



**OPERATION & INSTRUCTION MANUAL
MANUAL SURFACE GRINDING MACHINE**

SPECTRAL 250

EC Declaration of Conformity

Manufacturer : Metkon Instruments Inc.
Address : Demirtas Dumlupinar Organize Sanayi Bolgesi
Ali Osman Sonmez Cd. No: 14 Bursa / TURKEY
Model No : SPECTRAL 250

Herewith declares that;
Tabletop Surface Grinder

- is in conformity with the provisions of the Machinery Directive **(directive 2006/42/EEC)**, as amended, and with national implementing legislation;
- is in conformity with the provisions of the Low Voltage Directive **(directive 2014/35/EU)**, as amended, and with national implementing legislation;
- is in conformity with the provisions of the EMC Directive **(directive 2014/30/EU)**, as amended, and with national implementing legislation;

And furthermore declares that

- the following (parts/clauses of) standards have been applied

EN ISO 12100:2010, TS EN 60204-1, TS EN IEC 61000-6-2, TS EN 61000-6-4

Authorized Person: ERCIN SENAY
Position: Manager of Research and Development Department
Year: 2019
Bursa / Turkey



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DESCRIPTION

Design

Optical emission spectrometry (OES) using arc and spark excitation is the preferred method to determine the chemical composition of metallic samples. This process is widely used in the metal making industries, including primary producers, foundries, die casters and manufacturing. Due to its rapid analysis time and accuracy, Arc/Spark OES systems are most effective in controlling the processing of alloys. This technique can be used for many aspects of the production cycle including in-coming inspection of materials, metal processing, quality control of semi-finished and finished goods and many other applications where a chemical composition of the metallic material is required.

X-Ray fluorescence is one of the most versatile methods to determine elements in a sample. The material is exposed to x-rays that cause each element to emit its own unique fluorescent x-ray. The subsequent analysis of the results is based on comparisons to standard samples with given chemical composition.

Sample preparation of metals and materials have become more and more important because of the rapid development and improvement of both software as well as OES and XRF-devices during the past few years that shifts the detection limit for trace analyses. It is crucial to have the sample properly prepared.

The sample needs to be both representative, homogeneous and with an even surface in order to eliminate factors that can influence the results.

For the preparation of solid metal samples, Metkon offers manual and automatic sample preparation machines – from the small tabletop disc surface grinder to automatic grinding machine. With Metkon Sample Preparation Machines, you feel yourself ready for the analysis.

SPECTRAL 250 is a table-top portable surface grinder for the preparation of steel samples for spectroscopy. Its compact design with vibration free operation makes it a practice instrument to work with. Low noise and dust generation levels as well as standard outlet for dust exhauster are additional advantages.

ø250 mm grinding disc is dynamically balanced for smooth running. Grinding paper is sucked to the grinding disc which does not require any glue. Papers with 60 grit can be used to obtain the desired surface quality. SPECTRAL 250 is equipped with electronic brake system bringing the motor to a quick full stop just in seconds after it has been stopped. A safety switch guarantees automatic switch off when the lid is opened.



Technical Data

Model Order No	SPECTRAL 250 80 06
Number of Stations	1
Wheel Diameter, [mm]	250
Wheel Speed, rpm	2800
Motor Power, kW	1,1
Dust Exhauster	Yes
Paper Adjustment	Vacuum
Dimensions, WxDxH, [cm]	35 x 45 x 33
Weight, [kgs], with cabinet	40 kgs
Mains	230 V, 1-phase, 50 Hz.

Warranty

The SPECTRAL 250 is guaranteed against defective material or workmanship defects for a period of 12 months from the date of receipt by the customer or latest 18 months after the shipping date. The warranty is not valid if inspection shows evidence of misuse or unauthorized repair. Warranty covers only replacement of defective materials. If this unit need to be returned to our factory for service, please contact your distributor for authorization and include the following details: Serial Number of the unit, Invoice number and date. Transport costs belong to the customer.



NOTE

Disabling Safety switch on the SPECTRAL 250 will void warranty.



NOTE

Warranty does not cover the safety switch. Do not apply excessive force to open the front door when safety switch is locked. Otherwise, it can be broken in a short time.



ATTENTION

The equipment is designed to be use with METKON accessories and consumables. In case of misuse of equipment, improper installation, alteration, use of different source parts, improper repair, METKON will accept NO responsibility for any damages to the operator or the equipment. Disassembling of any part should always be performed by a qualified technician.

Safety Precautions

Read the below instructions carefully before use.

- Place the machine on a sturdy and safe table.
- The equipment must be installed in compliance with local safety regulations.
- Only use approved METKON accessories and consumables to achieve max. safety and lifetime.
- Follow the instructions and safety regulations when lifting and carrying the equipment.
- While grinding, be careful not to touch the grinding disc.
- Do not try to collect a specimen from the working area while the disc is turning.
- Disconnect the electrical connection before servicing the equipment.
- The equipment emits normal noise. However, during operation, the noise level may become higher. It is recommended to wear ear protectors.
- It is recommended to wear steel toe shoes during transportation.
- Follow the periodically maintenance.



NOTE

METKON Instruments Inc. can make any changes without notice on the equipment, accessories, consumables and miscellaneous products. Consequently; visual or written information on the instruction manuals, technical materials, catalogues, website, product videos and other marketing materials may show inconsistencies and may be different from the product.

INSTALLATION & SET UP

Unpacking & Checking Contents of Package

Carefully unpack and check contents of the package. If any components are missing or damaged, save the packing list and materials and advise your distributor and the carrier of the discrepancy.

- Hose Clamp, $\varnothing 40$ mm, 2 pieces
- Hex Key, 10 mm, 1 piece
- Brush, 1 piece



WARNING

SPECTRAL 250 weights approximately weighs 40 kg and be sure that there are enough people [at least 2] to safely lift the unit from the shipping carton. It is recommended to wear safety shoes during transportation.



ATTENTION

SPECTRAL 250 is bolted to a wood base for protection during shipping. Remove the bolt securing the unit to the wood base.

- SPECTRAL 250 is only available as bench top.
- SPECTRAL 250 should be placed on a sturdy and safe platform. Please be sure that the platform is large enough and can stand its weight.
- In order to work with equipment comfortably, it is recommended to leave at least 30 cm space from all side of the equipment.
- You can see the dimensions and weight of SPECTRAL 250 as below:

Dimensions	W	D	H
	35 cm	45 cm	33 cm
Weight	Approx. 40 kgs		

- Please also be sure that there is enough space for dust container which supplied with the equipment.



Step by Step Unpacking

If Sent in a Carton Box (Equipment without Cabinet)

- Carefully remove the outer stretch wrap, cut the strips and remove the cover.



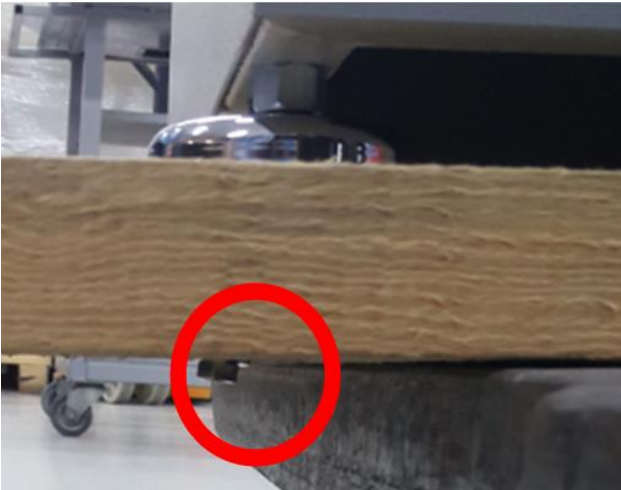
- Open the box and remove filling materials inside the box.



- Remove the box.



- Equipment is fixed on the wooden base with bolts. Lift the equipment from the wooden base by using a lifting equipment and then carefully remove these bolts.



- Carefully remove the protective bubble wrap. Be careful not to damage equipment while using a knife. Remove the protective foam on the touch screen.



Installation and Set-Up

- SPECTRAL 250 unit is shipped as already assembled.
- Place the unit on a sturdy table with convenient access to power source.
- Make the connection of dust hose between the instrument and dust tank by fixing the clips.
- Place the grinding disc and tighten the fixing bolt by 18 Wrench.
- Then close the top cover.
- Insert the plug and it is ready for operation.



CAUTION

Follow approved procedures and take all necessary preventive safety measures when lifting and installing this equipment. Improper lifting can result equipment damage.

Locate the SPECTRAL 250 with convenient access to a 1-phase power source. Be sure to allow a minimum space of 30 cm at the rear of the machine.

Electrical Installation

Before making electrical connections, check that the voltage and frequency stated on the specification plate correspond to the local voltage and frequency. Check that the values for the voltage, is compatible with the intended electrical supply before installation.



ATTENTION

Connect the unit to the grounded mains voltage. The SPECTRAL 250 requires a 1-phase electrical supply and Earth/Ground.



WARNING

Electrical Shock Hazard. A qualified electrical technician should perform all hard wiring and electrical maintenance.

- Disconnect the power supply before making any electrical adjustments.
- Make sure that the supply voltage and frequency is correct. Check the values from the machine identification plate located at the rear of the machine

Voltage / Frequency	Operational Power Range	Fuse Rating
115 V, 50/60 Hz. 1 ph.	110 - 120 V	6 A [C Type]
230 V, 50/60 Hz. 1 ph.	220 - 240 V	6 A [C Type]



Identification Plate

- Connect the equipment to the grounded mains voltage. Type E or Type F Power cord is supplied with the equipment.
- If you do not have a suitable power socket, in this case you should supply a suitable power cord.
- Length of power cable is 1.8 meters.



Power Cable

Noise Level



Approximately 70 dB is measured at idle running at a distance of 1 meter from the machine.

CONTROL PANEL



SPECTRAL 250 Control Panel

Control Button Functions

	Start Activates the grinding motor.
	Stop

OPERATION

The main switch is at right side of the instrument. START, STOP and EMERGENCY STOP buttons are on front panel. START button starts the rotation and the disc will go on rotating with 2800 rpm fix speed. STOP button stops the rotation. You can use the EMERGENCY STOP to stop the instrument immediately for safety. The thermal overload protector and fuses are at the back of the instruments.

If the motor is overloaded, the overload switch will pop out and the power to the motor will be cut. After a short period of time, the overload switch can be reset and motor started

- It is recommended to use Sample holders to handle your specimen due to potential heat increase during grinding. [Refer to Accessories Section] Fig.3.
- Press START.
- Grind your sample until you reach the desired flat surface.
- And press STOP



Magnetic Sample Holder



ATTENTION

During the operation DO NOT turn off the equipment directly from the main switch. First press STOP button and accordingly turn of the machine from main switch.

In case of emergency, press emergency stop button. The brake system will be activated for quick disc stop.

SERVICE AND MAINTENANCE

Maintenance

Clean the instrument by a wet cloth so that there are no particles, residual material etc.

After working process, remove the grinding paper and clean the grinding bowl completely. Especially clean the limit switch's around removing all the residual materials. Check the dust transport hose and clean the dust tank completely.



Troubleshooting

ERROR	DESCRIPTION	ACTION
Power lamp is off	The main switch is OFF	Turn on the main switch from the back of the equipment and check the mains cable.
	Fuse blown	Check the fuses located at the back of the equipment.
The machine does not start	The main switch is OFF	Turn on the main switch from the back of the equipment and check the mains cable.
	Fuse blown	Check the fuses located at the back of the equipment.

ACCESSORIES AND CONSUMABLES

Accessories

Order No	Accessories for SPECTRAL 250
GR 1804	Sample Holder for round specimens, Magnetic type. chuck
GR 1805	Sample Holder for round specimens, Mechanical type.

Consumables

Order No	Grinding Tips for SPECTRAL 250
37-040-060-22	Ø250 Disc, P 60 Grit, Corundum, general use, soft medium-hard materials
36-040-060-22	Ø250 Disc, P 60 Grit, Zirconium oxide, long life time, hard materials

TECHNICAL DOCUMENTATION

Customer Service

Our factory-trained assembly personals are at your disposal for customer service.
Please contact the following address:

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