Alternators, Starters & Parts

2021.04.30

RTP9007S

TESTER FOR VOLTAGE REGULATORS OF ALTERNATORS

USER MANUAL

QUALITY WARRANTY INNOVATION SERVICE TRAINING UNIQUENESS

CONTENTS

INTRODUCTION

Thank you for choosing the product by AS-PL Sp. z o.o..

The actual Manual contains information on the Tester RTP9007S purpose, set contents, technical characteristics, design, and operation instruction.

Read this Manual carefully before putting RTP9007S (hereunder referred to as "the tester") into operation. Get a special training at the equipment manufacturing facility if necessary.

In connection with the constant upgrade of the equipment, the changes made to the tester configuration, set contents, and software may not be specified in the actual Manual.

⚠ **WARNING! The actual user manual does not contain information on how to diagnose voltage regulators and alternators with the tester. Follow the link RTP9007S Operation Manual or scan the QR-code to find this information.**

1. PURPOSE

The tester purpose is as follows:

1. Assessing performance of automotive alternators with a nominal voltage of 12/24V and stop-start alternators with a nominal voltage of 12/24V (VALEO I-StARS). The diagnosis is carried out either on a car or on the test bench that provides its drive and a load on the alternator.

2. Assessing performance of voltage regulators separately from alternators.

3. Reading and saving data transmitted via the LIN bus of a vehicle («LIN analyzer» function).

4. Diagnosing starters directly on cars without their removal or on the test bench that provides proper unit fixation and power supply using cable MS-33503.

⚠ **WARNING! Cable MS-33503 is not included in the equipment set and can be purchased separately.**

Below are the criteria for alternator and voltage regulator performance assessment:
- stabilizing voltage;
- control lamp operation;
- FR (displayed FR signal frequency and waveform, voltage regulator feedback).

For COM voltage regulators:
- ID;
- Protocol type;
- Data exchange rate;
- LIN protocol type;
- Voltage regulator self diagnosis faults.

2. TECHNICAL CHARACTERISTICS

General		
Dimensions (L×W×H), mm		157×85×18
Weight, kg		0,3
Supply voltage, V	during alternator testing	12-48 – either battery or test bench supply
	during voltage regulator testing	power unit with «Quick Charge 2.0» function
Touch screen		IPS 4.3" Capacitive touch
Operating temperature, ℃		from 0 to +40
Relative humidity, %		from 0 to 75
Storage temperature, ℃		from -10 to +50
Ingress protection code		IP20
Voltage regulator/Alternator testing		
Nominal voltage of tested alternators, V		12, 24
Types of tested alternators	12V	«Lamp», «SIG», «RLO», «RVC», «C KOREA», «P/D», «COM» («LIN», «BSS»), «C JAPAN», VALEO «I-StARS»
	24V	«Lamp», «COM» («LIN»), PWM (SCANIA)

Voltage measurement accuracy, V	±0,1
Additional functions	
Software update	Yes
Voltage regulator database	Yes
Load on voltage regulator	No
Load on alternator	No

3. EQUIPMENT SET

The tester set includes:

Item name	**Number of pcs**
Tester RTP9007S	1
MS-33501 – diagnostic cable for alternators	1
MS-33502 – diagnostic cable for voltage regulators and a set of adapter cables	1
USB Cable Type-C	1
A power unit with a function «Quick Charge 2.0» (Input 100-240V 50/60Hz; Output 9V-2A)	1
User Manual	1

Inspect the tester. In case of any damage, contact the manufacture or sales representative before launching the equipment.

⚠ **WARNING! In case there is obvious damage, the use of the equipment is prohibited.**

4. TESTER DESCRIPTION

The tester is a portable device controlled through the touch screen (Fig. 1).

Figure 1 - General view of the tester

In the upper part of the device, there is a terminal for connection of diagnostic cables (Fig.2).

Figure 2 – Terminal for connection of diagnostic cables

There is a USB Type-C port in the bottom part of the tester, through which the power is supplied to the tester during the diagnostics of voltage regulators. The USB port serves as well for connection of the tester to a computer either for software updating or for data copying (Fig.3).

Figure 3 - USB port, Type-C

A diagnostic cable for voltage regulators (Fig.4) and adapter cables (Fig.5) for easy connection to the voltage regulator output terminals are included in the tester set.

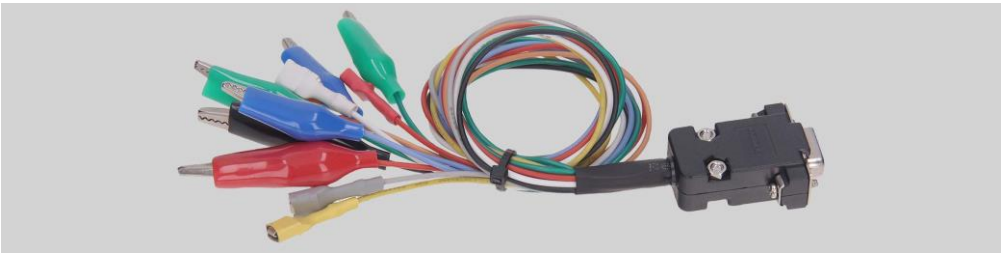

Figure 4 – Diagnostic cable for voltage regulators MS-33502

Figure 5 – Adapter cables for connection to voltage regulators

The diagnostic cable for voltage regulators (Fig.4) has the following color marking:

- Red cable with a clip – **B+** – voltage regulator terminal B+ (terminal 30);
- Black cable with a clip – **B-** – voltage regulator terminal B- (GND, terminal 31);

- Orange cable with a terminal – **S** (Sense pin) – through this terminal, the voltage regulator measures the battery voltage and compares it with the alternator/voltage regulator output voltage. This cable is connected to terminals S of the voltage regulator;
- Red cable with a terminal – **IG** (Ignition) – the ignition terminal (terminal 15, A, IG);
- White cable with a terminal – **FR** – through this terminal, the data on the voltage regulator load are transmitted. The cable connects to FR, DFM, and M terminals of the voltage regulator;
- Grey cable with a terminal – **D+** – the terminal through which the control lamp of the voltage regulator is connected to terminals D+, L, IL, and 61 of the voltage regulator;
- Yellow cable with a terminal – **GC** – for connection of the tester to the control channel of the voltage regulator through voltage regulator terminals COM, SIG, and others;
- Green cables with clips – **F1**, **F2** – for connection of the tester to the brushes of the voltage regulator or their corresponding terminals: DF, F, FLD;
- Blue cables with clips – **ST1**, **ST2** – for connection of the tester to the stator terminals of the voltage regulator: P, S, STA, Stator.

The equipment set includes a cable for alternator diagnostics (Fig.6).

Figure 6 – Diagnostic cable for alternators MS-33501

The diagnostic cable (Fig.6) has the following color markings:
- Red clip, big – „**B+**”;
- Black clip, big – „**B-**”;
- Orange clip, small - „**S**” (Sense pin);
- Red clip, small – „**IG**” (Ignition);

- White clip, small – „**FR**”;
- Grey clip, small – „**D+**”;
- Yellow clip, small – „**GC**”.

5. INTENDED USAGE

1. Use the tester as intended (see Section 1).
2. The tester is designed for indoor use. Be aware of the following operating constraints:
   2.1. Observe the environmental conditions for the equipment operation specified in Section 2 of User Manual. Do not use the device when the air temperature is negative or the humidity is high (over 75%). Do not turn on the tester immediately after moving it from a cold room (or from outdoors) into a warm one as its components may be covered with a condensate. Keep it off at room temperature for at least 30 min.
   2.2. Avoid leaving the device in direct sunlight.
   2.3. Keep away from heating devices, microwaves, and other temperature-raising equipment.
   2.4. Avoid dropping the tester or spilling technical liquids on it.
   2.5. Any interference with the electric diagram of the device is strictly prohibited.
   2.6. Make sure the crocodile clips are completely insulated before connecting them to the alternator/voltage regulator terminals.
   2.7. Avoid the crocodile clips short circuit between themselves or to any conductive parts of a vehicle, including its body.
   2.8. Do not put the tester on the vehicle battery or other elements of the underhood space. Avoid short circuit of the tester housing to the conductive parts of a vehicle.
   2.9. Do not use the device with a faulty power unit.
   2.10. Turn off the tester when it is not in operation.

In case of failure, contact the technical support service or sales representative.

5.1. Safety regulations

The operation of the tester requires technical proficiency of the operator, he must be authorized to operate certain types of test benches (devices) and receive safety training.

5.2. Mode of operation

Mode 1 – Powered from a power unit.

Testing voltage regulators with a nominal voltage of 12/24V requires the use of a power unit: either the one included in the equipment set or any other power unit with the «Quick Charge 2.0» function. In this mode, the supply voltage (9V) will be displayed at the top of the tester screen. When the tester is powered from a 5V power unit, the only available test mode is for 12V units.

⚠ **WARNING! The operation of some voltage regulators requires heavy current that the tester cannot provide. The diagnosis of such voltage regulators is not possible.**

Mode 2 – Powered from a vehicle power system.

Use a diagnostic cable for alternators included in the equipment set (Fig.6). The tester will switch on and function in alternator test mode only when we connect big crocodile clips “B+” and “B-“ to the alternator output terminals.

Mode 3 – Connecting to a computer.

When we connect the tester to a computer via a USB Type-C port, it operates in a data transmit receive mode. In this mode, a new bootloader, software, and database versions can be uploaded to the device memory. Also, it is possible to read information stored in the tester memory.

6. TESTER MAINTENANCE

The tester is intended for long-term operation. However, regular inspection of the device and preventive measures performed as recommended can ensure its long and trouble-free service life.

Below are the key points that require special attention during the daily inspection of the device:

• Compliance of the environmental conditions to the requirements for the tester operation: temperature, humidity, air pollution level, vibration, etc.

• Condition of diagnostic cables (visual inspection for damage).

• Condition of a power unit and a USB cable.

6.1. Software update

The updates are available for:

• Firmware

• Databases

• Bootloader

Software update:

- Download a new firmware version (file «Update.bin» on the product detail page) on servicems.eu.

- Connect the tester to a computer via a USB cable Type-C. The computer will identify the tester as a flash drive.

- Copy «Update.bin» file to the root directory (substitute the old one).

- Disconnect the tester form the computer.

- Connect the tester to the power unit (included in the equipment set). The tester will be ON, and the update installation will start automatically.

⚠ **WARNING! Do not disconnect the tester from the power unit to cancel the update.**

- Wait for the update to install. Upon finishing, the tester will re-boot and be ready for use.

Database update:

- Download a new version (file “Base.bin” on product detail page) on servicems.eu.

- Connect the tester to a computer via a USB cable Type-C. The computer will identify the tester as a flash drive.

- Copy «Base.bin» file to the root directory (substitute the old one).

- Disconnect the tester from the computer. The tester is ready for use.

Bootloader update:

- Download a new bootloader version (file «Bootloader.bin» on product detail page) on servicems.eu.

- Connect the tester to a computer via a USB cable Type-C. The computer will identify the tester as a flash drive.

- Copy “Bootloader.bin” file to the root directory (substitute the old one).

- Disconnect the tester from the computer.

- Connect the tester to the power unit (included in the equipment set). The tester will be ON.

- Go to the tester settings and press “Update bootloader”.

- Press “Update” and wait until the installation is finished.

⚠ **WARNING! Do not disconnect the tester from the power unit to cancel the update.**

- Upon finishing the installation, the tester will re-boot and be ready for use.

6.2. Cleaning and care

Use soft tissues or waste cloth and neutral detergents to clean the tester surface. Clean the touch screen with a special fiber and a cleaning spray. To avoid corrosion, breakdown, or damage to the tester, do not use any abrasives or solvents.

7. MAJOR FAULTS AND RECOVERY TECHNIQUES

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

Failure symptom	Potential cause	Troubleshooting tips
1. Tester does not turn on when connected to a power unit.	Power supply failure.	Recover power supply.
	Power unit failure.	Check the tester by connecting it to another power unit.
	USB cable failure.	Check the tester by connecting another USB cable.
2. Computer cannot identify the tester.	USB cable failure.	Check the tester by connecting another USB cable.
	Software error. Tester failure.	Contact a sales representative.
3. Incorrect display of tested parameters.	Loose terminal connection.	Reconnect.
	Diagnostic cable breakdown	Replace the diagnostic cable.
	Software error. Tester failure.	Contact a sales representative.
4. Test mode failure.	Loose terminal connection.	Reconnect.
	Diagnostic cable breakdown.	Replace the diagnostic cable.
	Tester failure.	Contact a sales representative.

8. EQUIPMENT DISPOSAL

European WEEE (Waste Electrical and Electronic Equipment) Directive 2002/96/EC applies to Tester disposal.

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

Use available waste collection systems to dispose of outdated equipment.

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

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