

GRINDER ACOUSTIC CONTROLLER

Operator's Manual

Manual code No. D2200004UA



CE

This product is in conformity with the **EMC** requirements as for the directives:

2004/108/CE

This product is intended to operate in industrial locations; it is not intended for connections to a public mains network but is intended to be connected to a power network supplied from a high or medium voltage transformer.

This product is in conformity with the "Electrical Safety" requirements as for the directive

73/23/CEE

Electrical safety The equipment has been manufactured in conformity with **EN 61010-1** specifications.

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MARPOSS S.p.A. does not take on the obligation of notifying possible further changes to the product.

The descriptions reported in this book do not authorize any tampering by non-authorized personnel.

The warranty on the equipments will decay if such tamperings are found.

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About the Directive 2002/95/EC "RoHS" regulating the presence of certain hazardous substances in electrical and electronic equipment.

The Member States of the European Community are in the process of completing the national reception and enforcement of the Directive 2002/95/EC regulating the presence of certain hazardous substances in electrical and electronic equipment.

The Directive explicitly excludes from its scope of application finished products such as those manufactured and sold by Marposs. It is still indeed a widely debated matter whether the complete removal of the regulated substances could affect the reliability of the product.

Marposs shares in the social responsibility of continuously supporting every form of innovation that reduces or minimizes any risk of adverse impact on human health and the environment.

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Marposs will put the greatest consideration in any initiative that our Customers undertake with the purpose of reducing the environmental risk. Our commitment is the support of their effort developing products that be of the highest quality and reliability.



Preface

The information contained in this manual are aimed to the following type of operator:

• **Machine operator**, whose task is to check the correct operation of the system by means of signallings toward the machine logic. If necessary, he can olso make interventions on the system is order to adapt it to the programming and to optimize the times of interventions on the system and therefore its production.

The instructions refer to all possible configurations of the MARPOSS E20N, so only the parts relevant to specific application must be considered.



Warning

All servicing or special maintenance operations must be carried out by authorized personnel

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1. E20N CONFIGURATION - FRONT PANEL

1.1 E20N Configuration

E20N with one GAP channel

The E20N is connected to one microphone for GAP control.

• E20N with one CRASH channel

The E20N is connected to one microphone for CRASH control.

• E20N with two GAP channels in switching

The E20N is connected to one or two microphones for GAP control with two independent and switching channels.

In case of applications with two microphones, each channel is connected to a given microphone.

Only one channel at a time is active.

When the E20N is switched on, channel 1 is automatically inserted.

• E20N with one GAP channel + one CRASH channel

The E20N is connected to one or two microphones for gap and crash control:

- Channel 1 for GAP control
- Channel 2 for CRASH control

In case of applications with two microphones, each channel is connected to a given microphone.

Both channels are active at the same time.



1.2 Front Panel



1 GAP channel





Figure 1: E20N Front Panel

Elements on the front panel (reference "Figure 1: E20N Front Panel" on page 8).

- A LED Bargraph scale (20 segments) for the visualization of the sound detected by the microphone. The color of the graduation of the scale changes from the value of 6,5, triggering point of the command.
- A1 LED to display that channel 1 has been selected.
- A2 LED to display that channel 2 has been selected.
- **B** Programming section of GAP control (see chapter 2 "GAP control programming" on page 10).
- **C** Progamming section of CRASH control (see chapter 3 "CRASH control programming" on page 13).



Key for enabling the AGC function (automatic gain control of the sensitivity) during the programming of the GAP control.



Key for the manual selection of channel 1 or channel 2.

2. GAP CONTROL PROGRAMMING

The GAP cycle can be controlled with the definition of an appropriate ultrasonic limit value; this limit must be empirically defined according to the characteristics of the application.

At first the grinding wheel must be driven to rest position, normally spinning and with the coolant off . The microphone is already mounted and connected to the E20N unit. The noise displayed by the E20N LED bargraph in this particular condition is the **background noise** which is a basic characteristic of the application.

The value of the displayed background noise can be:

- fairly stable and repetitive
- variable and oscillating.

2.1 Stable and repetitive background noise

Press the key $\frac{1/2}{2}$, if present, and select the channel to program. On the programming area of the selected channel proceed as follows:

1. Bring the selector 1 to the right position (the LED 3 lights up) to select the fixed gain control procedure $(\stackrel{\frown}{\Box})$.



- Rotate the potentiometer 4 counterclockwise to "zero" 2.
- Bring the wheel almost in contact with the workpiece, reference pin, etc as in 3 normal working conditions (wheel spinning at work speed, workpiece rotating, coolant on, etc)
- Adjust the sensitivity on potentiometer 4 to amplify the displayed noise slightly 4. below the value of 6.5 on the graduated bargraph scale and just before the LED 5 switches off.
- To verify the programming perform a few cycles and verify that the gap 5. command is triggered at the right time.



If the type of wheel, workpiece, etc. is changed it may be necessary to reprogram the system.

In case of dressing cycle control, intended as continuity check on the grinding wheel during the traverse of the dresser, it is necessary to make sure that the command is triggered when there is a contact between dresser and wheel and it is released when there is a discontinuity (hole or similar) on the wheel.

The dressing can be considered over when, during a complete traverse, the command is always triggered.

2.2 Variable and oscillating background noise

Press key $\frac{1/2}{2}$, if present, and select the channel to program.

On the programming area of the selected channel proceed as follows:

1. Bring the selector 1 to the left position (the LED 2 lights up) to select the **automatic (variable) gain control**





- 2. Rotate the potentiometer 4 counterclockwise to "zero".
- **3.** Bring the wheel almost in contact with the workpiece, reference pin, etc as in normal working conditions (wheel spinning at work speed, workpiece rotating, coolant on, etc).



- 4. Keeping the key pressed adjust the sensitivity on potentiometer 4 to amplify the displayed noise slightly below the value of 6,5 on the graduated bargraph scale and just before the LED 5 switches off.
- **5.** To verify the programming perform a few cycles and verify that the gap command is triggered at the right time.

Warning

The background noise acquisition time is 250 ms from the start cycle so it is mandatory that the grinding wheel reaches the workpiece, reference pin, dresser, etc. in a greater time.



Note

If the type of wheel, workpiece, etc. is changed it may be necessary to reprogram the system.

In case of dressing cycle control intended as continuity check on the grinding wheel during the traverse of the dresser it is necessary to make sure that the command is triggered when there is a contact between dresser and wheel and it is released when there is a discontinuity (hole or similar) on the wheel.

The dressing can be considered over when, during a complete traverse, the command is always triggered.

3. CRASH CONTROL PROGRAMMING

The CRASH control must be intended as an ALARM signal that is given when the grinding wheel collides against the workpiece or other devices and/or parts of the grinder due to a malfunctioning or to a bad programming.

3.1 Programming procedure

Press the key 1/2

 $\begin{pmatrix} 1/2 \end{pmatrix}$, if present, to select the CRASH channel.

 Set the sensitivity on the potentiometer 1 approximately to the center of its range (40-60) or to the same value relative to the GAP control (in case of dual channel units)



2. Simulate a few cycles and all the possible machine conditions (grinding, loading, unloading, dressing, etc) to identify the maximum noise condition and adjust the sensitivity to have the displayed value just below 6.5 on the graduated bargraph display of the E20N (triggering point of the command).

In case the above procedure leads to the definition of a CRASH limit value which a much lower sensitivity than in the GAP programming, to have a reliable crash control it may be necessary:

- to program the sensitivity on potentiometer 1 only 10-20% lower than for gap control.
- disable the crash control in the normal machine conditions that exceed the crash value.



4. TROUBLESHOOTING AND MAINTENANCE

4.1 Introduction

With **ordinary mainterance** we mean all the operations which have to be carried out periodically and whose execution does not require any specific capability and therefore they can be carried out by the users (operators, etc.).

With **extraordinary maintenance** we mean unexpected interventions due to mechanical or electrical failures requiring an exact technical competence or particular capabilities and therefore they should be carried out by qualified personnel only (maintenance personnel, etc.).

4.2 Alarm conditions

When at least one of the following alarm conditions occur, the GAP and/or CRASH control is supplied at the output:

- Alarm of cable continuity: it is checked whether the microphone connection is not interrupted (cut of the cable for the connection or disconnection of the microphone)
- Alarm of microphone efficiency: it is checked both the microphone correct operation and the correct interfacing between fixed sensor and revolving sensor (microphone with contactless transmission)

OPERATIONS TO BE CARRIED OUT

Verify the integrity of the connection cable of the microphone and the correct connection; verify the correct interfacing between fixed sensor and revolving sensor of the microphone with contactless transmission (cleaning of faced transmission surfaces).

If the alarm condition remains, ask for the invention of maintenance personnel.

4.3 Ordinary maintenance

4.3.1 Cleaning of the electronic unit

To clean out the external side of the electronic unit and the front panel use a damp cloth.

Do not use solvents or abrasive products.

4.3.2 Cleaning of the contactless microphone

In case of microphone/s with contactless transmission (code 3424802000 + 3424802011), carry out the cleaning operations of the transmission faced surfaces periodically according to the use conditions (for example, with compressed air).

4.4 Extraordinary maintenance



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All special maintenance operations must be carried out by authorized personnel.

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