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EQUIPMENT FOR DIAGNOSTICS AND REPAIR OF AUTOMOTIVE UNITS

car service

CATALOGUE 2023



Contents

MSG Equipment.....	2
Diagnostics of starters and alternators.....	4
Diagnostics of power steering systems.....	20
Diagnostics of electric power steering (EPS) unit.....	26
Diagnostics of automotive air conditioning system.....	31
Diagnostics of shock absorbers.....	36
Diagnostics of brake calipers.....	39
Particulate filter flushing.....	41
Diagnostics of electric vehicles.....	43
Training courses.....	49

Diagnostics of starters and alternators

Test bench MS002 COM

Test bench MS002 COM is a multifunctional diagnostic bench for quick and proper diagnostics of automotive alternators, voltage regulators, and starters. The high-power test bench diagnoses automotive units under different loads. The test bench simulates the real-time operation of the tested unit in a car, thus tracing up to 99% of all possible faults.



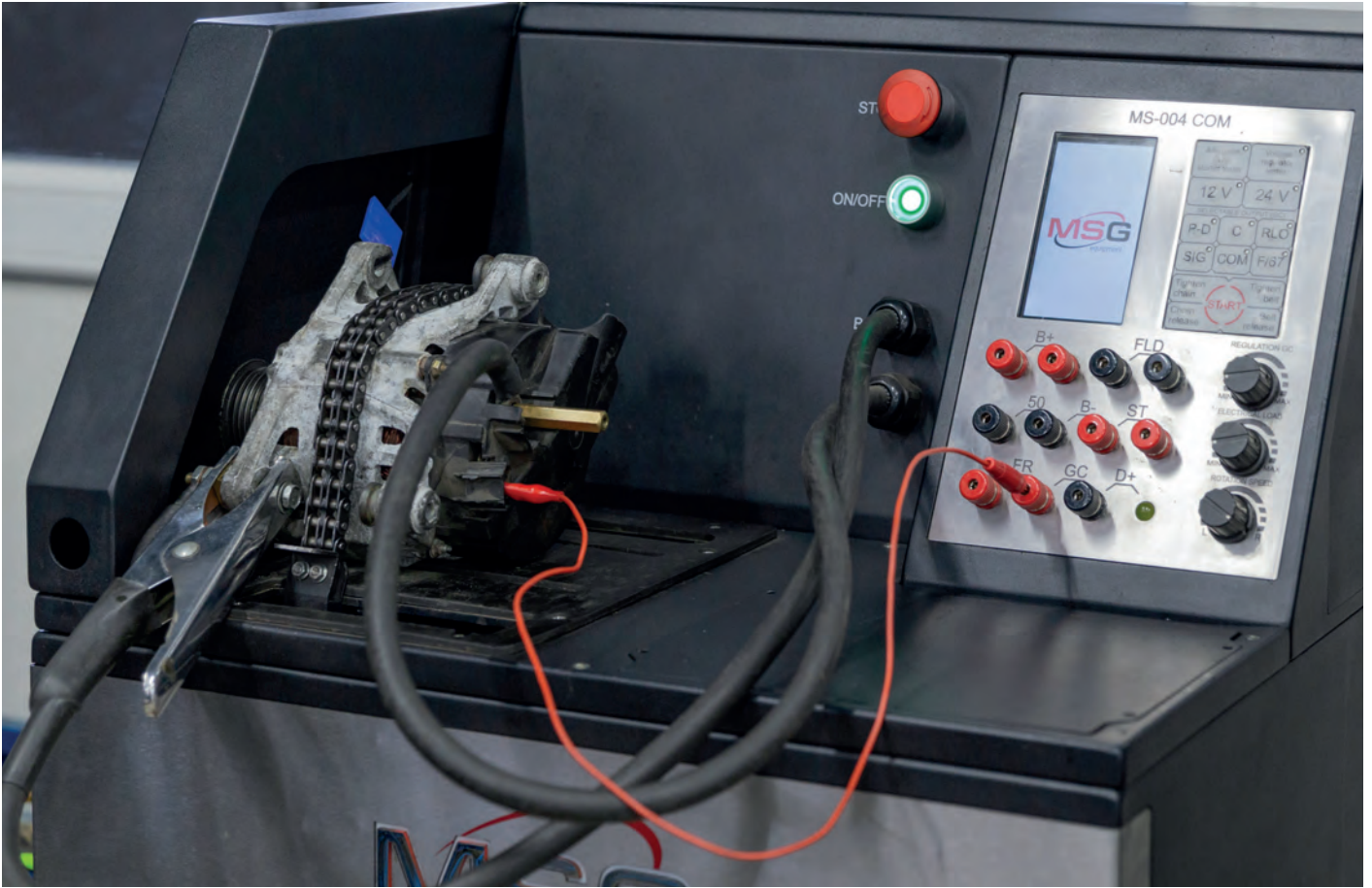
Test bench MS002 COM is designed to diagnose:

- 12V alternators under a load of up to 200A;
- 24V alternators under a load of up to 100A;
- starters with the power of up to 6kW (at no load);
- COM voltage regulators removed from alternators (with fault indication).



Technical characteristics	
Dimensions (L×W×H), mm	555×455×930
Weight, kg	96
Supply voltage, V	400
Supply type	Three-phase
Number of batteries	2 identical 12V batteries
Battery model (not included)	Battery capacity: from 45 to 60 Ahr
Automatic charging: Battery 1	Yes
Automatic charging: Battery 2	No
Rated voltage of tested units, V	12, 24
Alternator testing	
Load on tested alternator, A	0-200 for 12V; 0-100 for 24V
Drive power, kW	5.5
Load adjustment (0-100%)	Smooth
Drive speed, RPM	0-3000
Drive speed adjustment	Smooth
Transmission type (drive/alternator)	Belt
Drive type	• V-belt; • Poly-V-belt
Types of tested alternators	«COM» («LIN», «BSS»), «P-D», «RLO», «C», «SIG», «F/67»
Read parameters	• Stabilizing voltage; • Alternate current; • Direct current; • Drive speed; For COM voltage regulators: • Protocol; • Data exchange rate; • ID; • Type; • Faults
Voltage regulator testing	
Voltage regulator tested parameters	• Stabilizing voltage; • Rotor winding direct current; For COM voltage regulators: • Protocol; • Data exchange rate; • ID; • Type; • Faults
Types of tested voltage regulators	«COM» («LIN», «BSS»), «P-D», «RLO», «C», «SIG»
Short circuit protection	Yes
Short circuit sound alert	Yes
Starter testing	
Power of tested starters, kW	Up to 6
Measured parameters	• Voltage; • Alternate current; • Direct current

Test bench MS004 COM



Test bench MS004 COM is used to determine the technical condition of the following automotive units: alternators under different loads (100A for 12V, 50A for 24V), 12/24V starters with the power of up to 4kW, and voltage regulators of the latest models. Technical parameters of the test bench allow the detection of 99% of potential alternator problems. The test bench allows to also make a proof test of an electrical unit after its repair.

Advantages:

- desktop mounting;
- 230V single-phase power supply;
- convenient fixing mechanism to secure a tested unit and its drive on the bench without auxiliary tools;
- smooth adjustment of alternator speed and load current;
- diagnostics of all types of the latest voltage regulators;
- diagnostics of alternators with no integral voltage regulators;
- quick and accurate measurement of electric unit performance parameters;
- electronic self-protection against damage and improper connection of a tested unit;
- convenience and ease of use.



Technical characteristics	
Dimensions (L×W×H), mm	570×505×450
Weight, kg	62
Supply voltage, V	230 or 120
Supply frequency, Hz	50/60
Supply type	Single-phase supply line
Number of batteries	2 identical 12V batteries
Battery model (not included)	Capacity: from 45 to 60 AHr; Dimensions (L×W×H), mm: no more than 207×175×175
Automatic charging: Battery 1	Yes
Automatic charging: Battery 2	No
Rated voltage of tested units, V	12, 24
Alternator testing	
Load on tested alternator, A	0-100 for 12V 0-50 for 24V
Load adjustment (0-100%)	Smooth
Drive power, kW	2,2
Drive speed, RPM	0-3000
Drive speed adjustment	Smooth
Transmission type (drive/alternator)	Belt
Belt types	• V-belt; • Poly V-belt
Types of tested alternators	«COM» («LIN», «BSS»), «P-D», «RLO», «C», «SIG», «F/67»
Measured parameters	• Stabilizing voltage; • Alternate current; • Direct current; • Drive speeda For COM voltage regulators: • Protocol; • Data exchange rate; • ID; • Type; • Faults
Voltage regulator testing	
Tested parameters of voltage regulator	• Stabilizing voltage; • Rotor winding direct current For COM voltage regulators: • Protocol; • Data exchange rate; • ID; • Type; • Faults
Types of tested voltage regulators	«COM» («LIN», «BSS»), «P-D», «RLO», «C», «SIG»
Short circuit protection	Yes
Short circuit sound alert	Yes
Starter testing	
Power of tested starters, kW	Up to 4
Measured parameters	• Voltage; • Alternate current; • Direct current

Test bench MS005



MS005 – multifunctional test bench designed for the quick and the accurate diagnostics of the automotive alternators and starters of the passenger cars and the trucks. The test bench software is regularly updated for the expanding of the range of diagnosed units.



Advantages:

- display of measured parameters in the form of oscillography charts;
- diagnostics of alternators in manual and automatic modes;
- diagnostics of alternators of system «start-stop» 12V;
- convenient fixing mechanism to secure tested units on the bench (no auxiliary tools required);
- automatic tightening of alternator drive belt;
- special diagnostic cables for quick connection to alternators (optional);
- thermal camera to monitor the temperature of a tested unit;
- alternator database;
- automatic test report saving and printout option;
- 12" touch screen;
- free automatic software update.



Technical characteristics		
Dimensions (L x W x H), mm	655x900x1430	
Weight, kg	130	
Supply voltage, V	400	
Supply mains type	Three phase	
Drive power, kW	7.5	
Quantity of storage batteries (not included into supply slip)	2 similar lead-acid by 12V	
Battery capacity	45Ah min.	
Storage battery automatic charging	Available	
Rated voltage of the diagnosed units, V	12, 24	
Maximum overall length of the diagnosed unit, mm (m)	410 (0,41)	
Alternator diagnostics		
Load, A	12V	300A
	24V	150A
Verification regime	Automatic / manual	
Load adjustment (0-100%)	Smoothly	
Drive speed, rpm	0-3000	
Drive speed adjustment	Smoothly	
Drive type (alternator drive)	V-belt drive/Poly V-belt drive	
Types of diagnosed alternators	12V	Lamp, SIG, RLO, RVC, C KOREA, P-D, C JAPAN, COM (LIN, BSS), VALEO «I-StARS»
	24V	Lamp, COM (LIN)
Starter diagnostics		
Power of diagnosed starters, kW	up to 11	
Measured parameters	The charts displaying the operation starting mode, voltage variations and voltage current on the terminals: K30, K50 и K45	
Additional features		
Display	Touch Screen 12"	
Software update	Available	
Alternator database	Available	
Diagnostics results storage	Available	
Printing	Available	
Internet connection	Wi-Fi (802.11 a/b/g/ac), Ethernet	
Connection of peripheral devices	2 x USB 2.0	

Test bench MS008



MS008 is a multi-purpose test bench for quick and proper diagnostics of the following automotive units:

- 12/24V (48V) alternators supplied with various connection terminals and control protocols under a load of up to 150A (12V mode);
- 12V alternators of system «start-stop»;
- 12/24V voltage regulators under load separately from alternators;
- 12/24V starters of passenger cars and heavy trucks at idle.

Advantages:

- measured parameters are displayed in the form of oscillograph charts;
- alternators are tested in either manual or automatic modes;
- results of a automatic test can be saved and printed out;
- database of alternators;
- database of voltage regulators;
- convenient system of fixing an automotive unit on the test bench;
- alternator drive belt automatic tightening;
- special diagnostic cables for quick connection to alternators (optional);
- 7 inch touch screen;
- desk-top test bench, compact size;
- automatic software update - free of charge.



Technical characteristics		
Dimensions (L x W x H), mm	770x640x500	
Weight, kg	100	
Supply voltage, V	400	
Supply mains type	Three phase	
Drive power, kW	4	
Quantity of storage batteries (not included into supply slip)	2 similar lead-acid by 12V	
Battery capacity	Capacity from 45 up to 60 A-h and dimensions (L x W x H) not exceeding 207x175x175 mm	
Storage battery automatic charging	Available	
Rated voltage of the diagnosed units, V	12, 24	
Alternator diagnostics		
Load, A	12V	150A
	24V	75A
Verification regime	Automatic / manual	
Load adjustment (0-100%)	Smoothly	
Drive speed, rpm	0-3000	
Drive speed adjustment	Smoothly	
Drive type (alternator drive)	V-belt drive/Poly V-belt drive	
Types of diagnosed alternators	12V	Lamp, SIG, RLO, RVC, C KOREA, P-D, C JAPAN, COM (LIN, BSS), VALEO «I-StARS»
	24V	Lamp, COM (LIN)
Starter diagnostics		
Power of diagnosed starters, kW	up to 11	
Measured parameters	The charts displaying the operation starting mode, voltage variations and voltage current on the terminals: K30, K50 и K45	
Voltage regulator diagnostics		
Engine rotation imitation, rpm	from 0 up to 6000	
Voltage regulator load imitation, %	from 0 up to 100	
Types of diagnosed voltage regulators	12V	Lamp, SIG, RLO, RVC, C KOREA, P-D, C JAPAN, COM (LIN, BSS)
	24V	Lamp, COM (LIN)
Additional features		
Display	Touch Screen 7"	
Software update	Available	
Alternator database	Available	
Voltage regulator database	Available	
Diagnostics results storage	Available	
Printing	Available	
Internet connection	Wi-Fi (802.11 a/b/g/ac), Ethernet	
Connection of peripheral devices	2 x USB 2.0	

Test bench MS006

Test bench MS006 provides the diagnostics of the technical condition of 12/24V alternators with various connection terminals, alternators with a nominal voltage of 12V for Stop-Start (VALEO I-StARS) and 24V for “I-ELOOP” systems. The test bench operates in two modes: manual and automatic. Test report printout option is available.



Advantages:

- desktop mounting;
- 230V single-phase power supply;
- diagnostics of 12V and 24V alternators for “Stop-Start” and “I-ELOOP” systems respectively;
- diagnostics of alternators in automatic and manual modes;
- by-number database search for alternator information;
- smooth adjustment of alternator speed and load current;
- automatic test results printout;
- convenient fixing of a tested unit;
- free software update.

Technical characteristics		
Dimensions (L×W×H), mm	570×490×450	
Weight, kg	42	
Supply voltage, V	230	
Number of batteries	No	
Alternator testing		
Voltage of tested alternators, V	12, 24	
Drive power, kW	1.5	
Load, A	0-50 for 12V, 0-25 for 24V	
Load adjustment (0-100%)	Smooth	
Drive speed, RPM	0-3000	
Drive speed adjustment	Smooth	
Transmission type (drive/alternator)	Belt	
Belt types	•V-belt • Poly V-belt	
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»
Displayed parameters	• Voltage; • Alternate current; • Direct current; • Drive speed For COM voltage regulators: • Protocol; • Data exchange rate; • ID; • Voltage regulator types; • Faults	
Additional information		
Display type	7" Touch screen	
Automatic test mode	Yes	
Alternator database	Yes	
Test results printout	Yes	

Comparison of test benches for alternators and starters

SPECIFICATIONS		MS002	MS004	MS005	MS006	MS008
Supply voltage, V		400	230	400	230	400
Power, kW		5.5	2.2	7.5	1.5	4
Voltage of diagnosed units, V		12/24	12/24	12/24	12/24	12/24
Diagnostics	alternator	✓	✓	✓	✓	✓
	alternator voltage regulator	✓	✓			✓
	starter	✓	✓	✓		✓
Maximum alternator current load	12V	200	100	300	50	150
	24V	100	50	150	25	75
Types of diagnosed alternators		«Lamp» «COM» «P-D» «RLO» «SIG» «C» «F/67»	«Lamp» «COM» «P-D» «RLO» «SIG» «C» «F/67»	«Lamp» «COM» «P-D» «RLO» «SIG» «C KOREA» «C JAPAN» «I-StARS»	«Lamp» «COM» «P-D» «RLO» «SIG» «C KOREA» «C JAPAN» «I-StARS» «I-ELOOP»	«Lamp» «COM» «P-D» «RLO» «SIG» «C KOREA» «C JAPAN» «I-StARS»
Automatic alternator check				✓	✓	✓
Special cables for quick alternator connection				✓		✓
Power of diagnosed starters, kW		up to 6	up to 4	up to 11		up to 11
Output parameters mode	values	✓	✓	✓	✓	✓
	oscillogram			✓		✓
Belt and chain tightening		Semi-automatic	Semi-automatic	Automatic	Manual	Automatic
Unit temperature measurement				✓		
Alternator database				✓	✓	✓
Voltage regulator database						✓
Software update				✓	✓	✓
Print result				✓	✓	✓
Display		TFT 4.3"	TFT 4.3"	PC 12" Touch	7.0" Touch	PC IPS 7" Touch

Tester MS012 COM



Tester MS012 COM simulates the connection of a voltage regulator to a properly operating alternator to determine its performance and to select the regulator analogue for a specific alternator.

Technical characteristics	
Dimensions (L×W×H), mm	260×265×92
Weight, kg	4,1
Supply voltage, V	230 or 120
Types of tested voltage regulators	12V «L/FR», «SIG», «RLO», «RVC», «C KOREA», «P-D», «COM» («LIN», «BSS»), «C JAPAN»
	24V «L/FR», «COM» («LIN», «BSS»)
Simulation of load on voltage regulator, %	From 0 to 100
Software update	Yes



Tester MS013 COM

Tester MS013 COM checks the efficiency of 12V alternators either in a vehicle or on the test bench that provides the driving and the load of the alternator. It can be also used for testing voltage regulators separately from alternators.

Technical characteristics	
Dimensions (L×W×H), mm	157×85×26
Weight, kg	0.7
Power supply	12V battery or 5V/2A AC/DC
Types of tested alternators/voltage regulators	«COM» («LIN», «BSS»), «P-D», «RLO», «C», «SIG», «D+»
PWM generator	Yes
Oscilloscope	Yes
Software update	Yes



Tester MS015

MS015 is a simple and user-friendly device for express diagnostics of 12V automotive alternators with digital or PWM-controlled voltage regulators without removing them from the cars.



Technical characteristics	
Dimensions (L×W×H), mm	120×65×18
Weight, kg	0,15
Supply voltage, V	From 10 to 18 V
TFT-LCD, color touch screen	Screen size– 2,8" Screen resolution – 320×240 px
Nominal voltage of tested alternators, V	12
Types of tested alternators	«COM» («LIN», «BSS»), «SIG», «RLO», RVC «C KOR.», «P-D», «C JAP.»
Software update	Yes

Tester MS016



Tester MS016 is a compact multifunctional device for express diagnostics of the following automotive units without removing them from vehicles: 12/24V alternators, 12V alternators for Stop-Start systems, and starters. The tester determines the performance of voltage regulators - separately from alternators, and it also reads and saves data transmitted via a vehicle LIN bus.



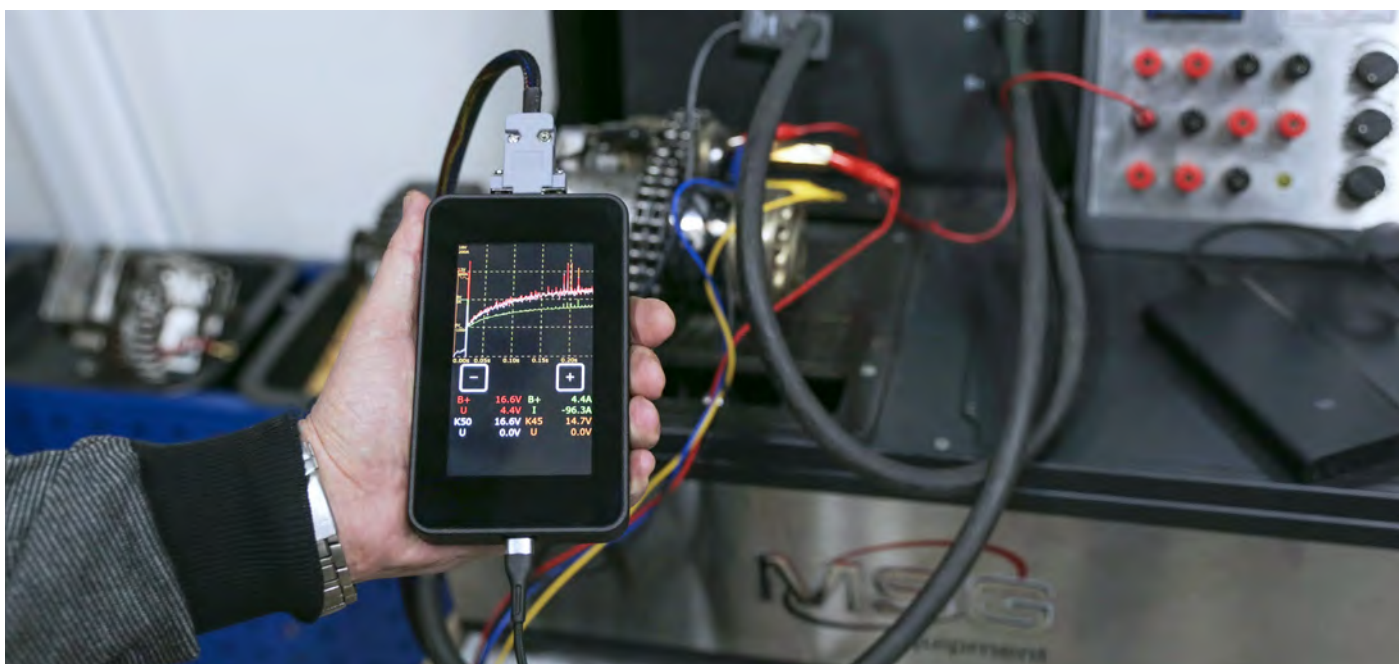
Technical characteristics		
Dimensions (L×W×H), mm	157×85×18	
Weight, kg	0,3	
Touch screen	IPS 4.3" Capacitive touch	
Types of tested alternators	12V	«Lamp», «SIG», «RLO», «RVC», «C KOREA», «P/D», «COM» («LIN», «BSS»), «C JAPAN», VALEO «I-StARS»
	24V	«Lamp», «COM» («LIN»), PWM (SCANIA)
Software update	Yes	

MS-33503

A CABLE FOR TESTER MS016 FOR DIAGNOSTICS OF STARTERS



Tester MS016 and cable MS-33503, we can register both: a voltage across starter terminals 31, 30, 50, 45 and a current across terminal 30 during the engine start. The measured parameters are displayed on the tester screen as diagrams. In addition, the maximum and minimum values are displayed numerically. This information helps recognize problems with the starter, battery, or wiring.



Tester MS031



Tester MS031 is designed for checking of the technical condition of starter solenoids and detection of open-circuit and short-circuit faults in solenoid coil.

Technical characteristics	
Dimensions (L×W×H), mm	260×250×90
Weight, kg	4
Supply voltage, V	230
Supply frequency, Hz	50/60
Power consumption, W	700
Voltage of tested solenoids, V	12/24
Tested parameters	• Pull-in current; • Hold-in current; • Voltage drop across power contacts
Software update	Yes



MS0311

MS0311 is designed for a joint usage with the tester MS031 to fix a starter solenoid for the diagnostics convenience. It can be used for all solenoid types regardless of their sizes and manufacturer.



Tester MS014

The **tester MS014** is used during the repair of 12/24V automotive alternators for the evaluation of the technical condition of stator winding coil and diode bridge.



Technical characteristics	
Dimensions (L x W x H), mm	290x320x120
Weight, kg	3
Supply voltage, V	100/120/230
Supply net frequency, Hz	50/60
Supply mains type	Single-phase
Demanded power (max.), W	40
Stator winding coil types	Star, Delta
Testing current	Impulse
Testing current, A	12,6
Testing voltage, (AC), V	30

Tester MS021



Tester MS021 ensures accurate testing of the technical condition of alternator diode bridge and a single diode. The tester identifies the type and performance characteristics of a tested diode, reports on the defect type and identify the diode degradation.



Technical characteristics	
Dimensions (L x W x H), mm	219x214x80
Weight, kg	2
Supply voltage, V	230/110
Supply net frequency, Hz	50/60
Supply mains type	Single-phase
Demanded power (max.), W	40
Testing current	alternating
Testing current, A	0,9
Testing voltage, (AC), V	30

Comparison of testers for alternator and starter diagnostics

SPECIFICATIONS		MS012 COM	MS013 COM	MS015	MS016
Supply voltage, V		230 AC	10-16 DC (230 AC->5 DC)	10-16 DC	10-48 DC (230 AC->9 DC)
Voltage of diagnosed units, V		12/24	12	12	12/24
Diagnostics	alternator – without dismounting from car		✓	✓	✓
	alternator voltage regulator	✓	✓		✓
	starter – without dismounting from car				✓
Types of diagnosed alternators / voltage regulator		Lamp COM P-D RLO SIG C KOREA C JAPAN	Lamp COM P-D RLO SIG C KOREA C JAPAN	COM P-D RLO SIG C KOREA C JAPAN	Lamp COM P-D RLO SIG C KOREA C JAPAN I-StARS
Output parameters mode	values	✓	✓	✓	✓
	oscillogram				✓*
Imitation of voltage regulator load		✓			
Voltage regulator database					✓
Oscillograph (single-channel)			✓		
PWM-signal generator			✓		
Reading of data from LIN bus					✓
Software update		✓	✓	✓	✓

* For starter diagnostics

Comparison of testers for diode bridge and stator winding coil diagnostics

SPECIFICATIONS		MS014	MS021
Supply voltage, V		230 AC	230 AC
Voltage of diagnosed units, V		12/24	12/24
Diagnostics	diode bridge	✓	✓
	stator winding coil	✓	
Diode bridge diagnostics	disconnection	✓	✓
	short circuit	✓	✓
	diode type		✓
	avalanche diode characteristic		✓
Type of current on the device probes		impulse	alternating
Voltage at device probes, V		12,6	30
Current rate at device probes, A		30	0,9
Stator winding coil types		Star, Delta	
Stator winding coil diagnostics	turn-to-turn short circuit	✓	
	phase-to-phase short circuit	✓	
	phase-to-body short circuit	✓	
	phase disconnection	✓	

**Diagnostics
of power
steering systems**

Test bench MS502M



Test bench MS502M is used for diagnostics of hydraulic power steering racks. The bench simulates a real-time operation of an automotive unit, thus allowing easy detection of faults and their nature.



Advantages:

- diagnostics of all power steering rack types;
- convenient fixing mechanism;
- possibility to adjust a maximum power fluid pressure generated in a steering rack.

Technical characteristics	
Dimensions (L×W×H), mm	1700×1300×750
Weight, kg	110
Supply voltage, V	380
Drive power, kW	1,5
Drive speed, RPM	1500
Tank volume, l	22
Maximum generated flow, l/min	5,9
Power fluid	ATF DEXRON II
Pressure adjustment range, bar	0-140
Flowmeter, l/min	0-18

Test bench MS603N

Test bench MS603N is designed to flush power steering system when changing the power fluid. It ensures a complete draining of the used system power fluid that has lost its performance characteristics and contains mechanical impurities appeared during a vehicle operation. The bench diagnoses HPS racks and pumps directly in a vehicle; steering racks can optionally be tested being dismantled from a vehicle.

Technical characteristics	
Dimensions (L×W×H), mm	600×610×1180
Weight, kg	83
Supply voltage, V	220
Power of electric motor, kW	2,2
Flowmeter, l/min	from 0 to 18
Manometer, bar	form 0 to 160
Pure fluid tank volume, l	18
Impure fluid tank volume, l	18
Power fluid	ATF DEXRON III
Fluid level sensor	Yes
Pressure in the system, bar	140
Fluid flow, l/min	5,6



Test bench MS604

Test bench MS604 checks the performance of mechanically driven single- and double-circuit pumps and their output parameters.

Technical characteristics	
Dimensions (L×W×H), mm	1100×750×1700
Weight, kg	188
Supply voltage, V	400
Supply type	Three-phase
Drive power, kW	5.5
Drive speed adjustment, RPM	from 0 to 1500
Drive rotation direction	Yes
Measured flow, l/min	from 0 to 19
Measured fluid pressure, bar	from 0 to 250
Measured fluid temperature, °C	from 0 to 100
Power fluid	ATF DEXRON III
Tank volume, l	22
Steering rack load simulation	Yes



Tester MS611



Tester MS611 is designed for a checking of hydraulic power system elements – steering racks and pumps without their dismantling from a vehicle. The tester determines the technical condition of the units and the necessity of their dismantling from the vehicle for the further repair.



Technical characteristics	
Dimensions (L×W×H), mm	400×310×165
Weight, kg	11
Power fluid	ATF
Manometer, bar	from 0 to 160
Flowmeter, l/min	from 2 to 10

Tester MS610

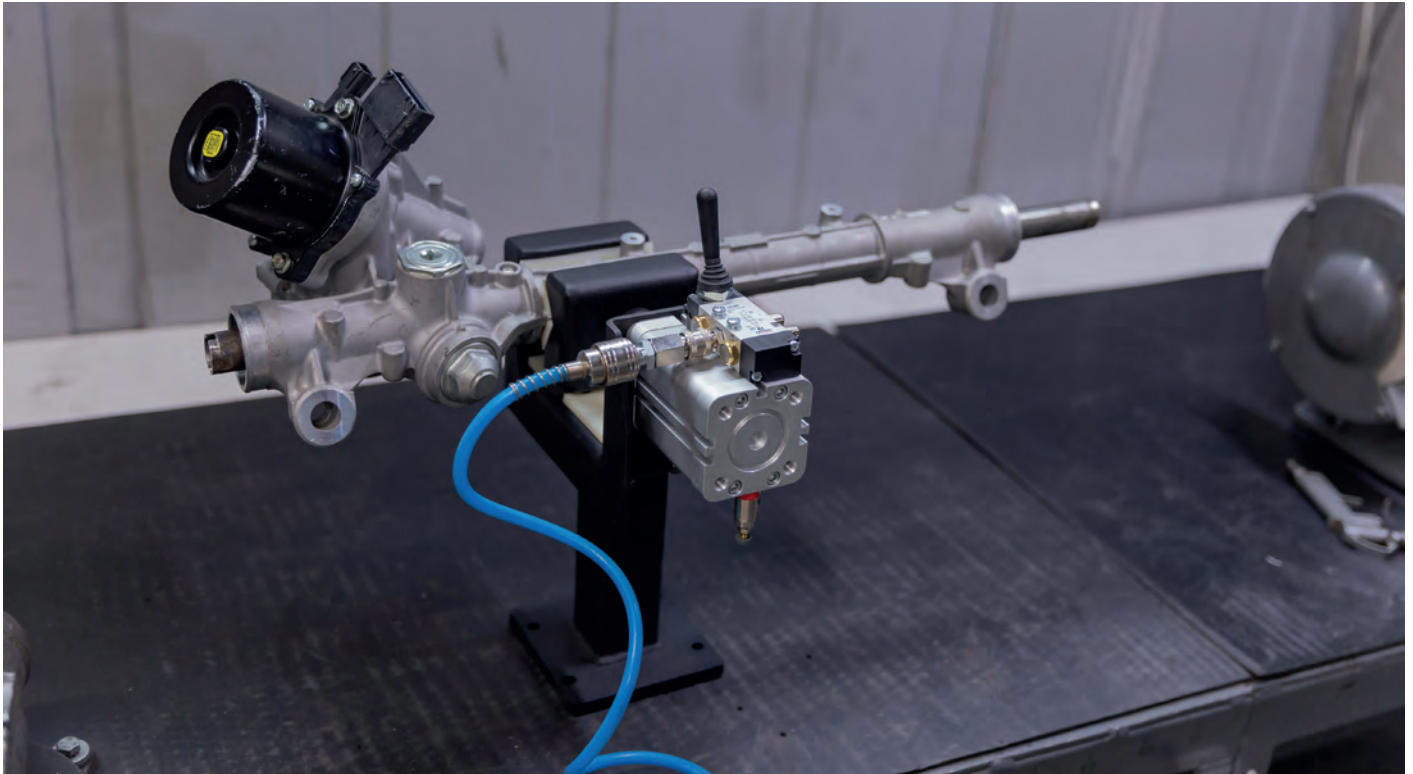


Tester MS610 diagnoses power steering systems in different operating modes (under load and at no load) by measuring the pressure generated by a vehicle HPS pump.



Technical characteristics	
Dimensions (L×W×H), mm	180×80×300
Weight, kg	1.5
Power fluid	ATF
Manometer, bar	0-250

MS522



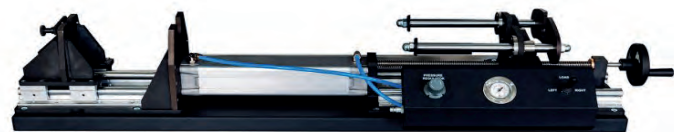
Pneumatic vise MS522 is used to secure cylindrical objects with a diameter of 35 to 85 mm and a clamping force of up to 1400 Newtons. A pneumatic distributor ensures control of the device.



MS521

The mechanism provides an accurate and complete test of the technical condition of HPS/EPS racks and detects the faults that can be traced only when there is a resistance to the steering rack movement.

Technical characteristics	
Dimensions (L×W×H), mm	1400×350×300
Weight, kg	63,5
Air operating pressure, bar	from 2 to 10
Maximum clamping force, N	2473



MS402



Polishing machine MS402 is designed to perform grinding and polishing of various shafts, Shafts of steering racks and other products in order to remove corrosion and obtain the required surface roughness.

Advantages:

- Made of high-quality anti-corrosion materials. The frame is made of metal with polymer coating.
- Reliable, functional and easy to use.
- Equipped with an emergency stop function and protection in case of spontaneous exit of the shaft from the installation site.
- Allows you to polish the overall products. The maximum length of the part is 900 mm.

Technical characteristics

Technical characteristics	
Dimensions (LxWxH), mm	1570x600x1080
Weight, kg	50
Supply voltage, V	400
Supply type	Three-phase
Drive power, kW	0,75
Drive speed, RPM	1500
Maximum shaft length, mm	900
Minimum shaft length, mm	400

Diagnostics of electric power steering (EPS) unit

MS561

Tester MS561 tests EPS and EHPS units (steering racks, columns, and pumps) utilizing CAN and FlexRay communication protocols. Automotive units are tested separately from a vehicle electrical system. Tester MS561 supplies power to a tested unit dismantled from a vehicle and provides special program codes required for its start. Diagnostics of automotive units directly in a car requires their previous disconnection from the in-vehicle electrical system. Special cables connect the tested units to the controller.

*The list of cables is provided additionally

** Complete set could be different as on the photo. Please specify set content with the manufacturer

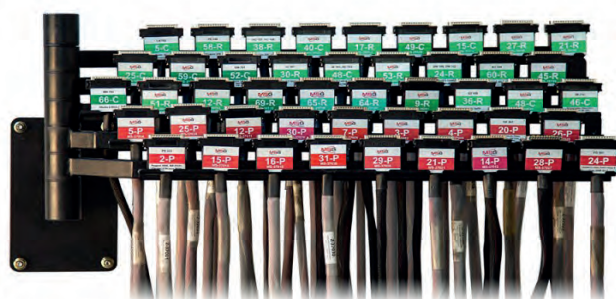


Technical characteristics	
Dimensions (L×W×H), mm	355×255×93
Weight, kg	6
Supply voltage, V	230/120
Supply type	Single-phase
Supply frequency, Hz	50/60
Power consumption, W	2000
Output current, A	Up to 100A (90A for 120V)
Simulated signals	K30, K15, K61, PWM, CAN
Adjustable parameters	• vehicle speed; • steering wheel rotation speed;
Types of protection	• Short circuit; • Overload; • Overheat; • Overvoltage
Test modes	Manual/automatic
Connection to PC	USB/Bluetooth
Software update	Yes





MS700



MS700 - Storage system for EPS diagnostic cables is used to:

- sort out diagnostic cables;
- find the necessary cable quickly;
- keep a workplace of a specialist in order;
- protect cables from entangling and mechanical damage.

MS700 is recommended for the technical process that requires the usage of more than 10 cables.

Technical characteristics	
Dimensions (L×W×H), mm	912×444×287
Weight, kg	19

MS570



Table MS570 is a ready-to-use workplace for an electronics technician. The table is customized for a usage with tester MS561 - a diagnostic system for EPS repair. It has two built-in laboratory power modules and a space for an oscilloscope and a soldering station. The table is equipped with a mounting mechanism for a monitor of any size. The need for bright localized lighting is typical for all the operations involving electronics repair. The table is equipped with the LED fixture which output is 60W LED and illumination - 750 lx, which meets the requirements for high-precision operations.

Standard package:

- 60W LED fixture;
- 8 sockets for connection of external equipment;
- 2 in-built power modules;
- monitor mount;
- tabletop.

An oscilloscope, soldering station, monitor display, and basic tool set for assembly operations can be additionally included in the equipment package.

Technical characteristics	
Dimensions (L×W×H), mm	2000×830×1530
Weight, kg	90
Tabletop height, mm	780
Supply voltage, V	230
Maximum power consumption, W	500
Output voltage range of laboratory power module, V	from 0 to 32
Output current range of laboratory power module, A	from 0 to 5
Setting increment of laboratory power module output voltage, V	0,01
Setting increment of laboratory power module output current, A	0,001

Adapter MS550



Adapter MS550 is designed for a joint usage with tester MS561 to test electric power steering racks without control units (mainly in Japanese vehicles). The adapter is an accessory tool for diagnostics of both electric (electric motor, electric motor position sensor, torque sensor) and mechanical parts of a steering rack with tester MS56. It can be also used for a torque sensor calibration.

Technical characteristics

Dimensions (L×W×H), mm	140x145x35
Weight, kg	0,5
Supply voltage, V	Supply voltage and consumption current are set by MS561
Overload protection	Yes
Functionality	Diagnostics of steering rack parts: <ul style="list-style-type: none">• brush motor; • brushless motor; • all types of torque sensors; • all types of electric motor crankshaft position sensors



Diagnostics of automotive air conditioning system

Test bench MS111

Test bench MS111 provide the diagnostics of automotive climate system compressors operating with refrigerants R134a or R1234yf, post-maintenance unit run, pre-sale testing of new analogue compressors, and test report generation.

Advantages:

- diagnostics of all types of automotive AC compressors with a belt drive and supply voltage of 12V and 24V;
- utilized refrigerants: R134a or R1234yf;
- two diagnostic modes: manual and automatic;
- diagnostics of electromagnetic clutches and valves separately from compressors;
- possibility of compressor post-maintenance test run;
- possibility of pre-sale testing of new analogue compressors;
- simple and user-friendly interface to control the test bench throughout the diagnostic process via a 10.4" touch screen;
- free automatic software update;
- test results storage and printout;
- variety of protection systems that eliminate the bench failure or misuse.



Technical characteristics		
Dimensions (L×W×H), mm		900×570×1280
Weight, kg		183
Supply voltage, V		400
Supply type		Three-phase
Drive power, kW		5.5
Drive speed, RPM		from 0 to 3000
Drive speed adjustment		Smooth/graduate
Utilized refrigerant		R134a, R1234yf
Refrigerant filtration		Yes (1 μm ²)
Refrigerant amount in the system, g		R134a – 1100 R1234yf – 1050
Test bench filling		External filling station
Unit pipeline vacuum		Yes
Unit refrigerant pumping		Yes
Compressor drive type		Belt, V-belt, poly V belt
Display parameters		HP, bar; LP, bar; Unit t, °C; Epr t, °C; PWM, %.
Type of filling fittings		Automotive HP and LP
Oil amount in the system, g		200
Utilized oil		PAG46yf
Data printout		Yes
Connection to Internet		Ethernet , Wi-Fi (802.11 a/b/g/ac)

Test bench MS112

The **test bench MS112** is designed for diagnostics of electric AC of hybrid cars and electric vehicles. The test bench checks any electrical compressors with built-in inverter and supply voltage from 100 to 400V (DC). The diagnosis of the compressor is carried out in a fully automatic mode, while checking the operation of the electrical part of the compressor and testing its performance. Nitrogen is used as a working gas for testing.



Advantages:

- Automatic diagnostic mode;
- Database of compressor;
- Pre-sale test of new compressors;
- Convenient compressor connection with special cables and fittings;
- Free automatic firmware update.



Technical characteristics	
Dimensions (LxWxH), mm	740x600x550
Weight, kg	40
Supply voltage, V	230
Supply type	Single-phase
Demanded power (max.), kW	3
Operation	touch control
Display	9"
Compressor check	
Tested units	2-pin high voltage connection, with built-in inverters
Tested units supply voltage, VDC	from 100 up to 400
Working substance	Compressed nitrogen (external source required)
Nitrogen source pressure, Bar	6
Nitrogen consumption	100L per one test
Nitrogen recovery	No. Waste gas is discharged into the atmosphere
Nitrogen connect coupling	SAE 1/4"
Additional features:	
Software update	Available
Test results saving	Under development
Test results printing	Under development
Database of compressor	Available
Internet connection	Ethernet

Flushing machine MS101P



Pneumatic flushing station MS101P is used for automotive climate system service and repair. The device ensures a proper washing of AC pipelines and other elements with a pulsating flow of flushing fluid. After flushing, the remaining fluid is drained from the system with the usage of pre-connected nitrogen.



Technical characteristics

Dimensions (L×W×H), mm	300×350×700
Weight, kg	27
Filter element	Polypropylene
Air operating pressure, bar	2-7
Size of filter element, mm (inch)	127 (5")
Tank volume, l	15
Length of hoses, m	2.5
Maximum nitrogen pressure, bar	10
Flushing fluid	R141B or isopropyl alcohol

Tester MS121



Tester MS121 is a compact device that combines two functions: testing of electromagnetic clutches and control valves of automotive climate system compressors.

Advantages:

- easy and simple to use;
- automatic selection of electric polarity for connection of a tested unit;
- simultaneous valve and clutch testing;
- possibility to control a compressor electromagnetic valve;
- diagnostics without dismantling from a car.



Technical characteristics	
Dimensions (L×W×H), mm	157×85×26
Weight, kg	0.5
Supply voltage, v	12-15
Voltage of tested electromagnetic clutches, V	12
Automatic selection of electromagnetic clutch polarity	Yes
Accuracy of current measurement, A	0.1
Short circuit protection	Yes
Supply type	Battery, constant power source - 12-15V
Types of tested electromagnetic clutches	• With diode; • Without diode
Voltmeter accuracy, V	0,1
Measured parameters of electromagnetic clutches	• Current consumption; • Open circuit; • Short circuit
Automatic selection of electromagnetic valve polarity	Yes
Types of tested electromagnetic valves	• PWM duty cycle; • Current consumption; • Open circuit, • Short circuit

Diagnostics of shock absorbers

Test bench MS1000+

Test bench MS1000+ is used to check the technical condition of shock absorbers of all light motor vehicle types, determine whether they need the repair, test the repaired shock absorbers, and check whether the performance parameters of the shock absorbers meet technical requirements.

Advantages:

- diagnostics of light motor vehicle shock absorbers with different types of mounting mechanisms and at various vibrational frequencies;
- possibility to set the shock absorber stroke;
- two diagnostic modes: automatic and manual;
- possibility to compare test results;
- possibility to save and print test results;
- user-friendly interface;
- operator safety;
- free automatic software update.



Technical characteristics		
Dimensions (L×W×H), mm		970×480×2500
Weight, kg		350
Supply voltage, V		400
Supply type		Three-phase
Drive power, kW		3.7
Test bench clamp control		Pneumatic
Power pressure of test bench pneumatic system, bar		6
Test modes		Manual/automatic
Shock absorber testing		
Tested shock absorber size	Maximum, mm	780
	Minimum, mm	250
Height adjustment		Manual
Shock absorber stroke, mm		Adjustable in the range from 50 to 150
Shock absorber stroke setting		Manual
Bound/rebound available load, kg		1000
frequency Shock absorber	Maximum, min ⁻¹	180
	Minimum, min ⁻¹	10
Travel speed of shock-absorber piston (at 50 mm stroke)	Maximum, m/sec	0,477
	Minimum, m/sec	0,026
Shock absorber temperature measurement		Yes
Additional features		
Data printout		Yes
Software update		Yes
Connection to Internet		Wi-Fi (802.11 a/b/g/ac)



MS200

Shock absorber filling system MS200 is a special tool for shock absorber repair and maintenance. The unit is designed to be mounted on the top of a technician's repair workbench. It is used for the filling of shock absorbers with the power pressure up to 120 bar with gas.



Advantages:

- simplicity of design and operation;
- safe fixing of a unit during filling;
- filling shock absorbers with power pressure of up to 120 bar.
- possibility to service both mono-tube and twin-tube shock absorbers.

Technical characteristics	
Dimensions (L×W×H), mm	250×350×400
Weight, kg	35

Adapter MS203

The adapter MS203 allows full diagnostics of electronically controlled shock absorbers on the test bench MS1000+. The kit comes with 5 diagnostic cables, allowing you to connect and diagnose the full range of controllable shock absorbers.



Technical characteristics	
Dimensions (L×W×H), mm	238×160×70
Weight, kg	1,0
Supply voltage, VDC	12
Power connector type	5.5 x 2.5 mm
Power consumption, no more than, W	60
Checking shock absorbers	
Supply voltage supplied to the solenoid valve, V	12
Number of simultaneously controlled solenoid valves	2
Regulation of opening rate of solenoid valves, %	From 10 to 95

Diagnostics of brake calipers

Test bench MS300



Test bench MS300 for diagnostics and repair of brake calipers is used to check their efficiency and sealing performance. The bench enables the testing of the electromechanical drive of the electric parking brakes.

Advantages:

- two-in-one: a mechanic's workplace and a diagnostic workbench;
- diagnostics of brake calipers of different types and configurations;
- parking brake performance test;
- long service life.

Technical characteristics

Dimensions (L×W×H), mm	1520×810×1480
Weight, kg	120
Supply voltage, V*	400
Supply type*	Three-phase
Power, kW	0,55
Power fluid	DOT4
Power fluid volume, l	4
Power pressure of test bench hydraulic system, bar	140 (limited by test bench settings)
Maximum generated pressure, bar	250
Supply voltage of electromechanical parking brake, V	12

* The test bench can be modified to fit any supply voltage

Particulate filter flushing

MS900

MS900 – system for the flushing of particulate filters of passenger cars, light commercial vehicles and buses. The system remove the particulate filter contaminations with the cleaning technology applied. MS900 enables the multiple usage of water. It reduces the flushing net costs. Besides, the module system makes the delivery and installation much easier.



The system consists of three modules:

- MS900A – bench for the diagnostics and drying of particulate filters
- MS900B – bench for the flushing of particulate filters
- MS900C – chamber for the cleaning and drying of particulate filters

Operation cycle includes:

- Filter diagnostics (5 minutes) – prior to the flushing, MS900A
- Cleaning (30-45 minutes), MS900B
- Drying and cooling of filter (20-30 minutes), MS900A
- Diagnostics of filter after drying and flushing, result output (5 minutes), MS900A

Both benches MS900A and MS900B are independent, and they can operate separately from each other. The simultaneous usage of both benches may increase the capacity almost twice – due to the equal cleaning and drying time of the benches.

Technical characteristics				
	MS900 assembly	MS900A	MS900B	MS900C
Dimensions (L×W×H), mm	2600× 840× 2050	600× 670× 1610	2020× 670× 1510	1550× 840× 2050
Weight, kg	400	150	150	100
Inner length of cleaning chamber, mm	1500	–	–	1500
Inner depth of cleaning chamber, mm	800	–	–	800
Inner height of cleaning chamber, mm	1000	–	–	1000
Power, kW	20,6	10	10,5	0,1
Supply voltage, V	400	400	400	230
Supply type	three-phase	three-phase	three-phase	Single-phase
Air pump capacity, m3/h	450	450	–	–
Drying air temperature, °C	up to 120	up to 120	–	–
Water tank capacity, L	200	–	200	–
Water pump capacity, L/min.	270	–	270	–
Flushing water temperature, °C	up to 60	–	up to 60	–
Air supply system pressure, atm.	4 - 12	–	4 - 12	–
Pressure drain	+	–	+	–
Water supply	+	–	+	–

Diagnostics of electric vehicles

LOKI - Diagnostic scanner for Tesla



LOKI diagnostic scanner was created that any service station can perform the full range of services for diagnosis, maintenance, and repair of the entire model range of Tesla.

LOKI scanner opportunities:

Diagnostics

- Activation Factory / Developer (Tegra to iOS 2022.8) / Service Mode. (Intel to firmware 2021).
- Review all vehicle errors.
- Self-tests/ Diagnostic tasks of vehicle blocks.
- View CAN bus data in real-time.
- Crash cleaning on Delphi SDM (Model S 2012-2018, MX until 2019), Bosh RCM V1 M.

Maintenance

- Update the firmware.
- Installation of navigation.
- Password deactivation (Valet/Glovebox PIN/PIN To Drive)
- ПModel S key pairing.

Repair

- Edit unprotected Model 3/Y configuration settings (without soldering to Model 3 firmware until 2021.4.12).
- Edit all configuration options for Model S/X.
- Calibration and adaptation of vehicle systems.
- Reflashing control units after their replacement.
- Radar calibration for AP2.53.0.



Advantages of the LOKI scanner

- Work with all Tesla models.
- Work with all firmware of vehicles.
- Factory/Diagnostic/Developer Mode activation and other modes depending on the model and firmware.
- All functions of Tesla Toolbox 3 are available.
- Change the configuration of the vehicle, including the protected one (now only for Model 3).
- All necessary cables are available to connect to the vehicle.
- Free software update.
- Constantly expanding functionality.

Technical characteristics	
Dimensions (L x W x H), mm	238x160x70
Weight (scanner Loki), kg	0.42
Weight (set), kg	1.3
Supply voltage, V	from 5 to 12 V (vehicle on-board grid) or power supply unit with function «Quick Charge 2.0» (Input 100-240V 50/60 Hz; Output 9V-2A)
Power consumption, no more than, kW	60
Tesla diagnostic models	Model S/X/3/Y with any firmware
Laptop (computer) communication interface	Wi-Fi
Connecting ports	2 x USB 2.0, 1 x RJ45 (Ethernet)
Software update	Yes (Free of charge)

Equipment set:

- Scanner LOKI.
- LC001-CS – Cable CAN for Tesla Model S.
- LC002-LS – Cable LAN for Tesla Model S/X.
- LC003-CX – Cable CAN for Tesla Model SR, Model X.
- LC004-L3 – Cable LAN for Tesla Model 3.
- LC006-C3 – Cable for Tesla Model 3, Model Y.



* Complete set could be different as on the photo. Please specify set content with the manufacturer

CABLE TO LOKI



LC001-CS

Cable CAN for connection of Tesla Model S Pre-facelift (<2015)



LC002-LS

Cable LAN for Tesla Model S Pre-facelift (<2015), Tesla Model S Facelift, Model X



LC003-CX

Cable CAN for connection of Tesla Model S Facelift, Model X



LC004-L3

Cable LAN for connection of Tesla Model 3



LC005-SEC

The cable is connected to Media Control Unit (MCU) of Tesla Model 3/Y for the modification of the configuration hidden parameters by the LOKI plug-in Secured Configuration.

Being connected to VCSEC unit (under development), the cable can be also used for the connection of the keys to TESLA MODEL 3.



LC006-C3

This cable connects Loki with CAN bus of Tesla Model 3, Model Y with the usage of cable LC003-CX.



LC007-LY

The cable enables the connection of Loki to Media Control Unit (MCU) of Tesla Model Y and Model 3 (made in the second half of 2020).

Tesla Model 3/Y

Secured Configuration Plugin



It's the additional software that expands the capabilities of LOKI and enables the modification of Tesla Model 3/Y. configuration hidden parameters.

Secured Configuration

Secured Configuration plug-in allows to modify the following parameters:

- VIN-number of a car;
- MCU serial number that is required for its modification;
- country configuration that's required for the modification of algorithms of headlights blinking and radio net;
- Autopilot Software replacement;
- Supercharger activation;
- Performance or Acceleration Boost activation;
- Premium Connectivity activation;
- Lifting of program limits of battery capacities (Canadian cars with battery limits) release;
- Audiosystem additional device activation.



Plugin for Key Fob Pairing for Model X Feature

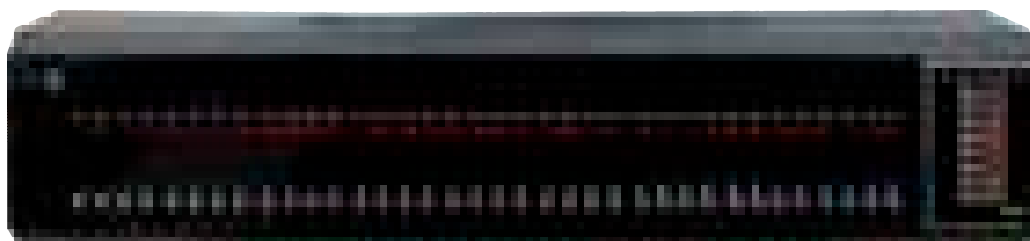


Additional software that extends the functionality of the Loki device and allows you to pair Key Fob to Tesla Model X, even if all the keys are lost.

Plugin supports to pair key to any version of the key security module (currently versions SE v3 and SE v4) to Tesla Model X with Tegra and Intel processors.



Tester MS800



The MS800 tester is designed to diagnose high-voltage nickel-metal hydride (Ni-Mh) and lithium-ion (Li-ion) batteries in hybrid and electric vehicles.

Capabilities of the tester MS800:

- Diagnoses high voltage battery modules, determining their capacity.
- Charges sequentially connected cells of batteries that are unbalanced over time.
- Prepares the battery for installation on the car by balancing all modules by voltage.
- Prepares modules for storage, charging them to a certain level.

Advantages:

- The tester provides simultaneous check (balancing) up to 36 modules.
- The diagnostics process (balancing) of battery modules takes place in automatic mode.
- Monitors the temperature of each module and stops charging any module whose temperature exceeds the allowable value.
- Full protection of battery and tester in case of incorrect connection (incorrect polarity).
- Module protection against recharge/reboot.
- The diagnostic result is stored in the tester's memory in the form of a battery discharge / charge graph, then it can be copied to a USB flash memory.
- Free software update.

Technical characteristics		
Dimensions (L x W x H), mm	1430x300x220	
Weight, kg	53	
Supply voltage, V	230	
Supply mains type	Single-phase	
Demanded power (max.), kW	3.5	
Operation	touch control	
Battery Diagnostics		
Max. channel voltage, V	for Ni-Mh	20
	for Li-Ion	4.2
Charge rate, A	from 0.1 up to 4.5	
Discharge rate, A	from 0.1 up to 6 (max. 50W per channel))	
Measured parameters	- capacity - voltage - current - temperature	
Measurement accuracy:		
voltage	0.02 %	
current	1 %	
Additional features		
Connection of USB flash drive	1 x USB 2.0	
Software update	Available	

Training courses

MSG Equipment Training Center offers online courses for the diagnosis, maintenance, and repair of vehicle units and systems.

Online courses from MSG Equipment Training Center is an opportunity to quickly and qualitatively learn the popular area in the automotive industry:

- starters and alternators
- EPS units
- air conditioning system
- Tesla electric vehicles

Training courses are held **online** on the ZOOM and UDEMY platforms.



Our courses are not a dry presentation of theoretical material, here we harmoniously combine theory with a detailed demonstration of each operation. For this, we use several video cameras and can confidently say that no detail will escape your attention.



We will provide various helpful diagnostic and repair documentation and video recordings of the course upon completion of the training. This will allow you to review individual course topics multiple times for a thorough understanding of the subject. As well as all those who have completed training get access to the Technical Support channel, where our specialists promptly answer questions arising in the course of further work.

MSG Equipment Training Center is a guarantee of the professionalism of your specialists!

Contacts



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