NÜVE SANAYİ MALZEMELERİ İMALAT VE TİCARET A.Ş.

NF 400 / NF 400R

BENCH - TOP CENTRIFUGE

USER'S MANUAL

CE

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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.

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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SECTION 1

INTRODUCTION

1.1 USE AND FUNCTION

NF 400/400R bench top centrifuges are designed for daily routine centrifugation requirements. The performance and capacity of NF 400/400R are ideal for the separation of blood samples, urine particles sedimentation and for carrying out the other routine applications in small and medium sized laboratories.

NF 400 is a ventilated model that ensures minimum temperature increase in sample by means of the continuous air flow system through the air channels in the lid.

Refrigerated model NF 400R offers wide range of temperature control between –9 °C and 40 °C for heat sensitive samples and also provides constant sample temperature. The powerful cooling system can maintain +4 °C even at maximum speed for biologically active samples.

By means of the programmable microprocessor control system speed (RPM or RCF), time, acceleration/braking rate and temperature (for NF 400R) 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.

NF 400/400R 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 400	NF 400R
Maximum speed	4100 rpm	
Maximum RCF	2819xg	
Maximum tube capacity	Swing-out: 4x100 ml Angle: 16 x 15 ml	
Control system	Programmable Microprocessor Control	
Speed set range	1,000 - 4,100 rpm	
Speed set step	10 rpm	
Operating speed accuracy	± 20 rpm	
Timer set range	1-99 minutes and hold position	
Timer set step	1 minute	
Acceleration Rate	1: Slowest 5: Fastest	
Braking Rate	1: Slowest 5: Fastest	
Temperature range		-9 °C / +40 °C
Refrigerant liquid		R134a
Temperature set step		1 °C
Motor	Induction Motor	
Supply Values	230 V / 50 Hz	
Power Consumption	450 W	750 W
External Dim.s (WXDXH) mm.	380x465x335	680x510x380
Packing Dim.s (WXDXH) mm.	440x525x440	740x650x570
Net / Packed weight (kg)	26 / 32	59 / 77

2.2 ACCESSORIES FOR NF 400 / 400R

- **A 08 062** Puller for rotor removal
- **B 50 024** RA 100 Swiing-out rotor 4*100 ml , 4.100rpm , 2.819 x g
- **G 51 001** Set of 4 inserts 1x100 ml
- **G 51 002** Set of 4 inserts 1x50 ml cocinal
- **G 51 003** Set of 4 inserts 4x15 ml
- **G 51 004** Set of 4 inserts 2 x15 ml cocinal
- **G 51 005** Set of 4 inserts 4x5 ml
- **B 50 018** MP 100 microtitre plate rotor 4.100 rpm, 2.011x g
- **B 50 028** RS 240 Angle rotor 16x15 ml , 4.100 rpm, 2.142xg

ADAPTORS FOR 16x15 ML ANGLE ROTOR of NF 400/400R

- **G 03 012** Adaptor for 1.5 / 2 ml tubes
  (Should be ordered according to the capacity of the rotor)
- **G 03 014** Adaptor for 13 x 100 mm vacuumed / non - vacuumed rotor
  (Should be ordered according to the capacity of the rotor)
- **G 03 015** Adaptor for 13 x 75 mm vacuumed / non- vacuumed rotor
  (Should be ordered according to the capacity of the rotor)

2.3 GENERAL PRESENTATION

Şekil 1

Şekil 2

1	Gasket	**6**	Gas spring
2	Displays and control panel	**7**	LID
3	On / Off Switch	**8**	Air channels
4	Plastic pads	**9**	Manual LİD opening hole
5	Rotor		

Şekil 1

2.4 ROTOR SELECTION TABLE

SWING-OUT ROTORS AND ACCESSORIES

Rotor	Description	Capacity	Max.Tube Dia.(mm)	Radius (mm)	Max. Speed (rpm)	Max.RCF xg	Rotor Type
RA100	Swing-out Rotor	4x100ml		150	4,100	2,819	SC415
	Set of 4 buckets	1x100ml	46.5	143	4,100	2,687	SC400
	Set of 4 inserts	1x50ml conical	30	147	4,100	2,763	SC450
	Set of 4 inserts	4x15ml	17	139	4,100	2,612	S1615
	Set of 4 inserts	2x15ml conical	17	150	4,100	2,819	SC415
	Set of 4 inserts	4x7ml	13	139	4,100	2,612	S1615
	Set of 4 inserts	4x5ml	13	114	4,100	2,142	S1657
MP100	Microtitre Plate Rotor	2x1 microtitre plates		107	4,100	2,011	nPLAt

ANGLE ROTOR ACCESSORIES

Rotor	Description	Capacity	Max.Tube Dia(mm)	Max.Radius (mm)	Max.Speed (rpm)	Max RCFxg	Rotor Type
RS240	Angle Rotor	16x15ml	17	114	4,100	2.142	A1615

ADAPTORS FOR ANGLE ROTOR

Tube Type	Max. Tube Dia. (mm)
1.5/2 ml microtubes	11
5 ml vacuumed/non vacuumed tubes	13
7 ml vacuumed/vacuumed tubes	13

2.5 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.

IF MENTIONED WARNINGS ARE NOT CONSIDERED, NÜVE WILL NOT BE RESPONSIBLE FROM THEIR RESULTS.

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

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
- 1ea. Warranty certification
- 1 ea. power cable
- 1 ea. manual lid opening tool
- 1 ea. Wrench 24
- 1 adet Wrench
- Lubricant oil

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.

	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.

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 centrifuges require 230 V, 50 Hz.
- Please make sure that the supplied mains matches the required power ratings.
- **Always plug the centrifuges into correctly grounded sockets.**
- **A supply fitted with a circuit breaker should be used for protection against indirect contact in case of an insulation fault.**

BÖLÜM 5

OPERATING PRENSIPLES

5.1 DISPLAYS AND CONTROL PANEL

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. It also shows the temperature during programming and by pressing the value decrease key during the run for NF 400R model.

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.

07-Value Increasing Key :

- This key is used to increase the parameter values during programming. If you press the value increasing key continuously the value increases faster, not one by one but ten by ten, hundred by hundred or thousand by thousand. If you would like to increase the value one by one you wait for some seconds without pressing the button and then press again. This property is to prevent wasting time during programming.

08-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.

09-Value Decreasing Key :

- This key is used to decrease the parameter values during programming. It is also used to see the temperature during the run for NF 400R model. If you press the value decreasing key continuously the value decreases faster, not one by one but ten by ten, hundred by hundred or thousand by thousand. If you would like to decrease the value one by one again, you wait for some seconds without pressing the button and then press again. This property is to prevent wasting time during programming.

10-Stop key :
- This key is used to stop the operation manually.

11-Cooling Led :
- This led is on during the cooling operation (for NF 400R).

5.2 SAFETY INTERLOCK SYSTEM

- The safety interlock system prevents opening of the lid while the rotor is spinning.
- The centrifuge does not operate until the lid is closed and the lid remains locked until the rotor stops spinning. The "Lid Open" message appears on the display to warn the user if the lid is not closed properly.

NOTE: If power failure occurs, access to the samples is possible by opening the lid with a special tool. Please see the manual lid opening section (4.4) for further information.

5.3 IMBALANCE DETECTION SYSTEM

- The imbalance detection system of the NF 400 / NF 400 R centrifuges operates electronically when an unacceptable imbalance occurs. In this case the brake is applied immediately.
- The "blncEEr" imbalance error is displayed. The lid can not be opened until the rotor stops spinning. The centrifuge can only be started after the lid has been opened and the rotor has been re-loaded correctly.
- To avoid facing imbalance problem, please make sure to insert the tubes correctly.

5.4 DRIVE SYSTEM

- The rotor is driven by a three phase asynchronous motor. The microprocessor control system assures the correct drive speed.
- The force applied to the rotor is directly related to the shape of the rotor, the swing-out rotor receives more load than the angle rotor does. Longer radius and more accessories increase the load of the rotor and decrease the spinning speed.
- The centrifuge does not allow the rotor to spin at a speed which it cannot resist mechanically.
- Please make that sure the correct type of rotor is selected during programming.

5.5 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 left side of the instrument (section 2.2).

- Push the tool while keeping it vertically until the lid is opened.

WARNING!!!

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 6

ÇALIŞMA PRENSİPLERİ

6.1 PREPARATION OF THE ROTOR TO RUN

- Before installation, check the rotor for corrosion and cleanliness.
- Chemical corrosion or mechanical corrosion may do severe damage to the rotor and the centrifuge. Particles which are stuck inside the inserts cause the breakage of tubes and lead to major imbalance please check to make sure that no particles are left on the rotor.
- The central hole of the rotor and the motor shaft should also be clean and dry before all centrifugal operations and they must be kept in that way all the time.

6.2 LOADING

The most important condition of an efficient centrifugation is to balance the tubes properly. Loading must be done by meeting the requisites of static and dynamic balance.

Static Balance: This balance states that diametrically oppositely replaced weights are almost the same. In application, the liquid level in the tubes should be at the same height to balance the load.

Dynamic Balance: This balance states that diametrically oppositely replaced tubes' center of gravity 's are symmetrical with respect to spinning axis of the rotor.

- Although in hospitals the samples having almost the same densities are centrifuged, in industry, samples having different densities may be centrifuged. In this case, the dynamic balance becomes more important factor than the static balance is.

- If the number of tubes to be centrifuged is less than the capacity of the rotor, the tubes must be placed oppositely. If an odd number of tubes is centrifuged, a water filled tube at the same weight should be used for balancing.

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

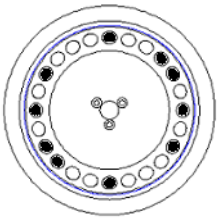
Never attempt to introduce liquids into the tube inserts.

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.

Always use tubes which can withstand to the set speeds.

Examples of the proper and improper loading are shown below.

RIGHT LOADING



WRONG LOADING

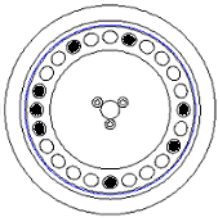


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Figure 3

6.3 ROTOR INSTALLATION

- Put some light oil on the drive head to prevent sticking.
- Be careful that the rotor fits on the drive shaft (See Figure 3).
- Screw the shaft nut with socket wrench to the clockwise direction. Make sure that shaft nut is screwed tightly, but do not expose over-force to the socket wrench while screwing.
- For swing-out rotors, lubricate the pins where the buckets are hanged.
- Place the buckets to the rotor.
- Connect the centrifuge to the power supply.

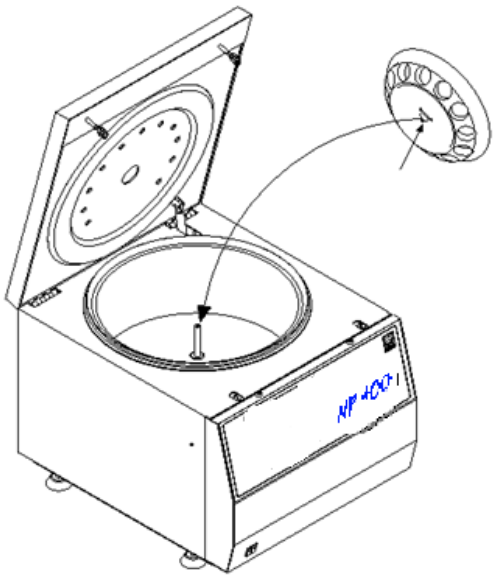


Figure 4

6.4 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. (See table of 2.3)
- Push the Set key again. The RPM or RCF option value on the speed display starts to flash.
- Choose the RPM or RCF option by pushing the Value Increase and Decrease keys.
- 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. The acc value on the speed display starts to flash.
- Set the acc by pushing the Value Increase and Decrease keys. (1: Slowest 5: Fastest)
- Push the Set key again. The br value on the speed display starts to flash.
- Set the br by pushing the Value Increase and Decrease keys. (1: Slowest 5: Fastest)
- Push the Set key again. The temperature value on the time display starts to flash.
- Set the temperature by pushing the Value Increase and Decrease keys.
- Push the Set key again to save the settings to memory.
- Push START to run the program.
- The program starts. “Acc” (Acceleration) is displayed on Speed display until the set speed is reached, and after that the set speed or RCF value is displayed during the set time duration.(RPM or RCF screen will appear in every 3 seconds)
- The program continues to operate until the time display shows “00”.
- At the end of the adjusted time the motor stats to slow down and ‘br’ is seen on the speed display.
- When the motor stops ‘End’ is seen on the speed display and audible alarm sounds. (If Hold position is selected, the program will stop when the STOP button is pushed)
  - Push the LID key and open the lid to take out the samples.

NOTE	Set key is pushed to see the RCF (relative centrifugal force) value during the run.

SECTION 7

CLEANING AND PERIODIC MAINTENANCE

7.1 PERIODIC MAINTENANCE

- Ideally, rotors should be washed after every use, especially if a spillage has occurred, in warm water containing a few drops of liquid soap. (a mild washing liquid is ideal as a cleaner).
- Rotors and other accessorıes must be cleaned ıf any spıllage, specıally chemıcals, occurs .
- Please do not forget to clean the part of the rotor which fits on the motor shaft. Every part of the rotor should be cleaned with a soft nylon brush.
- Do not use metallic brushes.
- Dry the rotor with a piece of soft absorber cloth. Please make sure that the buckets and inserts are well dried, you may use hair dryer.
- Make sure that the bottoms of the tube inserts are dried well.

For alluminium rotors;

- The buckets of the microtitre rotor and the pins of the swing-out rotor should be greased frequently with the oil provided with the centrifuge. Please remove the light oil from the pins and put a small amount of fresh oil every time you grease. This will ensure free swinging of the buckets. Most of the imbalance problems are mostly raised by the users who do not clean and oil the pins.
- Please do not leave the rotor on a metal surface, particularly stainless steel as electrochemical reactions set off easily with the aluminum or magnesium in the rotor.
- Make sure that no deposit remains at the bottom of the bucket because the pressure of a flask or tube from above during centrifugation will certainly increase the chance of corrosion.

7.2 STERILIZATION

- Apply alcohol , for example %70 ethanol or isoprophanol, for 10 minutes against bacteria and viruses.
- The rotors and buckets may be autoclaved at 121°C and under 215 kPa pressure for 20 minutes but please do not forget to remove all accessories.
- Do not use for the sterilization process of formaldehyde.
- Phenol is a corrosive substance and should never be used.
- Glutaraldehyde is a toxic substance and increases the rate of fatty acid in the body.

7.3 CORROSION INFORMATION

- Nuve rotors which are made of aluminum are designed to spin at proper RCFs for many years. When used properly, their resistance to corrosion and their life span increases and the imbalance problems decrease.
- All accessories should be checked thoroughly and regularly as almost all laboratories already have the conditions which lead to corrosion easily.

7.3.1 Chemical Corrosion

This type of corrosion is caused by chemical reactions. The electrolide liquid on the surface of the material is the main cause of the chemical reaction. If that electrolide liquid is allowed to stay at the surface, corrosion occurs. First, discoloration appears and then the metal pittens. Aluminum easily reacts with the ionic solutions.

The other causes of corrosion are as follows,

- Chemical vapors in the laboratory environment which dissolve in the water on the rotor (in refrigerated centrifuges)
- Corrosive liquids which overflow from overfilled and unsealed tubes. (the liquids which spread out during centrifugation)
- Contaminated and non-cleaned buckets, tubes and bottles.

NOTE: If the centrifuged samples are corrosive, only rinsing with water is not sufficient. The residuals dissolve in the water and humidity on the rotor and in the buckets.

NOTE: Some particles may stick to the tubes, buckets and adapters. These particles crash and do harm to anodized surface during centrifugation and ease the occurrence of corrosion.

7.3.2 Stress Corrosion

This type of corrosion is caused by the force of the centrifugation of the corrosive chemical which is already in contact with the alloy. As the aluminum alloy contacts with the corrosive chemical, the stress corrosion starts. This type of corrosion is even more dangerous than the chemical corrosion as the effects of this corrosion are microscopic and very difficult to observe in the course of time.

The corrosive material is pushed against the aluminum alloy by the centrifugation “g” force during the centrifugation. This situation causes the stress corrosion to occur more quickly than the chemical corrosion does. Microscopic cracks occur under the force of the centrifugation.

Every centrifugation causes the aluminum rotor to be attacked by the chemical more and more and eventually micro-cracks decrease the resistance of the rotor against the centrifugation force. Fortunately, no crash occurs just after the first micro-cracks have appeared as the rotors are manufactured according to the high safety limits.

The corrosion of the small amount of corrosive materials does not result in severe cracks but weakens the mechanical resistance of the rotor in the course of time.

The rotor’s places , buckets, buckets’ edges and the base of the rotor should be checked regularly. If needed, they must not be used until a specialist has checked them thoroughly.

7.4 CLEANING

- Disconnect the centrifuge before cleaning.
- There is no need of daily cleaning unless a tube breakage occurs or any liquid spills.

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.

8.1 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 & the control 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 5 : This failure occurs when the temperature sensor endings are broken or the temperature sensor is defective. (For NF 400R)

Err 6 : Motor driving PCB is defective.

blncEEr : It is the imbalance error. This means the load is not distributed properly. Please balance the load statically and dynamically and check if the weights of the buckets are the same.

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

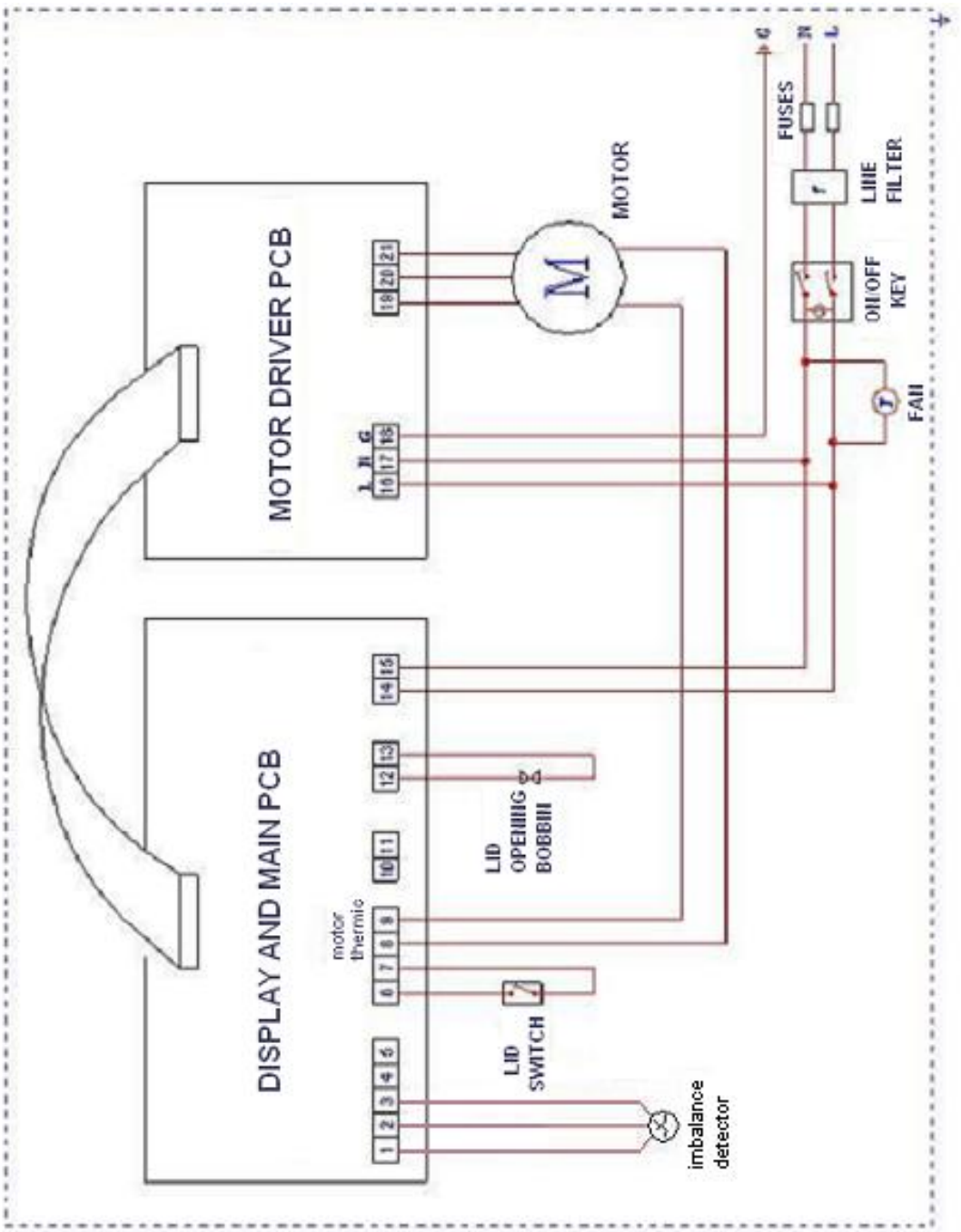
Eoff : It occurs in case of a power failure during the run. It dissapears if you wait for 2 minutes or open and close the lid again.

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

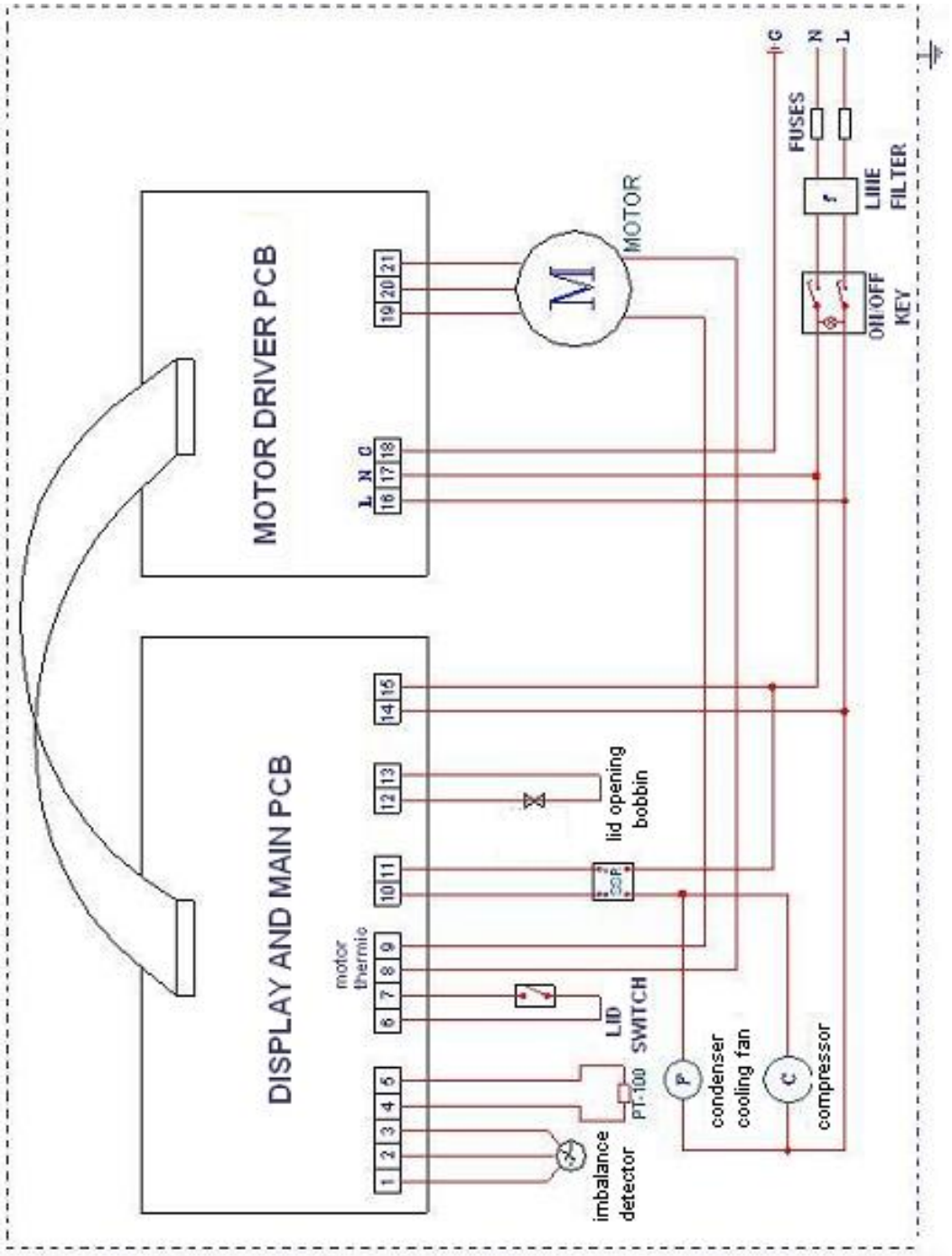
SECTION 9

ELECTRICAL CIRCUIT DIAGRAMS

8.2 NF 400 ELECTRICAL CIRCUIT DIAGRAM



8.3 NF 400R ELECTRICAL CIRCUIT DIAGRAM



SECION 10
WARNING LABEL

GROUNDED PLUG

NF 400R FUSES (2x10A)

NF 400 FUSES (2x3A)