

Electronically controlled Dosing system

Electronic Valve Saver



Technical Manual

Installation Instructions
Safety Notices
Programming
Operation

Congratulations

We congratulate you on your purchase of this electronic additive dosing system
“electronic Valve Saver Kit”
of highest quality and thank you for your trust.

Using this dosing system in combination with a suitable valve protection
additive can significantly reduce the wear of engine parts.

We recommend you read through these operating instructions carefully
before putting this device into operation. Please observe all safety notes and
all instructions on use, connection and settings.

Note

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Use only original replacement parts and accessories.

We are also not liable for any consequential damages or loss resulting
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Introduction

Intended use:

Electronic Valve saver is an electronically controlled dosing unit consisting of the following components:

1. Additive tank incl. level sensor
2. Electronically controlled dosage module
3. Discharge connection via additive nozzle
4. PA tube
5. Signal led incl. mounting sleeve

Check kit for completeness when unpacking.

The intended use is the dosage of appropriate and approved additives for combustion engines.

Valve saver has been developed on the basis of the applicable safety guidelines and built for use in European countries.

The electronic additive dosage system "**electronic Valve saver**" allows a volume-driven or consumption-dependent adding of additives or lubricants, which counteract wear of engine components.

Use in vehicles with gas engines

In order to protect the respective components, vehicles with non gas-tight cylinder heads and valves or valve seats, require the adding of appropriate additives via a dosing device into the combustion chamber. The recommended amount of additive is one per thousand in proportion to the amount of gas consumed.

The correct additive dosage and the reliable supply to the relevant motor components are crucial for the effectiveness. The time required for the particular dosage can be changed with the adjustment function.

The correct dose

Example for 1‰:

If your vehicle consumes 100 litres of LPG over a distance of 1000 km, then the optimum additive admixture dose is 100 ml.

That means a distance of 5000 km will require an additive dose of 500 ml.

Additive consumption is therefore a linear function of consumed LPG.

Additive consumption is therefore also greater in vehicles with higher LPG consumption.

This calculation is only provided as an example, and applies only to a dosage of 1‰. Always observe the additive manufacturer's specific dosing instructions.

The electronic Valve saver offers the following features:

1. Additive consumption only when needed
2. No over-or under-dosage
3. Consumption-based additive admixture
4. Level monitoring of the additive tank
5. Easy installation
6. Easy refilling of the additive tank
7. Also suitable for retrofitting
8. Low cost of purchase

How does the electronic Valve saver work?

The system consists of an additive tank and an additive dosing unit with an inbuilt electronic controller. To calculate the required amount of additive, the gas nozzle control times are used. Via the control input (purple conductor) of the electronic VP-Light module, the control times of the gas nozzle are measured and then calculated and fed in according to quantity setting.

The longer the nozzles are open, the more additive is fed in.

As the dosing system is only provided with power once the gas system is active, no unnecessary additive is fed in during petrol operation.

Additive nozzle M5

For gas powered vehicles, the additive is fed in by means of the additive nozzle over the air supply behind the throttle (intake manifold).



The additive tank

The total capacity of the tank is approximately 600 ml; the printed scale allows for easy readings and controlling. The tank can easily be refilled without a funnel thanks to the large screw cap. The tube is connected via the rotating push-in fitting. The additive tank is equipped with a level sensor which indicates when an additive needs to be refilled via the LED light which is included. At a remaining additive amount of approx. 150 ml, the LED will flash every second and notify you about the low additive level. At this point you have approx. 70 litres of gas remaining until the additive is used up completely.



The dosing unit

The dosing unit is moulded in a compact case including the controller board. The installation position can be selected. The line connections are designed as quick push-in fittings. The quantity is set easily by touching the metallic tube connectors (capacitive button).

Electrical connection electronic Valve saver

Connecting the electronic dosing system is easy.
The voltage tap and the ground connection must be suitable for a current of 6A.

Set up the following cable connections:

5 pin wiring harness:

1. red	12 volts for gas operation	12 V LPG is on
2. brown	mass	ground
3. purple	Control core of any gas injection nozzle	signal any LPG injector
4. yellow	Led signal output	signal output control lamp
5. gray	level sensor	level sensor to ground

Connection instruction:

To connect the light-emitting diode, connect the yellow conductor from the module to the red conductor on the signal light diode and connect the blue wire with the signal light diode to the ground.

Please note:

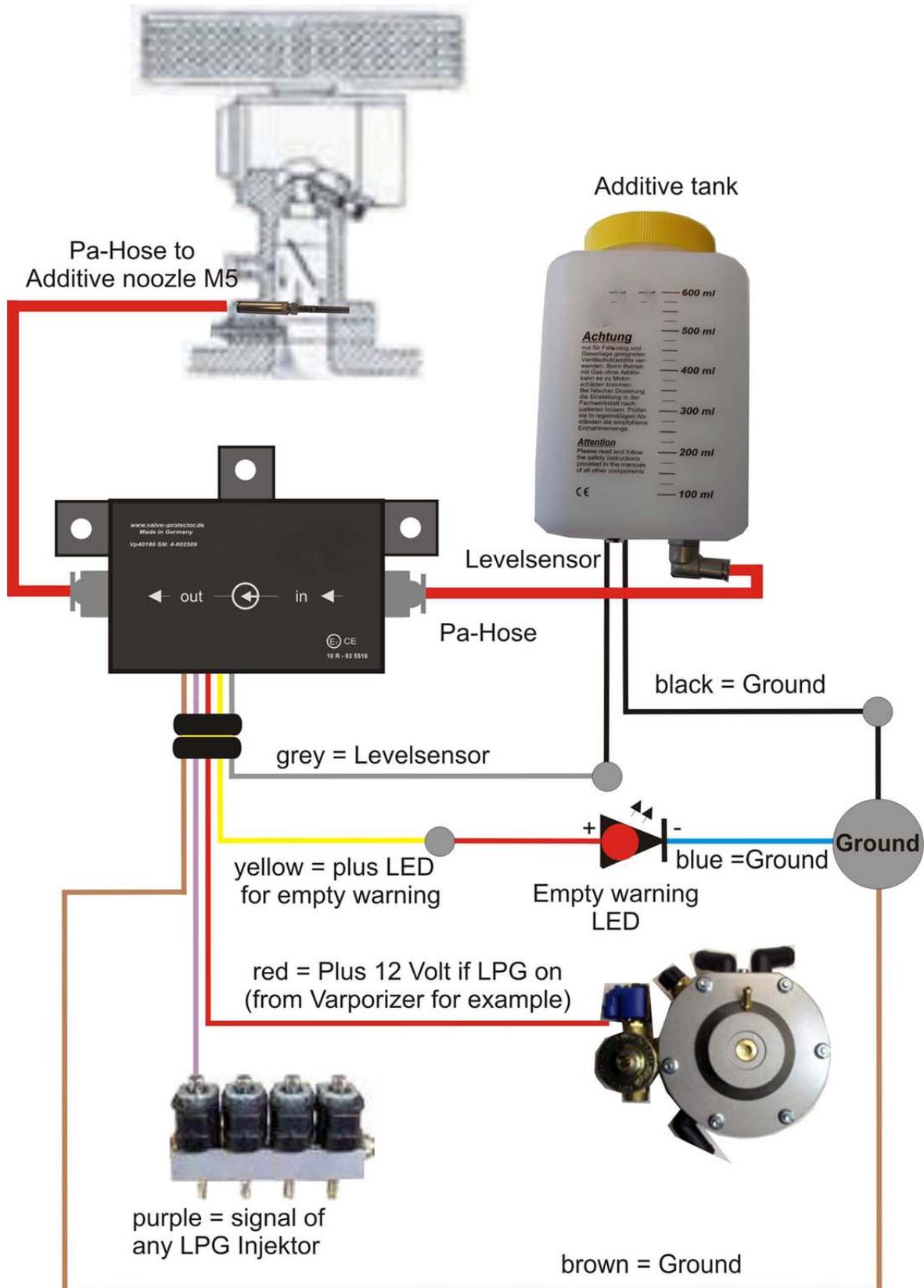
The LED must never be operated directly at 12 volts, as it will be destroyed immediately.
The signal output (yellow) is already laid out for the operation of a light diode and limits the output current to 15mA.

Function of the LED in the passenger compartment:

Slow flashing (sec.) - additive level is low (remaining amount of approx. 70 ml).
Fast flashing (0.2 sec) - additive tank is empty and additive must be refilled as soon as possible.

To connect the level sensor in the additive tank, connect the gray conductor of the module with one of the black conductors of the level sensor and connect the second black conductor of the sensor to the ground.

Connection and system overview



Installation and commissioning of electronic-Valve saver:

1. Attach the additive tank to an accessible, cool location on the body. During installation, ensure a solid, vibration-free and horizontal mounting and that the connection on the base of the tank are accessible and not bent. As the additive tank needs to be refilled by the end customer, easy accessibility of the lid and the easy and safe filling of the additive must be ensured. **The maximum ambient temperature for the additive tank should not exceed 80 degrees. Keep a distance of at least 200 mm from the exhaust manifold and the down pipe.** When handing over the vehicle, inform the customer about the required controls such as checking of the additive level, usage control and leak testing.
2. Attach the dosage module to an accessible, cool location on the body. Installation can be in any orientation. When installing, ensure a solid, vibration-free mounting and that the connections socket and the status LED are freely accessible. **The maximum ambient temperature for the dosage should not exceed 80 degrees. Keep a distance of at least 200 mm from the exhaust manifold and the down pipe.**
3. Install the additive feed-in connection in the inlet manifold by means of the additive nozzle after the throttle. Drill a 4.2 mm hole behind the throttle valve in the intake manifold. Cut in an M5 thread. Screw in the additive nozzle by using a thread sealant paste until the end of the nozzle ends in the approx. centre of the suction tube. Secure the nozzle with a screw lock.
(Caution!! No borings are allowed to get into the combustion chamber, otherwise they could cause considerable damage to the engine)
4. Connect the tank and the input of the dosage module with the additive tube (4x2.7mm) and the output of the dosage module with the feed-in nozzle. The cut off tube must be inserted approx. 12 mm into the push-in plugs. When detaching the tube, the ring must be pressed against the quick push-in plug.
**Attention: Do not snap off and only cut off with a suitable tube cutter.
Avoid abrasive points, if necessary protect with protective tube.
Secure against rotating or hot parts with clamps.
Always use protective rubber sleeve for sheet metal ducts.**
5. Now prepare all necessary electrical connections, taking all safety instructions into account. (See connection diagram)

6. Now fill the additive tank with a suitable and approved valve protective additive up to the upper fill line (max. 600ml). Check the tube plug connections for leaks.
Attention! Additive can cause damage to rubber and plastic parts. Immediately rinse any spilled additive with lots of water.

7. Now set the appropriate parameters for the vehicle.
(See the Quick Start sheet - amount setting)
Furthermore, when installing, also adhere to the installation instructions of the respective gas system. The system installation is now complete and can be put into operation.

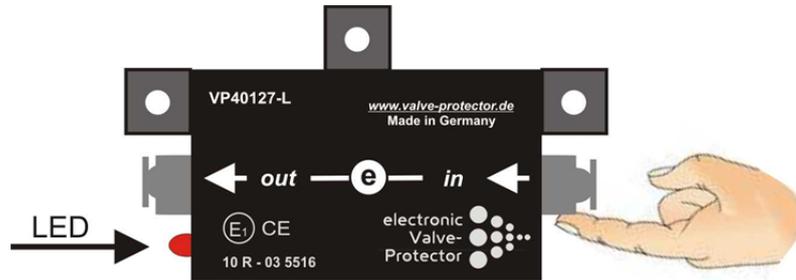
8. Test run: Start the vehicle and check the LEDs on the dosing module. If the vehicle running in gas mode, the LED should change from yellow to green after 30 seconds. The LED should flash green, which indicates that the gas nozzle control impulses are being measured. Additive dosage will occur approx. every 20-180 seconds, depending on vehicle type. The LED indicates an additive shock as a yellow light. The time until the next additive output depends on the set nozzle flow and the measured gas nozzle control times. Now open the additive tank and gently push down the float level of the level sensor for approx. 10 seconds. The LED in the module as well as the LED in the passenger compartment should flash red and indicate the additive reserve. When you let the float return back to the top, the message should stop after approx. 10 seconds. Approx. 100 ml of additive remains from the start of the additive reserve message until the additive is empty. When the additive has been depleted, the LEDs flash red rapidly.

Note

After approx. 1.000 kilometres in gas mode, the additive amount used should be checked. If the amount of additive dosed is too high or too low, increase or reduce the dosage level.

Quick start instructions – Amount setting

The Electronic Valve saver kit is equipped with a touch sensor at the end of the tube connection in order to perform adjustments. The complete metal connection of the module reacts to touch by finger – just like a button. On the left side wall of the module, an LED is installed, which indicates the various functions with three colours (red-green-yellow).



Step 1: Start the vehicle and activate gas operation. The dosing module is now provided with power and remains in Set-up ready mode (LED lights up yellow) for 30 seconds.



Step 2: While the yellow LED is on, touch the metallic tube connection with your finger until the LED lights up red. Then remove your finger.



Step 3: The LED now flashes x times and indicates the set dosage level. There are 15 dosage levels. Please see the guide level table at the end of this page.

(Default setting step 5)



Step 4: To change the dosage level, simply tap on the tube connection with your finger until you have reached the required dosage level. The flash display will always show the dosage level set. Once level 15 has been reached, counting starts again at 1.

Step 5: Once you have set the required dosage level, (see required number of flash impulses), hold down your finger on the tube connection until the LED light is green. The setting has now been completed and the module is ready for use.



The module remains in set-up ready mode (LED yellow) following each restart. If during this phase, the tube connection is not touched, the module automatically changes into working mode (LED green) after 30 seconds. The dosage levels can be set in 15 levels. Following level 15, the Table starts again at level 1. The correct additive dosage must be checked regularly. The recommended additive amount is 1 per thousand in relation to the liquid gas amount consumed (**Always observe the additive manufacturer's specific dosing instructions**). The setting Table is only a guide! The correct dosage must be checked after each installation and adjusted if required.

Display of LED built-in module

LED light is green:	System has operating voltage but is not receiving control impulses from the gas injector.
LED flashes green:	System has operating voltage and is receiving control impulses from the gas injector (operating mode)
LED slowly flashes red (every second):	no input from level sensor into additive tank
LED quickly flashes red (every 0.25 sec.):	additive depleted
LED flashes yellow (every 0.5 sec.):	additive is being injected

Display of LED to be installed in passenger area

LED flashes slowly (every second):	remaining additive level reserve approx. 100 ml
LED flashes quickly (every 0.25 sec.):	additive depleted.

Guide level table

Level	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Engine capacity in KW	30	40	50	60	70	80	90	100	115	130	150	180	210	240	270
Engine capacity in PS	41	54	68	82	95	109	122	136	156	177	204	245	286	326	367

Safety instructions

Intended use:

Electronic Valve saver is an electronically controlled dosage unit consisting of the following components:

1. Additive tank, 2. Electronic controlled dosage module, 3. Discharge connection, 4. PA tube

The intended use is the dosing of appropriate and approved additives for combustion engines.

Valve saver has been developed and built on the basis of the applicable safety guidelines.

Only use according to the following criteria:

1. Perfect technical condition
2. After careful leak testing
3. After installation and commissioning by a specialist
4. Only use for intended use
5. Non-compliance with safety instructions can lead to injury of persons or damage to material
6. Electric wires and additive cables must always be installed in such a way that damage is excluded and no friction occurs
7. Observe additive manufacturer's safety instructions
8. Check material compatibility of additives in conjunction with perfused components
9. Check that dosage is correct at regular intervals
10. Have system checked by a specialist workshop in case of under or over dosage
11. Driving with incorrect dosage can cause damage to your engine or exhaust system
12. Rinse any spilled additive with lots of water
13. Refill additive when additive level is low
14. Do not fill above the upper filling line
15. Never mix different additives
16. Only use permitted and approved additives
17. In case of use of unapproved additives, your vehicle type approval may lapse
18. Only use original spare parts
19. The specified resistances and fields of application are only "guidelines", and do not release customers from the responsibility of testing for evaluation of the operational capability. Please note that elastomers have a limited service life, e.g. due to ageing. Therefore, we recommend regular inspection and replacement intervals. All information is correct to the best of our knowledge. However, we do not guarantee the accuracy or completeness of the information.
20. The warranty is 24 months. The warranty will become void in the case of non-compliance with intended use of the device, in the case of operation outside of the technical specification, in the case of a non permitted additive being used or in case of improper use or external intervention. No liability is accepted for damages resulting thereof. The exclusion of liability extends to any services that are made by third parties which were not commissioned by us in writing.