MOTOPLAT VC-09ST

Instruction Manual

2015 Version

The VC-09ST is used for testing and calibrating Valeo ST-series Start/Stop alternators. These are start/stop reversible alternators which also have the function of charging the battery and starting the engine.

MOTOPLAT

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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.

People who start using this product should review carefully this instruction manual, 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.

Since this tester only operates in conjunction with other test equipment, you should also be aware of the installation, operation and safety requirements of the other equipment.

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.

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Section 1 – General information

1.0 General information about Motoplat VC-09ST:

The Motoplat VC-09ST is the world's first aftermarket tester/calibrator for Valeo ST-series alternators. These are start/stop reversible alternators which also have the function of charging the battery and starting the engine

There are six types of Stars alternators that are equipped with this technology:

ST35C010	Citroen
ST35C013, ST35C016, ST35C017 and ST35C018	Smart MHD
ST35C015	Mercedes

The VC-09ST calibrates the electronic signals to the control box in connection with the ECU for a reliable and fast start. The VC-09ST tests all of the functions of the alternator, like the parameters.

Depending on the rotor position, the phase switching control system requires, that after such an alternator is repaired, the Hall sensors should be properly positioned. Otherwise, the generator won't have enough power to rotate the crankshaft.
On the screen of the tester, you can check whether their position is correct or not. On the screen will appear an oscilloscope graph of the signal received from the Hall sensor (the rectangular wave) and the one of the phases. The correctness of the Hall sensor's position is displayed on the basis of points where both waves intersect each other.

If we deal with an alternating current reversible generator, it will be 100% efficient as an alternator. For example an alternating current generator and at the same time its Hall sensors are correctly positioned, it will be 100% efficient as an alternating current motor, for example in this case, a starter.

There is no need to develop a tester that will power the ST-series alternator and make it run like a motor (starter function).
This process is controlled on the engine by an electronic control box which has diodes, a regulator and an inverter built in.
This part is impossible to rebuild and is a separate part controlling the alternator.

1.1 Specifications:

Length:	403 mm
Width:	301 mm
Height:	202 mm
Weight:	7,78 Kg

1.2 General warnings:

- Do not leave the tester powered on without any supervision.(The B+ and GND coming from the test bench usually don't have circuit breakers to protect the tester and test bench).
- Do not test alternator longer than 5 minutes, because the wires that are connected to the alternator are much longer than the ones on the car. With full load applied they will become very hot, also the relay inside the VC-09ST can get overheated. Standard duration of testing with full load should not be longer than 1-2 minutes (just like any other alternator test).
- When testing the Valeo ST35 series alternators at 1800RPM and with a current of 130A the VSP(voltage set point) should be around 14Volts.
- Calibrate the hall sensors in CALIBRATION MODE. On the left screen a graph will appear, on right screen text CALIBRATION MODE.
- DO NOT put the tester in test mode during the calibration of the hall sensor, because the stator connections may spark or burn.

Section 2 – Installation

2.0 Installation of Motoplat VC-09ST:

The Motoplat VC-09ST is an addition and is only working in combination with other test equipment.
To work with the VC-09ST, it's necessary to connect it to your current test equipment by using the cables +B and GND on the front side of the tester.

Put the red +B cable in the 12V socket of your current tester.
Put the black GND cable in the Ground of your current tester.

CAUTION! Changing the cables may damage the tester!

Section 3 – Instructions

3.0 Plug descriptions:

STAT1	Stator connection on alternator
STAT2	Stator connection on alternator
STAT3	Stator connection on alternator
ROTOR	Rotor connection on alternator
SENSOR	Sensor connection on alternator

3.1 Button descriptions

MODE	Toggle through test and calibration mode
RESET	Resets tester

Section 4 – Connecting Alternator

4.0 ST35C013, ST35C016, ST35C017 and ST35C019

First connect the alternator to your current tester in the usual way. (Please consult the instruction manual of your current tester).

After, you can start to connect the alternator to the VC-09 tester the following way:

1). Connect the supplied plugs to the VC-09 in the following order:
CAUTION! Changing stator poles may damage the tester!

2). Attach the other side of the plug cable to the phase connection of the alternator using the supplied nut. Please make sure you tighten the nut firmly so displacement is not possible.

2.

4.1 ST35C010 and ST35C015

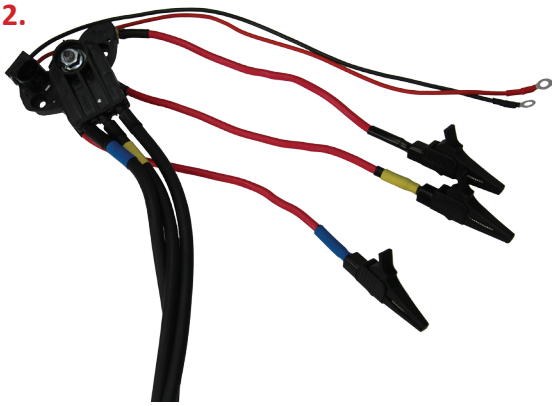
First connect the alternator to your current tester in the usual way. (Please consult the instruction manual of your current tester).

After, you can start to connect the alternator to the VC-09 tester the following way:

1). Connect the supplied plugs to the VC-09 in the following order:
CAUTION! Changing stator poles may damage the tester!

2). Connect the other end of the plugs to the supplied adapter using a bolt and nut.

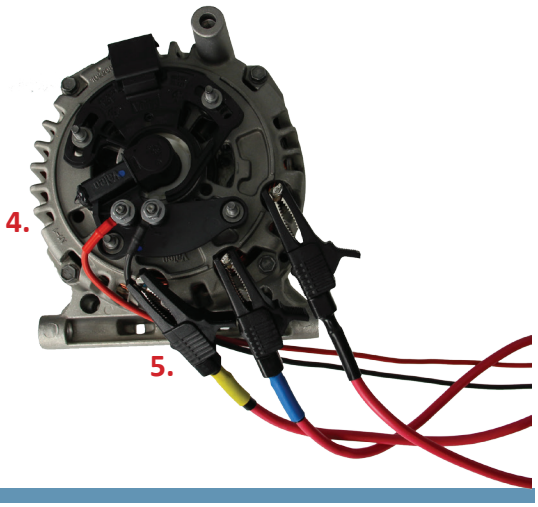
2.



3). Remove the plastic back cover of the alternator.

4). Connect the red thin wire to the + of the brush holder and connect the black thin wire to the - of the brush holder.

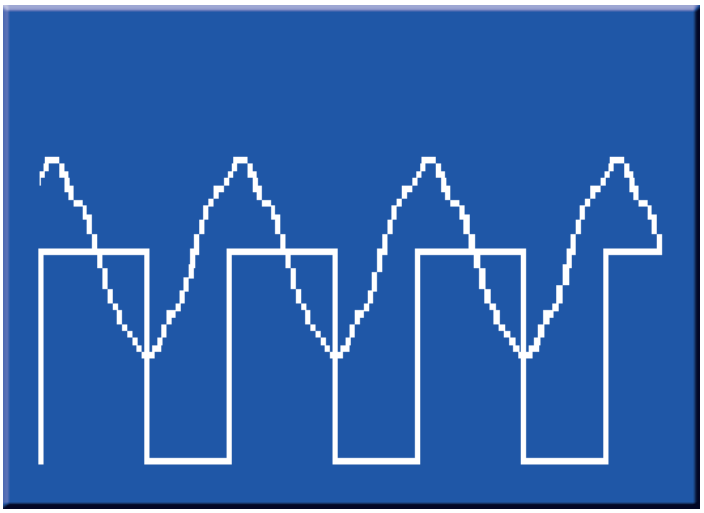
5). Connect the clips of the adapter to the stator of the alternator in the same order as on the photo on the right.



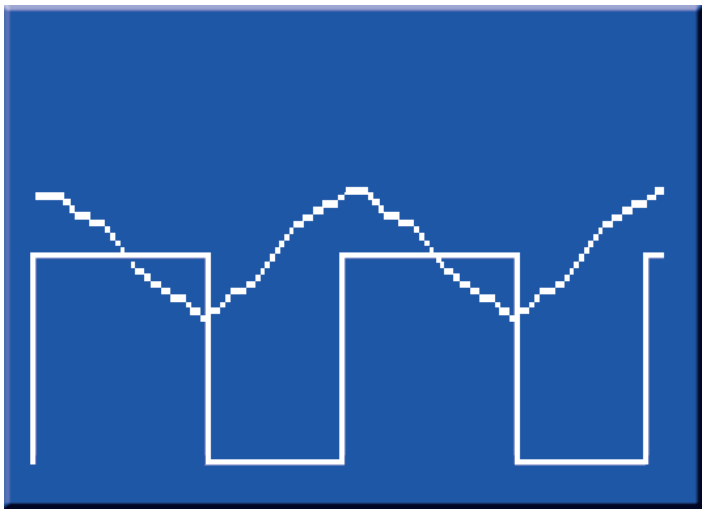
Section 5 – Test and Calibrate

5.0 Set RPM

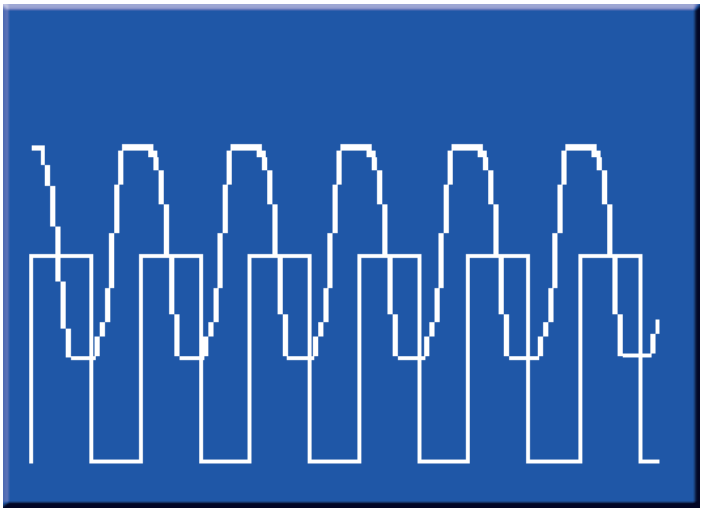
Start your current tester and set the RPM to 1000 as this gives the most clearest image of the sinus to the block pattern.



1000 RPM:
If the screen on the VC-09 is similar to the one you see here on the left, it means that the RPM is set correctly.



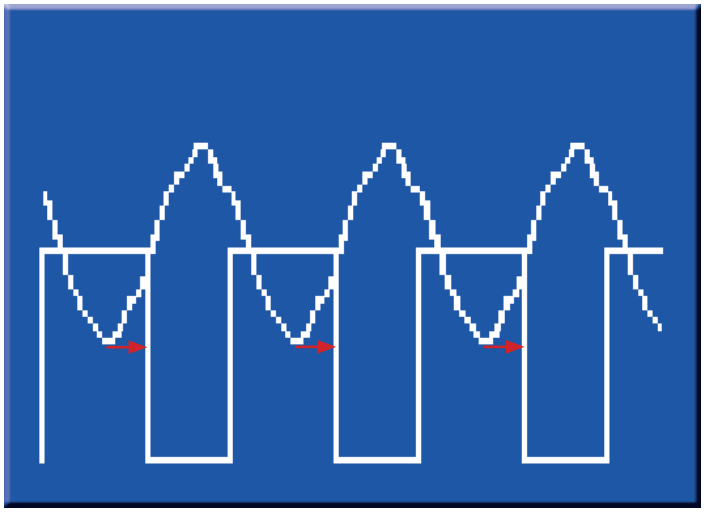
Lower:
If the screen on the VC-09 is similar to the one you see here on the left, it means that the RPM of the test bench is too low.



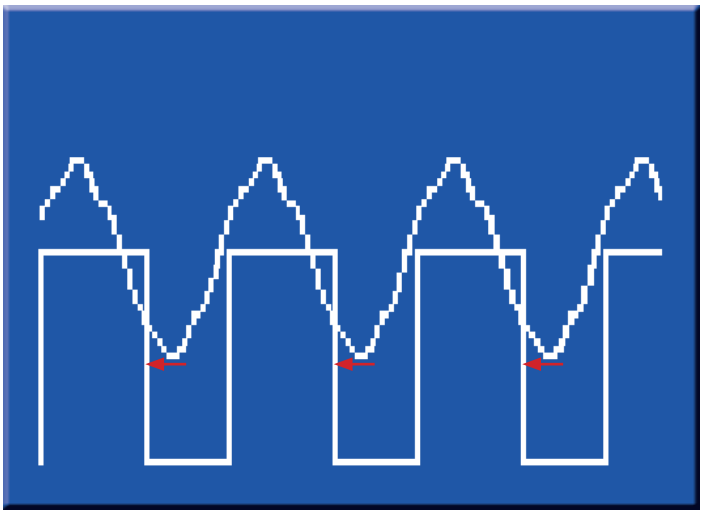
Higher:
If the screen on the VC-09 is similar to the one you see here on the left, it means that the RPM of the test bench is too high.

5.1 Test and calibrate

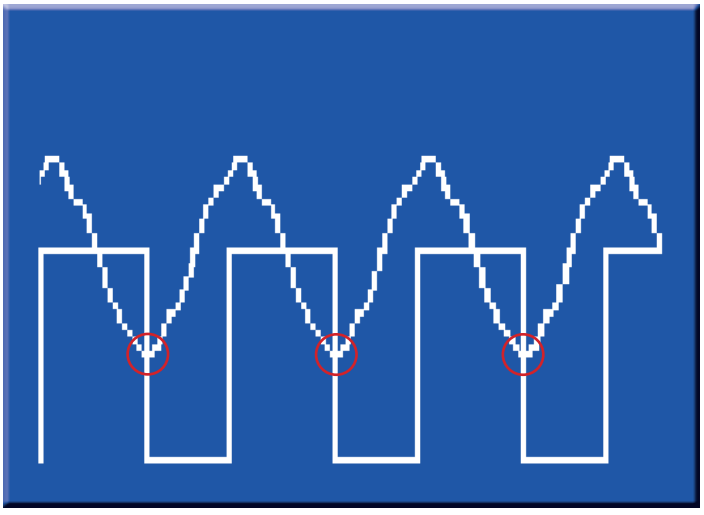
When the Hall sensor is not positioned correctly, the VC-09 tester can show you a scope pattern similar to pattern 1 or 2:



Scope pattern 1:
When the Hall sensor is positioned to the left, the scope pattern is similar to the one you see here on the left.
In this case, you gently move the Hall sensor to the right till the lowest point of the sinus meets with the block pulse.



Scope pattern 2:
When the Hall sensor is positioned to the right, the scope pattern is similar to the one you see here on the left.
In this case, you gently move the Hall sensor to the left till the lowest point of the sinus meets with the block pulse.



Correct scope pattern:
The scope pattern on the left shows that the Hall sensor is positioned correctly.

There is no time limit for calibrating the hall sensor in calibration mode, because during this test there is no load on the alternator.

After testing the voltage and having the hall sensors calibrated, the alternator will function as a starter and charge the battery on that application.
This test is 100% reliable!

Section 6 – Support

6.0 Contact Information:

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