USER'S MANUAL

LABORATORY CENTRIFUGE CENTRIC 400 R

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PREFACE

Dear customer,

Congratulations for purchasing a centrifuge Centric 400 R. You have selected a device which combines many advantages.

A wide usage of programming options and an electronic operation control allow a trouble-free use of the centrifuge. With a special drive, maintenance-free quiet operation without any carbon dust pollution is guaranteed.

Your device is equipped with user-friendly options which make the operation and standard settings easier for you. Built-in error detecting functions keep the user from entering incorrect values and check the complete operation.

The centrifuge has the possibility to save programs. In the program store you can save up to 10 different data sets. The centrifuge always keeps the last run program in its memory for an unlimited amount of time allowing the program to be restarted at any time – even if the centrifuge was turned off in-between. All important operation parameters can be seen at a glance.

The settings are executed via knobs and keys on the control panel. The interior of the centrifuge is also easy to clean. We are able to offer you a device that combines functional variety with practical applications.

We thank you for your confidence and wish you a successful application of the centrifuge.

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1. INTRODUCTION

1.1 INTENDED USE

Centrifuge CENTRIC 400 R is a laboratory refrigerating centrifuge intended to be used in laboratories for separating the substances with different specific densities by centrifugal force.

The maximum rotational speed of 18.000 RPM gives the centrifugal force of 31.151 x g.

Before starting the centrifuge CENTRIC 400 R for the first time, please read this user's manual and observe the safety regulations.

1.2 PRIMARY EQUIPMENT

Following equipment is enclosed to centrifuge:

1 User's manual
1 Hexagonal rotor key
1 Power cord

1.3 UNPACKING

Remove all the screws on the top of the wooden case. Remove the top wooden cover. Open the carton. Take out the accessories. Remove packaging material.
Then lift the centrifuge from the box with several persons because the centrifuge is very heavy (79 kg)!

1.4 INSTALING THE DEVICE

To avoid damage to the compressor caused by incorrect transportation, wait for four hours after installation before switching on the centrifuge.

To disconnect the mains supply from the centrifuge in the event of errors occurring, an emergency switch which is separate from the centrifuge must be available. This switch should be outside the room in which the centrifuge is operated or next to the exit of the room.

Before plugging in the centrifuge check that the mains voltage and frequency corresponds to the specifications on the identification plate of your centrifuge. The mains connection of the centrifuge may only be connected to a socket with a protective earth conductor.

Place the centrifuge onto a stable, solid, horizontal and clean surface, without vibrations. Make sure that the centrifuge is not exposed to direct sunlight. To ensure sufficient ventilation, there should be clearance of 30 cm on both sides of the centrifuge to the wall or other devices. This is particularly important for the refrigeration function of the centrifuge. According to the recommendations of the EN 61010-2-020 standard, a safety distance of 30 cm should be observed around the centrifuge during operation. No objects whose destruction may cause damage should be positioned in this space.

Connect the centrifuge to the mains supply and press the main switch. The switch is located on front left side of the centrifuge. The centrifuge lid can now be opened by pressing the open key. Insert the rotor and tighten it with hexagonal rotor key.

Before attaching the rotor, make sure the axle and rotor are clean and undamaged.
Do not move or knock the centrifuge during operation!

1.5 OVERALL VIEW

2. SAFETY REGULATIONS

In the interest of your own personal safety, always observe the following regulations:

The rotor and the lid must always be securely fastened.
Do not begin centrifugation before the rotor has been securely fastened!

- Do not use rotors and buckets, which show clear sights of corrosion or mechanical defects. Please check the accessories at regular intervals.
- The rotor must be loaded symmetrically or with the pairs of same buckets. To prevent negative issue of unbalanced rotor, as are damaged bearings and motor axle, or worse results of centrifugation, must be equal, or equal loaded buckets between arrangement symmetrically, as for direction of rotating.
- Please use only the original accessories recommended.
- Do not move or knock against the centrifuge during operation!
- Repairs must only be performed by an authorized service technician.
- Centrifuge may only be used for specified applications. They must not be operated in a hazardous or potentially flammable environment and must not be used to centrifuge explosive or highly reactive substance.
- When handling toxic, aggressive or radioactive liquids or pathogenic bacteria out of Risk Group II (see World Health Organization: "Laboratory Biosafety Manual"), observe national regulations.
- Fluids or materials used for cleaning and disinfecting should be disposed of in accordance with approved laboratory regulations.
- If any liquids are spilled in the rotor chamber, on the rotor or accessories, the surfaces must be cleaned immediately. You can use a damp cloth and mild soap solution. This is particularly important for the cleaning of the bores of the fixed-angle rotors.
- A liquid density of 1.2 g/ml must not be exceeded at maximum rotational speed.
- The use of organic solvents and reagents (e.g. chloroform, phenol) may have adverse effect on the stability of plastic test tubes.
- Rotors are high-grade components which are subject to extreme mechanical strain. Aluminium rotors are protected against corrosion caused by commonly-used laboratory chemicals by means of an electrolytic coating, although this protection cannot be fully guaranteed.
- Please ensure that the rotor is protected from mechanical damage. Even slight scratches and cracks can cause serve inner damage to the rotor materials.
- Please clean your rotor regularly using a neutral cleaning liquid (e.g. Extran). This will protect the rotor and maintain its service life.

Do not use rotors, lids and buckets, which have been damaged by chemicals or as a result of mechanical faults!

3. OPERATION

3.1 ROTOR MOUNTING AND DISMOUNTING

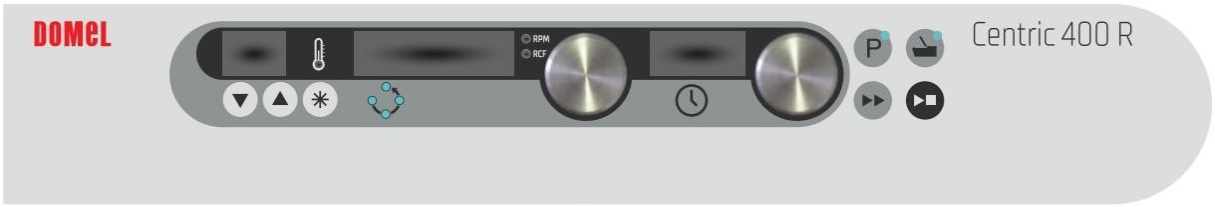
Before fixing the rotor on motor axle, wipe all fixing surfaces with clean soft cloth. Thus, you will avoid potential damages of the axle and motor.

- Mount the rotor onto the motor axle and tighten the rotor nut by turning it clockwise using the hexagonal rotor key supplied.
- To dismount the rotor, turn the rotor nut counter-clockwise using the hexagonal rotor key.
- Do not centrifuge using rotors and buckets with visible corrosion or mechanical defects.

3.2 ROTOR LOADING

The rotors and buckets must always be loaded symmetrically. The adapters may only be loaded with the approved test tubes.
Differences in the weight of the filled samples tubes should be kept as low as possible in order to prolong the lifetime of the device and to minimize running noise.

3.3 FRONT PANEL OF THE CENTRIFUGE CENTRIC 400 R



Switch on the mains supply. The nominal values of the last run appear on the display. Load the rotor symmetrically and close the centrifuge lid. The yellow lamp on open key lights up. If display shows inscription LID OPN mean, that the cover is still open. In that case close the lid again.

3.4 CENTRIFUGE KEYS


(START/STOP)

By pressing this key, you **start or end** the run. When you press this key the first time the centrifuge starts to run. When you press it again, the centrifuge stops. Next run is possible when the rotor stops completely.
The running of the centrifuge is displayed with four indicator lamps bellow rotational speed display.
After the run stops the braking procedure of the rotor is activated.


(QUICK START)

By pressing this key, you start quick run. The centrifuge runs as long as you keep pressing this key. Time of run in seconds is displayed on the time display. The acceleration and braking level is 9 and it is fixed. When you release the key the braking procedure of the rotor is activated.


(PROGRAM)

If you want to use the existing program, follow the next procedure:

- With longer press on this key (more than 2 sec.) you enter into the preset programs of the centrifuge. The key lamp lights.
- By turning the time knob, you choose one of ten preset programs.
- By short pressing the key you return to previous mode. The key lamp turns off.

If you want to change the existing program, follow the next procedure:

- With longer press on this key (more than 2 sec.) you enter into the preset programs of the centrifuge. The key lamp lights.
- By turning the time knob, you choose one of nine preset programs.
- With repeated longer press on this key you enter the programming mode. The key lamp is blinking.
- Set the desired values of centrifuging by the knobs (rotational speed, time, acceleration and braking level).
- When you finish programming, you return to preset programs by short pressing of the key. The key lamp lights. Repeat the same procedure if you want to change the parameters for any other program.
- You finish the programming with short press on the key. The new parameters are shown on display. The key lamp turns off.


(LID)

With pressing this key, you open the lid. **When closing the lid, press it with your hand and hold it until centrifuge beeps, then release it. The lid is automatically closed completely with motor.** When the lid is closed the key lamp lights.

	**When closing the lid, the fingers must be on the top side of the lid and never in the gap between the lid and housing of the centrifuge!**

3.5 SETTING THE TIME, ACCELERATION AND BRAKING LEVEL

By rotating this knob, you change the parameters. With pressing on the knob, you choose between:

- **Working time**

Working time could be set between 0.01 and 99.5 minutes. Time setting from 0.01 to 9.59 minutes is possible in steps by 1 second. Between 10.0 and 99.5 minutes is possible to set on 10 seconds. If the maximum possible time is exceeded or below the minimum adjustable time range, the hold function is activated.

- **Acceleration level (Ac)**

Acceleration level could be set from 0 to 9. Level 0 mean very slow acceleration, level 9 very fast acceleration. All the values are in appendix - chapter 7.

- **Braking level (br)**

Braking level could be set from 0 to 9. Level 0 means braking without brake and level 9 maximal braking. All the values are in appendix - chapter 7.

Working time could be changed during the operation.
By changing the working time, you should be aware that only the difference between preset and passed working time is added when you extend working time, at shortening the time difference is subtracted. In case that time difference is less than 1 minute, the time changing is not possible. The same is valid if the centrifuge runs in hold function.

Example: The centrifuge started with time set to 10 minutes. It has been running for 3 minutes. Now you decide to change parameter time to 5 minutes. The centrifuge will run still 2 minutes.

3.6 SETTING THE SPEED AND RELATIVE CENTRIFUGAL FORCE

By turning the knob, you change the parameters on display. With turning the knob in the clockwise direction, the parameters are rising; counter clockwise direction they are falling. You can choose between two parameters displayed by pressing on the knob:

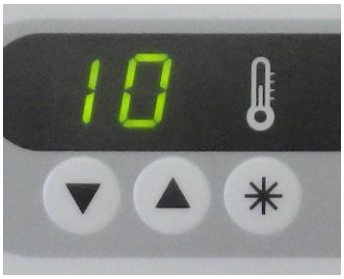
- **Speed - RPM** (lamp RPM lights)

Rotating speed can be set from 500 to 18.000 RPM in steps by 10 RPM.
The maximum speed values are rotor dependent.

- **Relative Centrifugal Force - RCF**

(lamp RCF lights)
Relative centrifugal force can be set from 24 to 31.150 x g in steps by 10 x g. The maximal relative centrifugal force values are rotor dependent.

3.7 COOLING SETTING



Centric 400 R offers the possibility to set the temperature range between -9 °C to 40 °C, in steps by 1 °C.
When the cooling system is working, the lamp in the temperature symbol lights.
If the difference between real and preset temperature is more than +/-3 °C, the display is blinking.


(DOWN)

By pressing this key, you decrease the temperature for 1 °C.


(UP)

By pressing this key, you increase the temperature for 1 °C.


(FAST COOL)

By pressing this key, you turn on **fast cool** function**.** The display shows FC.
Rotor started to run automatic with 5000 RPM.
Fast cool function cools down the centrifugal area from 20 °C to 4 °C in approximation 20 minutes.

3.8 ROTOR RECOGNITION

Rotor recognition is executed automatically, every time when the centrifuge starts. Display shows ROTOR CHN and centrifuge stops, if the rotor was changed. Start is possible by pressing START/STOP key again. Display shows new maximum rotor speed if the preset value was too high.

Rotor	Code	Rotor number / Number of magnets	Radius (mm)	Max. speed (RPM)	RCF (x g)	Max. vol.
RA 24/2	456.600	1 / 2	86	18000	31151	24 x 2 ml
RA 24/2 AERO	473.400	1 / 2	86	18000	31151	24 x 2 ml
RA 30/2	456.620	2 / 4	98	14000	21474	30 x 2 ml
RA 16/5	472.890	2 / 4	98	14000	21474	16 x 5 ml
RA 6/PCR	457.380	2 / 4	92	14000	20159	6 x PCR
RS 4/100	473.450	3 / 6	154	5000	4304	4 x 100 ml
RS 4/200	473.380	3 / 6	159	5000	4444	4 x 200 ml
RA 6/50	457.450	4 / 8	130	5000	3633	6 x 50 ml
RA 30/12	457.485	4 / 8	140	5000	3913	30 x 12 ml
RA 30/15	457.490	4 / 8	153	5000	4276	30 x 15 ml
RM 2/3	457.340	5 / 10	132	3000	1328	2 x 3 micro.

IMPORTANT: After changing the rotor, you must first start the centrifuge, so that rotor recognition is executed and maximal rotor speed is set. For the correct calculation of the relative centrifugal force RCF, you must then enter the radius of currently used rotor in parameter "**rOr**", following the procedure described in the chapter "5.3 USER'S PARAMETERS" on page 16.

3.9 OPENING OF THE CENTRIFUGE IN CASE OF POWER FAILURE

In case of power failure during the operation the lid can be opened manually. Manual opening is performed on the following way:

Turn off the main switch. Wait until rotor fully stops. Check this by looking through the lid window. Remove the plastic cap on the left side of the housing. Insert hexagonal rotor key in the opening and turn it anti-clockwise until the cover opens!

3.10 DISPLAY OF NOMINAL VALUES DURING THE RUN

The centrifuge shows the current parameters on displays. If you wish to check the preset parameters turn the desired parameter knob for one step or short press the key. Display will show preset value of the parameter for approximately 1 second. After that display will show the current value again.

3.11 TEMPERATURE CALIBRATION

If you perceive at temperature control a difference between preset temperature on display and real – measured temperature, the centrifuge offers you possibility to make temperature calibration by entering the service parameters and set the temperature difference.
Calibration may only be performed by authorized service technician.
Measured temperature depends on environment temperature, working speed, working time…

4. MAINTENACE AND CLEANING

4.1 CLEANING THE CENTRIFUGE

The outside of the centrifuge and the rotor chamber should be cleaned regularly with neutral detergent.
Open the lid of the centrifuge and disconnect the mains plug. Unscrew the rotor with rotor key. For cleaning and disinfection use only the neutral agents.
After cleaning with detergent, the rubber seals in the rotor should be rinsed well with water and lubricated with glycerine.
The user must consult with manufacturer before cleaning or decontaminating the centrifuge using methods not recommended by the manufacturer in order to ensure that the centrifuge is not damaged.
To ensure that the centrifuge functions correctly and safety in the long-term, please note that aggressive chemicals can damage the rotor and buckets. Please check the centrifuge regularly for damage caused by corrosion.

4.2 CLEANING THE ROTOR

The rotor and buckets must be cleaned regularly to prevent contamination caused by residue. Check the rotor and housing monthly for residue and corrosion. This applies in particular to the rotor bores. Clean the rotor using a neutral cleaning liquid. This will protect the rotor and maintain its service life.

Do not carry out centrifugation using damaged rotors and accessories!

To protect the rotor please ensure that the sealing rings are maintained regularly.

4.3 ROTOR STERILIZATION

The rotors are autoclavable at the temperature of 121°C, for 20 minutes. After the rotor has been autoclaved for a maximum of twenty times, seals of the rotor must be replaced (this is valid for rotors with seals).

4.4 CONDENSATION

Please remove any condensation water in the rotor chamber using a soft, absorbent cloth.
Switch off the centrifuge after use, leave the lid open and empty the tray for condensation water, located bellow the device.

5. TROUBLESHOOTING

5.1 ERROR MESSAGES

If error happens during the operation of the centrifuge, error message appears on display, and the centrifuge stops automatically. For the list of errors, see below table.

DISPLAY		PROBLEM	SOLUTION	WHO REPAIRS
SPEED	TIME			
ROTOR	CHN	Rotor change	Repeat run	User
	SEN	Rotor sensor	Check if the rotor is in centrifuge	User
			Check rotor sensor	Service-SP
			Check sensor	Service
			Electronics error	Service
	SPD	Rotor is still turning	Wait till rotor stops	User
	HI	Speed too high	Enter new reduced speed	User
			Check rotor sensor	Service-SP
IMB	SEN	Imbalance sensor	Check imbalance sensor	Service-SP
			Check sensor	Service
			Electronics error	Service
	OUR	Rotor imbalance to high	Check rotor loading	User
			Check the samples weight in rotor	User
			Check if the rotor and lid are fastened	User
			Check rotor and motor	User
			Check rotor sensor	Service-SP
			New balancing procedure	Service
LID	OPN	Lid open	Close the lid	User
	SEN	Lid latch not engaged	Press down lid again	User
			Check lid sensors	Service-SP

DISPLAY		PROBLEM	SOLUTION	WHO REPAIRS
SPEED	TIME			
MOTOR	SEN	Speed sensor error	Check speed sensor	Service-SP
			Check sensor	Service
			Electronics error	Service
	SPD	Speed deviate high than +/- 500 / 5 sec.	Check rotor, motor and electronics	Service
			Electronics error	Service
	HOT	Motor temperature over 80 °C	Check motor, motor fan and electronics	Service
T MOT	SEN	Temp. sensor error	Check temp. sensor	Service-SP
			Check sensor	Service
			Electronics error	Service
	OUR	Motor temperature over 80 °C	Check motor and electronics	Service
T CHA	SEN	Temperature sensor error	Check temperature sensor	Service-SP
			Check sensor	Service
			Electronics failure	Service
	OUR	Chamber temperature over 50 °C	Check refrigerating system	Service
T CON	SEN	Condenser temperature sensor error	Check condenser temperature sensor	Service-SP
			Check sensor	Service
			Electronics error	Service
	OUR	Condenser temperature over 80 °C	Check refrigerating system	Service
			Check refrigerating parameters	Service-SP

DISPLAY		PROBLEM	SOLUTION	WHO REPAIRS
SPEED	TIME			
DRIVE	ER1	Voltage overload on the DC link	Reduce braking level / decline	User
			Electronics error	Service
	ER2	Current overload of the motor	Repeat run	User
			Reduce acceleration level / decline	User
			Check start up parameters	Service-SP
			Check motor	Service
			Electronics error	Service
	ER3	Communication error	Electronics error	Service
MAINS	INT	Power failure during the run	Repeat run	User

TOTAL	FC	End of FAST COOL function
-------	---	Stand by position

SP … service parameters

5.2 EXIT FROM ERROR DISPLAY

Press the START/STOP key to go back on standby position.
If the error still displays, switch off the device and switch it on again.
In case that error still display call SERVICE!

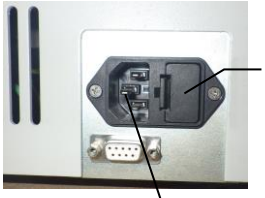
5.3 USER'S PARAMETERS

For entering to user's parameters, the centrifuge must be in stand-by position, and then simultaneously press time and speed knobs and hold them for about 2 seconds. When the first parameter is displayed, release the knobs.
You can check the parameters by rotating the time knob.
To exit from user's parameters, press START/STOP key.

DISPLAY		PARAMETER DESCRIPTION
SPEED	TIME	
0,0	**cor**	Temperature correction (°C). The value can be set by rotating the speed knob.
98	**ror**	Radius (mm) of currently used rotor. The value can be set by rotating the speed knob. (25 - 200 mm)
14000	**r0S**	Maximum permitted speed for temporary rotor.
26.0	**InH**	Imbalance value for temporary rotor over 3000 RPM. Express in percent as to maximal value, which was written at measuring procedure of imbalance sensors.
25.0	**InL**	Imbalance value for temporary rotor below 3000 RPM. Express in percent as to maximal value, which was written at measuring procedure of imbalance sensors.
23	**HrS**	Number of working hours.
3	**Hr3**	Number of working hours for rotor no. 3. (RS 4/100 and RS 4/200)

Note: Values in SPEED column of the above table are informative only, and they depend on inserted rotor and individual centrifuge.

5.4 REPLACING THE CENTRIFUGE FUSES



The following fuses are required for CENTRIC 400 R:
2 x 16AT 250V

- Unplug mains plug from the mains socket.
- By pressing the locking device on the bottom side of the fuse compartment, fuse holder is released and you can pull it out.
- Replace fuses.
- Insert fuse holder and push it, until it locks.

6. TECHNICAL DATA

Code:	457.3.501 - 230 V 1457.3.500 - 120 V
Power supply:	230 V ± 10 %, 50 / 60 Hz 120 V ± 10 %, 50 / 60 Hz
Power requirement:	
Centrifuge:	600 W
Compressor:	330 W
Fuses:	2 x 16 A T
Isolation category:	I
Maximal rotation speed:	500 to 18,000 RPM
Maximal centrifugal force:	31,151 x g
Maximal load:	4 x 200 ml
Maximal kinetic energy:	7,600 Nm
Max. density of material to be centrifuged:	1.2 g / ml
Run time:	1 s to 99 min 50 s, continuous (HOLD)
Program settings:	10 programs
Acceleration:	0 to 9 levels
Deceleration:	0 to 9 levels (0 – without braking)
Range of control for refrigeration:	-9 °C to +40 °C
Refrigeration time for Fast Cool:	from 20 °C to 4 °C in approx. 20 min.
Permitted ambient temp. during operation:	2 °C to 35 °C
Permitted max. relative air humidity:	75 %
Communication:	RS - 232
Dimensions (H x W x D):	350 x 650 x 545 mm
Weight:	79 kg

We reserve the right to alter specification details etc. without prior notice or liability!

7. APPENDIX

7.1 TABLE OF PRESET PROGRAMS

Program	Speed (RPM)	Time (min)	Temperature (°C)	Acceleration (Ac)	Braking (br)
PROG 0	8000	10	5	6	6
PROG 1	8000	5	5	9	9
PROG 2	10000	10	5	6	6
PROG 3	10000	5	5	9	9
PROG 4	12000	10	5	6	6
PROG 5	12000	5	5	9	9
PROG 6	14000	10	10	6	6
PROG 7	14000	5	10	9	9
PROG 8	16200	10	10	6	6
PROG 9	16200	5	10	9	9

7.2 CALCULATION OF RCF

For the calculation of the centrifugal force (RCF), stated as a multiple of the gravitational force "g", use the following formula:

$RCF = 11.18 \times r \times (n / 1000)^2$

RCF ……... Relative centrifugal force (x g)
r …….... Radius of the rotor (cm)
n ……..… Rotational speed (RPM)

7.3 CALCULATION OF MAXIMUM PERMITTED ROTOR SPEED

The user is responsible and must consider limitations about rotor speed and about correct rotor load.

The maximum speed for each type of rotor is marked on the rotor. Speed is calculated for samples with maximum density of 1.2 g / cm^3.

If you need to centrifuge higher density samples, maximum permitted rotor speed must be reduced according to the following formula:

$M = (1.2 \times n^2 / S)^{½}$

M ……..... Reduced maximum permitted rotor speed
n …….. Maximum permitted rotor speed for samples with density of 1.2 g / cm3
S ……..… Density of used sample

7.4 EQUIPMENT DECONTAMINATION

	The device may be contaminated.

If infectious materials get into the centrifugal chamber, on the rotors or accessories, they must be appropriately decontaminated.
They may only be decontaminated by hand with soft cloth and liquids, which contain the following ingredients: ethanol, n-propanol, ethyl hexanol.
After using disinfectants, remove the disinfectant residue by wiping it with a damp cloth.
The surfaces must be dried immediately after disinfecting.

You must perform the decontamination before the device is shipped to the service and before it is sent to disassembly after the end of the life cycle.

7.5 TRANSPORT AND STORAGE

Transport and storage are allowed only in the original packaging. Remove the rotor from the centrifuge before transport and storage.

The centrifuge is heavy. To prevent possible injuries, at least two people should lift and carry the centrifuge by holding it at the bottom from opposite sides. Use a transport aid for transferring the device.

Permissible environmental conditions for transport and storage of the equipment:
- Ambient temperature: - 25 °C to 60 °C
- Relative humidity: 10 % to 75 %

7.6 EQUIPMENT DISPOSAL

This equipment is marked with the crossed-out wheeled bin symbol, to indicate that this equipment may not be disposed of as unsorted municipal waste.
It's your responsibility to correctly dispose of your equipment at life-cycle end, by handing it over to an authorized facility for separate collection and recycling of waste equipment. It's also your responsibility to decontaminate your equipment in case of biological, chemical or radiological contamination, and so protect the persons involved in the disposal and recycling of the equipment from health hazards.
For more information about where you can dispose of your waste equipment, please contact your local dealer, from whom you purchased the equipment.
By doing so, you will help to preserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

CE

EU DECLARATION OF CONFORMITY

Manufacturer / name and address

Domel, d.o.o.
BU Laboratory Systems
Otoki 21
4228 Železniki
Slovenia

We declare under our sole responsibility that

product: **Laboratory centrifuge**
type / model: **Centric 400 R**

is in conformity with the provisions of the following regulations and also complies with the following standards

1. Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits

   Standards: EN 61010-1:2010, EN 61010-2-020:2017

2. Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility

   Standards: EN 61326-1:2013

3. Directive 2011/65/EU of the European Parliament and of the Council of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment, amended by Commission Delegated Directive (EU) 2015/863 and Directive (EU) 2017/2102 of the European Parliament and of the Council

   Standards: EN IEC 63000:2018

Place and date of issue — Name, surname and signature of authorized person

Železniki, 28.12.2021 — manager — Andrej Eržen

Version: 1