



# MOTOPLAT CV-622

## Starters Guide



POS SERVICE HOLLAND

T: +31 (0)35 656 3180 | E: PSH@PSH.NL | WWW.PSH.NL



# Motoplat CV-622 Starters Guide

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## IMPORTANT INFORMATION

### Safety warning



Electrical devices should be installed and operated in such a way that all applicable safety requirements are met. It is your responsibility as an installer to ensure that you identify the relevant safety standards and comply with them. Failure to do so may result in damage to equipment and personal injury. In particular, you should study the contents of this guide carefully before installing or operating the equipment.

Only qualified people should work with this equipment!

People who start using this product should review carefully this Starters Guide, or have had a training from a qualified person.

The use of electrical equipment is entirely at your own risk and Pos Service Holland is under no circumstances responsible for any incidental, consequential or special damages of any kind whatsoever, including but not limited to lost profits arising from or in any way connected with the use of the automated test equipment or this manual.

The tester should be connected to a properly grounded outlet.

If the power cable is damaged, you must have it be replaced by the supplier or by another qualified person in order to avoid dangerous situations.

In case the tester comes without batteries (non EU-countries) or in case you have to replace the batteries, please be aware to use qualified batteries (preferably deep cycle AGM) only, as non-qualified batteries can affect during testing or can even damage the tester.

### Environment

The tester should be installed in an weather protected area where heat, humidity or any other climate situation can not damage the tester.

The tester should be installed on a level surface that is clear of debris and obstructions.

*It is recommended that the box and packing materials be kept for possible reuse, should the tester be shipped again at a later time.*

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## Section 1 – General information

### 1.0 General information about the Motoplat CV-622 alternator testbench:

The Motoplat CV-622 test bench has a 380V 3 phase power supply and tests both 12 and 24 volt alternators.

To test modern alternators that have a high output at low RPM, the CV-622 is equipped with a modern high power 11KW motor, which makes less noise than most other test benches out there today.

The tester is equipped with the new API+ technology which will automatically detects the LIN and BSS protocol faster. The LIN and BSS signals will be displayed in 21 different protocols together with its ID code, which makes development in remanufacturing easier, cheaper and more clear.

The CV-622 also tests PWM, C and PD controlled alternators.

An in-depth DFM tester is also built in which shows the off-set of a DFM signal.

For sturdy and reliable testing, the alternator can be mounted pneumatic or servo motor.

A USB port is added on the front panel to connect the tester to a computer for an internet connection and to generate a modern and extensive report after the test is done.

The test bench is CE marked for use in any workshop or workplace that demand safe and reliable equipment.

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## 1.1 Front view:



Figure 1.

1	2-way Pneumatic belt tension valve	9	Inverter supply switch	17	COMMUNICATION display
2	Power lead (+)	10	Motor switch	18	Voltmeter
3	Additional socket (+)	11	Resistor switch	19	Tachometer
4	Emergency stop switch	12	Motor speed regulator	20	Amp meter
5	Platform control up/down when the alternator is mounted on the front	13	Changing the direction of motor RPM, CW or CCW	21	Connect and control panel
6	Insulated support (+)	14	12 V/24 V switch	22	Movable platform to mount the alternator on the front
7	Main circuit breaker switch	15	Fuse 8 A	23	Oscilloscope
8	Stepless resistor control in the range of 0 – 45 A	16	Platform to mount the alternator on the side	24	Computer screen



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## 1.2 Back view:



Figure 2.

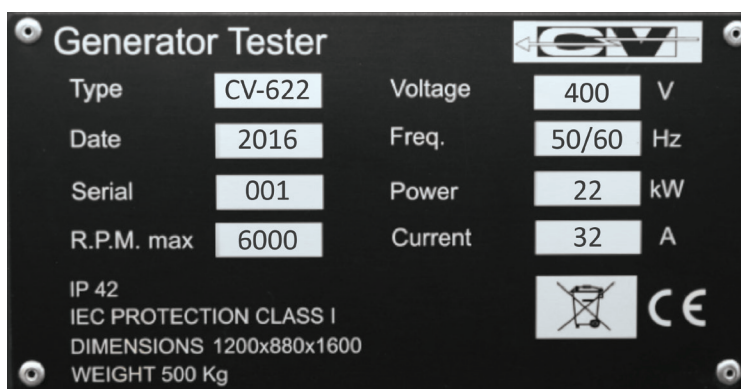


Figure 3.

25	Compressed air connection
26	Data plate

## 1.3 Main Specifications:

Measurements	
Width	120 cm
Depth	88 cm
Height	150 cm
Weight	ca. 800 kg (depending on the weight of the batteries)

Electric equipment	
Motor	Three-phase, supply voltage 400 V, power 11 kW
Motor RPM	“left/right” switching, stepless speed control in the range of 0-6000 RPM.
Inverter	Winner V-60 22 kW/18,5 kW
Resistors	10 units with total current capacity of 600 A, step by step load adjustment, including one with stepless adjustment from 0-45 A.

Security and key safety information	
	This product fully complies with actual CE requirements.
	Safety and protection elements MUST NOT BE MODIFIED!
	Main circuit breaker switch
	Emergency stop switch
	Safety cover lock protection switch
	Electric circuit wires
	Metal safety cover

Tester-alternator communication	
A.	Load indicator lamp 12 V/24 V (conventional)
B.	Digital (based on 3 types of BSS signals and 21 types of LIN signals used in cars from 2000 to 2014). In the case of introducing new computer-alternator communication systems, the updates with the latest command signals data base will be available.
C.	Using information from the alternator about the actual value of the rotor current (DFM+ and DFM-) – after pressing the DFM key, there will appear detailed frequency and offset data on the COM display
D.	Using C for Hyundai, Mitsubishi and Nissan and C1 signals characteristic for Honda.

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## 1.4 Connect and control panel description:

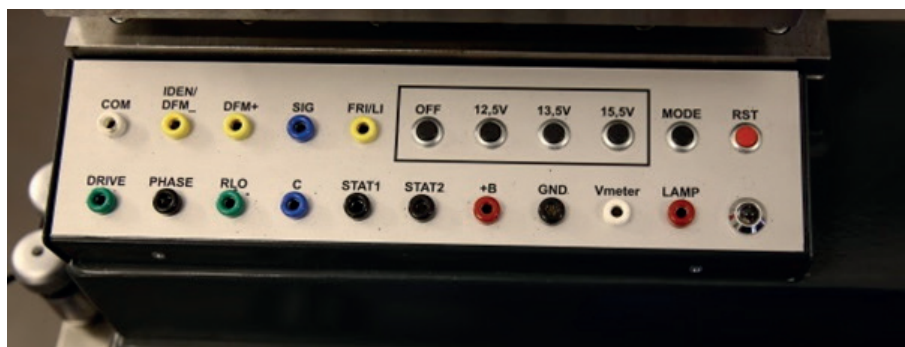


Figure 8.

Connect and control panel description	
COM	Computer communication(API+)BSS/LIN(BSS-1,2,3/LIN-1 up to 17)
IDEN/DFM-; DFM+	information from the alternator about the actual value of the rotor current in percentage depending on the type of the current control (current is transferred to the positive polarity brush (DFM+) or negative polarity brush (DFM-))
SIG	PWM computer control signal used on Ford, Landrover and Asian applications
FR / LI	Computer control signal used in Ford cars (both SIG and FRI/LI connectors are used to control the alternator on Ford/Landrover and Mondeo models)
OFF; 12,5; 13,5; 15,5	Buttons used to control the voltage setpoint of the alternator with specified computer signals
OFF	“Off” command to the regulator to turn off the alternator
12,5; 13,5; 15,5	Voltage set points sent to the alternator during testing
MODE	Toggle through the different modes/functions displayed on the left screen
RST	Resets the CPU of the alternator control electronics(reverts to the default settings)
PHASE/DRIVE (PD)	Mazda control system (PHASE – output of the alternator phase)
DRIVE	Mazda alternator voltage control terminal
RLO	Toyota “Sense” PWM control system
C	PWM control system used on Nissan, Hyundai and Mitsubishi applications
STAT1	Simulation of the alternator stator phase used to check the condition of the voltage regulator that uses one phase of the stator(Bosch regulators)
STAT2	Simulation of the alternator stator phase used to check the condition of the voltage regulator that uses two phases of the stator(Valeo Regulators)
B+	Positive connection(continuous supply)
GND	Ground connection
Vmeter	Voltmeter connection
LAMP	Lamp connection (conventional terminal)

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## Section 2 – Installation and system connection

### 2.0 Requirements installation area:

The tester must be placed on a flat and stable surface.

The floor must be stable enough to easily endure the weight of the tester!

Weight: 800KG

Please keep an extra square meter on the front and sides free to ensure a good and safe working environment.

### 2.1 Power supply

Connect the alternator tester to a 400 V three phase voltage supply. Each phase must be protected by a 32A fuse.

Behind the front doors there is enough space to mount two 12 V batteries with capacity range from 40 to 100 ampere-hours (Ah) each. It is recommended to use AGM batteries. They are designed to work with Start-Stop systems, as they are more resistant to temperature extremes and there is no chance they will evaporate!

### CAUTION!

*The positive (+) and negative (-) poles must not be confused with each other. Otherwise, the alternator tester can be damaged. The poles are well marked on the batteries as well as on the wires. When the voltage is 24 V, the batteries are connected in series. Therefore, the batteries should be of the same name brand and condition (age and usage level). It is preferable to use batteries with capacity of 70 Ah. During every alternator test, the batteries are being charged and they should not become discharged. Nevertheless, the battery charge level should be checked periodically. If the need arises, the batteries should be charged by means of a rectifier. In the case of damaging the batteries, they have to be replaced with the new ones. Discharged or damaged batteries can have a significant influence on the test and test results.*

*Connect compressed air supply on the back of the alternator tester. The compressed air of 8-10 bar is crucial for the pneumatic system controlling the tensioning of the drive belt. When the compressed air pressure is 8-10 bar, the drive belt tension is about 1000 N.*

### 2.2 Printer + Test report

Any desktop or laptop with a printer can be connected to the USB port on the connect and control panel of the alternator tester. Before this, the software accompanying the product has to be installed.

The alternator test printout is in the form of a table that includes, i.a., load value, voltage, rotational speed, and communication system, logo and company details.

Such information like the type of the alternator, identification number, time, and date of the test can be added to the table. According to the need, the result can be printed out at any time during the test. As the rotational speed and load value are set manually, one can print out the test result showing, for example, maximum load at minimum speed or the alternator's efficiency at 100, 500 and 1000 RPM.

A side mount is mounted already for a PC screen or all-in-one PC.

PC and printer are options!

They can be customized in any way to meet the customers needs.

For more information feel free to contact us for the possibilities.

[www.psh.nl](http://www.psh.nl)

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## 2.3 Switch on/off the alternator tester

1. Switch the main circuit breaker switch (7, Figure 1.) from the "0" position to the "1" position (it will activate all displays and turn on the 12 V/24 V electrical system)
2. Press the "ON" button (9, Figure 1.) marked "POWER".
3. Wait about 5 seconds (time needed to stabilize the inverter) and press the "ON" button (10, Figure 1.) marked "MOTOR". If one presses the "ON" button marked "MOTOR" within 5 seconds, the motor will not start because the inverter will not be ready to work. In this case, the procedure of turning on the alternator tester has to be repeated starting from the point 1.
4. Set the direction of motor revolutions (left or right) by means of the "ROTATION" switch (13, Figure 1.)
5. Close the safety cover
6. The engine speed regulator (12, Figure 1.) marked "RMP" must be in the "0" position i.e., turned maximum left. Otherwise, the motor will not start and an alarm will sound informing about the necessity to switch the motor speed regulator to the "0" position. After the motor speed regulator is in the "0" position and the safety cover is put down, the motor will start to slowly rotate at a speed of 10 RPM.
7. By turning the motor speed regulator to the right, one can increase the motor speed to 6000 RPM or decrease it by turning the motor speed regulator to the left.

### **Caution!**

*The motor fully stops after pressing the "OFF" button marked "MOTOR" (10, Figure 1) or lifting up the safety cover.*

*If the alternator tester is being used, it does not have to be fully turned off (it is even not recommended to fully turn it off). It is preferable to use the "ON" and "OFF" buttons marked "MOTOR". That way, the alternator tester starts instantly without any delay. It can be connected to the power supply all the time, because in that state, the power consumption of the alternator tester is minimum. It is not recommended to frequently turn off and on the alternator tester, as it contains a lot of advanced electronic measurement systems. In order to work properly, the advanced electronic measure systems should be connected to the power supply all the time rather than turned on and turned off in cycles.*

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## Section 3 – Alternator – mounting and connecting

### 3.0 Intro:

Depending on the construction of the alternator it can be mounted on the alternator tester in such a way that it can be powered directly by the motor (front mounting) by means of proper connecting elements or belt (side mounting). All the parts needed to mount the alternator are included in the tooling, equipment accompanying the alternator tester. After mounting the alternator, connect it to the electric circuit of the alternator tester. This differs per alternator please refer to our webshop [www.psh.nl](http://www.psh.nl) or other.

### 3.1 Front mounting

In order to mount the alternator in front of the alternator tester, use a platform that is in front of the motor. Place an adequate V-block on the platform. Then place the alternator on the V-block and fasten it with a clamping hoop (see figure 4. below).

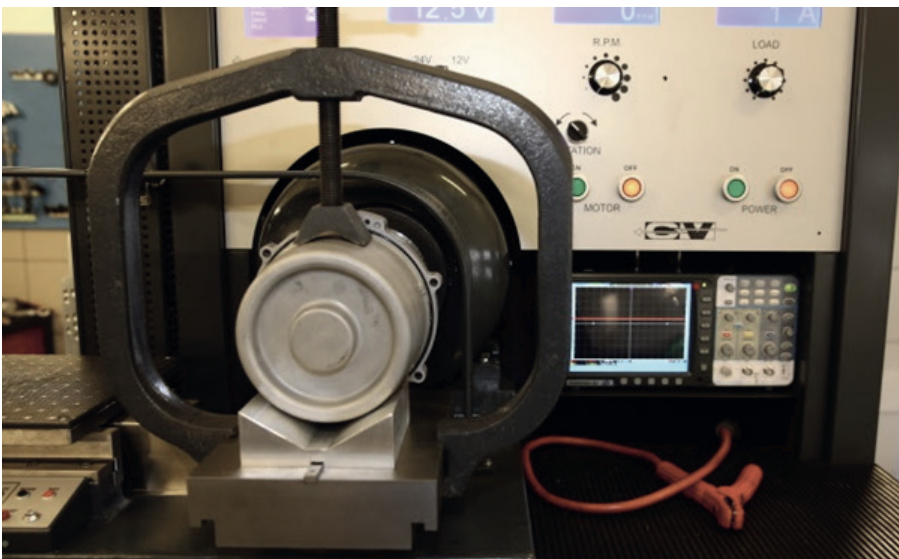


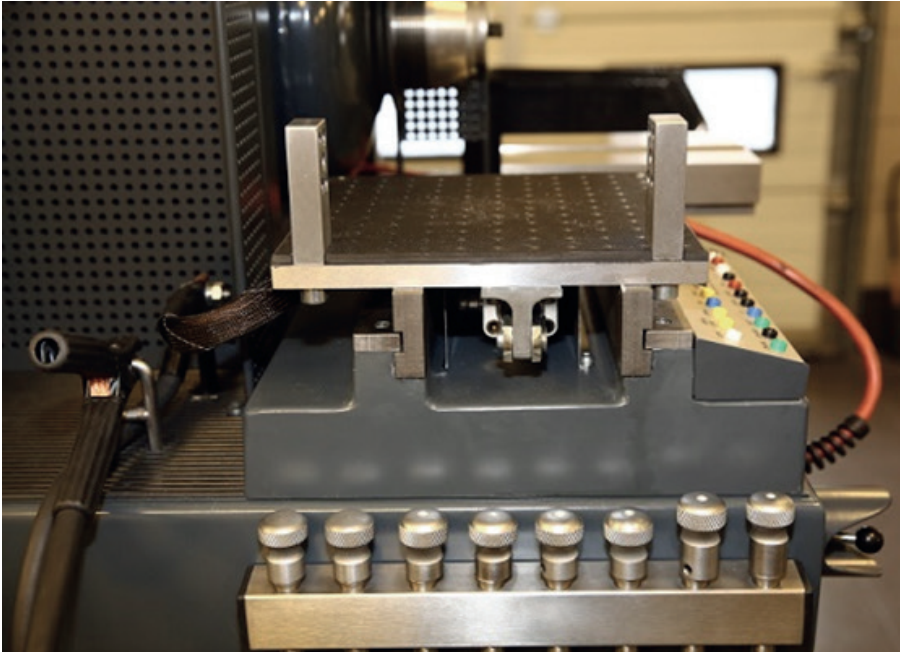
Figure 4.

Next, use an adapter and a tubular spanner that fits the clamp nut that attaches the pulley to the rotor in order to connect the driving engine to the alternator. Then check whether the rotor of the alternator is in the axis of the engine rotor. Correct the position of the alternator by pressing the "UP" or "DOWN" buttons (5, Figure 1.)

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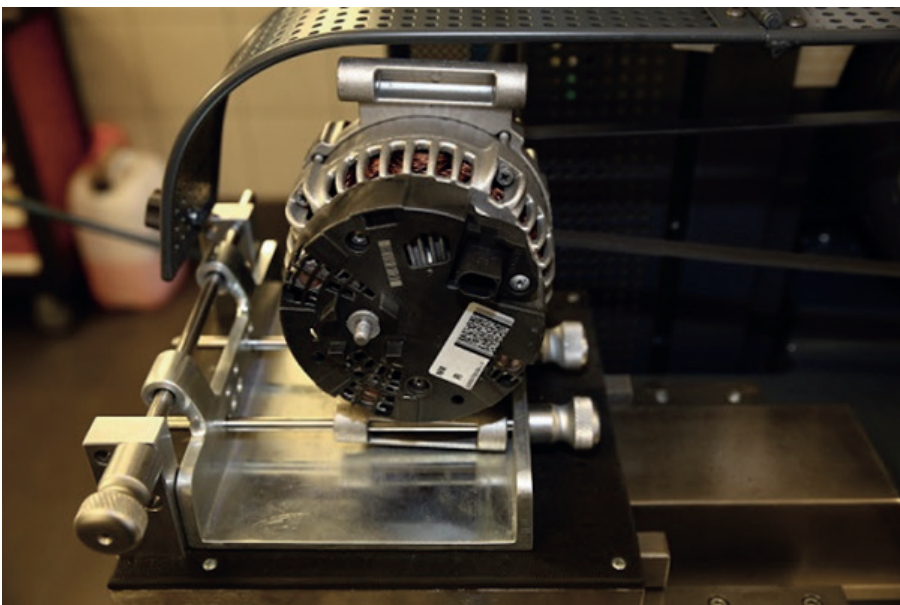
## 3.2 Side mounting

In order to mount the alternator on the side of the alternator tester, use a platform that is placed on the left side of the alternator tester. In the case of the alternators with a so called pad mounting solution, first attach a support that is placed on the side of the alternator tester with spindles that have a proper diameter. The spindles are also placed on the side of the alternator tester (see figure 5).



*Figure 5.*

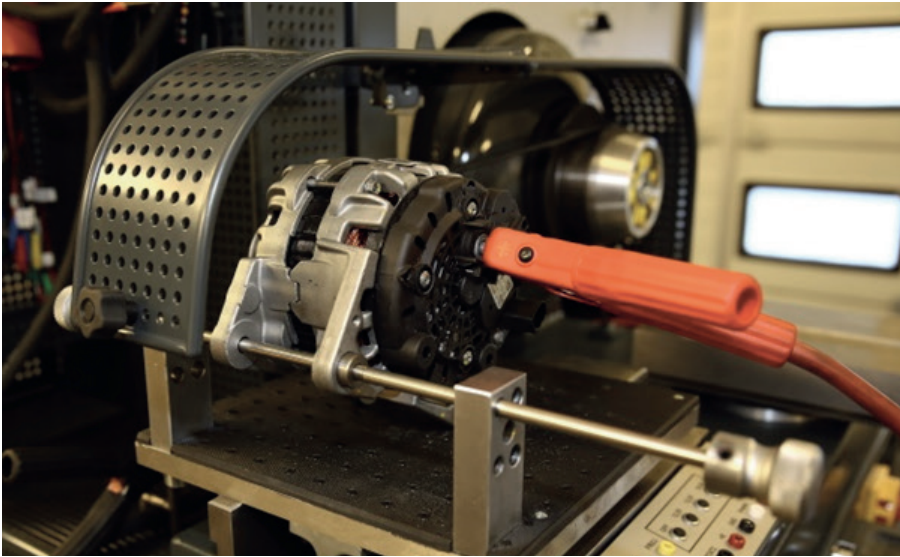
Next, mount the alternator by putting adequate spindles into the holes that are placed on both sides of the support (see figure 6. below).



*Figure 6.*

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To mount alternators that are longitudinally mounted use only spindles (that have a proper diameter) without the support ( see figure 7. below).



*Figure 7.*

### 3.3 Connecting the alternator

After mounting the alternator, connect it to the electric circuit of the alternator tester.

Connect the power lead to the positive clamp of the alternator B+(2, Figure 1.)

Then, depending whether it is a computer-controlled alternator or a conventional one, use the adequate connectors and buttons on the connect and control panel (21, Figure 1.).

## Section 4 – Testing the alternator

### 4.0 Intro

After mounting the alternator, connecting it to the electric circuit of the alternator tester and turn on the alternator tester, you can start the alternator test.

### 4.1. Load control

The "LOAD" switch-knob (11, Figure 1.) is used to load the alternator.

First, using the speed regulator (12, Figure 1.) make sure the alternator running at more than 600 RPM.

The "LOAD" switch-knob must be in the "A" position, which is signaled by the yellow light of the diode. The alternator load system has two safety locks:

1 – when the rotational speed decreases to less than 600 RPM, the load will automatically turn off, which prevents batteries from discharging.

2 – when the switch knob is in other position than the "A" position, the load will not turn on in order to protect the alternator from damage.

### **Caution!**

*The value of overload must not exceed the power rating value of the alternator. It can result in the alternator damage (burning out of its phases), faster battery discharge or even burning out of fuses in the battery circuit.*

- Turning the "LOAD" switch-knob from the "B" position to the "K" position (inclusive) will make the red diodes light one by one.
- The "B" position means the load value of 45 A, which can be steplessly regulated in the range of 0-45 A by means of a potentiometer (8, Figure 1.).
- Every step from the "C" position to the "H" position (inclusive) increases the load value by 32 A.
- Both "I" and "J" positions increases the load value by 45 A each.
- The "K" position increases the load value by 65 A.
- If all resistors are turned on, the total load value is 392 A. Taking into account the resistance of wires, the maximum load value is 407 A. Thanks to the stepless control in the range of 0-45A, the load can be adjusted to every type of alternator with an accuracy of 1 A.
- In the case of 24 V alternators, the safety requirements and the procedure of turning on the alternator tester is the same. However, when the voltage doubles its value, the load value of every resistors also doubles.

### **CAUTION!**

*The load must not be turned on in the situation when the alternator is not driven by the engine.*

The "B" position provides a stepless load control in the range of 0-90 A, the "C" position adds 64 A to the alternators load and the "D" position increases the load value by another 64 A. The total load value is 218 A, a sufficient one to test 24 V alternators.

Moving the switch-knob to the further positions on the right side will not make any of the red diodes light and the load of the alternator will not increase further.

In the case of a long-term loading of the alternator, cooling fans mounted in the casing of the resistors turn on. The cooling fans turn off automatically, when the temperature falls below 50 degrees Celsius.

### **4.2 Testing the alternator controlled by the charging control lamp:**

After mounting and connecting the alternator (see section 4.1., 4.2. and 4.3.) use the speed regulator (12, Figure 1.) to increase the speed value above the idling speed value of an alternator mounted in a car. Next, increase the load value (see section 5.1.) and the speed of the alternator to achieve the maximum power and the charging voltage of 13,8-14,6 V. The charging voltage is registered by the voltmeter of the alternator tester (18, Figure 1.).

### **4.3 Testing the computer controlled alternator:**

After mounting and connecting the alternator (see section 4.1., 4.2. and 4.3.) use the speed regulator (12, Figure 1.) to increase the speed value above the idling speed value of an alternator mounted in a car. Next, push the buttons (OFF; 12,5; 13,5; 15,5) on the connect and control panel to choose the specified operation voltage of the alternator and observe its reaction on the level of charging voltage provided to it at the moment.

If the alternator tester software (API+ Automatic Protocol Identification +) fails to recognize the communication signal after about 60 seconds the display will show an information about the failure of communication with the alternator.



## Section 5 – Support

### 5.0 Contact Information:

Pos Service Holland BV  
Stichtse Kade 47c  
1244NV 's-Graveland  
Holland

Telephone: +31 (0)35-656 3180  
Fax: +31 (0)35-656 0409  
Email: [psh@psh.nl](mailto:psh@psh.nl)  
Website: [www.psh.nl](http://www.psh.nl)

#### **Technical support**

Telephone: +31 (0)65-333 2341  
Email: [nardo@psh.nl](mailto:nardo@psh.nl)

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T: +31 (0)35 656 3180 | E: [PSH@PSH.NL](mailto:PSH@PSH.NL) | [WWW.PSH.NL](http://WWW.PSH.NL)