handling/testing charge.

Getting Help with your Install

If you have any questions, concerns or comments on the DevilsOwn™ DVS3 Methanol/Alcohol Injection System, please visit the DevilsOwn Web site at https://www.methanol-injection.co.uk

Browse the Instructions, Articles, Information and FAQs (Frequently Asked Questions) section for additional information that may be helpful prior to contacting us.
Otherwise, you can always contact us at: support@methanol-injection.co.uk.

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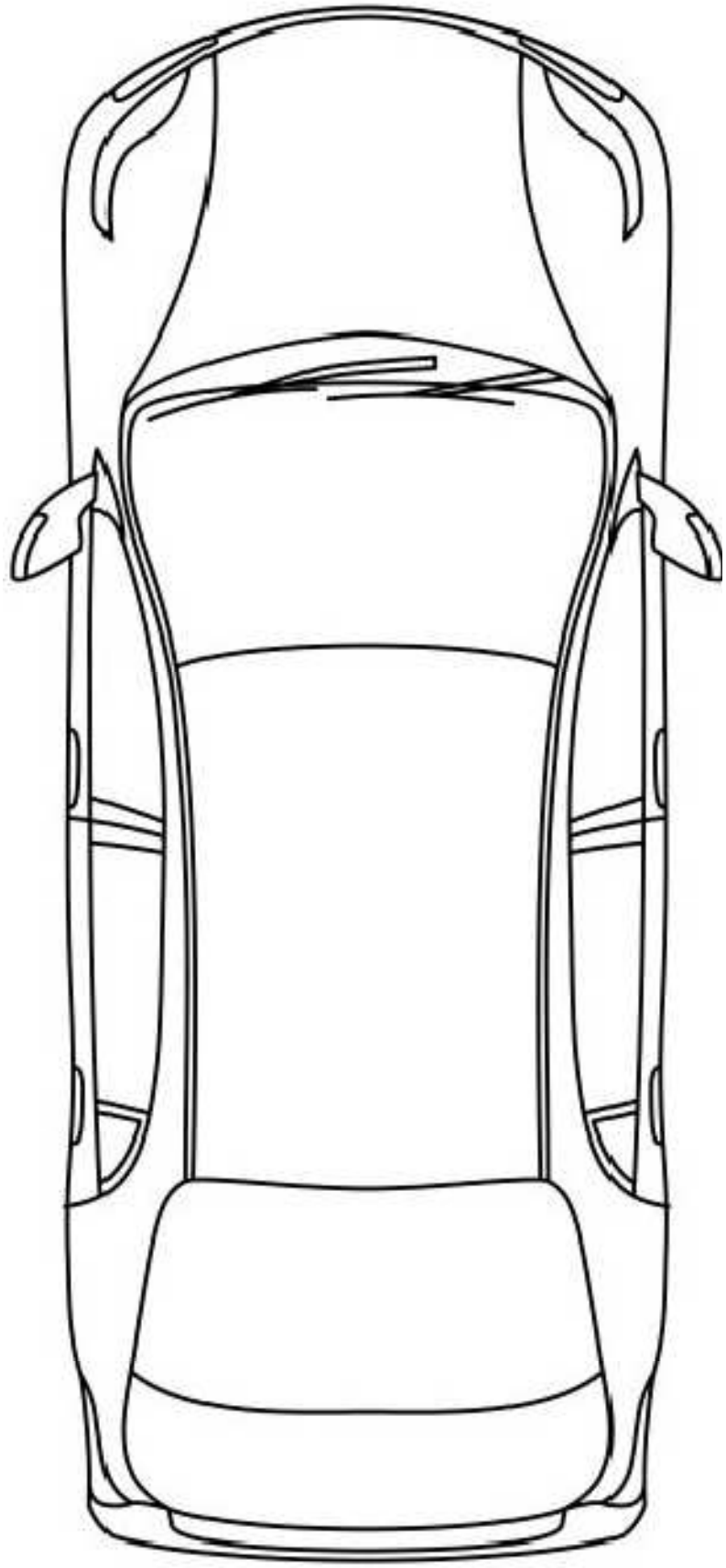
Vehicle Layout



Versions

Version Number	Description	Date
1.0	First Draft	20/6/2025
1.1	Level sensor strike rule	12/1/2026