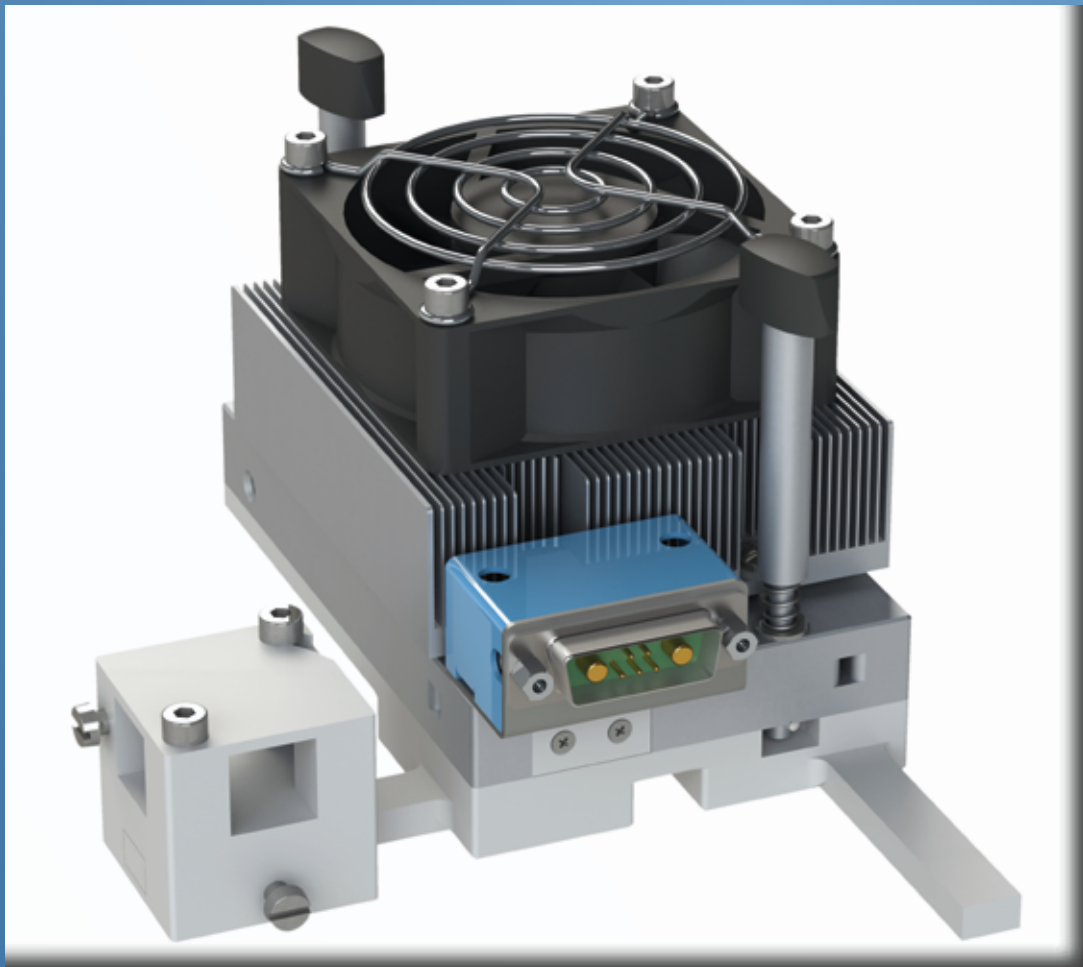


## **Column Oven PRSO-V2**

Users Manual

Revision 2018-04



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# 1 Important safety instructions

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Do not use this apparatus near water.
- Mains powered apparatus shall not be exposed to dripping or splashing and no objects filled with liquids shall be placed on the apparatus.
- Do not block the ventilation. Install in accordance with the manufacturer's instructions.
- This apparatus shall be connected to a mains socket outlet with a protective earthing connection.
- Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet. (for USA and Canada)
- Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- Use only with accessories specified by the manufacturer, or sold with the apparatus.
- Use only power cables rated at least for the maximum input current of the apparatus.
- If the apparatus is used in a manner not specified by the manufacturer the protection provided by the equipment may be impaired.

# 2 Operating conditions and conventional usage

- The oven is exclusively designed for the heating and tempering of separation columns in nano-ESI applications.
- The oven must be installed as described in this manual.
- The fan must be able to turn free and may not be blocked.
- The oven may only be used in clean and dry areas.
- Do not use any adhesive tape or other non-heat-resistant materials inside the oven
- During transport and storage temperature and humidity must be within the following range:  
Transport: Temperature: -20 to 60°C (-4 to 140°F), humidity: 5 to 90%  
Storage: Temperature: 10 to 40°C (50 to 104°F), humidity: 10 to 80%
- The oven may not be operated above 30°C / 86°F ambient temperature and above 80% humidity.
- If condensation water is formed after unpacking the oven, an acclimatization period of 2 hours must be adhered prior to installation.
- The oven must be kept away from easily inflammable and combustible liquids.
- If a liquid should penetrate the electrical part of the oven or regulator it is to be set immediately out of operation and must be checked by a specialist.
- The valid accident guarding regulations according to each country must be considered.
- A repair of the oven may be accomplished only by a specialist.

## 3 Scope of supply

### **PRSO-V2:**

This article contains all the parts needed to operate the oven, but it does not yet contain a source inlay. It consists of the following parts:

- 1 x Column oven (upper and lower part with 4 column pins)
- 1 x Regulator
- 1 x Oven control cable
- 1 x Data cable for RS232 and contact closure
- 1 x USB-to-serial adapter
- 1 x 24V power supply with wide range input and power cable (with EU, CH, UK or US plug)
- 1 x Crossholder with crossholder lid, 2 x screw M4x6 and 2 x nylon screw M4x16
- 1 x Countersunk head screw M5x20 with M5 locking nut for mounting the oven to the source
- 1 x Software CD
- 1 x This manual

### **PRSO-V2-ES71**

This is the base article PRSO-V2 with one inlay for the Nanospray Flex™ Ion Source ES071 from Thermo Scientific.

### **PRSO-V2-ES72**

This is the base article PRSO-V2 with one inlay for the Nanospray Flex™ Ion Source ES072 from Thermo Scientific.

### **PRSO-V2-IES71**

This is an additional inlay for the Nanospray Flex™ Ion Source ES071 from Thermo Scientific.

### **PRSO-V2-IES72**

This is an additional inlay for the Nanospray Flex™ Ion Source ES072 from Thermo Scientific.

### **PRSO-V2-KES71**

This is the mounting kit for the Nanospray Flex™ Ion Source ES071 from Thermo Scientific. It contains the following parts:

- 1 x Acrylic shield
- 1 x Modified upper camera holder
- 1 x Distance block for left camera holder
- 1 x Screw M2x10 slit head
- 2 x Screw M5x20 Allen head

### **PRSO-V2-KES72**

This is the mounting kit for the Nanospray Flex™ Ion Source ES072 from Thermo Scientific. It contains the following parts:

- 1 x Acrylic shield
- 1 x Upper camera holder
- 1 x Left camera holder
- 2 x Screw M2x10 slit head
- 1 x Oven holder
- 1 x Acrylic shield holder

## 4 Functional description

### 4.1 Oven

The oven itself consists of two main parts. The upper part contains the heating/cooling unit, the heat sink and the cooling fan. This part is connected to the oven controller. The bottom part holds the column and provides two inlets and one outlet for the columns. This part also provides the adapter to mount the oven to the source. Depending on the column length, the front or the lateral column inlet is used and therefore the front or the lateral arm can be used to mount the crossholder. If longer columns are used with the oven they are placed wound up inside the oven. The four column pins are used as guides and downholders for the column.

**Warning: During operation the surface of the oven can get very hot!**



Fig. 1: Upper and lower part with column pins

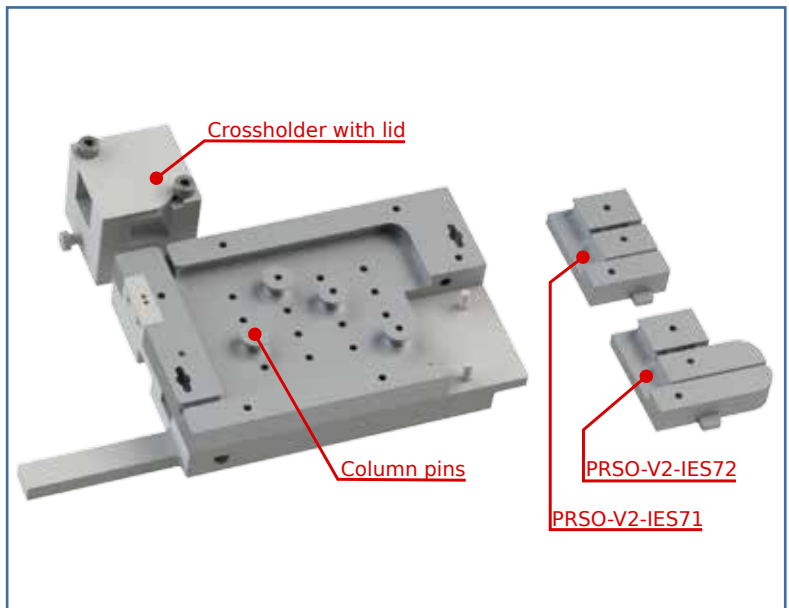


Fig. 2: Lower part with column pins and inlays

### 4.2 Controller

The controller contains the regulator and the power stage as well as the data interface for the connection to the the instrument PC. Further it can be switched between two temperatures with the provided contact closure interface. If no serial port is available, a USB-to-serial adapter is provided. The front view shows the connector for the connection between controller and oven. The rear view shows the connectors for the connection to the power supply, the PC and the contact closure interface.



Fig. 3: Controller - Rear view



Fig. 4: Controller - Front view

# 5 Installation

**Before installing the oven, please make sure your instrument is switched to standby or at least the high voltage has been switched off.**

## 5.1 Hardware installation

The column oven can be used with the original Proxeon nano-ESI source. For use with other sources adapter kits are available. Currently the oven can be used with the following sources:

- Thermo Scientific Nanospray Flex ES071
- Thermo Scientific Nanospray Flex ES072
- Bruker Captive Spray (see separate manual)

The oven can also be used with sources from other manufacturers. All that has to be done is a mechanical adaptation to the source. Please contact Sonation if you plan to use the oven with a different source.

### Installation of the ES071 conversion kit

First the original transparent safety hood has to be removed. After removing the two screws it can be dismantled. Also the two camera holders have to be dismantled by removing the corresponding screws. The upper camera holder has to be replaced by the one in the conversion kit. The distance block has to be mounted between the left camera holder and the source. As last step mount the provided safety hood. Please see Fig. 5 for reference.



Fig. 5: Thermo Scientific ES071 source with mounting kit (exploded view)

### Installation of the ES072 conversion kit

- Remove the the shield clamp, the upper and left camera holder, the acrylic shield, the XYZ-manipulator and the attached mounting bar by loosening the screws marked in Fig. 6.
- Slide the acrylic shield from the conversion kit onto the source. You might have to bend it carefully to make it slip over the flange.
- Install the oven holder onto the XYZ-manipulator.
- Reinstall the XYZ-manipulator onto the source by putting the shield holder between the manipulator and the manipulator holder using the provided M4x10 screws.
- Install the modified left and upper camera holders by reusing the screws removed before.

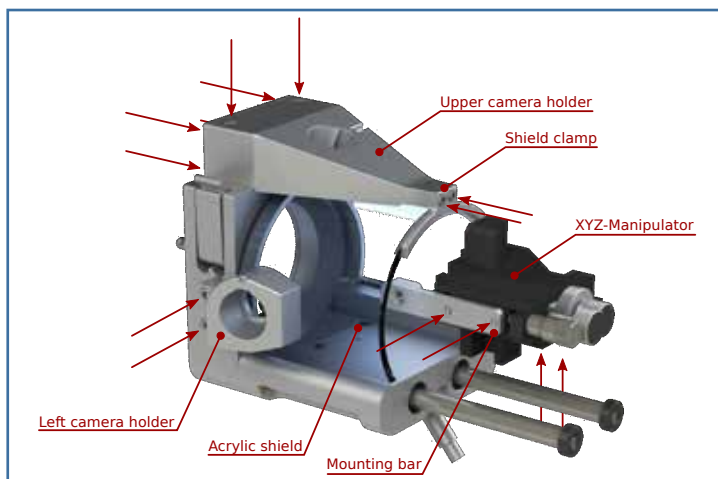


Fig. 6: Thermo Scientific ES072 source

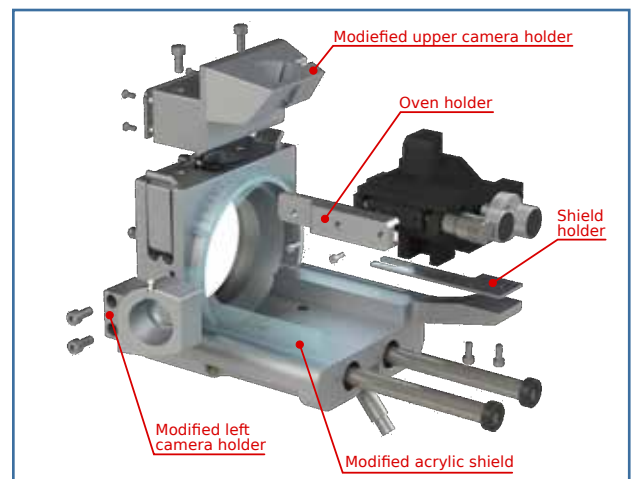


Fig. 7: Thermo Scientific ES072 source with conversion kit (exploded view)



### Mounting the oven to the source

With the Proxeon respectively the newer Thermo source the installation is most simple. Just mount the oven by screwing it to the arm of the XYZ-actuator with the provided screw and nut as shown on Fig. 8.



Fig. 8: Mounting the oven to the source

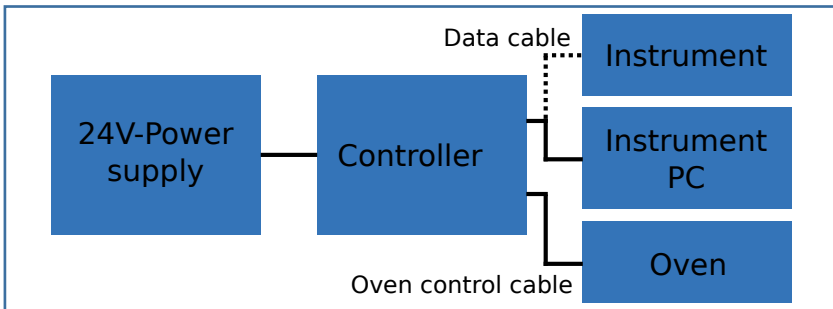


Fig. 9: PRSO-V2 - Wiring scheme

### Connecting the controller

- Connect the 24-Volt power supply to the power connector. The power supply will be connected to a wall outlet later.

**The wide side of the plug faces the top of the control module, do not force it in twisted.**

- Connect the controller with the provided RS232 cable to an available com-port on your instrument PC. If there is no com-port available, please use the provided USB-to-COM adapter.
- The remaining two open leads of this cable can be connected to the 'contact closure out' of your instrument to switch between two preset temperatures.
- Connect the cable between the controller and the oven.

### Column loading

Open the oven by turning the spring loaded handles at the front and back of the oven. The upper part can be removed now. Install your column either through the front- or left side gap, depending on the column length. Longer columns enter through the left side gap and

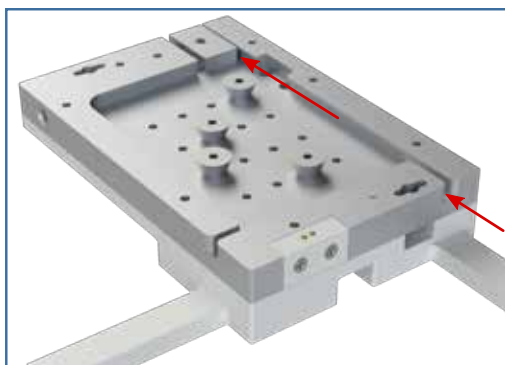


Fig. 14: Short colum loading

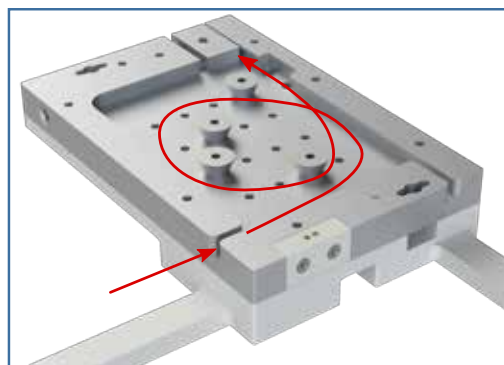


Fig. 15: Long column loading

can be wound around the column pins as needed. Install your T- or cross-piece into the cross holder. It can be attached to the left or front rail. The exit end of your column should point out 15 to 20mm. It is held in place by the spring loaded clamp.

**Do not use any adhesive tape or other temperature sensitive materials inside the oven.**

Now reinstall the upper part of the oven and plug in the power cord from the power supply to a wall outlet.

The oven is now ready to use.

## 5.2 Software Installation

To install the oven control software, execute setup.exe in the directory COControl from the provided software CD. Follow the steps of the setup wizard. The software needs an installed Microsoft .NET. If the software won't start and throws an error message showing .NET is missing, just install it from the provided CD.

## 6 Usage

### 6.1 Using COControl

After starting the software it comes up with the main view (Fig. 10).

On the “COM Ports” tab choose the port the controller is connected to and click „connect“. Now you should see the current temperature of the oven in the display in the upper right. If no temperature is displayed, please ensure that the upper part of the oven sits proper on the ower part. If the oven is open, no temperature will be displayed. In the main view you can also adjust the two temperature setpoints „Temp. normal“ and „Temp. high“. By clicking „Switch regulator on“ the regulator starts to heat or cool the oven to one of the setpoints, depending on the state of the contact closure input. To visualize the temperature profile, a graph window can be displayed. To show it up, chose „Options>Show Graph“ from the main menu. In the settings window under „Options>Settings“ the graph window can be started automatically on startup.

It is possible to unlock an extended temperature range. If your application requires higher or lower temperatures, please ask Sonation for an option code. But also keep in mind that a higher temperature range is stress for the Peltier-modules and can lead to a shorter lifetime.



Fig. 10: COControl - Main view



Fig. 11: COControl - COM Settings

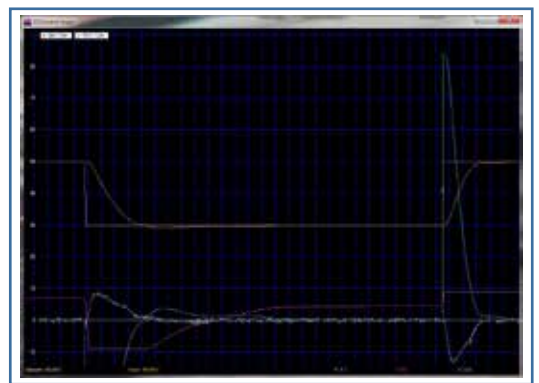


Fig. 12: COControl - Graph view

### 6.2 Setting up an instrument method

If the oven regulates the temperature to the lower or the higher setpoint, is up to the state of the contact closure input. Open means normal temperature, shortened means high temperature. This can be done automatically by an instrument method in Xcalibur. Please refer to your Xcalibur manual to get more information on how an instrument method can be created. Please keep in mind that the oven needs about 90 seconds to heat up from 30°C to 50°C and around 180 seconds to cool down back to 30°C.

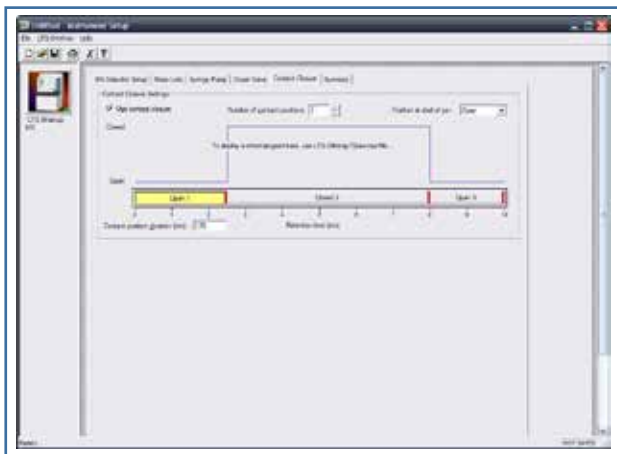


Fig. 13: Setting up an instrument method



## 7 Technical data

Ambient conditions Transport Storage Operation	Temperature: -20 to 60°C (-4 to 140°F) Temperature: 10 to 40°C (50 to 104°F) Temperature: 10 to 30°C (50 to 86°F)	Humidity: 5 to 90% Humidity: 10 to 80% Humidity: 10 to 80%
Dimensions Oven Regulator	127x115x180mm (WxHxD) 110x55x166mm (WxHxD)	
Oven weight	800g	
Temperature control range	Standard range: 15°C - 60°C (59°F - 140°F) Extended range: 15°C - 80°C (59°F - 176°F)	
Temperature control rate Heating Cooling	30°C to 50°C: < 90s 50°C to 30°C: < 180s	
Control accuracy	> ±0,1°C	
Usable column lengths	> 130mm	
Usable column diameter	< 2mm	
Power supply Primary Secondary	100-240V AC / 3A 24V / 9,16A	

## 8 FAQ - Frequently Asked Questions

**My PC does not have any COM-ports / no available COM-ports. Can I run the oven anyhow?**

Yes. Please use the provided USB to serial converter to install a virtual com-port.

**I've successfully connected to the oven but can still see no temperature. What is wrong?**

Please ensure that your oven is closed properly. When the oven is open or even not properly closed, the temperature sensor cannot be read.

**Is it possible to set up higher temperatures than 50°C or lower temperatures than 15°C?**

Yes, it is possible. Please ask Sonation for an option code, but remember that the lifetime of the Peltier-elements will be lowered because of the additional thermal stress.

**The temperature of the oven fluctuates / oscillates some degrees around the setpoint. What's wrong?**

The most common cause is that the upper part of the oven sits not properly on the lower part, so the thermal connection is bad. Please check if the column or other things are trapped between the upper and lower part.

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 CE Déclaration de Conformité  
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2004/108/EG, EC, CE	19.04.2016	
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<b>Angewandte Normen:</b> Applied standards: Normes appliquées: Norme applicate :	EN 61326-1:2013 - Basic requirements EN 61010-1 :2010 + Cor. :2011
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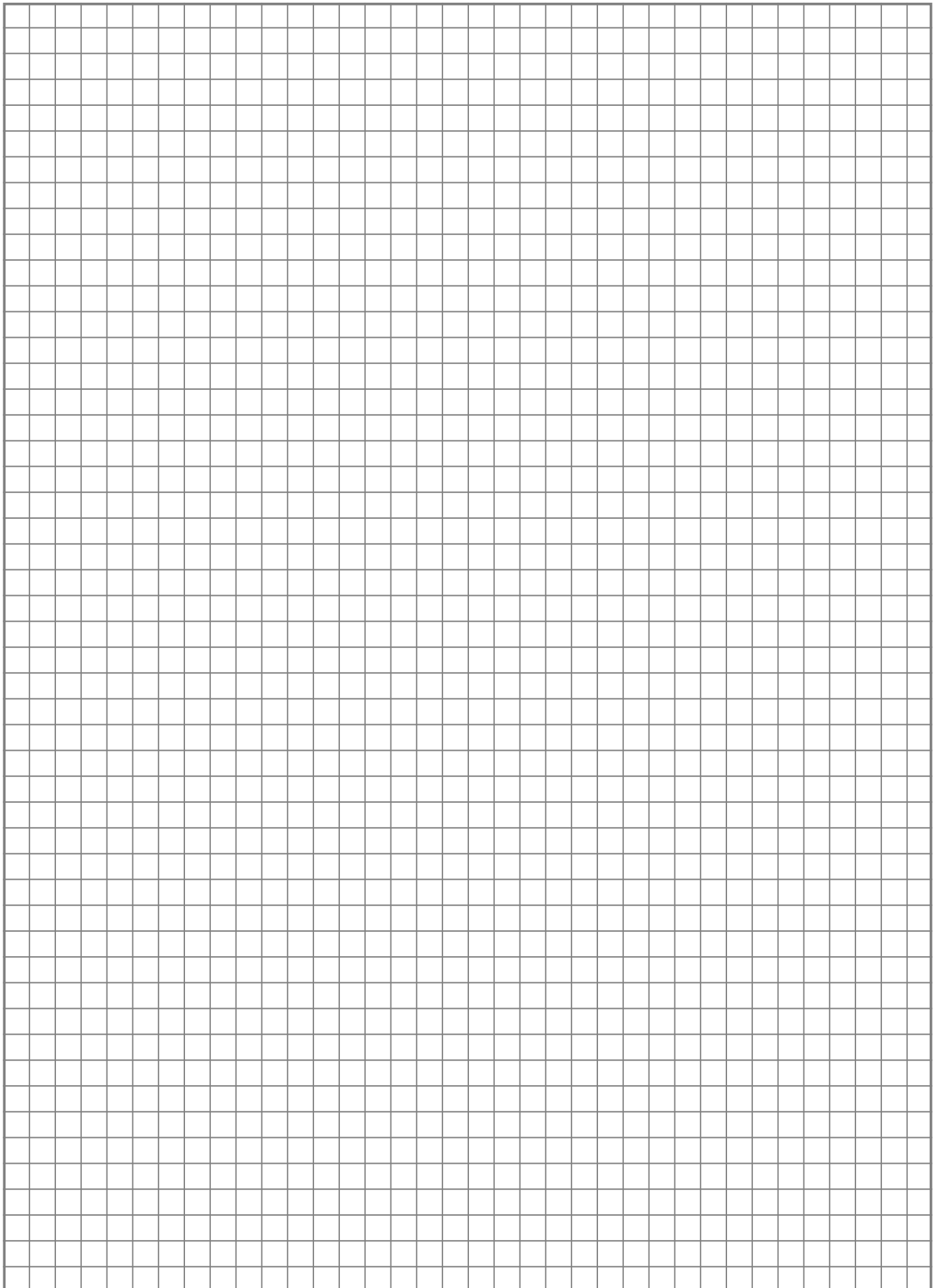
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