



DIAGNOSTICS & REPAIR OF STARTERS AND ALTERNATORS



Test benches



Testers



Special tools



Training

WE - DEVELOPER AND MANUFACTURER OF DIAGNOSTIC EQUIPMENT AND SPECIAL TOOLS

» **OWN RESEARCH AND DEVELOPMENT DEPARTMENT ~R&D**

We constantly maintain the relevance of our equipment through regular updating of software and databases.

» **OWN TRAINING CENTER FOR DIAGNOSTICS AND REPAIR OF UNITS**

Author training programs based on the experience of repair and restoration of units in the partner network of the Service Station, our development of repair technologies, as well as the knowledge accumulated by our specialists from all over the world.

» **TECHNICAL SUPPORT**

We provide unlimited technical support on questions of equipment and diagnostics of units.

» **PARTNER NETWORK OF SERVICE STATION**

We develop the equipment taking into account the recommendations, comments, and wishes of practicing masters.



MSG Equipment production




We manufacture the diagnostic equipment since **2005**

THE REASONS WHY THE CUSTOMERS TRUST MSG EQUIPMENT

- » Regular software update and new protocol type introduction
- » Unlimited technical support on the equipment and the diagnostics of the units
- » Delivery with any transport company
- » Always-on-stock products





WHAT DIFFICULTIES CAR SERVICE STATIONS COMMONLY FACE?

01 —

Inability to test a unit dismounted from a car

02 —

Express-diagnostics of alternator without its removal from a car can be a challenge

03 —

Diagnostics issues when testing alternators of new protocol types

04 —

Inability to test the rebuilt units without mounting them back into a car

05 —

Inability to provide the warranty for the rebuilt units

06 —

Necessity to pass the units for repair to the third-party contractors



TEST BENCHES

Diagnostics and evaluation of technical parameters of starters and alternators



TESTERS

Express-diagnostics of starters and alternators without their removal from cars



SPECIAL TOOLS

Alternator repair - easy and delicate



TRAINING

Courses with theory and practice at our own car service stations. Online

TEST BENCHES FOR DIAGNOSTICS OF STARTERS AND ALTERNATORS



MS002 COM



MS004 COM



MS005



MS006



MS008



SPECIFICATIONS		MS002 COM	MS004 COM	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/(48*)	12/24	12/24/(48*)
Diagnostics	alternator	✓	✓	✓	✓	✓
	alternator voltage regulator	✓	✓			✓
	starter	✓	✓	✓		✓
Maximum alternator current load	12V	200	100	300	50	150
	24V	100	50	150	25	75
	48V*			100*		50*
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 I-ELOOP*	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 I-ELOOP*
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

* In the development stage

Car service stations - for car maintenance

Service centers rebuilding the starters and alternators - for stock

Shops that sell spare parts for repair and rebuilding of starters and alternators

Shops that sell diagnostics equipment

Special-purpose centers that research starters and alternators, as well as the centers training in repair and rebuilding of starters and alternators

Higher and vocational schools where the repair and rebuilding of starters and alternators are studied

01

02

03

04

05

06

SECTORS WHERE TEST BENCHES ARE USED



TESTERS FOR STARTER AND ALTERNATOR DIAGNOSTICS



MS012 COM



MS013 COM



MS014



MS015



MS016



MS021



MS031

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

SPECIFICATIONS		MS014	MS021
Supply voltage, V		230 AC	230 AC
Voltage of diagnosed diode bridges, 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	✓	

SECTORS WHERE THE TESTERS ARE USED



01

Car service stations - for car maintenance

02

Shops that sell diagnostics equipment

03

Special-purpose centers that research starters and alternators, as well as the centers training in repair and rebuilding of starters and alternators

04

Higher and vocational schools where the repair and rebuilding of starters and alternators are studied

SPECIAL TOOLS FOR REPAIR OF STARTERS AND ALTERNATORS

They are used for the replacement of the alternator rotor rear bearings and eliminate the damage of collector rings.

Applicable for the bearings: 6203, 6202, 6003, 6201, 141071, 140419 and their analogues that are used in 90% of the alternators from the global manufacturers, such as Bosch, Valeo, Magneti Marelli, Mitsubishi, Delco Remy etc.



MS0204



WHAT ASPECTS SHOULD BE TAKEN INTO ACCOUNT TO MAKE THE 'STARTER AND ALTERNATOR REPAIR' AREA EFFICIENT AND PROFITABLE?

01

Personnel – it's important that the servicemen completed the training in the diagnostics and maintenance of alternators

02

Components - their all-time availability is crucial for the unit repair

Rebuilding and repair of starters and alternators - Minimal estimated income per day

Service provided	Cost of 1 service (\$)	Service gross margin (\$)	Service quantity per day	Income per day	Gross margin per day
Repair (simple/medium)	15	10	3	45	30
Repair (complicated)	35	25	3	105	75
Total amount			6	150\$	105\$

Estimated proceeds \$ 3 900

TRAINING IN DIAGNOSTICS AND REPAIR OF STARTERS AND ALTERNATORS

Course duration – 3 days

Course goal: providing the insight into the aspects of the repair of starters and alternators of any car make, including the study of the principles of car repair shop arrangement, labour rate setting, usage of the necessary supplies and equipment

What you get:

- bundle of theoretical knowledge as well as a mass of practical knowledge;
- opportunity to get new partners;
- training at any time that is convenient for you;
- organizational support;
- detailed technical consulting.



MSG Equipment training center



TRAINING IN DIAGNOSTICS AND REPAIR OF STARTERS AND ALTERNATORS

Theory

- application, configuration and performance principles of alternators, starters and voltage regulators;
- electric circuit schematic of alternators and starters;
- alternator specifications;
- aspects of rectifier testing;
- malfunction reasons and repair methods;
- performance testing of voltage regulators with the terminals:
- COM (Lin, BSS), RLO, SIG, P-D, C, L/D, RVC.

Practice

- diagnostics of starter/alternator at the test bench MS004 COM;
- test and replacement of alternator bearings, dismounting of the drive pulley;
- diagnostics of the rectifier by the tester;
- replacement of starter contact brushes;
- testing of the alternator voltage regulator performance, in a car and separately from alternator.

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