

Date:	24-10-2018
To:	Commercial manager/ Workshop manager / LPG technician
Reference:	Introduction eVP-500
Article number:	180/030001
System:	VSI-2.0 Universal, VSI-2.0-DI

Dear Prins customer,

We would like to draw your attention to the introduction of the electronic reducer eVP-500.

This document provides:

- Product information
- Installation instruction
- Service and maintenance information.

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What's new?

As of 2018 Q4 Prins starts the delivery of the eVP-500 in selected VSI-2.0 kits.

Product information

eVP-500 is the abbreviation of electronic Variable Pressure 500Hp. It is a state of the art full electronic reducer for the LPG market. It does not only surpass competitors in terms of capacity (500hp), it also extends the benefits of an electronic controlled LPG system with the possibility to fully electronically control the system pressure.



Features

Unique, next-generation concept
- High performance (>370kW / 500hp)
- No diaphragm
Housing
- Compact and light weight design
- Lock-off valve integrated
- Integrated safety pressure relief valve
System pressure
- Fully dynamic output pressure
- Pressure adjustment by software
- No pressure loss even at higher flows
- No pressure drift over time
- No pressure peaks during fuel cut-off
Service and Maintenance
- Replaceable filter
- Easily accessible from top
Installation / calibration
- MAP connection not required / Via optional MAP sensor
- Special calibration parameters
- Standard coolant temperature sensor
- Regular Prins two pole Superseal connector for actuator



Technical Specifications

Type	Single stage full electronic LPG pressure reducer
Fuel type	Liquefied Petroleum Gas (LPG)
Environment	Engine compartment
Weight	800g
Dimensions	Ø56mm x 142mm
Input pressure (Abs.)	300-2500 kPa
Output pressure (Abs.)	0- 550 kPa, adjustable (software limited between 50-380kPa)
Max Fuel flow rate	>100kg/h at 60°C ECT
Pressure relieve valve	585 ±50 kPa (acc.to R67-01)
Operating temperatures	-40 to +120°C
Gas inlet	Standard M10x1: (XD3 flare, XD3,4,5 banjo bolt, 6mm copper) Adapter M12x1: XD4,5 flare, 8mm copper Adapter ¼ NPT
Gas outlet	16 mm hose connection
Coolant connections	16mm hose connection (no flow direction specified)
Temperature sensor type	Standard Prins sensor, R-ntc at 20°C is 2500Ω, IP 54A Connector
MAP Reference	Controlled by software

Parts identification



eVP-500



Actuator



Filter



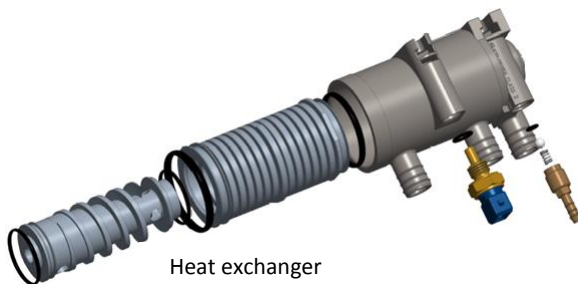
Body



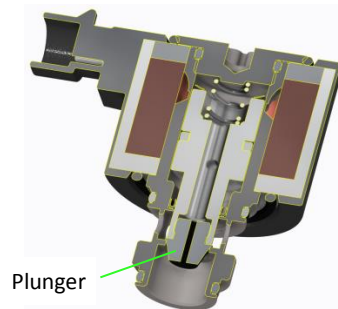
PRV
(pressure relief
valve)



ECT



Heat exchanger

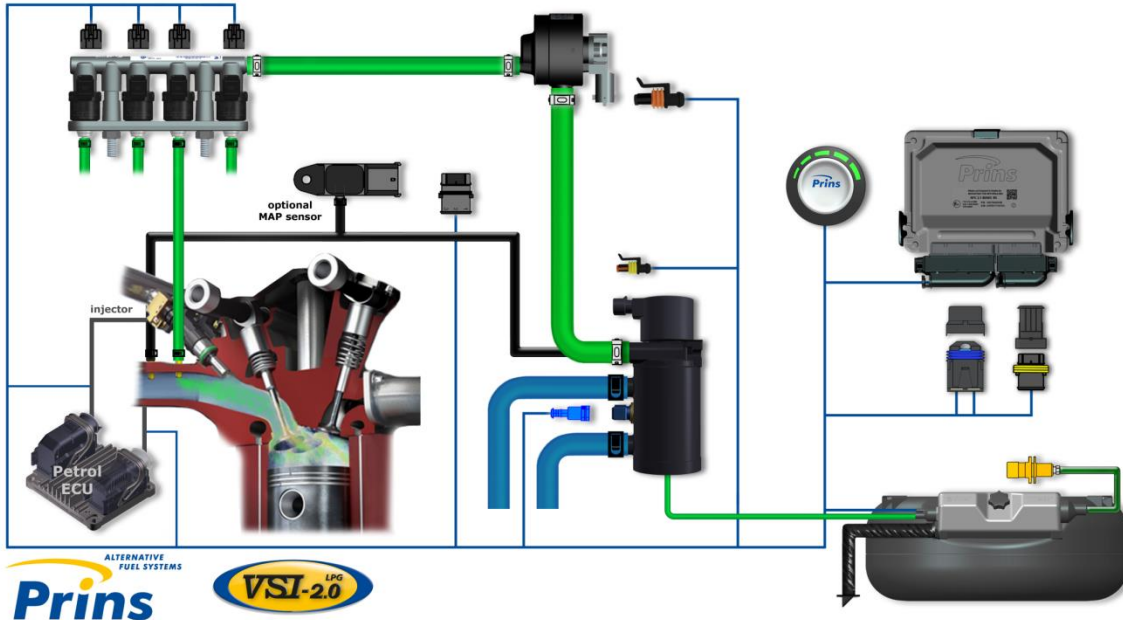


Plunger



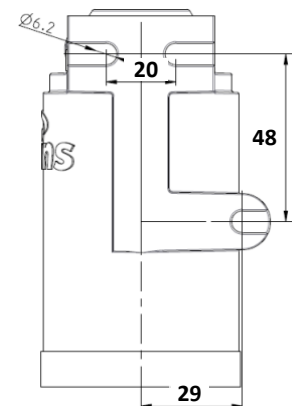
Installation

System overview



Mounting the eVP-500

Mount the eVP-500 in the engine compartment as seen on the images below and according to local regulations. Always use the two upper mounting points. Use the third mounting point if the reducer suffers from vibration. Use the M6 bolts, nuts and spring lock washers delivered in the kit.



7Nm Do not Exceed torque, this may cause damage

Use spring lock washer



Design your own bracket according the dimensions or order a bracket separately.



Basic strip eVP: 001/999040



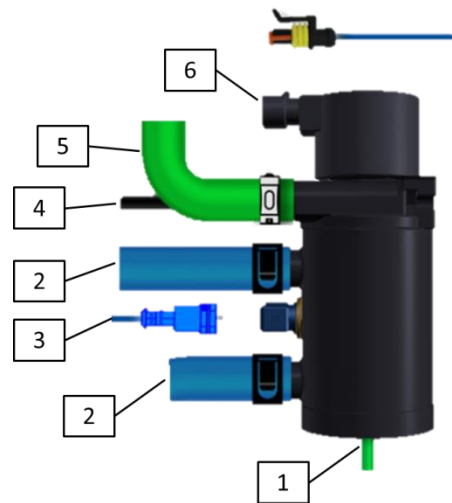
Bracket universal zinc plated steel: 001/080131

Tightening torques

Tightening torques	Nm
Mounting bolts	7
Actuator	15
Banjo bolt / LPG hose	10
Pressure Relief Valve	4
ECT sensor	4

Wiring and hoses

- 1) LPG in
 - Standard M10x1: (XD3 flare, XD3,4,5 banjo bolt, 6mm copper)
 - Adapter M12x1: XD4,5 flare, 8mm copper
 - Adapter ¼ NPT
- 2) Coolant pipes
 - 16mm hose connection
 - No flow direction specified
- 3) ECT sensor (Engine Coolant Temperature)
 - Standard Prins sensor
 - NTC resistor
 - R20°C ≈ 2500Ω
 - IP-54A Connector
- 4) Pressure Relief Valve (PRV)
 - Connect to inlet manifold or air intake
- 5) Gas Out to filter unit
 - 16mm hose connection
- 6) Actuator connector
 - Regular Prins two pole Superseal connector




Programming / Calibration

Firmware

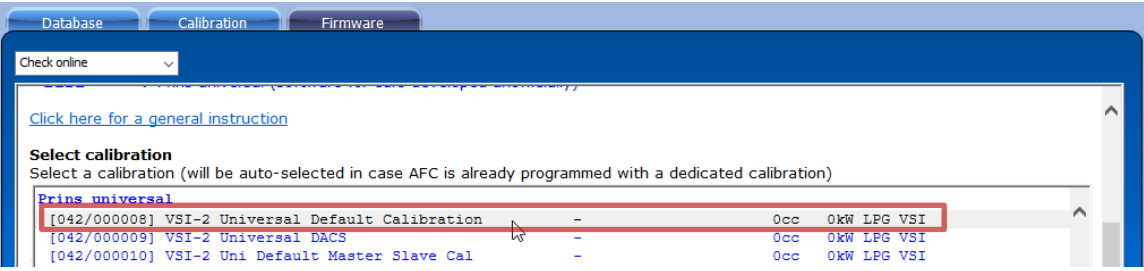
Use the Prins AFC Software v2 to flash the 'Online VSI-2 Universal Default Calibration' into the AFC.

1



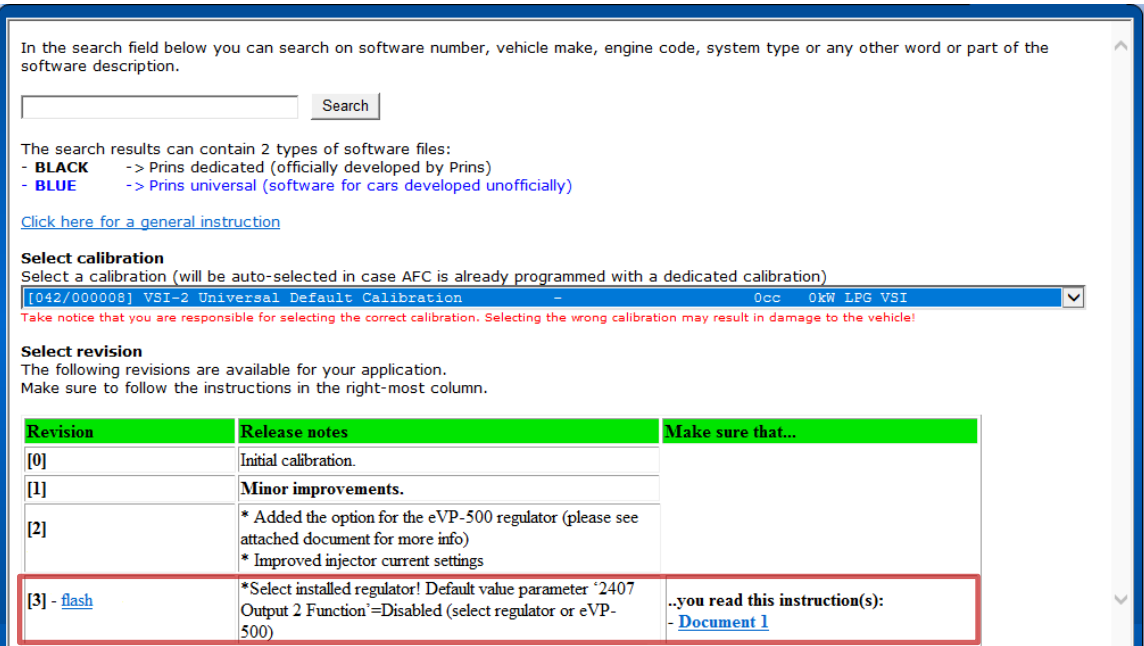
Go to Load-Save -> Firmware -> Check online

2



Scroll down to the blue 'Prins universal' Firmware.
Select software [042/000008] VSI-2 universal Default calibration.

3



Select calibration
Select a calibration (will be auto-selected in case AFC is already programmed with a dedicated calibration)

Select revision
The following revisions are available for your application.
Make sure to follow the instructions in the right-most column.

Revision	Release notes	Make sure that...
[0]	Initial calibration.	
[1]	Minor improvements.	
[2]	* Added the option for the eVP-500 regulator (please see attached document for more info) * Improved injector current settings	
[3] - flash	*Select installed regulator! Default value parameter '2407 Output 2 Function' =Disabled (select regulator or eVP-500)	..you read this instruction(s): - Document 1

DISCLAIMER: Prins only shares this universal software. No rights can be derived and no results can be guaranteed.



First read the Release notes and the document.
As of revision [3] parameter '2407 Output 2 Function' is 'Disabled'
Select the correct reducer during calibration; The engine will not run without selection of the correct reducer.

Select flash to program the AFC.



Calibration

Set the calibration parameters as described in the table below.



WARNING:

When the VSI regulator is selected, then the eVP-500 actuator valve opens completely. The system pressure will rise to maximum and the PRV opens to release the too high gas pressure. Be sure to set the calibration parameter '2407 Output 2 Function' to 'eVP-500' before switching over to gas.

Sub menu	ID	Name	Value default	Set to value	Explanation
In-outputs	2407	Output 2 Function	Disabled	eVP-500	
System	495	Regulator Map referenced	No	Optional: Yes	Yes: Target-, Idle -and Tank Empty pressure is based on "Delta pressure".
	15295	eVP-500 Target pressure	2200	Tune during engine high idle and test drive	Set System pressure
	195	Tank Empty	1500	= ID 1653 – 400 mbar = ID 1653 – 600 mbar	XD3= - 400mbar XD4= - 600mbar XD5= - 600mbar



Service and maintenance

A filter is mounted inside the eVP-500. The filter needs to be replaced according the service interval to assure the performance of the eVP-500.

The interval of the filter is equal to the VSI reducer. It depends on the gas quality and the amount of pollution inside the LPG tank.

Always replace the eVP-500 filter and filter unit at the same time.

Parts Replacement kit eVP-500 filters





180/800501: eVP-500 & 16X11mm



180/800502: eVP-500 & 16X11x11mm

Service interval

The interval of the filters is equal to the existing VSI reducer.

	25.000 km* / 2 year*	100.000* / 2 year*	175.000* / 2 year*	250.000 / 2 year*	> +75.000* / 2 year*
 eVP-500 filter	X	X	X	X	X
 Filter unit	X	X	X	X	X



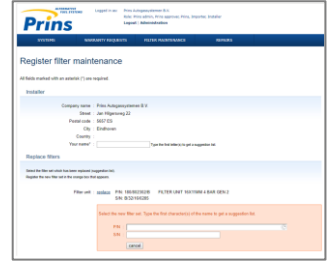
* Depends on local conditions and gas quality.



How to replace the eVP-500 filter

<p>1</p>  <p>Release gas pressure with the diagnostic tool</p>	<p>2</p>  <p>Remove dirt and dust Use low pressure water, brake cleaner and/or compressed air</p>	<p>3</p>  <p>Torx: T45</p>
<p>4</p>  <p>Remove actuator with filter</p>	<p>5</p>  <p>Clean thread and O-ring grooves thoroughly</p>	<p>6</p>  <p>Clean area and remove filter</p>
<p>7</p>  <p>Remove O-rings Clean grooves thoroughly</p>	<p>8</p>  <p>Lubricate rings with O-ring grease Install O-rings</p>	<p>9</p> 
<p>10</p>  <p>Hand tight until join.</p>	<p>11</p>  <p>Torx: T45 +30°</p>	<p>12</p> 



<p style="text-align: center;">13</p>  <p style="text-align: center;">Do not exceed torque, this may cause damage to the actuator</p>	<p style="text-align: center;">14</p>  <p style="text-align: center;">Check for gas leakage with a system under pressure.</p>	<p style="text-align: center;">15</p>  <p style="text-align: center;">Register maintenance in the warranty portal and service manual</p>
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FAQ eVP-500

The engine does not run on LPG.

- Check if calibration parameter '2407 Output 2 Function' is set to 'eVP-500'.

I see only one connection to connect the hose to the intake manifold.

- That's correct. You only need to connect the PRV to the inlet manifold / intake
- The eVP-500 is MAP-regulated by software. (preferred with a turbo / supercharged engine).
- You still need to connect the MAP sensor to the AFC with a turbo charged engine and calibrate it

The Pressure Relief Valve vents LPG.

- System pressure is too high.
- Check if calibration parameter '2407 Output 2 Function' is set to 'eVP-500'.

When do I need to install a MAP sensor to the VSI-2.0 system?

- With a turbo/supercharged engine.
- When the lowest gas injector time is lower than 3ms and when the gas injector duty cycle exceeds 90%.

During demanding power, a 'tank empty' is set while the LPG-tank is filled sufficient.

- Check that the capacity of the tank valve is sufficient.
- Check that the size of the LPG fuel line between tank and reducer is sufficient.
- Check for contaminated internal eVP-500 filter.
- Check for contamination of the low-pressure VSI filter.
- Check for fouled gas hoses.
- Calibrate the system with the calibration manual or Calibration Wizard

Low gas temperatures when demanding engine power.

- Check the operating temperature of the reducer.
- Check for sufficient coolant flow

What to do if DTC 236 Internal gas leakage is present after replacing the filter?

- Remove the filter.
- Clean the O-ring grooves and the area around the plunger thoroughly.
- Install the filter as described in this document.

Please contact your distributor if you have question or remarks about the content in this information bulletin.

Kind regards,

Prins Autogassystemen B.V.
After Sales department

