

USER MANUAL



LABORATORY CENTRIFUGE MPW-54

Read before use!

Serial number of the centrifuge:

For centrifuges with serial no (SN): from 10054237122



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1. Symbols used in the manual and on the device

Symbol	Explanation
	WARNING! Warning of potential injury or health risk
	DANGER! Risk of electric shock with potential for severe injury or death as a consequence
	DANGER! Biohazard with potential for risk to health or death as a consequence
	DANGER! Risk of explosion with potential for severe injury or death as a consequence
	Symbol identifying a medical device for in vitro diagnostic use
	CE mark
	Symbol informing about the method of disposal
	Please read the instruction manual before you start working with the device
	Manufacturer's data

2. Application

The MPW-54 is a tabletop laboratory centrifuge for in vitro diagnostic (IVD). Device is used for separation samples taken from people's, animal's, and plant's components of different densities, under the influence of the centrifugal force, to provide information about their biological state. Its construction ensures easy operation, safe work, and wide range of applications at laboratories engaged in routine medical analyses, biochemical research works etc. This centrifuge is not biotight and therefore during centrifugation of preparations requiring biotightness one has to use closed and sealed containers and rotors. In the centrifuge, it is prohibited to centrifuge caustic, inflammable, and explosive preparations.

3. Technical specification

manufacturer	"MPW MED. INSTRUMENTS" SPÓŁDZIELNIA PRACY, Boremłowska 46 Street, 04-347 Warsaw									
type	MPW - 54					MPW – 54s				
cat. no (REF)	10054/2-56	10054/1-56				10054/2-56/S	10054/1-56/S			
mains voltage (L1+N+PE)	230V	100V	110V	120V	127V	230V	100V	110V	120V	127V
	±10%	±5%				±10%	±5%			
frequency	50/60Hz									
connected load (max)	60W									
overcurrent protection	fuse WTA-T 2A 250V									
capacity (max)	120ml									
speed – RPM	(L) 3500, (H) 5800					(L) 1000, (H) 3500*				
force – RCF	1137, 3122					93, 1137				
running time	01:00 ÷ 30:00 [min., s] (step 1min.)									
short-time operation mode – SHORT	no									
continuous operation mode – HOLD	yes									
electromagnetic compatibility	according to EN 61326-2-6:2006									
height (H)	180 mm									
width (W)	220 mm									
depth (D)	270 mm									
height with open lid(H _{oc})	367 mm									
noise level	≤ 56 dB									
weight of centrifuge 230V	approx. 4,2 kg									
weight of centrifuge 120V	approx. 4,2 kg									

*- It is possible to change the speed **H** and **L** in the range from 500 to 5800 RPM

3.1. Environmental conditions

- The device may only be used indoors.
- The permissible ambient temperature is 2°C to 40°C.
- Maximum allowed relative humidity 80% at temperature up to 31°C decreasing linearly to 50% relative humidity at 40°C.
- The mains voltage fluctuations must not exceed ± 10% of the nominal voltage.
- Maximum altitude 2,000 m above sea level.
- Overvoltage category II.
- Pollution degree 2.

4. Installation

4.1. Unpacking

Open the package. Remove the box containing the accessories. Take out centrifuge from the container. Keep the box and packing materials in case of service shipping

4.2. The contents of the package

Name	Quantity (pcs)	Cat No.
Centrifuge MPW-54	1	10054/1-56 ; 10054/2-56 or 10054/1-56/S ; 10054/2-56/S
Complete clamp	1	17168
Spanner for the rotor	1	17099T
Key for emergency cover release	1	17162
Power cord 230V/120V	1	17866/17867
Fuse WTA T2A 250V	2	17859
Petroleum jelly 20ml	1	17201
User manual	1	See page 1

4.3. Consumable Materials

	<p>Only original MPW buckets can be used! One should use tubes which dimensions, and durability is proper! Using of tubes from other companies should be consulted with manufacturer of centrifuge. In the centrifuge, disinfectants and cleaning agents generally used in medical care should be used (e.g., Aerodesina-2000, Lysoformin 3000, Melseptol, Melsept SF, Sanepidex, Cutasept F).</p>
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4.4. Location

	<ul style="list-style-type: none"> ▪ The device should be lifted from below near its feet and placed directly on a suitable laboratory table. ▪ The centrifuge should be set so that access to the power switch is not difficult. ▪ Do not place the centrifuge near heaters and avoid direct sunlight. ▪ The table on which the centrifuge is placed should be stable and have a flat, leveled top. ▪ A protection zone of at least 30 cm on all sides should be provided around the centrifuge. The ambient temperature for normal operating conditions of the centrifuge is given in section Environmental conditions. ▪ When changing the place from cold to warm, water condensation inside the centrifuge will occur. It is important to allow sufficient time for drying before restarting the centrifuge (minimum 4 hours). ▪ The supply voltage must match the voltage specified on the rating plate. Laboratory centrifuges by "MPW MED. INSTRUMENTS" are devices with a basic safety class and have a three-wire connection cord with a plug resistant to dynamic loads. ▪ The power socket should have a protective pin. ▪ It is recommended to install an emergency switch located far from the centrifuge near the exit from the room or outside the room.
	<ul style="list-style-type: none"> ▪ Before switching on, check if the centrifuge is properly connected to the power supply. ▪ Only the power cord recommended by the manufacturer may be used.

4.5. Current protection



The centrifuge is equipped with thermal current protection. Fuse is situated in the plug-in socket unit at back wall of the centrifuge.

5. Safety notes

5.1. General remarks

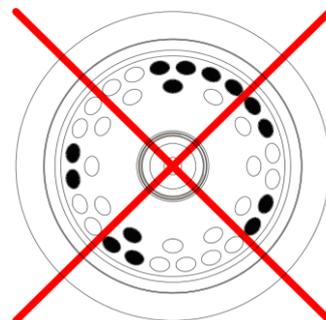


- The laboratory centrifuge may be operated only by qualified laboratory personnel after getting acquainted with the user's manual.
- **The operating instructions are part of the product.**
- **The instruction manual should always be kept near the centrifuge.**
- The centrifuge cannot be operated inconsistently with its purpose.
- **If the centrifuge is used in a manner inconsistent with the manufacturer's guidelines, the safety of the device operation may be impaired.**

5.2. Filling the rotor



- **Check that the rotor is properly seated and bolted to the motor axis.**
- Do not exceed the maximum rotor load (information is provided on the rotors).
- In order to ensure symmetrical loading, fill opposite openings of the rotor with inserts and test tubes of the same type and weight.



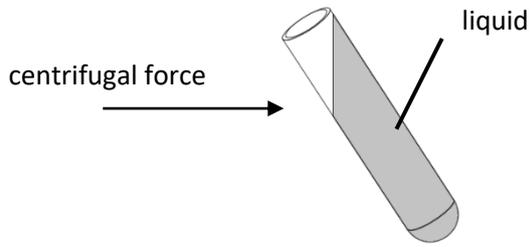
ATTENTION:

- If the centrifuge is started with large unbalance, dangerous vibrations will occur.
- Containers with catalog numbers 13080 and 13081 are balanced in sets and marked with one number. Make sure that the containers are placed in sets with the same numbers in the rotor.

5.3. Filling tubes



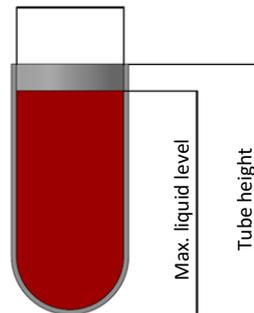
- **Tubes may only be filled outside the centrifuge.**
- Tubes may only be filled with the maximum amount of substance specified by the manufacturer.
- The test tubes must be filled in such a way that the centrifuged substance does not run out of the vessel during centrifugation.



- In case the tube manufacturer has not specified a maximum level, fill the tubes according to the formula:

$$\text{Max liquid level} < \text{Tube height} - \frac{\text{Internal tube diameter}}{2}$$

Internal tube diameter



- For centrifugation in the centrifuge, only containers included in the list of equipment and centrifuge tubes, the diameter, length and strength of which are appropriate, should be used. The use of test tubes from other manufacturers should be agreed with MPW MED. INSTRUMENTS or its authorized representatives.
- Pay attention to the quality and appropriate thickness of the walls of glass test tubes. **Glass tubes should be centrifuge tubes.**
- To prevent the centrifuge from being unbalanced, it is recommended to weigh the filled test tubes before inserting them into the rotor. When centrifuging in horizontal rotors, it is recommended to weigh the filled containers / hangers. This will allow to minimize the differences in mass between them, which will positively affect the suspension of the engine and the reduction of noise level during the operation of the centrifuge.

5.4. Safety hints

	<p>ROTORS MAINTENANCE</p> <ul style="list-style-type: none"> ▪ Use only accessories in good condition. ▪ Protect equipment against corrosion using accurate preventive maintenance.
	<p>HAZARDOUS MATERIALS</p> <ul style="list-style-type: none"> ▪ Infectious materials could be processed in closed buckets only. ▪ It is not allowed to subject to centrifugation toxic or infectious materials with damaged leak proof seals of the rotor or test-tube. Proper disinfection procedures have to be carried out when dangerous substances contaminated the centrifuge or its accessories.

	<p>EXPLOSIVE AND COMBUSTIBLE MATERIALS</p> <ul style="list-style-type: none"> ▪ It is not allowed to centrifuge explosive and inflammable materials. ▪ It is not allowed to centrifuge substances prone to reacting in result of supplying high energy during centrifugation. ▪ The centrifuge can not be operated in explosion-endangered areas ▪ It is not allowed to centrifuge materials capable of generating inflammable or explosive mixtures when subjected to air.
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5.5. Operating conditions

	<p>START-UP</p> <ul style="list-style-type: none"> ▪ Prior to switching the centrifuge on, one shall read all sections of this instruction carefully in order to ensure smooth operation and avoid damages of this device or its accessories. ▪ In order to protect the centrifuge against unbalance, fill in the test tubes up to the same weight.
	<p>TRANSPORTATION</p> <ul style="list-style-type: none"> ▪ Centrifuge must not be transported with the rotor mounted on the shaft.
	<p>GENERAL HINTS</p> <ul style="list-style-type: none"> ▪ One must use original rotors, test-tubes and spare parts only. ▪ In case of faulty operation of the centrifuge one shall ask for assistance of service of MPW MED. INSTRUMENTS company or its authorized representatives. ▪ It is not allowed to switch the centrifuge on if it is not installed properly or rotor is not fitted correctly.
	<p>CENTRIFUGES SUBSTANCES</p> <ul style="list-style-type: none"> ▪ It is not allowed to exceed load limit set by the manufacturer. Rotors are intended for fluids of average homogeneous density equal to 1,2 g/cm³ or smaller when centrifugation is carried out at maximum speed. When fluids of higher density shall be used, then it is necessary to change density of centrifuges sample in PARAM/DENSITY field. ▪ Observe the limitation on the permissible mass specified on the rotor (e.g., MAX 24x2,4g). If the designation is given on the rotor, it refers to the mass of the sample. If the designation is given on the rotor, it refers to the mass of the entire load. ▪ Examples: <div style="text-align: center;">  <p>The diagram shows a cross-section of a centrifuge rotor. A sample tube is inserted into the rotor. An arrow points to the tube. Below the rotor, the text 'MAX 24x2.4g' is written.</p> </div> <p style="text-align: center;">2,4g – maximal mass of tube content</p>

5.6. Work safety

The centrifuge should be inspected by an authorized service at least once a year (after the warranty period). The reason for more frequent inspection may be, for example, a corrosive environment. Tests should end with issuing a validation protocol, which specifies checking the technical condition of a laboratory centrifuge. It is recommended that you create a document that records all repairs and inspections. Both these documents should be kept in the place where the centrifuge is used.

	<p>INSPECTION PROCEDURES CARRIED OUT BY THE OPERATOR</p> <p>Operator has to pay special attention to the fact that the centrifuge parts of key importance due to safety reasons are not damaged. This remark is specifically important as for:</p> <ul style="list-style-type: none"> ▪ Centrifuge accessories and especially structural changes, corrosion, preliminary cracks, abrasion of metal parts. ▪ Screw connections. ▪ Inspection of seals of the buckets if such are used. Special attention must be paid to all of the rubber (seals) parts. In the case of damage or visible structural changes defective parts must be replaced for new immediately. ▪ Control of execution of the guarantee yearly technical inspection of the centrifuge (after lapse of guarantee). ▪ Only the manufacturer-specified buckets, included in the equipment list, as well as centrifuge tubes, which diameter, length and durability are suitable, should be used for spinning in this centrifuge. The use of equipment made by other manufacturers should be consulted with the manufacturer of the centrifuge. ▪ It is not allowed to lift or shift the centrifuge during operation, and rest on it. ▪ It is not allowed to stay in the safety zone within 30 cm distance around the centrifuge neither leave within this zone some things, e.g., glass vessels. ▪ It is not allowed to put any objects on the centrifuge.
	<p>COVER OPENING</p> <ul style="list-style-type: none"> ▪ It is not allowed to open the cover manually in emergency procedure when rotor is still turning.
	<p>ROTORS</p> <ul style="list-style-type: none"> ▪ It is not allowed to use the rotors and round carriers with signs of corrosion or other mechanical defects. ▪ It is not allowed to centrifuge highly corrosive substances which may cause material impairment and lower mechanical properties of rotor and round carriers. ▪ It is not allowed to use rotors and accessories not admitted by the manufacturer. Let to use commercial glass and plastic test tubes, which are destined to centrifuging in this laboratory centrifuge. One should absolutely not use poor quality elements. Cracking of glass vessels and test tubes could result in dangerous vibration of the centrifuge. ▪ It is not allowed to carry out centrifugation with the rotor caps taken off or not driven tight.

5.7. Residual risk

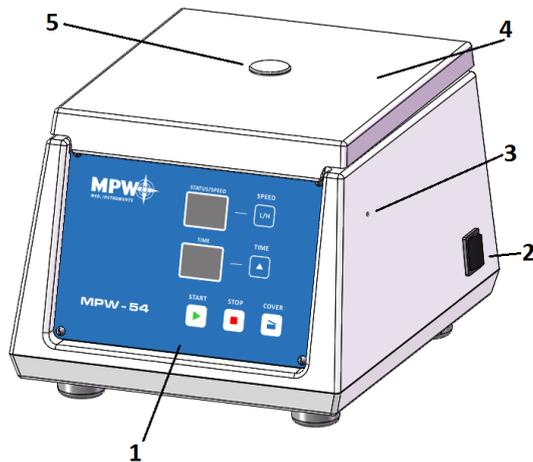
The centrifuge is built according to the state-of-the-art and the recognized safety regulations. Nevertheless, still remain some level of residual risk due to improper operation and malfunctions. It is possible to decrease residual risk by strictly applying user manual conditions and correcting malfunction which could threaten safety, immediately.

6. Operating

6.1. Centrifuge overview

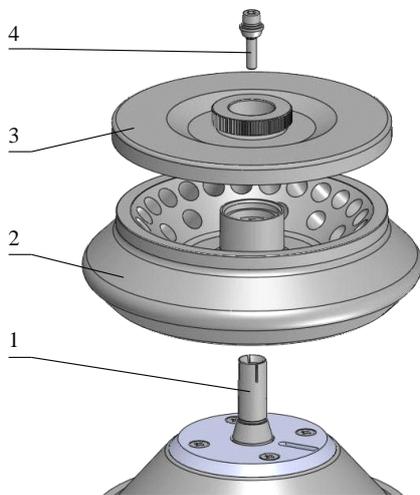
The new generation of laboratory centrifuges "MPW MED. INSTRUMENTS" is equipped with modern microprocessor controllers, very durable and quiet brushless asynchronous motors and equipment that meets modern user requirements.

6.2. Centrifuge description



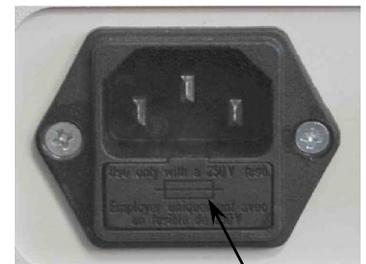
1. Control panel
2. Power switch
3. Hole for emergency lid opening
4. Cover
5. Glass inspection

Fig.1. General view



1. Motor axle
2. Rotor
3. Rotor lid
4. Complete clamp

Fig. 2. Angle rotor assembly



- 1
 - 2
1. Mains socket
 2. Fuse socket

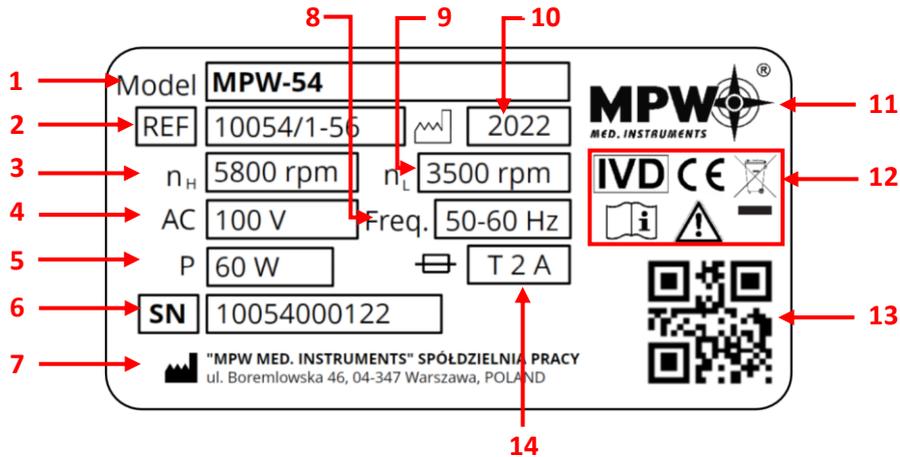
Fig. 3. Back of the centrifuge

6.3. Construction

The centrifuge has a rigid self-supporting structure. The housing is made of ABS plastic. The cover is mounted on metal hinge axes, and from the front it is closed with an electromagnetic lock blocking the possibility of opening during spinning. The bowl, which constitutes the centrifugation chamber, is made of plastic.

6.4. Name plate

The data concerning the device should be read from the rating plate located on the rear wall of the centrifuge (the picture below is an example).



- | | |
|------------------------------|---|
| 1 Centrifuge model | 9 Minimum speed |
| 2 Catalog number | 10 Year of production |
| 3 Maximum speed | 11 Manufacturer's logo |
| 4 Rated voltage | 12 Approval marks and symbols
(explained in chapter 1) |
| 5 Maximum rated power | 13 QR code for serial number |
| 6 Serial number | 14 Current protection |
| 7 Manufacturer's information | |
| 8 Rated frequency | |

6.5. Rotor and accessories installation



- Connect the centrifuge to the power source (mains socket at the back of the centrifuge).
- Turn on the centrifuge (switch on the side of the centrifuge).
- Open the cover of the centrifuge by pressing the COVER key. Before installing the rotor, check that the centrifugation chamber is free from contamination, e.g., dust, glass splinters, liquid residues that must be removed.
- Put the rotor on the motor axis by sliding it onto the cone as far as it will go (keeping the coaxially between the rotor and the motor axis).
- Screw the clamp into the motor shaft (clockwise), then tighten it firmly with the rotor wrench.
- Swinging rotors must be equipped with buckets in all seats.
- Container suspension pins should be regularly lubricated with technical petroleum jelly.
- In the case of rotors with a cover, they must not be used without the cover. Rotor caps must be screwed securely onto the rotor. The rotor and cover are marked with the same catalogue number (REF) to eliminate the risk of incorrect selection when the user has several types of rotors. Rotor covers ensure lower rotor resistance, correct tube seating and airtight sealing.
- Only containers suitable for the selected type of rotor should be used.
- In order to increase the durability of the rotor and seals, it is recommended to lubricate the rotor pins used to suspend the containers, the undercuts for the pins in the containers, gaskets, and threaded places with technical petroleum jelly.

	<ul style="list-style-type: none"> ▪ In order to replace the rotor, remove the tubes and containers, loosen the rotor clamp with the provided wrench, counterclockwise, and then use both hands to grasp the rotor on opposite sides and remove it from the motor axis by pulling it upwards.
	<p>Centrifuge will tolerate small weight differences occurring during loading of rotors. However, it is recommended to equalize vessels loads as much as possible in order to ensure minimal vibrations during operation. When the centrifuge is started with large imbalance, the unbalance control system will switch-off the drive system and error signal will be transmitted. On the monitoring panel, error message will be displayed.</p>

6.6. Control device

The microprocessor control unit of the centrifuge ensures broad possibilities of providing, realisation and reading of work parameters.

6.7. Set up parameters

Data setting and read-out system forms hermetically closed keyboard with distinctly accessible operation points. Easily readable display signalling time to end of centrifuging and set mode of speed. It makes easy for the operator to the registration status of the device.

Control system provides possibility of:

- set up speed mode (H) 5800 or (L) 3500 rpm (MPW-54), (H) 3500 or (L) 1000 rpm (MPW-54s),
- set up time of centrifuging in the range 1÷30 min or hold time mode.

6.8. Safety features

Cover lock

The centrifuge can be started only with properly closed cover. While the cover can be opened only after stopping the rotor. In case of emergency opening of the cover during operation, the centrifuge will be immediately switched-off and the rotor will brake till complete stopping.

Rest state inspection

Opening of the centrifuge's cover is possible only with the rotor in the state of rest.

6.9. Increase in temperature

In uncooled centrifuges, the temperature in the rotor chamber, rotor and sample can increase to above 40°C, based on the run time, g-force (rcf)/speed and ambient temperature.

7. Centrifuging

Power switching ON/OFF is carried out with master switch situated on the side wall of the centrifuge. All settings on the centrifuge are done by means of the control panel.

7.1. Control panel

The control panel (equipped with membrane keyboard) placed on the front casing serves the purpose of controlling centrifuge operation. STATUS/SPEED display show information about state of centrifuge (left side) and speed mode (right side). TIME display show information about time remain to the end of centrifuging.

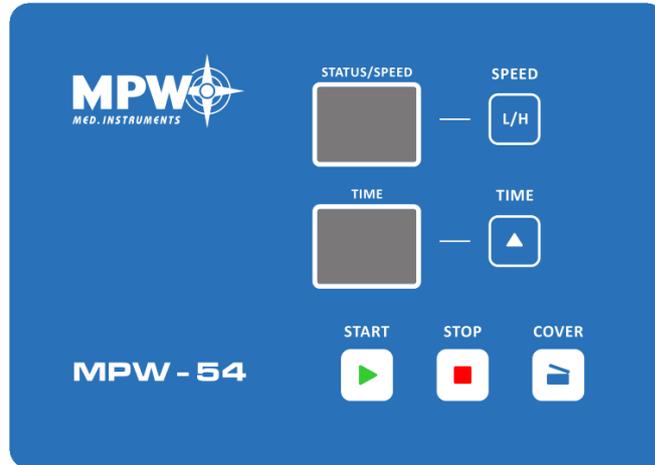


Fig.4 Control panel

Buttons application:

	START	Start of centrifuging
	STOP	Cancel of centrifuging
	COVER	Open the lid
	TIME	Set up runtime (in 1 minute step)
L/H	SPEED	Change speed mode

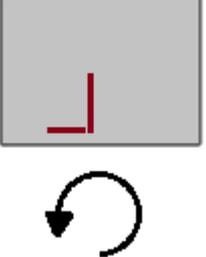
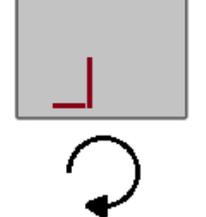
7.2. HOLD mode

HOLD mode	continuous mode (centrifuging until pressing STOP)
	<ul style="list-style-type: none"> In order to run the HOLD mode, set the time value to - -

7.3. End of the centrifuging

	WAYS OF FINISH THE CENTRIFUGING
	<ul style="list-style-type: none"> After reaching the preset working time centrifuging is stopped.
 x1	<ul style="list-style-type: none"> Before the expiry of the set time, you can interrupt the cycle by pressing the STOP

7.4. Signaling states of centrifuge

<p>STATUS/SPEED</p> 	<ul style="list-style-type: none"> ▪ Cover is locked
<p>STATUS/SPEED</p> 	<ul style="list-style-type: none"> ▪ Cover is open
<p>STATUS/SPEED</p> 	<ul style="list-style-type: none"> ▪ Rotor is running (speed is increasing or constant) – mark turn counter-clockwise
<p>STATUS/SPEED</p> 	<ul style="list-style-type: none"> ▪ Rotor is running (braking) – mark turn clockwise
<p>TIME</p> 	<ul style="list-style-type: none"> ▪ Rotor is running, time is counting – dot next to time indication is blinking
<p>TIME</p> 	<ul style="list-style-type: none"> ▪ Cycle cancelled or end of centrifuging – a dot next to the time indication stops flashing, after braking the rotor, four short beeps are issued
<p>STATUS/SPEED</p> 	<ul style="list-style-type: none"> ▪ Centrifuging in high rotational speed

	<ul style="list-style-type: none"> Centrifuging in low rotational speed
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Centrifuge has memory for remembering the last settings even after turning off and turn on the centrifuge.

8. Maintenance

8.1. Cleaning of the centrifuge

	<ul style="list-style-type: none"> Pull the mains plug before cleaning. Before any cleaning or decontamination process other than that is recommended by the manufacturer, the user has to ask the manufacturer if the planned process does not damage the device For cleaning, water with soap or other water-soluble mild detergent shall be used. One should avoid corrosive and aggressive substances. It is prohibited to use alkaline solutions, inflammable solvents or agents containing abrasive particles. Do not lubricate the centrifuge motor shaft. The unused centrifuge should have cover opened. <p style="text-align: center;">Once a week</p> <p>Using wiping cloth, remove condensate or residues of the products from the rotor chamber.</p> <p style="text-align: center;">Once a month</p> <ul style="list-style-type: none"> Check the rotor clamping thread. In case of damage, replaced it. Check the centrifuging chamber whether it is damaged. In case of damage, it cannot be longer put into operation. Notify authorized service workshop.
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8.2. Maintenance of centrifuge elements

	<ul style="list-style-type: none"> In order to increase the durability of threaded places, they should be lubricated with technical petroleum jelly. Make sure that the sealing rings (rubber) are covered with a thin layer of technical petroleum jelly in order to maintain tightness (catalog number 17201 - element of basic equipment).
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Cleaning of the accessories

	<ul style="list-style-type: none"> In order to ensure safe operation, one shall carry out in regular way periodical maintenance of the accessories. Rotors, buckets, and round carriers have to withstand high stresses originating from the centrifugal force. Chemical reactions as well as corrosion (combination of variable pressure and chemical reactions) can cause destruction of metals. Hard to observe surface cracks increase gradually and weaken material without visible symptoms. In case of observation of surface damage, crevice, or other change, as well as the corrosion, the given part (rotor, bucket, etc.) shall be immediately replaced. Clamping rotor, containers and reducer inserts must be cleaned regularly to
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	<p>prevent corrosion.</p> <ul style="list-style-type: none"> ▪ Cleaning of the accessories shall be carried out outside of the centrifuge once every week or still better after each use. For cleaning them one should use neutral agent of pH value 6÷8. It is forbidden to use alkaline agent of pH > 8. Then, those parts shall be dried using soft fabric or in the chamber drier at ca. 50°C. ▪ Angle rotor should be placed on a fabric with holes facing down, for effective drying. ▪ Do not use bleach on plastic parts of the rotor. ▪ In this way, the useful service life of the device is substantially increased and susceptibility to corrosion is diminished. Accurate maintenance increases the service life as well and protects against premature rotor failures. ▪ Do not use bleach on plastic parts of the rotor. ▪ According to laboratory standards, minimize the immersion time in each solution. ▪ Especially prone to the corrosion are parts made of aluminium. ▪ Corrosion and damages resulting from insufficient maintenance could not be subject of claims lodged against the manufacturer. ▪ The unused rotor should have the lid removed.
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HS accessories maintenance (HU):

	<ul style="list-style-type: none"> ▪ Check the general condition of seals. ▪ Make sure that rubber O-rings are lightly coated with silicone grease. Use high vacuum grease, e.g., type „C” by LUBRINA. ▪ In order to maintain hermetic sealing, it is recommended to replace the sealing rings after each autoclaving. ▪ Store hermetically sealed rotors and buckets with the lids removed.
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8.3. Sterilization

Plastics - legend to abbreviations

PS	polystyrene	ECTFE	ethylene/chlorotrifluoroethylene
SAN	styrene-acrylonitrile	ETFE	ethylene/tetrafluoroethylene
PMMA	polymethyl methacrylate	PTFE	polytetrafluoroethylene
PC	polycarbonate	FEP	tetrafluoroethylene/perfluoropropylene
PVC	polyvinyl chloride	PFA	tetrafluoroethylene/perfluoroalkylvinylether
POM	acetal polyoxymethylenel	FKM	fluorcarbon rubber
PE-LD	low density polyethylene	EPDM	ethylene propylene diene
PE-HD	high density polyethylene	NR	natural rubber
PP	polypropylene	SI	silicon rubber
PMP	polymethylpentene		

One can use all standard disinfectants. Centrifuges and devices are made of different materials, one should consider their variety.

	radiation β radiation γ 25 kGy	C ₂ H ₄ O (ethylene oxide)	formalin, ethanol
PS	●	○	●
SAN	○	●	●
PMMA	●	○	●
PC	●	●	●
PVC	○	●	●
POM	●	●	●
PE-LD	●	●	●
PE-HD	●	●	●
PP	●	●	●

PMP	●	●	●
ECTFE, ETFE	○	●	●
PTFE	○	●	●
FEP, PFA	○	●	●
FKM	○	●	●
EPDM	○	●	●
NR	○	●	●
SI	○	●	●
●	may be used		
○	cannot be used		

In the centrifuge, disinfectants and cleaning agents generally used in medical care should be used (e.g., Aerodesina-2000, Lysoformin 3000, Melseptol, Melsept SF, Sanepidex, Cutasept F).

8.4. Autoclaving

- Rotors, buckets, and round carriers can be sterilized in autoclave with temperature 121°C during 20 min (215 kPa), unless otherwise specified in the OPTIONAL ACCESSORY.
- During sterilization (autoclaved) by means of steam one should consider temperature resistance of individual materials.
- Deformation of the accessories (carriers or lids made of plastic) may occur during autoclaving.
- Do not autoclave disposable materials (e.g., tubes, cyto-container).
- The life of the accessory depends on the frequency of autoclaving and use.
- Autoclaving reduces lifespan of plastic components. They should be replaced if any signs of damage are visible, including a change in colour or shape or when leakage etc.
- Pressure in closed containers can cause plastic deformation or explosion.
- Prior to autoclaving the rotors and accessories, thoroughly wash and rinse with distilled water.
- Never exceed the permissible autoclaving temperature and time.
- If you want to keep the hermetic seals, replace the sealing rings after each autoclave.

Chemical resistance of plastics

	autoclaving 121 °C, 20 min		autoclaving 121 °C, 20 min
PS	○	PMP	●
SAN	○	ECTFE, ETFE	●
PMMA	○	PTFE	●
PC	●	FEP, PFA	●
PVC	○ ¹⁾	FKM	●
POM	●	EPDM	●
PE-LD	○	NR	○
PE-HD	○	SI	●
PP	●		
●	may be used		
○	cannot be used		
1)	Except PVC hoses which are resistant to the steam sterilization in the temperature 121°C.		

8.5. Chemical resistance

Chemical resistance of plastics

	aldehydes	cyclic alcohols	esters	ether	ketones	strong or concentrated acids	weak or diluted acids	oxidizing substances	cyclic hydrocarbons	ahs	haloid hydrocarbons	alkalis
PS	○	●	○	○	○	○/●	○/●	○	○	○	○	●
SAN	○	●	○	○	○	○	○/●	○	○	○	○	●
PMMA	○/●	●	○	○	○	○	○/●	○	○/●	○	○	○
PC	○/●	●	○	○	○	○	○/●	○	○/●	○	○	○
PVC	○	●	○	○	○	●	●	○	●	○	○	●
POM	○/●	●	○	●	●	○	○	○	●	●	●	●
PE-LD		●	●	●	○/●	●	●	○	●	●	●	●
PE-HD	●	●	○/●	○/●	○/●	●	●	○	●	○/●	○/●	●
PP	●	●	○/●	○/●	○/●	●	●	○	●	○/●	○/●	●
PMP	○/●	●	○/●		○/●	●	●	○	○/●	○	○	●
ECTFE	●	●	●	●	○	●	●	●	●	●	●	●
ETFE	●	●	●	●	○	●	●	●	●	●	●	●
PTFE	●	●	●	●	●	●	●	●	●	●	●	●
FEP	●	●	●	●	●	●	●	●	●	●	●	●
PFA	●	●	●	●	●	●	●	●	●	●	●	●
FKM	●	○	○	○	○	○	●	○/●	○/●	○/●	○/●	○/●
EPDM	●	●	○/●	○	○/●	●	●	○/●	○	○	○	●
NR	○/●	●	○/●	○	○	○	○/●	○	○	○	○	●
SI	○/●	●	○/●	○	○	○	○/●	○	○	○	○	○/●
●	very good	Permanent action of the substance does not cause damage through 30 days. The material is able to be resistant through years										
○/●	good to limited	Continuous action of the substance causes insignificant and partly reversible damage through the period of 7-30 days (e.g., puffing up, softening, reduced mechanical durability, discoloring).										
○	limited	The material should not have the continuous contact with the substance. The immediate occurrence of damage is possible (e.g., the loss of mechanical durability, deformation, discoloring, bursting, dissolving).										

Rubber inserts shall be exactly cleaned or possibly replaced. Centrifuges and accessories are made of different materials.

Do not use bleach on plastic parts of the rotor.

	<p>DANGER!</p> <p>MPW accessories are not biotight. For centrifuging infectious materials, it is necessary to use hermetically closed tubes meeting demands of biotightness, in order to prevent germs migration into the centrifuge and beyond it.</p>
	<p>User is responsible for proper disinfections of the centrifuge if some dangerous material was spilled inside or outside of the centrifuge. During the above mentioned works one must wear safety gloves.</p>

9. Troubleshooting

Most errors can be corrected by switching the centrifuge off and on again. In the event of short-term power failures during operation, centrifugation is not continued. In order to centrifuge after power is restored, restart the centrifuge by pressing the **START** key.

The most common errors and how to fix them are shown below

1. Lack of the display:	Remedies:
<i>Is mains socket live ?</i>	<i>Check mains socket fuse.</i>
<i>Is supply cable plugged into socket ?</i>	<i>Plug correctly supply cable.</i>
<i>Is input fuse good ?</i>	<i>Replace input fuse (rated data on rating plate).</i>
<i>Is master switch switched ON ?</i>	<i>Switch ON power supply.</i>
<i>Above was checked and still there is not display active.</i>	<i>Call service.</i>
2. Centrifuge does not start:	Remedies:
<i>START key pushing does not generate reaction or single tone only</i>	<i>Call service</i>
<i>P message is displayed</i>	<i>Call service</i>
<i>The symbol  is displayed</i>	<p>Close the cover. The lock must close with a characteristic sound. A dot must appear in the display.</p> <p>If the symbol does not change to , call for service.</p>
3. Centrifuge starts but does not accelerate	Remedies:
<i>E symbol displayed after stopping. Drive overload.</i>	<i>Wait for 15 minutes and switch again after opening and closing the cover.</i>
4. One cannot open the cover:	Remedies:
<i>With the attempt opening cover is audible buzzing of the lock.</i>	<i>One should lift up till the yellow LED "Cover" is switching on. Failed spring of cover lifting or bended the lock striker. One should bend the striker or call service.</i>
<i>The symbol  is displayed and the centrifuge is not spinning.</i>	<i>Lock is failed. Call service.</i>

9.1. Emergency cover release

	<p>EMERGENCY COVER RELEASE</p> <p>Attention! <i>The cover may be opened in emergency only when the rotor is at rest. Before emergency opening the cover, switch off the mains power switch and disconnect the power cord. Wait 10 min and/or looking through the sight glass, make sure that the rotor is not rotating.</i></p> <p>To do this, insert emergency opening key (17162) into the hole and press to make the moment of the release of lock.</p> <p>The emergency opening of the cover can be used, for example, in the event of a power failure, failure of the control panel, etc.</p>
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10. Guarantee

Manufacturer grants to the Buyer the guarantee on conditions specified in the Guarantee Certificate. Buyer forfeits the right to guarantee repair when using the device inconsistently with the User manual provisions, when damage results from the User's fault.

Repairs should be conducted in authorized service workshops, granted with the MPW Certificate.

The centrifuge shall be sent to repair after decontaminating disinfections. Information about authorized service workshops could be obtained from the Manufacturer.

	<ul style="list-style-type: none"> ▪ Guarantee period amounts to 24 months (unless otherwise specified in the purchase documents). ▪ Guarantee conditions are described in guarantee card.. ▪ The service life of the centrifuge specified by the manufacturer amounts to 10 years. ▪ After 24 months from the start of the warranty period (date of purchase), a technical inspection of the centrifuge should be carried out (validation) by an authorized service of the manufacturer. Subsequent inspections should be carried out at annual intervals. ▪ Maximum period of storage of not used centrifuge amounts to 1 year. After this period, a service authorized by manufacturer should carry out technical inspection of the centrifuge. ▪ Manufacturer reserves the right to make technical changes in manufactured products.
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11. Transport and storage

- Store the device only in a closed and dry room.
- Remove rotor from centrifuge before transport.
- Use the original packaging and transport protection for transport.

11.1. Transport and storage conditions

	Storage (in the package)	Storage (without the package)	Transport
Temperature	-25 ÷ +55 °C	-5 ÷ +45 °C	-25 ÷ +60 °C (general) -20 ÷ +55 °C (air)
Relative humidity	10 ÷ 75 %	10 ÷ 75 %	10 ÷ 75 %
Pressure	70 ÷ 106 kPa	70 ÷ 106 kPa	30 ÷ 106 kPa

11.1. Disposal

	<ul style="list-style-type: none"> ▪ Dispose of the device in accordance with applicable regulations. ▪ Pursuant to Directive 2002/96 / EC. ▪ The device belongs to group 8 (medical equipment) and is classified under the category "business to business". ▪ The disposal regulations of the individual EU countries may differ. If in doubt, please contact the supplier of the device.
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12. Manufacturer's info

"MPW MED. INSTRUMENTS" SPÓŁDZIELNIA PRACY
Boremlowska 46 Street
04-347 Warsaw

tel. (+48) 22 610 56 67 (sales department - POLAND)
(+48) 22 879 70 46 (sales department - outside POLAND)
(+48) 22 610 81 07 (service)
fax (+48) 22 610 55 36
e-mail: mpw@mpw.pl
website: www.mpw.pl

000042924 - number of entry in the Waste Database

PL/CA01-01782 - identification number given by Office for Registration of Medicinal Products, Medical Devices and Biocidal Products

Distributor's info

DISTRIBUTOR:



13. Annexes

A. Wyposażenie dodatkowe/Optional accessories**MPW-54****WIRNIK / ROTOR****PARAMETRY WIRNIKA / ROTOR PARAMETERS****POJEMNIK/BUCKET****WKŁADKA / ADAPTER**

[liczba probówek na wirnik/tubes per rotor] PROBÓWKA / TUBE

11101**RPM 5800, RCF 3122, Rmax 83, ϕ 29****13080****14082**

[6] * BD Vacutainer® (13 x 100 mm), (4-7 ml)

[6] * Greiner Vacuette® (13 x 100 mm), (3,5-6 ml)

[6] * Sarstedt S-Monovette® (11 x 92 mm), (4,5; 5 ml)

[6] 15054 6 ml probówka z pokrywką (11,5 x 92 mm), Sarstedt®
6 ml tube with cap (11,5 x 92 mm), Sarstedt®[6] 15119 7 ml probówka szklana (12 x 100 mm)
7 ml glass tube (12 x 100 mm)**bez wkładki/without adapter**

[6] * BD Vacutainer® (16 x 100 mm), (2,5-11 ml)

[6] * Greiner Vacuette® (16 x 100 mm), (7-9 ml)

[6] * Sarstedt S-Monovette® (15 x 92 mm), (7,5; 8,2; 8,5 ml)

[6] * Sarstedt S-Monovette® (16 x 92 mm), (9; 10 ml)

[6] 15046 14 ml probówka z pokrywką (16,8 x 113,7 mm), Sarstedt®
14 ml tube with cap (16,8 x 113,7 mm), Sarstedt®[6] 15048 15 ml Thermo Nalgene® (16 x 113 mm)
15 ml Thermo Nalgene® (16 x 113 mm)[6] 15053 10 ml probówka z pokrywką (16 x 106 mm)
10 ml tube with cap (16 x 106 mm)[6] 15118 10 ml probówka szklana (16 x 100 mm)
10 ml glass tube (16 x 100 mm)[6] * 15 ml probówka z dnem stożkowym z zakrętką (17 x 120 mm), Falcon®; [15050], 15ml (17 x 120 mm)
15 ml tube, conical bottom, with cap (17 x 120 mm), Falcon®; [15050] 15ml Sarstedt®(17 x 120 mm)**RPM 5800, RCF 2858, Rmax 76, ϕ 29****13081****14082**

[6] * BD Vacutainer® (13 x 75 mm), (1,6-5,3 ml)

[6] * Greiner Vacuette® (13 x 75 mm), (1-4,5 ml)

[6] * Sarstedt S-Monovette® (11 x 66 mm), (1,6; 2; 2,7; 3; 3,1 ml)

[6] * Sarstedt S-Monovette® (13 x 65 mm), (2,6; 2,9; 3,4; 3,8 ml)

[6] * Sarstedt S-Monovette® (13 x 75 mm), (2,7; 3; 4,3 ml)

[6] 15120 5 ml probówka szklana (12 x 75 mm)
5 ml glass tube (12 x 75 mm)**bez wkładki/without adapter**

[6] * Sarstedt S-Monovette® (15 x 75 mm), (4; 4,3; 5,5 ml)

[6] * 10 ml Thermo Nalgene® Oak Ridge (16 x 81,5 mm)

[6] 15121 10 ml probówka z dnem okrągłym i pokrywką (17 x 70 mm)
10 ml tube, round bottom, with cap (17 x 70 mm)**11144****RPM 5800, RCF 3122, Rmax 83, ϕ 29****13080**

A. Wyposażenie dodatkowe/Optional accessories**MPW-54****14082**

- [4] * BD Vacutainer® (13 x 100 mm), (4-7 ml)
- [4] * Greiner Vacuette® (13 x 100 mm), (3,5-6 ml)
- [4] * Sarstedt S-Monovette® (11 x 92 mm), (4,5; 5 ml)
- [4] 15054 6 ml probówka z pokrywką (11,5 x 92 mm), Sarstedt®
6 ml tube with cap (11,5 x 92 mm), Sarstedt®
- [4] 15119 7 ml probówka szklana (12 x 100 mm)
7 ml glass tube (12 x 100 mm)

bez wkładki/without adapter

- [4] * BD Vacutainer® (16 x 100 mm), (2,5-11 ml)
- [4] * Greiner Vacuette® (16 x 100 mm), (7-9 ml)
- [4] * Sarstedt S-Monovette® (15 x 92 mm), (7,5; 8,2; 8,5 ml)
- [4] * Sarstedt S-Monovette® (16 x 92 mm), (9; 10 ml)
- [4] * 15 ml probówka z dnem stożkowym z zakrętką (17 x 120 mm), Falcon®; [15050], 15ml (17 x 120 mm)
15 ml tube, conical bottom, with cap (17 x 120 mm), Falcon®; [15050] 15ml Sarstedt®(17 x 120 mm)
- [4] 15046 14 ml probówka z pokrywką (16,8 x 113,7 mm), Sarstedt®
14 ml tube with cap (16,8 x 113,7 mm), Sarstedt®
- [4] 15048 15 ml Thermo Nalgene® (16 x 113 mm)
15 ml Thermo Nalgene® (16 x 113 mm)
- [4] 15053 10 ml probówka z pokrywką (16 x 106 mm)
10 ml tube with cap (16 x 106 mm)
- [4] 15118 10 ml probówka szklana (16 x 100 mm)
10 ml glass tube (16 x 100 mm)

RPM 5800, RCF 2858, Rmax 76, α 29**13081****14082**

- [4] * BD Vacutainer® (13 x 75 mm), (1,6-5,3 ml)
- [4] * Greiner Vacuette® (13 x 75 mm), (1-4,5 ml)
- [4] * Sarstedt S-Monovette® (11 x 66 mm), (1,6; 2; 2,7; 3; 3,1 ml)
- [4] * Sarstedt S-Monovette® (13 x 65 mm), (2,6; 2,9; 3,4; 3,8 ml)
- [4] * Sarstedt S-Monovette® (13 x 75 mm), (2,7; 3; 4,3 ml)
- [4] 15120 5 ml probówka szklana (12 x 75 mm)
5 ml glass tube (12 x 75 mm)

bez wkładki/without adapter

- [4] * Sarstedt S-Monovette® (15 x 75 mm), (4; 4,3; 5,5 ml)
- [4] * 10 ml Thermo Nalgene® Oak Ridge (16 x 81,5 mm)
- [4] 15121 10 ml probówka z dnem okrągłym i pokrywką (17 x 70 mm)
10 ml tube, round bottom, with cap (17 x 70 mm)

11145**RPM 5800, RCF 3122, Rmax 83, α 29****13080****14082**

- [8] * BD Vacutainer® (13 x 100 mm), (4-7 ml)
- [8] * Greiner Vacuette® (13 x 100 mm), (3,5-6 ml)
- [8] * Sarstedt S-Monovette® (11 x 92 mm), (4,5; 5 ml)
- [8] 15054 6 ml probówka z pokrywką (11,5 x 92 mm), Sarstedt®
6 ml tube with cap (11,5 x 92 mm), Sarstedt®
- [8] 15119 7 ml probówka szklana (12 x 100 mm)
7 ml glass tube (12 x 100 mm)

bez wkładki/without adapter

- [8] * BD Vacutainer® (16 x 100 mm), (2,5-11 ml)
- [8] * Greiner Vacuette® (16 x 100 mm), (7-9 ml)
- [8] * Sarstedt S-Monovette® (15 x 92 mm), (7,5; 8,2; 8,5 ml)
- [8] * Sarstedt S-Monovette® (16 x 92 mm), (9; 10 ml)
- [8] 15046 14 ml probówka z pokrywką (16,8 x 113,7 mm), Sarstedt®
14 ml tube with cap (16,8 x 113,7 mm), Sarstedt®
- [8] 15048 15 ml Thermo Nalgene® (16 x 113 mm)
15 ml Thermo Nalgene® (16 x 113 mm)
- [8] 15053 10 ml probówka z pokrywką (16 x 106 mm)
10 ml tube with cap (16 x 106 mm)
- [8] 15118 10 ml probówka szklana (16 x 100 mm)
10 ml glass tube (16 x 100 mm)

A. Wyposażenie dodatkowe/Optional accessories**MPW-54**

[4] * 15 ml probówka z dnem stożkowym z zakrętką (17 x 120 mm), Falcon®; [15050], 15ml (17 x 120 mm)
15 ml tube, conical bottom, with cap (17 x 120 mm), Falcon®; [15050] 15ml Sarstedt®(17 x 120 mm)

RPM 5800, RCF 2858, Rmax 76, α 29

13081

14082

[8] * BD Vacutainer® (13 x 75 mm), (1,6-5,3 ml)
[8] * Greiner Vacuette® (13 x 75 mm), (1-4,5 ml)
[8] * Sarstedt S-Monovette® (11 x 66 mm), (1,6; 2; 2,7; 3; 3,1 ml)
[8] * Sarstedt S-Monovette® (13 x 65 mm), (2,6; 2,9; 3,4; 3,8 ml)
[8] * Sarstedt S-Monovette® (13 x 75 mm), (2,7; 3; 4,3 ml)
[8] 15120 5 ml probówka szklana (12 x 75 mm)
5 ml glass tube (12 x 75 mm)

bez wkładki/without adapter

[8] * Sarstedt S-Monovette® (15 x 75 mm), (4; 4,3; 5,5 ml)
[8] * 10 ml Thermo Nalgene® Oak Ridge (16 x 81,5 mm)
[8] 15121 10 ml probówka z dnem okrągłym i pokrywką (17 x 70 mm)
10 ml tube, round bottom, with cap (17 x 70 mm)

Suma końcowa

DECLARATION OF CONFORMITY

Product name: **Laboratory centrifuge
MPW-54**

Product type: **Laboratory centrifuge**

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Product classification on the basis of the Directive 98/79/EC: Non classified to list A or B and not for self-testing.

Product complies with the requirements:

• **Directive 98/79/EC (IVD), including the requirements of harmonized standards:**

EN 15223-1:2016

EN ISO 18113-3:2011

EN 13612:2002

EN 61326-2-6:2006

EN 13612:2002/AC:2002

EN 61010-2-101:2002

EN 13975:2003

EN 62304:2006

EN ISO 14971:2012

EN 62304:2006/AC:2008

EN ISO 18113-1:2011

EN 62366:2008

• **selected harmonized standards of Directive 2014/35/UE (LVD):**

EN 61010-1:2010

EN 61010-2-020:2006

EN 61010-1:2010/A1:2019

EN 61010-1:2010/A1:2019/AC:2019-04

• **Directive 2014/30/UE (EMC)**

• **Directive 2011/65/UE (RoHS 2)**

Z-ca PREZESA ZARZĄDU

Wojciech Anisiewicz

PREZES ZARZĄDU

mgr Łukasz Salański

**"MPW MED. INSTRUMENTS"
SPÓŁDZIELNIA PRACY**

Warsaw, 46 Boremlowska Street

*applies Quality Management System in line with
PN-EN ISO 9001:2015, PN-EN ISO 13485:2016*



DECLARATION OF DECONTAMINATION

(repair)

In order to protect our employees please fill out the declaration of decontamination completely before sending centrifuge to the manufacturer (repair).

1. Device:

– type:

– serial No.:

2. Description of decontamination

(see user manual)

.....

.....

.....

.....

3. Decontamination carried out by:

name:

4. Date and signature:

.....

DECLARATION OF DECONTAMINATION

(return)

In order to protect our employees please fill out the declaration of decontamination completely before sending centrifuge to the manufacturer (return).

1. Device:

– type:

– serial No.:

2. Description of decontamination

(see user manual)

.....

.....

.....

.....

3. Decontamination carried out by:

name:

4. Date and signature:

.....

NOMOGRAM

Centrifuging radius [cm]

R.C.F. (x "g")
multiple of
gravitational
acceleration

[r.p.m.]

