MSG MS006 Test Bench for Diagnostics of Alternators User Manual

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Contents

INTRODUCTION

Thank you for choosing the product of MSG equipment. The actual manual contains information on the test bench purpose, package contents, design, technical characteristics, and safe operation rules. Read carefully this manual before putting MS006 (hereinafter “the test bench”) in tooperation, take special training at the equipment manufacturing facility if necessary. As the test bench is being continuously improved, some changes made to the equipment design, package set, or firmware may not be reflected in this user manual. The test bench firmware is updateable, so its maintenance can be terminated without prior notice to users.

WARNING! The actual user manual does not contain information on how to diagnose alternators with the test bench. Follow the link MS006 Operation Manual to find this information

PURPOSE

The test bench is designed for the diagnostics of the 12/24V automotive alternators with the different connection terminals, the 12V alternators of ‘start-stop’ system (Valeo I StARS) and 24V I-ELOOP alternators (Mazda). The alternator diagnostics mode is either manual or automatic. The results of automatic diagnostics can be printed on the portable Bluetooth printer (included into the supply slip).
Below are the criteria for alternator performance assessment:

- stabilizing voltage;
- control lamp operation;
- FR (displayed FR signal frequency and waveform, voltage regulator feedback).
- the AC pulsation value.

For COM alternator

- ID;
- Protocol type;
- Data exchange rate;
- LIN protocol type;
- Voltage regulator self diagnosis faults.

SPECIFICATIONS

Main		
Supply voltage, V		230
Supply type		Single-phase
Drive power, kW		1.5
Dimensions (L×W×H), mm		570×490×450
Weight, kg		42
Number of connected batteries		No
Alternator testing		
Voltage of tested alternators, V		12, 24
Load, A	12V	0-50
	24V	0-25
Load adjustment (0-100%)		Smooth
Drive speed, RPM		3000
Drive speed adjustment		Smooth
Drive type (drive/alternator)		V-belt drive/Poly V-belt drive
Types of tested alternators	12V	L/FR, SIG, RLO, RVC, C KOREA,P-D, COM (LIN, BSS), C JAPAN, VALEO I-StARS
	24V	«L/FR», «COM (LIN)», «I-ELOOP»
Additional features		
Display		Touch Screen 7”
Automatic diagnostics mode		Available
Alternator database		Available
Diagnostics result printing		Available (through portable Bluetoothprinter)
Firmware update		Available
Connection of USB flash drive		1 x USB 2.0

EQUIPMENT SET

The equipment set includes:

Item name	Number of pcs
Test bench MSG MS006	1
MS0105 – set of wires for connection to the alternator terminal (voltageregulator)	1
Positive terminal adapter of the alternator	2
Bluetooth printer	1
User Manual (card with QR code)	1

TEST BENCH DESCRIPTION

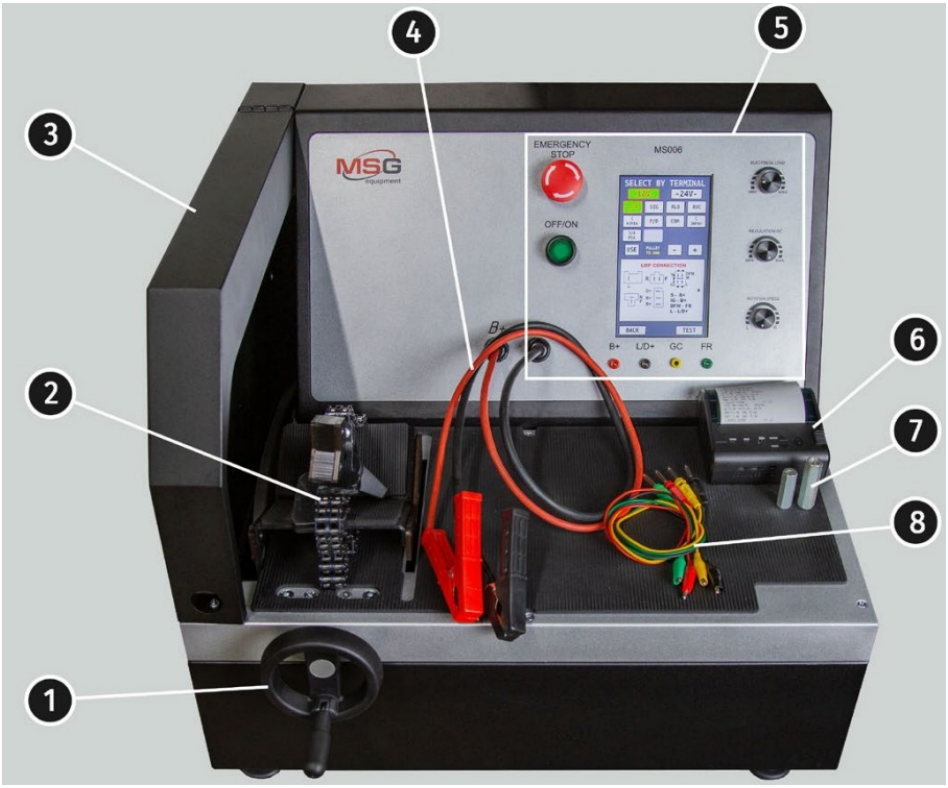

Figure 1. General view

1. An alternator drive belt tensioning mechanism.
2. A mounting face and a chain for fixing an alternator on the test bench. English User manual 7
3. A protective cover. The cover opening will lead to the procedure emergency shutdown.
4. Power cables for connection to the alternator.
5. A control panel.
6. A Bluetooth printer.
7. An adapter for the alternator positive terminal.
8. A set of wires for connection to the voltage regulator of an alternator.

Main elements of the control panel (Fig.2):

Figure 2. Control panel

1. **Touch screen:** screen to output the parameters of the tested alternator and control the test bench operation.
2. **“OFF/ON”**: button to turn the test bench off/on. Button “OFF/ON” is inoperative when the **“EMERGENCY STOP”** button is pressed.
3. **“EMERGENCY STOP”**: button for test bench emergency shutdown.
4. Adjustment knobs: to set and adjust operating parameters
    - **«ELECTRICAL LOAD»:** knob to set electric load on an alternator (simulates vehicle power consumers). Press the knob shortly to reset the load to zero smoothly.
    - **«REGULATION GC»:** knob to set/adjust an alternator output voltage. It is used when the alternator is connected to the “GC” terminal. Press the knob shortly to reset the preset voltage to the default values (13.8V).
    - **ROTATION SPEED»:** knob to set/adjust the drive speed (RPM) and rotation direction. Press the knob shortly to stop the drive.
5. **Diagnostic terminals:** to connect the test bench to the voltage regulator terminals:
    - **«B+»:** test bench terminal to connect to the alternator terminals: “B+”, “IG”, “S”, “AS’, “BVS”, “A”, “15”;
    - **«L/D+»:** output to the voltage regulator control lamp; it is connected to the following terminals: “L”, “D+”, “I”, “IL”, “61”;
    - **«GC»:** alternator control terminal. It is connected to the terminals “COM”, “LIN”, “D”, “RLO”, “C”, “G”, “SIG”, “L(RVC)”, “RC”;
    - **«FR»:** alternator load control; it is connected to the voltage regulator terminals: “FR”, “DFM”, “M”, “LI”

A set of four diagnostic cables **(Fig.3)** is included in the package set.

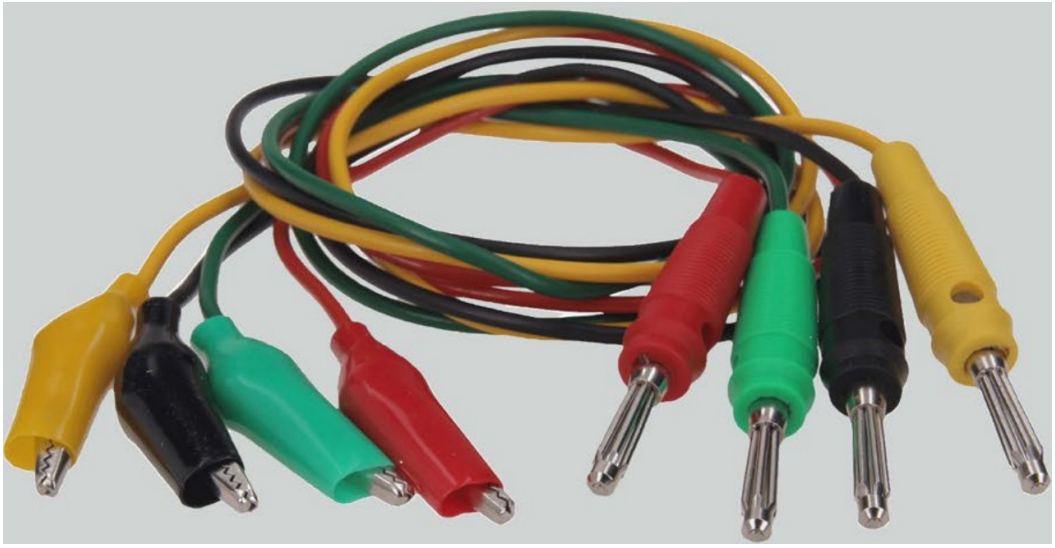

Figure 3. MS0105 – a set of diagnostic cables for connection to the terminals of the voltage regulator

Diagnostic cables are connected to the test bench sockets (Fig.2, n.5), observing the color marking.

APPROPRIATE USE

1. Use the test bench as intended only (read Section 1).
2. When switching the power off, use the “EMERGENCY STOP” button **(Fig.2, n.3)** for emergency shutdown only.
3. Connect the test bench diagnostic output terminals to the voltage regulator terminals only.
4. To prevent the damage and the failure of the bench, do not make any modifications in the bench in your discretion. Any modifications can be effected by the official manufacturer only. Should the bench have defects contact the manufacturer or a dealer.
5. In case of failures in the operation of the bench, stop further operation and contact the manufacturer or sales representative.

The manufacturer is not responsible for any damage or injury to human health resulting from non-compliance with the requirements of this user manual.

Safety regulations

1. The test bench shall be operated by the workers qualified to work with certain types of equipment and received appropriate training in the safe operation.
2. In case of a power outage, the test bench shutdown is mandatory when cleaning and lubricating the bench and in emergencies.
3. The workplace must be always clean, well-lit, and spacious.
4. **To ensure electrical and fire safety PROHIBITED:**
    - connect the bench to the electrical network having faulty protection against current overloads or not having such protection;
    - use a socket without a grounding contact to connect the bench;
    - use extension cords to connect the bench to the electrical network. If the socket is far from the bench installation site, it is necessary to modify the electrical network and install the socket;
    - operation of the bench in defective condition.
    - Independently to repair and make changes to the design of the bench, because it can lead to serious

damage to the bench and deprive the right to warranty repair.

5. The units with a running drive must not be left unattended on the test bench.
6. While mounting and dismounting of a unit from the bench, to prevent arms from harming, be more cautious.

Test bench installation and connection

The test bench is delivered in the outer packaging. Once unpacked, make sure the test bench is in good condition. If damage is found, contact the manufacture or sales representative before turning on the equipment.

Install the equipment on a desktop. The bench has high-adjustable legs to compensate for the surface irregularities.

The recommended operating conditions: temperature – in the range +10 °C to +40 °C, relative humidity of the air – in the range 10 to 90 %

When installing, provide a minimum space of 0.5m from the right side of the test bench for free air circulation.

Before putting the test bench in operation, connect it to a 230V single-phase AC main. Make sure there is an earth wire.

WARNING! The use of a Residual Current Device (RCD) I not recommended. If this is not the case, the tripping current of the RDC should not exceed 100 mA

Connection of a printer

1. Go to SETTINGS to connect a Bluetooth printer.
2. Click START SEARCH in the PRINTER SETTINGS menu to start a search for available devices

   WARNING! Switch the printer on before starting the search.
3. On completing the search for devices available in the Bluetooth range (no more than 5 meters), select the printer and click CONNECT to confirm.
4. When connected, the TEST button is active. Then press TEST. The device will print the following message: “MS006 ALTERNATOR TESTER READY TO WORK”. Now the printer is ready for use.

TEST BENCH MAINTENANCE

The test bench is designed for long-continued operation and does not have any specific maintenance requirements. However, a regular inspection of the equipment’s technical condition is necessary to ensure its uptime. Points to check:

- Engine operation for unusual sounds, vibrations, etc.
- Environmental conditions: temperature, humidity, vibrations, etc.
- Condition of the wires for alternator connection to the test bench terminals (visual inspection).

Test bench firmware update

The update procedure will require a 32 Gb USB flash drive formatted to FAT32 file system.

The update procedure is as follows:

- Download a new program version on servicems.eu under the product page.
- Copy file “MS006Update.bin” to the root folder on the USB flash disk.

  WARNING! There should be only one file on the USB flash disk – “MS006Update.bin”.
- Turn the test bench off.
- Insert the USB flash disk into the USB port of the test bench.
- Turn on the test bench. When started, the program will automatically detect the new version and launch the installation.
- Wait until the installation is finished

  WARNING! Do not interrupt the firmware update process. Turning the test bench off or removing the USB flash disk when the installation is in progress is prohibited.
- After finishing the installation, the calibration window is downloaded. **(Fig.4).** Keep tapping the touch pointer until the calibration is finished and the main menu is loaded.
- Turn off the test bench, remove the USB flash disk, and wait for 10 seconds. Now turn on the test bench and use it as normal.

Figure 4. Touch screen calibration window

The update procedure for the test bench databases is as below:

- Download the new program version under the product page on **servicems.eu**.
- Copy folder “MS006Base” to the root directory of the USB flash drive.

  WARNING! The USB flash drive should not contain more than one “MS006Base” folder.
- Turn the test bench off.
- Insert the USB flash drive in the USB port of the test bench.
- Turn on the test bench. After the launch, the program will automatically find the new firmware version and start the installation.
- Wait until the installation is finished. It may take some time

  WARNING! Not to interrupt the installation please, do not turn the test bench off or remove the USB flash drive.
- When the installation is finished, the main menu will be loaded. Now the test bench is ready for operation.

Touch screen calibration

In case of the touch screen improper function, calibrate it as below:

1. Turn the test bench off.
2. Press and hold down the “ELECTRICAL LOAD” knob.
3. Press “ON” to turn on the bench.
4. Press and hold down the “ELECTRICAL LOAD” knob until the touch screen calibration window is loaded **(Fig. 4).**
5. Keep tapping the touch pointer until the calibration is finished and the main menu loaded.
6. Now the touch screen calibration is completed, and the test bench is ready for operation.

Cleaning and care

Use soft tissues or wipe cloths to clean the surface of the device with neutral detergents. Clean the display with a special fiber cloth and a cleaning spray for touch screens. To prevent corrosion, failure, or damage to the test bench, do not use any abrasives or solvents.

MAJOR FAULTS AND THEIR REMOVAL

The table below contains a description of potential faults and recovery techniques

Failure symptom	Potential cause	Troubleshooting tips
The test bench does not start.	The EMERGENCY STOP button is on .	Turn off the emergency button.
	The supply voltage is under 220V.	Restore the supply voltage.
Short-circuit sound alert (blee p) is on when turning on the t est bench.	Crocodile clips (+)/(-) closure to the te st bench body.	Break the clips.
	The electric wiring of the bench is damaged.	Contact the sales representative.
		Contact the sales
	representative.	
	Re-install the tested unit.	
	Wear out of motor bearings.	Contact the service department.
	Tighten the belt.	
	The belt is worn out.	Replace the belt.
	Use positive terminal adapter.	

EQUIPMENT DISPOSAL

European WEEE Directive 2002/96/EC (Waste Electrical and Electronic Equipment Directive) applies to the tester waste.

Obsolete electronic equipment and electric appliances, including cables, hardware, and batteries, must be disposed of separately from household wastes.

Use available waste collection systems to dispose of outdated equipment.

Proper disposal of old appliances prevents harm to the environment and personal health.

SUPPORT

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Documents / Resources

	MSG MS006 Test Bench for Diagnostics of Alternators [pdf] User Manual MS006 Test Bench for Diagnostics of Alternators, MS006, Test Bench for Diagnostics of Alternators, Diagnostics of Alternators, Alternators

References

- MSG Equipment - wyposażenie warsztatów TM MSG equipment. - msgequipment.pl