NÜVE SANAYİ MALZEMELERİ İMALAT VE TİCARET A.Ş.

NF 048

BENCH - TOP CENTRIFUGE

USER'S MANUAL

CE

DOMINIQUE DUTSCHER SAS

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WARRANTY CERTIFICATE

1. Nüve warrants that the equipment delivered is free from defects during material and workmanship. This warranty is provided for a period of two years. The warranty period begins from the delivery date.

2. Warranty does not apply to parts normally consumed during operation or general maintenance or any adjustments described in the operating instructions provided with the equipment.

3. Nüve does not accept any liability in the case where the goods are not used in accordance with their proper intent.

4. The warranty may not be claimed for damages occurred during the shipment, for damages resulting from improper handling or use, the defects in maintenance, negligence, bad functioning of auxiliary equipment, in the case of force majeure or accident and incorrect power supply.

5. In the event of failure, Nüve shall be under no liability for any injury, or any loss or damage as the result of the failure other than the guarantee conditions.

- **BEFORE OPERATING THE INSTRUMENT THIS MANUAL SHOULD BE READ CAREFULLY.**

- **THE VALIDITY OF THE GUARANTEE IS SUBJECT TO THE OBSERVATION OF THE INSTRUCTIONS AND PRECAUTIONS DESCRIBED IN THIS MANUAL.**

- **INFORMATION CONTAINED IN THIS DOCUMENT IS THE PROPERTY OF NÜVE. IT MAY NOT BE DUPLICATED OR DISTRIBUTED WITHOUT PERMISSION.**

Dear Nüve User,

We would like to take this opportunity to thank you for preferring this Nüve product. Please read the operating instructions carefully and keep them handy for future reference.

Please detain the packing material until you see that the unit is in good condition and it is operating properly. If an external or internal damage is observed, contact the transportation company immediately and report the damage. According to ICC regulations, this responsibility belongs to the customer.

While you are operating the instrument please;

- obey all the warning labels,
- do not remove the warning labels,
- do not operate damaged instrument,
- do not operate the instrument with a damaged cable,
- do not move the instrument during operation.

In case of a problem contact your Nüve agent for an authorized service or maintenance.

The validity of the guarantee is subject to compliance with the instructions and precautions described in this manual.

Nüve reserves the right to improve or change the design of its products without any obligation to modify previously manufactured products.

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PLEASE REGISTER ONLINE TO VALIDATE WARRANTY:
To register your warranty online, please visit our web page **www.nuve.com.tr** and fill in **WARRANTY REGISTRATION FORM.**

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TABLE OF CONTENTS

SECTION 1 - INTRODUCTION 4

1.1 USE AND FUNCTION 4

SECTION 2 - TECHNICAL SPECIFICATIONS 5

2.1 TECHICAL SPECIFICATIONS TABLE 5
2.2 ACCESSORIES FOR NF 048 5
2.3 GENERAL PRESENTATION 6
2.4 PRECAUTIONS AND USAGE LIMITATIONS 6

SECTION 3 - SYMBOLS 7

SECTION 4 - INSTALLATION PROSEDURE 7

4.1 LIFTING AND TRANSPORT 7
4.2 UNPACKING 7
4.3 POSITIONING 8
4.4 MAINS SUPPLY 8

SECTION 5 - OPERATING PRINCIPLES 9

5.1 CONTROL PANEL 9

SECTION 6 - OPERATING PRINCIPLES 10

6.1 LOADING 10
6.2 PROGRAMMING 11
6.3 MANUAL LID OPENING 11

SECTION 7 - PERIODIC MAINTENANCE, CLEANING AND STERILIZATION 11

7.1 PERIODIC MAINTENANCE 12
7.2 CLEANING 12
7.3 STERILIZATION 13

SECTION 8 - DISPOSAL MANAGEMENT CONCEPT 13

SECTION 9 - TROUBLESHOOTING 13

SECTION 10 - ELECTRICAL CIRCUIT DIAGRAM 15

10.1 NF 048 ELECTRICAL CIRCUIT DIAGRAM 15

SECTION 11 - WARNING LABEL 16

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SECTION 1

INTRODUCTION

1.1 USE AND FUNCTION

NF 048 Bench Top Centrifuge is especially designed for the separation of blood samples, urine particles sedimentation and for carrying out the other routine applications in the microbiology laboratories.

NF 048 is a compact centrifuge that can be used both as microliter and hematocrit centrifuge.

With its microliter rotor accepting small capacity tubes up to 2 ml, NF 048 is ideal for hospital and research laboratories and for applications such as pelleting of DNA and protein, DNA amplification, enzyme tests, centrifugation of cells, yeast and microorganisms at high speed.

When NF 048 is operated with it is hematocrit rotor, it can be used for determining the hematocrit volume by means of the centrifugation of blood samples in capillary tubes.

The body, lid and chamber of NF 048 is made of epoxy-polyester painted steel which means that the centrifuge is resistant to external and internal effects.

By means of the programmable microprocessor control system speed (RPM or RCF) and time could be programmed and the 'pulse' function provides the operator to run the programs of short duration.

It ensures safe processes by means of the locking system which does not allow the centrifuge to operate if the lid is open and which does not allow the rotor to spin if the lid is not closed.

The lid locking system which does not allow the centrifuge to operate if the lid is open, which also does not allow the lid to be opened while the rotor is spinning and the possibility to open the lid by pushing only one key when the program ends, provide safe and easy working conditions. There are audible and visible alarms to inform the operator when the lid is open, when the program ends and when any error conditions occur. In case of a power failure, the lid could be opened manually by using a manual lid opening tool. There is also an observation hole at the top of the instrument to check the speed of the centrifuge by a tachometer.

NF 048 Bench Top Centrifuges are manufactured according to the following standards, EN 61010-1, EN 61010-2-020, EN 61000-6-3, EN 50419.

This device is in compliance with WEEE Regulation.

SECTION 2

TECHNICAL SPECIFICATIONS

2.1 TECHICAL SPECIFICATIONS TABLE

Technical Specifications	NF 048
Maximum speed	Angle (Microliter): 14.000 rpm Hematocrit: 12.000 rpm
Maximum RCF	Angle (Microliter): 18.188xg Hematocrit: 14.811xg
Tube capacity	Angle (Microliter): 24x1.5/2 ml Hematocrit: 24xcapillary tube
Control system	Programmable Microprocessor Control System
Speed set range	1,000-14,000 rpm
Speed set step	10 rpm
Timer set range	1-99 minutes and hold position
Timer set step	1 minute
Motor	Induction Motor
Supply Values	230 V, 50/60 Hz
Power Consumption	450 W
External Dim.s (WXDXH) mm.	275x355x240
Packing Dim.s (WxDxH) mm.	350x420x460
Net / Packed weight (kg)	13/17

2.2 ACCESSORIES FOR NF 048

- **A 14 005** Adaptor, 1x500/800 µl Capacity, Maximum Tube Diameter 8 mm
- **A 14 007** Adaptor, 1x250/400/700 ul Capacity, Maximum Tube Diameter 6 mm
- **A 14 006** Adaptor, 1x200 µl PCR Capacity, Maximum Tube Diameter 6.5 mm
- **B 50 019** Angle (Microliter) Rotor ,(Maximum Tube Diameter 11 mm)
- **B 50 020** Hematocrit Rotor (Maximum Tube Diameter 0.75 mm)

2.3 GENERAL PRESENTATION



Figure 1

1	**Control panel**	**4**	**Gasket**
2	**Manual LID openıng hole**	**6**	**Fixing feeling**
3	**Hematocrit rotor**	**7**	**LID bolt**
4	**Observatıon hole**	**8**	**LID**

2.4 PRECAUTIONS AND USAGE LIMITATIONS

- Do not use the device for any purpose other than the usage purpose.
- Prior to first use, the user's manual should be read and the device is only to be used by authorized and trained personnel. Only authorized technical personnel handle the product in case of any failure.
- The working bench should be durable to the device weight and vibration isolated.
- Ensure that the rotor is placed correctly prior to usage.
- According to the standard IEC 61010-2-020, anyone and any hazardous materials should not be in the 300 mm safety zone while centrifuge is running.
- Do not move the device while it is running.
- Do not open the lid while rotor is spinning.
- Apply the manual lid opening procedure in the case of power cut or in the case of any error.
- Use only the the spare parts, rotors and accessories which are supplied by NUVE.
- Load the rotor according to the explanations in the user's manual.
- Start the device after ensuring the rotor is loaded correctly.
- Do not use the centrifuge in areas which are in explosive danger.
- Do not centrifuge the explosive, flammable, radioactive, corrosive materials and the materials which may react with each other.
- The centrifuge and the rotor are not microbiologically leak-proof. Use tubes with leak-proof covers, if hazardous, toxic and pathogenic microorganisms are centrifuged.

- Do not use corrosive materials which may be harmful for the device integrity, rotor and accessories.
- Do not use rotors and accessories with corrosion and mechanical damages.
- Mains supply should be appropriate to power of the device and grounded.
- Use tubes whose sizes are suitable to the rotor and accessories.
- Tubes which are used in the centrifuge should not be deformed by the effect of the centrifuge force.
- Use glass tubes to balance, if glass tubes are used. Use plastics tubes to balance, if plastics tubes are used.
- Do not start the device unless tubes are in balance.
- Imbalance loading may cause mixing the samples, broken tubes, and damages on the rotor and motor shaft.

SECTION 3

SYMBOLS

	Symbol in the operating instructions: Attention, general hazard area. This symbol refers to safety relevant warnings and indicates possibly dangerous situations. The non-adherence to these warnings can lead to material damage and injury to personal.
	Symbol in the operating instructions: This symbol refers to important circumstances.

SECTION 4

INSTALLATION PROSEDURE

4.1 LIFTING AND TRANSPORT

All lifting and transport must be carried out by using proper handling equipment. The instrument must be supported from underneath and never turned over.

4.2 UNPACKING

Remove the packing cardboard box and the second nylon packing around the centrifuge. The below written are provided with the instrument, please check them;

- 1 ea. User's manual
- 1 ea. Warranty certification
- 1 ea. Power cable
- 1 ea. Manual lid opening tool

4.3 POSITIONING

- Check that no damage has occurred during transport.
- Check that the positioning is suitable for users.
- Lift the centrifuge underneath and carry it to its place carefully. Check that the centrifuge is stable on its four pads.
- Leave sufficient free space on each side of the centrifuge.
- Make sure that the centrifuge does not do harm to nearby equipment.

	**IEC 61010 - 2 - 020 standards, while centrifuge is running, anybody, any device or any hazardous element should not be in the 300 mm security area**

ATTENTION !!!

The centrifuges are designed to operate safely under the following conditions:

- Indoor use only
- Ambient temperature: 5 ° C to 25 ° C.
- Maximum relative humidity of 80% for temperature up to 22 °C.
- Maximum altitude: 2000 m.
- Temperature for maximum performance: 15 °C / 25 °C.

4.4 MAINS SUPPLY

- The centrifuge requires 230 V, 50 / 60 Hz.
- Please make sure that the supplied mains match the required power ratings. If no, provide an extra line to support.



Always plug the sterilizer/ovens to properly earthed sockets.



A supply fitted with a circuit breaker should be used for protection against indirect contact in case of an insulation fault.

SECTION 5

OPERATING PRINCIPLES

5.1 CONTROL PANEL

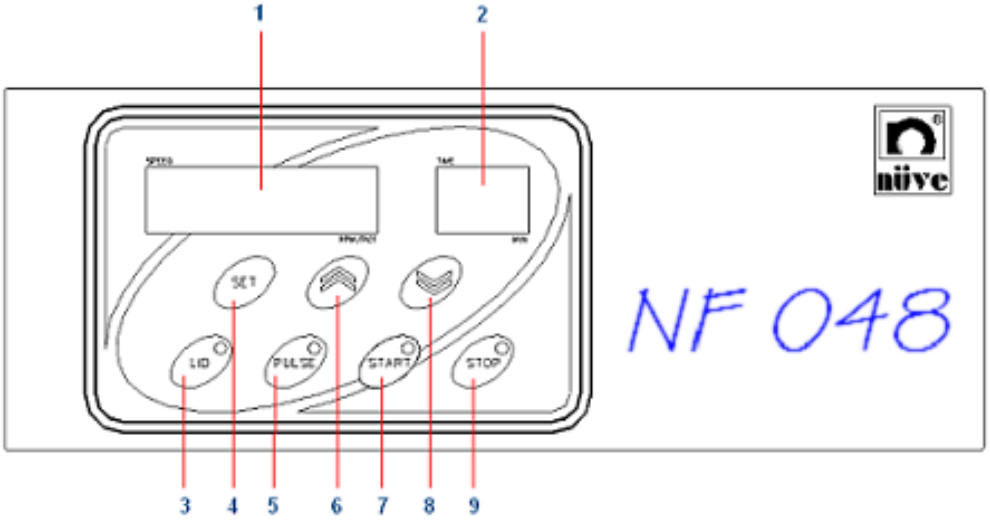


Figure 2

01-Speed Display :

- This display shows the speed values (RPM or RCF) during programming. It also indicates accelerating condition, braking condition, power failure condition, open lid condition and the condition that occurs when Start is pressed while the lid is open by the expressions Acc, br, E oFF, oPEn, cLoSE Lid, respectively. The error codes that occur in case of any failure condition are also shown on this display.

02-Time Display :

- This display shows the time during programming and the run.

03-Lid Key and Led :

- This key opens the lid if the led is on. It is active before starting the centrifugation and at the end of the centrifugation when the audible alarm sounds.

04-Set Key:

- This key is used to set the speed and time during programming and to check the RPM or RCF value during the operation.

05-Pulse Key:

- The motor increases to the maximum value of the chosen rotor type and continues to spin on that speed as long as this key is pressed.

06- Value Increasing Key :

- This key is used to increase the parameter values during programming.

07-Start Key and Led:

- This key starts the centrifugation operation and the led turns on. The led turns off if the program is stopped manually or the lid is opened at the end of the program.

08-Value Decreasing Key :

- This key is used to decrease the parameter values during programming.

09-Stop key :

- This key is used to stop the operation manually.

SECTION 6

OPERATING PRINCIPLES

6.1 LOADING

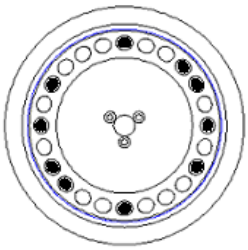
- Each tube insert must be at the same weight as the one diametrically opposite for balancing.
- In case the number of tubes which will be centrifuged is less than the capacity of the rotor, the tubes must be placed in opposite inserts. If the number of tubes that will be centrifuged is an odd number, use a water-filled tube at the same weight for balancing.

Imbalance of the rotor may cause major damage to the rotor and centrifuge

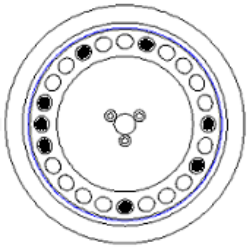
Never attempt to introduce liquids into the tube inserts.

Balance the rotor with glass tubes if you use glass tubes for centrifugation.
Balance the rotor with plastic tubes if you use plastic tubes for centrifugation.

RIGHT LOADING



WRONG LOADING



6.2 PROGRAMMING

At stand-by position,

- Push the Set key. The rotor type starts to flash on the speed display.
- Choose the rotor type by using the Value Increase and Decrease keys (nC for the microlitre rotor, HE for the haematocrit rotor).
- The programming type (RPM or RCF) starts to flash on the speed display.
- Choose the programming type by using the Value Increase and Decrease keys (RPM or RCF).
- Push the Set key again. The speed value on the speed display starts to flash.
- Set the speed or RCF by pushing the Value Increase and Decrease keys.
- Push the Set key again. The time value on the time display starts to flash.
- Set the time by pushing the Value Increase and Decrease keys.
- Push the Set key again to save the settings to memory.

Santrifüj işlemi sonrasında, kapak açılmazsa, program tekrar çalıştırılamaz. Bir sonraki çalışma için kapağı açıp kapatmayı unutmayınız.

Cihazı kapağı kapalı iken aç/kapa anahtarıyla bekleme konumuna getirdikten sonra ve yaptığınız her programın çalışması bittikten sonra yeni bir program çalıştırmak için kapağı açıp kapamanız gerekmektedir.

6.3 MANUAL LID OPENING

In case of a power cut or any defects, the instrument would be opened manually to be able to get the samples.

To open the lid manually :

- Power off the instrument
- Insert the manual lid opening tool into the hole at the front side of the instrument.
- Push the tool while keeping it vertically until the lid is opened.

Before opening the lid manually, be sure that the rotor is completely stopped. Observe the rotor upon opening while the lid is hold by hand, if the rotor is still rotating, close the lid and wait approximately 10 minutes before repeating the operation. This operation must be carried by someone who is informed of the danger and of the precautions which must be undertaken.

SECTION 7

PERIODIC MAINTENANCE, CLEANING AND STERILIZATION

Her periyodik bakım öncesinde cihazı aç / kapa anahtarından kapatarak fişini çekiniz.

After every care, check the continuity the network of ground line.

Turn-off the equipment and plug it off prior to each maintenance, cleaning and sterilization.

7.1 PERIODIC MAINTENANCE

- Before every use, check the rotor, inserts, adapters and motor shaft against corrosion, deformation and cracks.

- Before loading the rotor, be sure that there is no substance in the tube inserts and the chamber.



Any substance left in the tube inserts will break the tubes and any substance left in the chamber will damage the rotor and the chamber.

7.2 CLEANING

- Before cleaning the device on / off switch, unplug the appliance off.
- Do not use alkaline cleaning reagents and metal brushes for cleaning. Chamber, rotor and the accessories should be cleaned immediately if any spillage occurs.

Centrifuge

- Clean the centrifuge body and the chamber regularly with a damp cloth, using soap or a mild detergent and dry well after cleaning.
- The chamber should be cleaned with 70% alcohol once a week.



In case of any spillage or tube breakage, the chamber should be cleaned well.



Take necessary precautions while cleaning the chamber after tube breakage. There could be glass particles in the chamber which may cut the hands.

Rotor, tube inserts and adapters

Dismantling and Reinstalling the Rotor,

- Loosen and take out the bolt fixing the rotor.
- Hold the rotor from two sides and pull out.
- While re-installing the rotor, make sure that it is properly placed on the motor's axis, such that the inscriptions on it are facing the top.
- Tighten the fixing bolt back.
- Rotor, tube inserts and adapters should be cleaned with a damp cloth using soap or mild detergent ideally every day but at least once a week against corrosion.
- Rotor, tube inserts and adapters can be washed with a damp cloth using soap or mild detergent.
- For the holes in the rotor, tube inserts and adapters, small and soft nylon brush can be used.
- Rotor, tube inserts and adapters should be cleaned with 70% alcohol once a week.
- Rotor, tube inserts and adapters should be dried well after cleaning with a dry, absorbent, non-wool soft tissue or with paper. You may also use a hair drier for that purpose.

- In case of any spillage or tube breakage, the rotor, the tube inserts and the adapters should be washed well. Special attention should be paid to the glass particles which may be left in the tube inserts and adaptors. Be sure that those kinds of particles are removed and cleaned well because the remaining particles may cause further tube breakage.

7.3 STERILIZATION

Rotors, tube inserts and adapters shall be left in contact with alcohol (70% ethanol or izopropanol) at least for 10 minutes for sterilization purposes against bacteria and viruses.

Rotors, tube inserts and adapters can be autoclaved at 215 kPa absolute pressure and 121°C for 20 minutes against microorganisms.

- Do not use formaldehyde - which is poisonous - for sterilization.
- Do not use phenol - which is corrosive - for sterilization.
- Do not use gluteraldehide - which is toxic - for sterilization.



Instruments or parts which may come in contact with biological samples (patient specimens, controls etc.) should be considered at least potentially infectious.
Before doing any servicing on the instrument it is very important to thoroughly disinfect all possibly contaminated parts. Before the instrument is removed from the laboratory for disposal or servicing, it must be decontaminated/disinfected. Decontamination/disinfection should be performed by well trained personnel, observing all necessary safety precautions.

SECTION 8

DISPOSAL MANAGEMENT CONCEPT

The currently valid local regulations governing disposal must be observed. It is in the responsibility of the user to arrange proper disposal of the individual components. Applicable local regulations for disposal have to be carefully observed. The instruments and electronic accessories (without batteries, power packs etc.) must be disposed off according to the regulations for the disposal of electronic components. Batteries, power packs and similar power source have to be dismounted from electric/electronic parts and disposed off in accordance with applicable local regulations.

SECTION 9

TROUBLESHOOTING

If the centrifuge fails to operate, check the following,

- The on/off switch is on,
- The mains supply is present,
- The plug is plugged-in properly,
- The plug is not defective,

- The fuses are sound,
- The installation of the plug is not defective.

Error Codes

In case of below written failures, related error codes shown on the speed display, motor starts braking.

Err 3:
The communication between the display & main PCB and the motor driver PCB fails.

Err 4 :
Motor overheat failure. Please wait for the motor to cool down and start the centrifuge again.

Err 6:
Motor driver PCB is defective.

Lid open :
This failure occurs when lid is opened during the centrifugation. Please close the lid properly and start the centrifuge again.

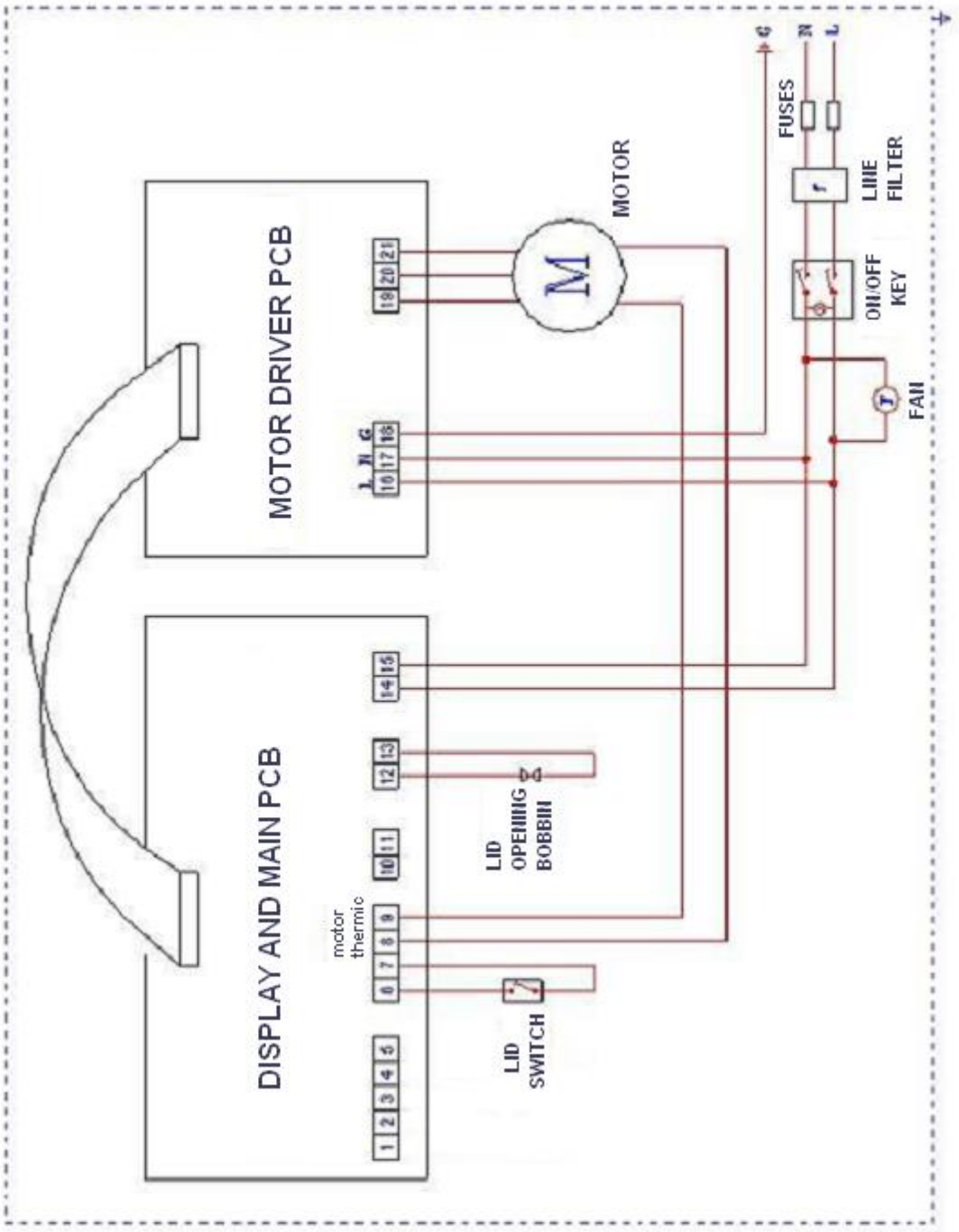
Eoff :
It occurs in case of a power failure during the run. It dissapears if you wait for 2 minutes or open and close the lid again.

PLEASE CONTACT TO AN AUTHORIZED NUVE AGENT TO SEEK TECHNICAL HELP IF AN ERROR OCCURS.

SECTION 10

ELECTRICAL CIRCUIT DIAGRAM

10.1 NF 048 ELECTRICAL CIRCUIT DIAGRAM



SECTION 11

WARNING LABEL











GROUNDED PLUG

