

## **VWR Micro Star 12**

### **INSTRUCTION MANUAL**

**European catalogue Number:**

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## Legal Address of Manufacturer

### **Europe**

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## EC Declaration of Conformity

### Déclaration de conformité CE

### EG Konformitätserklärung

We, **VWR International bvba**,  
Nous, **Researchpark Haasrode 2020**,  
Wir, **Geldenaaksbaan 464**,  
**B-3001 Leuven**

hereby declare that the products, mentioned in Schedule 1 comply with the essential requirements of the following Directives of the European Parliament and council:

*déclarons par la présente que les produits mentionnés en annexe sont conformes aux exigences essentielles des Directives du Parlement Européen et du Conseil suivantes :*

*bestätigen hiermit, daß die Produkte im Anhang den grundlegenden Anforderungen der folgenden Richtlinie des Europäischen Parlaments und des Rates entsprechen:*

<b>2006/42/EC</b>	of 17 May 2006 on machinery, and amending Directive 95/16/EC <i>du 17 mai 2006 relative aux machines et modifiant la directive 95/16/CE</i> <i>vom 17. Mai 2006 über Maschinen und zur Änderung der Richtlinie 95/16/EG</i>
<b>2006/95/EC</b>	of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits <i>du 12 décembre 2006 concernant le rapprochement des législations des États membres relatives au matériel électrique destiné à être employé dans certaines limites de tension</i> <i>vom 12. Dezember 2006 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten betreffend elektrische Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen</i>
<b>2004/108/EC</b>	of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility and repealing Directive 89/336/EEC Text with EEA relevance <i>du 15 décembre 2004 relative au rapprochement des législations des États membres concernant la compatibilité électromagnétique et abrogeant la directive 89/336/CEE Texte présentant de l'intérêt pour l'EEE</i> <i>vom 15. Dezember 2004 zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über die elektromagnetische Verträglichkeit und zur Aufhebung der Richtlinie 89/336/EWG Text von Bedeutung für den EWR</i>
<b>2011/65/EU</b>	of 8 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment <i>du 8 juin 2011 relative à la limitation de l'utilisation de certaines substances dangereuses dans les équipements électriques et électroniques</i> <i>vom 8. Juni 2011 zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten</i>

and are in conformity with the following standard(s) and/or other normative document(s):

*et sont conformes à la (aux) norme(s) ou autre(s) document(s) normatif(s) :*

und der (die) folgende(n) Norm(en) oder ander(er) normativ(er) Dokument(e) entsprechen:

**EN61010-1:2001; EN61010-2:020:2006; EN61326-1:2006**  
**EN55011:2007**  
**EN12100:2010**

Year of CE marking: **2012**

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## EC Declaration of Conformity

*Déclaration de conformité CE*  
*EG Konformitätserklärung*

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Schedule 1  
Annexe 1  
Anhang 1

Article Number	Article description
521-1651	MICROCENTRIFUGE VWR MICROSTAR 12 , EU PLUG MICRO-CENTRIFUGEUSE VWR MICROSTAR 12 FICHE EU MIKROLITERZENTRIFUGE VWR MICROSTAR 12 EU STECKER

2/2



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Revision 01 of June 2014

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# Warnings

Before using, read this operation manual to ensure correct usage and thorough understanding of the instrument. Incorrect handling could possibly result in personal injury or physical damage of the unit or its accessories. The manufacturer accepts no responsibility for any damage caused by mishandling that is beyond normal usage as defined in this manual. The manufacturer is only responsible for the security, reliability and performance of the instrument, if the unit is operated in accordance with the operating instructions. Any adjustments, changes or repairs must be performed by authorized personnel.

## NOTES AND WARNINGS

Notes and warnings appear throughout this manual to provide additional information and directions so that specific actions can be taken to protect both personnel and the instrument.



This symbol indicates additional warnings to prevent actions that may result in equipment damage, property damage, or personal injury.

### NOTE

Notes are intended to provide additional information to clarify specific instructions or highlight information requiring special attention.

## Safety Information

**For your own safety, please review the following precautions:**

- NEVER use a power source other than that designated for the instrument.
- NEVER operate the instrument, if it has not been installed or repaired properly. Repairs must be performed only by qualified personnel authorized by VWR
- NEVER use unapproved rotors and associated components. Contact the manufacturer prior to such use to prevent possible damage to the instrument.
- NEVER attempt to open the lid or move the instrument unless the rotor is completely stopped.
- NEVER operate the instrument without a rotor and lid installed correctly and secured to the motor shaft.
- NEVER centrifuge flammable, toxic, radioactive, explosive, or corrosive materials.

**NOTE**

When it is required to handle the Risk Group II materials that are known to be toxic, radioactive materials or pathogenic micro-organisms, as identified in the World Health Organization (WHO): “Laboratory Biosafety Manual,” the guidelines recommended by WHO should be followed to ensure the safety.

(<http://www.who.int/csr/resources/publications/biosafety/Labbiosafety.pdf>)

- NEVER exceed the rated speed or specific gravity. Samples whose density is greater than 1.2 g/ml must have reduced maximum rotational speed to avoid rotor failure.
- ALWAYS load the rotor symmetrically with evenly weighted samples to avoid rotor imbalance. If necessary, use the water blank to counterbalance the unpaired sample.
- NEVER use Biosafety rotor without lid
- ALWAYS locate the instrument on a flat, level, rigid, and vibration free surface.
- ALWAYS mark a safety zone of 30 cm around the centrifuge to indicate that neither hazardous materials nor persons should be permitted within the area during operation, as safety regulations required.
- ALWAYS position the instrument with additional free space on each side of instrument to ensure proper ventilation.
- ALWAYS install the instrument within a temperature and humidity controlled environment.  
(Permissible ambient temperature: +5 °C – +35 °C, Relative humidity: ≤ 80 %)
- ALWAYS disconnect the power supply prior to maintenance and servicing to avoid electrical shock. Do not immerse.
- ALWAYS use proven disinfection procedures when centrifuging bio-hazardous materials.

Please follow the guidelines above, and read this manual in its entirety to ensure safe operation of the unit.

## Package Contents

Main Body, 1 unit

Rotor: Autoclavable fixed angle rotor with 12 tube holes for 1.5 / 2.0 ml tubes, 1 unit

Rotor Lid: Autoclavable biosafety rotor lid, 1 unit

Adapter: Adapter for 0.2 ml PCR tubes, 12 units

Power Supply: AC Power Cable (3m), 1 unit

L-type rotor wrench, 5 mm, 1 unit

Operation Manual, 1 unit

Main Body	Rotor & Lid	Adapter for 0.2 ml tubes
		
		Power Cord
		

## Installation

### WARNING!



- Safety regulations require a safety zone of 30 cm around the centrifuge that needs to be marked to indicate that neither hazardous materials nor persons should be permitted within the area during operation.
- Proper ventilation is necessary to prevent the overheating of samples.

1. Inspect the instrument and the parts for any visible signs of shipping damage.
2. Unpack the unit and verify the contents of the package.
3. Place the instrument on a clean, flat, level, and vibration free surface.
4. Plug the power cord into the appropriate power outlet.

### NOTE

Check that the power supply corresponds with the manufacturer's specified electrical requirements.



Turn the power on. The switch is located on the rear side of the unit.

5. Once the power is applied, the door will be opened automatically.
6. Carefully place the rotor onto the motor shaft. Hold the rotor with one hand and securely tighten with the supplied rotor wrench the rotor nut to the shaft by turning clockwise.

**NOTE**

Turn the rotor nut counterclockwise to release the rotor from the shaft.

Place the biosafety lid on the rotor and screw on clockwise to secure, see photo Rotor &

Lid

## Intended use

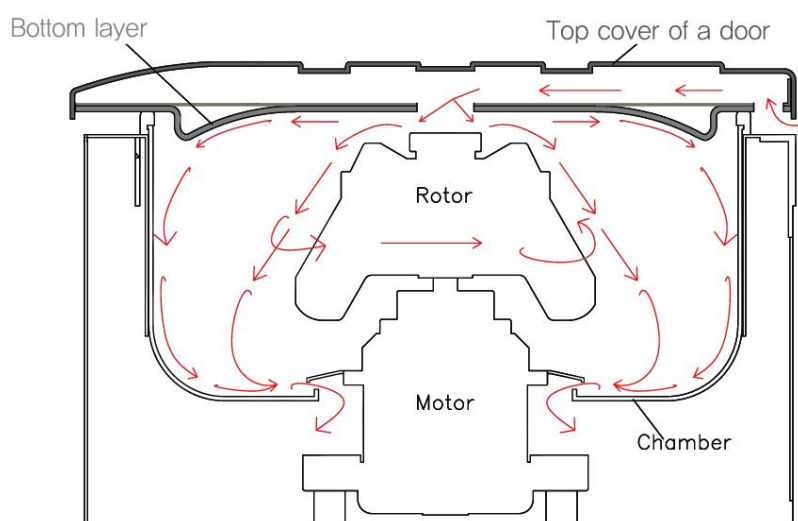
### VWR Micro Star 12

is a benchtop high-speed, multi-purpose micro-centrifuge designed to be used in medical, industrial, and scientific applications. Its user-friendly control features and compact, space-saving design delivers maximum solid performance for your daily centrifugation needs. VWR Micro Star 12 is supplied with an easily interchangeable rotor to accommodate micro-tubes and (with optional rotor) PCR strips.

#### PRODUCT FEATURES

- Maximum centrifugation speed/force of 13,500 rpm / 12,300 x g
- Compact and space saving design with a small foot print
- Reduce operating time with fast acceleration ( $\leq 12$  sec) / deceleration rates ( $\leq 16$  sec)
- "Pulse" for quick runs
- Highly visible LCD display (blue backlit with white text) and intuitive controls with a soft touch keypad
- Automatic RPM/RCF conversion
- Automatic detection system with audible alarm alerting the user when speed, heating and weight limit is exceeded
- 3-layered stainless steel door with interlock system for safety and durability
- Maintenance free and environmentally friendly high torque AC induction motor ensures quiet operation
- Unique air flow design prevents overheating of samples
- Supplied with autoclavable fixed angle rotor with screw on biosafety lid.
- Optional PCR rotor

[Schematic diagram of mini's air flow design]



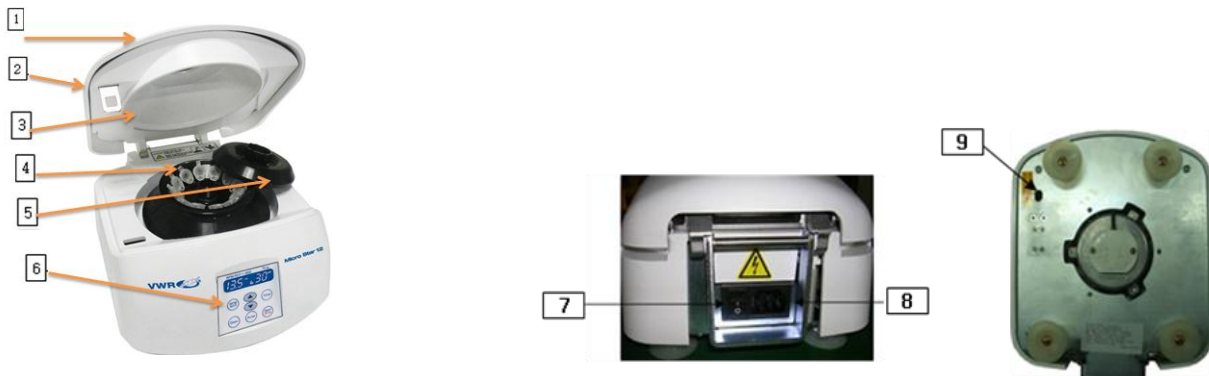
The patented, unique internal design circulates an efficient airflow inside the instrument, reduces spinning frictions, whilst minimizing both the motor temperature and the noise levels.

## SPECIFICATIONS

	Angle Rotor	PCR Rotor
Maximum RPM	13,500 rpm	6,000 rpm
Maximum RCF	12,300 x g	1,850 x g
Maximum Capacity	12 x 1.5/2.0 ml	4 x (8 x 0.2 ml) PCR strips
Run Time	Timed ≤ 30 min	
Acceleration Time	≤ 12 seconds	
Deceleration Time	≤ 16 seconds	
Noise Level	≤ 60 dB(A)	
Motor	High torque AC induction motor	
Power & frequency	230 V, 50/60Hz	
Power consumption	122 Watt	
Weight	4.4 kg (for main body only)	
Dimension (W x D x H)	208 x 245 x 145 mm	
RPM/RCF Conversion	Automatic	
Safety lid lock	Automatic	
Certification	CE	

# Overview




## PHYSICAL DESCRIPTION



1. Door
2. Door Lock
3. Ventilating Hole & Center Win
4. Rotor
5. Rotor Lid
6. Control Panel
7. Power Switch
8. Power Socket
9. Emergency Door Open Hole

## FRONT CONTROL PANEL DESCRIPTION



1. Display LCD control panel: Displays set values and actual operating conditions
  - Speed/Force (RPM/RCF): Displays rotor speed/force in RPM/RCF x 1000
  - Centrifugation:  Sign "blinks" whilst spinning.
  - Status of door: Indicates door status as  for open or  for closed.
  - Time: Displays remaining time in min or sec.

2. Speed/force Setting Button: Press to set speed/force value and to switch between RPM and RCF.
3. Door Button: Press to open door.
4. Time Setting Button: Press to set run time between 1 min to 30 min.
5. Pulse Button: Press to use for quick separation.
6. Start & Stop Button: Press to start and stop operation.
7. Up & Down Arrow (▲, ▼) Buttons: Press to change input data.

## Operation



### WARNING!

- Check tubes and rotors for cracks and deformities before each use.
- Do not attempt to open the lid unless the rotor has stopped completely.
- Do not exceed safe rotor speed.
- The operator should not leave the centrifuge until the full operating speed is attained and the machine appears to be running safely without vibration.
- Stop the centrifuge immediately and unplug the power cord if an unusual condition (noise or vibration) begins.
- If tube breakage occurs, turn centrifuge off immediately. Leave for 30 minutes to reduce the risk of aerosols. The operator should wear suitable gloves, remove debris, clean and disinfect centrifuge interior and rotors.
- If breakage occurs rotor should be opened in a Biological Safety Cabinet to prevent contamination from any aerosol that has formed
- Clean all spills immediately and decontaminate the instrument and rotor after use with biological or radioactive materials.

1. Turn the power switch to “ON” position. The switch can be found on the rear of the instrument.
2. Press the “Door” button on the control panel to open the door.
3. Load sample tubes into the rotor symmetrically with evenly weighted samples and securely close the rotor lid by placing the biosafety lid on the rotor and securing by screwing on in clockwise manner.

### NOTE

Do not attempt to exceed the maximum load or speed of the rotor. The maximum allowable speed needs to be reduced to spin solutions with a density greater than 1.2 g/ml, see Appendix for details.

4. To set or change the centrifugation parameters, follow the instruction below.

- Speed/Force: Press the “RPM/RCF” button and press the arrow buttons (▲, ▼) to select or change speed in increments of 100 RPM from 1,200-13,500 RPM.

#### **NOTE**

Press the “RPM/RCF” button once again to enter or change the force in RCF or convert speed in RPM to RCF.

- Time: Press the “Time” button and press the arrow buttons (▲, ▼) to adjust the desired length of spin time from 1 ~ 30min. The remaining operation time will be displayed.
- Pulse: Press the “Pulse” button on the control panel for quick spin cycle. Press and hold the button for desired length of time and release to deactivate it.

#### **NOTE**

The parameters can be adjusted during the centrifugation.

5. Close the centrifuge door by press down firmly until the latch handle is fully retracted.

#### **NOTE**

The instrument will not operate if the door is not properly latched.

6. Press the “Start/ Stop” button to start the centrifuge, and at any time, press the button again to stop the operation.
7. The door opens automatically at the completion of the run and the rotor stops fully.

#### **NOTE**

In the event of a power failure or malfunction, the door can be opened manually with Emergency Door Open function. See overview of features pos. 9. Do not turn the instrument upside down when using this function, but lift the instrument so you can get access to Emergency door open hole. Use a screw driver to move the latch in the advised direction.

Remove the samples. Clean the instrument and rotor thoroughly.

## **MAINTENANCE AND CARE**

### **WARNING!**



- Do not immerse the instrument in liquid or pour liquids over it.
- Before cleaning or maintenance, always isolate and disconnect the power supply to eliminate the risk of electric shock.
- Do not use any volatile chemicals such as alcohol, benzene, acetone, and etc.
- Liquids must not come into contact with the motor.
- Always use a lint-free cloth and non-corrosive, neutral cleaning agents with pH value 6-8 to clean all parts. Rinse thoroughly with distilled water and dry completely.

## ROTOR

- Preparation for the cleaning
  1. Remove any rotor adapters and tubes from the rotor prior to cleaning.
  2. Remove the rotor securing nut from the motor shaft by turning counterclockwise,
  3. To remove the rotor from the motor shaft, carefully lift the rotor directly upward in a straight vertical motion.
- Keep the rotor clean and dry at the end of each work day, and immediately after any spill.
- Periodically inspect the rotor for dents, dings, scratches, discoloration and cracks. If any of these signs are evident, discontinue use and replace the rotor immediately.
- Always use non-metallic, soft brush to wash rotors to prevent corrosion that can emanate from scratches.
- Remove adapters after use and inspect for corrosion.
- Remove O ring prior to sterilization of the rotor
- Check O ring for signs of wear and tear
- The rotor and the rotor lid can be autoclaved at 121 °C in 20 minutes

## CENTRIFUGE BODY (External surfaces and the Chamber)

- All parts should be wiped down periodically to prevent corrosives or contaminants from drying on component surfaces.
- In case of glass tube breakage, all parts must be thoroughly cleaned and all broken particles must be removed completely.
- Abrasions or scratches should not be made on the surfaces, as corrosion may result.

## TRANSPORT

- Avoid impacts during transportation and do not drop the unit as damage will result.
- Always remove the rotor and pack the inside of the chamber with protective packaging before transporting the instrument. This prevents damage and minimizes any impact to the shaft.

## RETURN

- Before returning the unit and/or associated accessories, for any reason, prior permission must be obtained from the manufacturer.
- All parts MUST be shipped along with "Return Authorization Document" (RAN) and "Certificate of Decontamination." Please contact VWR Service to obtain the forms.

### **NOTE**

In order to protect our personnel, Certificate of Decontamination needs to be filled out completely to ensure that all parts are free from pathogens, chemical hazards, and/or radioactivity. Sterilization and decontamination MUST be done prior to returning the parts.

- Failure to attach the forms will result in return or disposal of the items without review of the reported problem.

## Troubleshooting

In the event of a malfunction, the error message with code number appears to indicate the probable causes and the instrument will cease to operate. If other malfunctions without error code indication occur, turn off the power immediately, identify the causes and follow the corrective actions as recommended below. For any problems not covered here or you are unable to correct the malfunction, contact VWR Service for assistance.

If the instrument stops due to an error indication, the run cannot be restarted until the error is cleared. After the problem is corrected, reset the instrument to check if the error occurs again.


Error Indication		Possible Reason	
E1		• Instrument is powered up incorrectly	
No display or power: Power failure during operation; display screen is blank		<b>Corrective Action</b>	1. Plug the power cord into the appropriate power outlet.
			2. Turn the power switch off and back on to reset.
		• Instrument is not connected to the power outlet	
		<b>Corrective Action</b>	1. Make sure to securely connect the power cord to the power outlet.
			2. Turn the power switch off and back on to reset.
		• Temporary system error	
		<b>Corrective Action</b>	Turn the power switch off and back on to reset.
			* If problem cannot be resolved, use the Emergency Door Open function to open the door manually to save samples. Call VWR Service Department
E2		• Rotor recognition or sensor error	
Operation cannot start		<b>Corrective Action</b>	Perform the recommended corrective action as listed in E1 and/or E9.
E3		• Door is not closed completely	
		<b>Corrective Action</b>	1. Make sure to press down the door firmly until the latch handle is fully retracted.
			2. Turn the power off and back on to reset.

E4		• Door switch or sensor error	
		<b>Corrective Action</b>	Turn the power off and back on to reset.
			* If problem cannot be resolved, use the Emergency Door Open function to open the door manually to save samples. Call VWR Service Department.
E5		• Temporary system error	
		<b>Corrective Action</b>	Turn the power switch off and back on to reset.
		* If problem cannot be resolved, call VWR Service Department	
E6		• Door switch or sensor error	
Door does not open		• Door latch is not operating properly	
E7		<b>Corrective Action</b>	Turn the power off and back on to reset.
			* If problem cannot be resolved, use the Emergency Door Open function to open the door manually to save samples. Call VWR Service Department.
		• Door switch or sensor error	
Door does not close		• Door latch is not operating properly	
E8		<b>Corrective Action</b>	Turn the power off and back on to reset.
			* If problem cannot be resolved, use the Emergency Door Open function to open the door manually to save samples. Call VWR Service Department.
E9		• Rotor is not balanced	
Instrument is vibrating excessively or making unusual noise		<b>Corrective Action</b>	Perform the recommended corrective action as listed in E8.
		• Mechanical failure or damage	
		<b>Corrective Action</b>	Turn the power off immediately and call VWR Service Department.
		* If problem cannot be resolved, call VWR Service Department.	



## Accessories

### ORDER INFORMATION

Cat No.	Product	Capacity	Max. Speed (rpm)	Max RCF (x g)
521-1651	VWR Micro Star 12 , Microcentrifuge (220V, 50/60Hz)		13,500	12,300
	includes Fixed Angle Rotor & 12 adaptors for 0.2 ml tubes			
Rotors for VWR Micro Star 12				
	Fixed Angle Rotor with biosafety lid	12 x 1.5/2.0 ml	13,500	12,300
521-1652	PCR Rotor, for 4x (8 x 0,2 ml) PCR strips 	32 x 0.2 ml	6,000	1,850
Adaptors for VWR Micro Star 12				
521-1653	0.2 ml Adaptor	0.2 ml/ea		
521-1654	0.5 ml Adaptor	0.5 ml/ea		

## Technical service

### Web Resources

Visit the VWR's website at [www.vwr.com](http://www.vwr.com) for:

- Complete technical service contact information
- Access to VWR's Online Catalogue, and information about accessories and related products
- Additional product information and special offers

**Contact us** For information or technical assistance contact your local VWR representative or visit. [www.vwr.com](http://www.vwr.com).

## Warranty

VWR International warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of delivery. If a defect is present, VWR will, at its option and

cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty turns invalid, except to the extent, the defect of the product is not due to such non-performance.

Items being returned must be insured by the customer against possible damage or loss. This warranty shall be limited to the aforementioned remedies.

IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

## **Compliance with local laws and regulations**

The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorizations necessary to run or use the Product in its local environment. VWR will not be held liable for any related omission or for not obtaining the required approval or authorization, unless any refusal is due to a defect of the product.

## Equipment disposal



This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.

Instead it's your responsibility to correctly dispose of your equipment at lifecycle -end by handling it over to an authorized facility for separate collection and recycling. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment.

For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment.

By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you

## APPENDIX

### Allowable Maximum Speed

The maximum allowable speed needs to be reduced when centrifuging a solution with a density greater than 1.2 g/mL. **Failure to reduce the speed may result in damage to the rotor and centrifuge.** The revised maximum speed can be calculated with the following formula.

$$\text{Reduced speed } (n_{\text{red}}) = \sqrt{\frac{1.2}{\text{higher density value}}} \times \text{max speed } (n_{\text{max}})$$

Example:

Where the density of the liquid is 1.9, the new allowable maximum speed would be calculated as follows:

$$\text{Reduced Speed} = \sqrt{(1.2/1.9)} \times 13,500 = 10,729 \text{ rpm}$$

### RPM to RCF conversion

RPM can be converted in RCF with the following calculation.

$$\text{RCF} = 11.2 \times r (\text{RPM}/1000)^2 \text{ or } \text{RCF} = 1.12 \times 10^{-5} \times r (\text{RPM})^2$$

Example:

Where the RPM is 12,000 RPM and radius of rotor is 6 cm, Rcf would be calculated as follows:

$$\text{RCF} = 1.12 \times 10^{-5} (6)(12,000)^2 = 9,651 \times g$$

# Your distributor

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\*0,14 €/Min. aus d. dt. Festnetz

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