20150R.EN rev.8

USER MANUAL

Refrigerated laboratory centrifuge MPW-150R

Read before use!

Serial number of the centrifuge: ……

For centrifuges with serial no (SN): from 10150R023419

CE IVD

This manual was prepared with special care. MPW MED. INSTRUMENTS may change the manual at any time and without notice because of improvements, typographical errors or improvements to facilities

You can find the current version of the user manual on our website under:
www.mpw.pl DOWNLOAD section (one should choose demanded language version of website).

Warning signs:

	**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.

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1 Application

The **MPW-150R** centrifuge is table top laboratory centrifuge for especially 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.

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 bio tightness one has to use bio tightness certificated containers and rotors. It is prohibited to centrifuge caustic, inflammable and explosive preparations.

2 Technical specification

manufacturer	"MPW MED. INSTRUMENTS" SPÓŁDZIELNIA PRACY, Boremlowska 46 Street, 04-347 Warszawa				
type	**MPW - 150R**				
cat. no. (REF)	10150R/2-5	10150R/1-6			
mains voltage (L1+N+PE)	230V	100V	110V	120V	127V
	±10%	±5%			
frequency, ±1%	50 Hz	60Hz			
Power consumption (max)	500W	500W			
current protection	T 6,3A	T 10A			
cooling medium t eq CO_2 GWP	R452A (CFC/HCFC free) = 0,14 kg 0,558 3985				
capacity (max)	90ml (6x15ml)				
Speed (rpm)	90 ÷ 15000 rpm (step 1 rpm)				
g-force (RCF)	21382 x g (step 1 x g)				
running time	00:00:01 ÷ 99:59:59 – [h. : min : s] (1s step)				
time counting	since start button is pressed / since preselected speed is reached				
short time operation mode (SHORT)	yes				
continuous operation mode (HOLD)	yes				
number of programs	100				
adjustable temperature	-20 ÷ 40°C* (step 1°C)				
initial cooling (FASTCOOL)	yes				
guaranteed temperature with max. rotor speed	≤4°C				
cooling without centrifuging	yes				
acceleration (ACEL)	10 linear characteristics				
deceleration (DECEL)	10 linear characteristics				
USB communication	yes				
electromagnetic compatibility	accordance with EN 61326-2-6:2006				
ambient conditions	PN-EN 61010-1 (pkt.1.4.1)				
set-up site	indoor only				
ambient temperature	2° ÷ 40°C				
humidity (maximum relative humidity)	< 80%				
installation category	II EN 61010-1				
pollution degree	2 EN 61010-1				
safety area	300 mm				
Degree of protection: (according to PN-IEC 34-5)	IP20				
noise level	≤60dB				
weight	30,5 kg	33kg			
dimensions: height (H) width (W) depth (D)	285 mm 299 mm 595 mm				
height with open lid (H_{oc})	565 mm				

*time and possibility of obtaining a set temperature is dependent on multiple factors , including: rotor type, established RPM, ambient temperature; accuracy: - ±1°C appropriate for place of temperature sensor

Menu languages: English, Spanish, Italian, Portuguese, German, Russian, Polish, Swedish, French, Czech.

3 Installation

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

3.1 *Content of package*

name	pcs	cat. no.
centrifuge MPW-150R	1	10150R/2-5 or 10150R/1-6
complete clamp	1	17142
spanner for a rotor	1	17099T
key for emergency lock release	1	18640
power cord 230V / power cord 120V	1	17866/17867
fuse WTA T10 250V / WTA T6,3 250V	2	17863/17862
petroleum jelly 20ml	1	17201
USB A-A cable	1	16655
user manual	1	20150R.EN rev.8

3.2 *Location*

<table>
<tr><td rowspan="2">  </td><td>

The device is heavy, so lifting and carrying the centrifuge can lead to back injuries. Risk of injury while lifting and carrying heavy loads.
Lifting and transporting of the centrifuge should be done with a sufficient number of helpers. Use a transport aid for transporting the centrifuge.
The device should be lifted by the underside in the vicinity of the its feet and placed directly on a suitable lab table.

</td></tr>
<tr><td>

Ensure safe location.
The centrifuge shall not be located near source of heat and shall not be subjected to direct sunlight.
Centrifuge should be flat-levelled. Efect of leveling shall be ensure by stable and flat-levelled table top for the centrifuge.
Centrifuge should be set horizontally on a rigid base.
It is necessary to ensure a ventilation zone of the minimum 30cm round the centrifuge from every direction. Do not veil ventilation holes !
Table for centifuge should posses safety zone of the minimum 30cm round the centrifuge from every direction (safety needs in case of malfunction according to EN 61010-020.
Table for centrifuge should be free of containtments before locating of centrifuge.
Passed parameters of the centrifuge are referring to the above named temperatures (see 2.Technical specification).
At the change of the place from cold to warm one, condensation of water will occur inside the centrifuge. It is important then that sufficient time be provided for drying the centrifuge prior to starting the centrifuge again (min. 4 hours).

</td></tr>
</table>

	▪ Do not position the centrifuge so that it is difficult to operate the power switch ▪ Supply voltage given on the rating plate has to be consistent with local supply voltage. MPW MED INSTRUMENTS laboratory centrifuges are 1st safety class devices and they are provided with the three-core cable with the plug resistant to dynamic loadings. Mains socket shall be provided with the safety pin - protective earth (PE). ▪ It is recommended to install emergency cut-out that shall be located far from the centrifuge, near the exit or beyond the room.

	▪ **Before switching on, check whether the centrifuge is connected to power supply correctly. It is obligatory to use only power cord reccomended by manufacturer (17866 for 230V, 17867 for 120V)** ▪ **Before using check whether the device is corretly intalled.**

3.3 *Current protection*

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

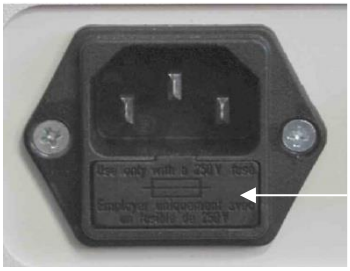


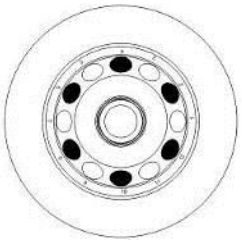
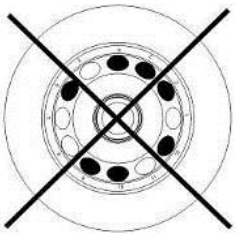
Fig.1 Plug-in socket unit

4 Safety of operation

4.1 *Operating personnel*

⚠	▪ Laboratory centrifuge can be operated by laboratory personnel after getting acquainted with user manual. ▪ **This User Manual is part of the device.** ▪ **User manual shall be always held near the centrifuge.** ▪ The centrifuge can not be misused. ▪ If the centrifuge is used in a manner not specified by the manufacturer, the protection provided by the device may be impaired.

4.2 *Arrangement of tubes*

⚠	▪ Fix the rotor on the motor axis firmly. ▪ Avoid unbalance. ▪ Load opposite buckets with the same accessories. ▪ Centrifugation of the test tubes of different sizes: There is a possibility to centrifuge test tubes of different sizes; however, it is absolutely necessary in such cases that opposite buckets and round carriers be the same. Mass of different containers with test tubes spun at the same time has to be comparable.
	  **CORRECT** **INCORRECT** It is necessary to insert test tubes symmetrically on the opposite sides.

	**FILLING TUBES** ▪ Fill test tubes outside the centrifuge and according to the manufacturer's recommendations. ▪ Please pay special attention to the quality and proper thickness of the glass test tubes walls. Those shall be test tubes for centrifuges. ▪ In order to protect the centrifuge against unbalance, fill in the test tubes up to the same weight.

4.3 *Safety hints*

	**ROTORS MAINTENANCE** ▪ Lubricate the swing-out rotor journal pins. ▪ Use only accessories in good condition. ▪ Protect equipment against corrosion using accurate preventive maintenance.
	**HS ACCESSORIES MAINTENANCE** ▪ Make sure that rubber O-rings are lightly coated with petroleum jelly (to ensure vacuum). Use high vacuum grease, e.g. type „C” by LUBRINA.

	**HAZARDOUS MATERIALS** ▪ MPW accessorises 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. ▪ It is not allowed to subject to centrifugation toxic 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.
	**EXPLOSIVE AND COMBUSTIBLE MATERIALS** ▪ 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.

4.4 *Maintenance conditions*

	**START-UP** ▪ Prior to switching the centrifuge on, one shall read carefully all sections of this instruction 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.
	**TRANSPORTATION** ▪ Centrifuge must not be transported with the rotor mounted on the shaft.
	**GENERAL HINTS** ▪ One must use original rotors, test-tubes and spare parts only. ▪ In case of faulty operation of the centrifuge one shall ask for assistance 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.
	**CENTRIFUGING SUBSTANCES** It isn't allowed to exceed load limit set by the manufacturer. Rotors are intended for fluids of average homogeneous density equal to **1,2 g/cm^3** 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 **PARA/DENSITY** field.

4.5 *Safety precautions*

For safety reasons, inspections of the centrifuge carried out by the authorized service at least once a year after the period of warranty. The reason for more frequent inspections could be corrosion inducing environment. Examinations should end with issuing report of validation that checks on the technical state of the laboratory centrifuge. It is being recommended to establish document where every repairs and reviews are being registered. Both these documents should be stored in the place of use of the centrifuge.

	INSPECTION PROCEDURES CARRIED OUT BY THE OPERATOR
	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: ▪ Centrifuge accessories and especially structural changes, corrosion, preliminary cracks, abrasion of metal parts. ▪ Screw connections. ▪ Inspection of bioseals 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 (Set of seals Cat. No. **18591** available from the manufacturer). ▪ 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 nor 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.

	**LID OPENING**
	It isn't allowed to open the cover manually in emergency procedure when rotor is still turning because it may cause loss health or life.

	**ROTORS**
	▪ 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 isn’t 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.

4.6 *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.

5 Operating

5.1. Centrifuge description

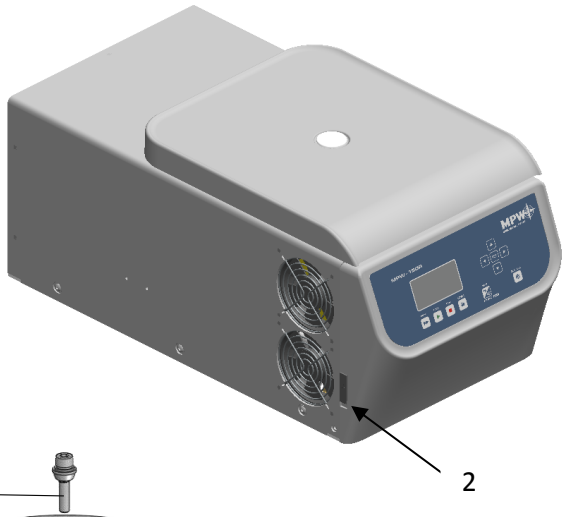
New generation of MPW MED. INSTRUMENTS laboratory centrifuges is provided with state-of-the-art microprocessor control systems, very durable and quiet asynchronous brushless motors and accessories consistent with requirements of the present-day user.

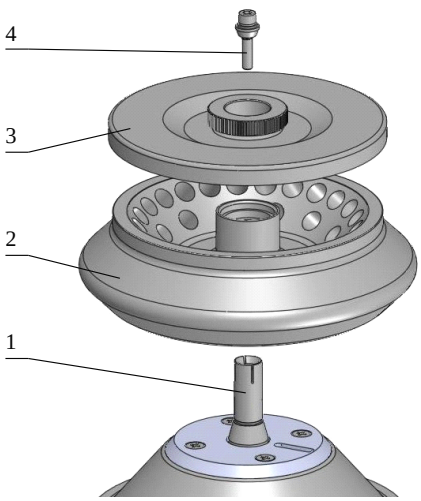
5.2. Centrifuge overview

Fig.1. Right side of centrifuge

1. Power switch
2. USB
3. Control panel
4. Point of emergency lid opening
5. Lid
6. Inspection glass

Fig.2. Left side of centrifuge

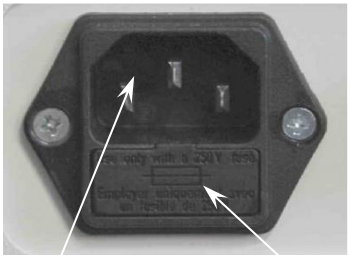




1. Motor axle
2. Rotor
3. Rotor lid
4. Complete clamp

Fig.3. Assembly of angle rotor

Fig.4. Mains socket back of the centrifuge

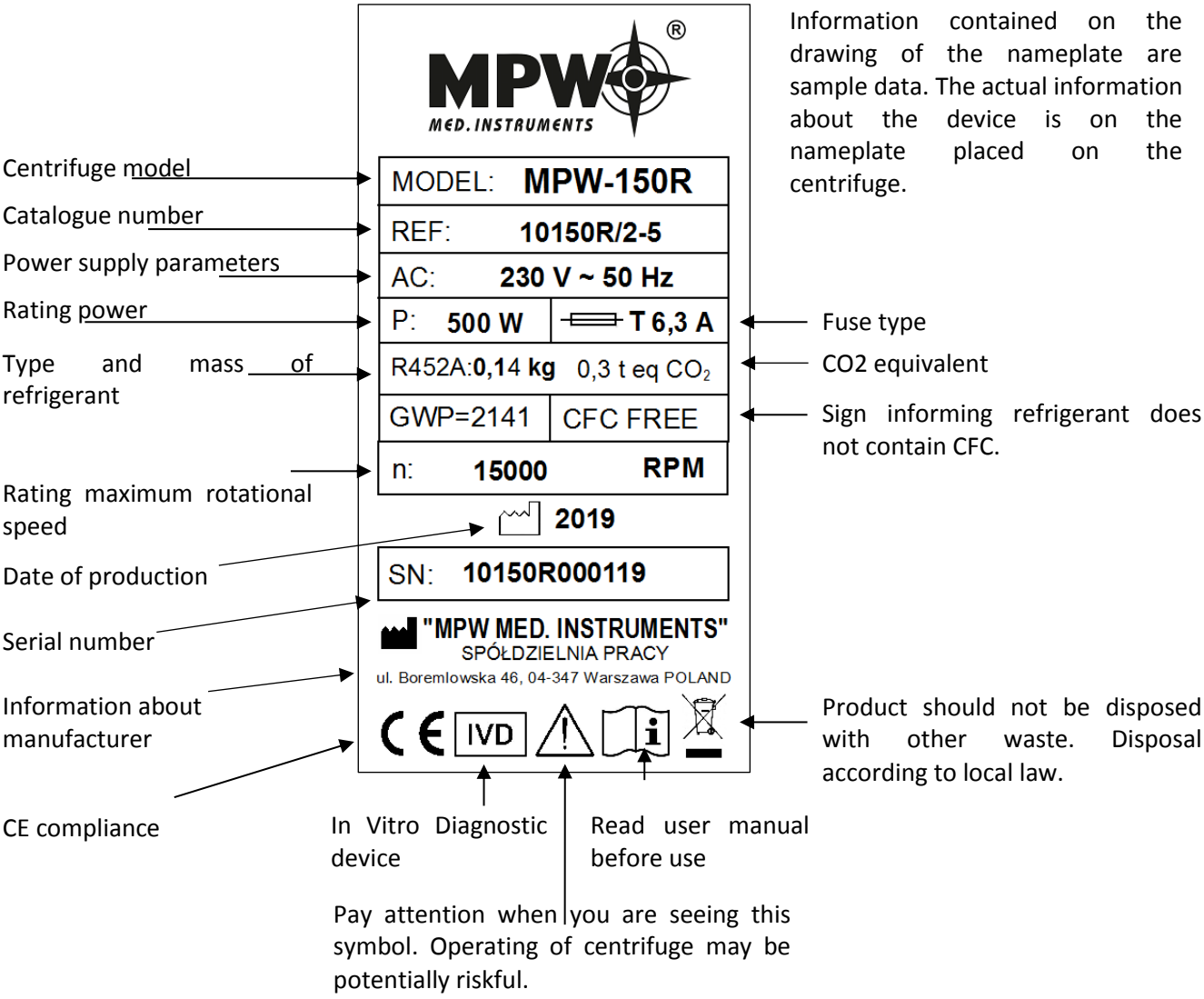


1. Plug-in socket
2. Fuse socket

5.3 *Construction*

The centrifuge has rigid self-supporting structure. Housing was made of sheet aluminium, back made of steel sheet. Front and cover was made of ABS. Cover is fixed on steel axles of hinges and from the front it is locked with electric lock blocking possible opening during centrifugation. The rotation chamber bowl is made of stainless steel sheet.

5.4 *Name plate*

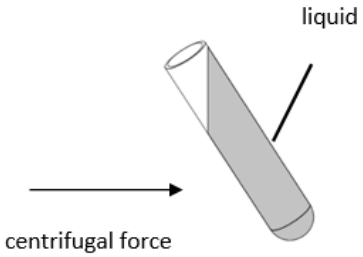


5.5 *Rotor and accessories installation*

- Connect the centrifuge to the mains (master switch on the back side of the centrifuge).
- Turn on the centrifuge (button on the side of the centrifuge).
- Open the lid of the centrifuge by pressing the **COVER** key (see section Centrifuging / Control Panel). Prior to putting the rotor in, one has to check if the rotating chamber is free of impurities, e.g. such as dust, glass splinters, residues of fluids that must be taken away.
- One shall fit the rotor on the motor shaft driving it home on the cone.

- Screw-in the bolt for fixing the rotor (clockwise) and screw it tightly home with the supplied spanner for the rotor.
- In case of rotors designed with the cover they must not be used without it. Rotor covers must be closed exactly. Rotor covers ensure smaller drags of the rotors, proper setting of the test-tubes and airtight sealing.
- One should use only buckets intended for selected types of the rotor.
- Fill test tubes outside the centrifuge.
- In case of centrifuging in an angle rotor, test tubes (buckets) have to be filled properly in order to prevent from pouring fluids during centrifuging.

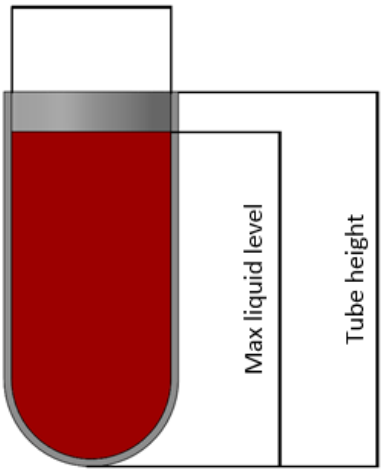
Tubes must be filled so that the material does not escape from the reservoir during centrifugation.



One shall fill tubes according to formula:

Max liquid level < Tube height – Internal tube diameter/2

Internal tube diameter



Observe the manufacturer's restrictions about the filling of the test tube.

	It is recommended to equalize vessels loads, as much as possible in order to ensure minimal vibrations during operation.

- **In order to prolong lifetime of the rotor and gaskets rotors shall be lubricated with the maintenance oil, while gaskets and threaded parts shall be lubricated with the petroleum jelly.**
- For replacement of the rotor one shall unscrew clamping and then grab the rotor with both hands at opposite sides, taking it away from drive shaft by pulling it up.

5.6 *Control device*

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

5.7 *Setting parameters*

Data setting and read-out system forms hermetically closed keyboard with distinctly accessible operation points. Easily readable displays signalling individual performed operations facilitate operator's programming and recording of parameters and condition of the centrifuge.
The centrifuge is provided with the USB interface that enables connection of the centrifuge to external PC unit with the printer and recording the centrifugation parameters.

5.8 *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. During cover closing it is prohibited to press any buttons. Do not place fingers into closing area during cover closing.

Unbalance detecting

When loads of opposite buckets or carriers in rotors are unbalanced, the drive will be switched-off during acceleration or operation of the centrifuge – and the error message will be displayed.

Rotor verification and checking compatibility with set program

Directly after starting centrifuging, a unit verifies the type of the rotor applied and in the case of its incompatibility with the type indicated in the application or absence of the rotor, the spinning process shall be stopped with simultaneous displaying the error message. The conformity of the type of the rotor is signalled with a single audible signal. In case auto identification (see 9.8 Other) option is checked, proper rotor will be automatically chosen, without user engagement.

Rest state inspection

Opening of the centrifuge's cover is possible only with the rotor in the state of rest. When the rotor is being stopped, the STOP diode is on and goes off when it is stopped. (excepting emergency cover opening) – see p. TROUBLESHOOTING.

Checking of excessive temperature

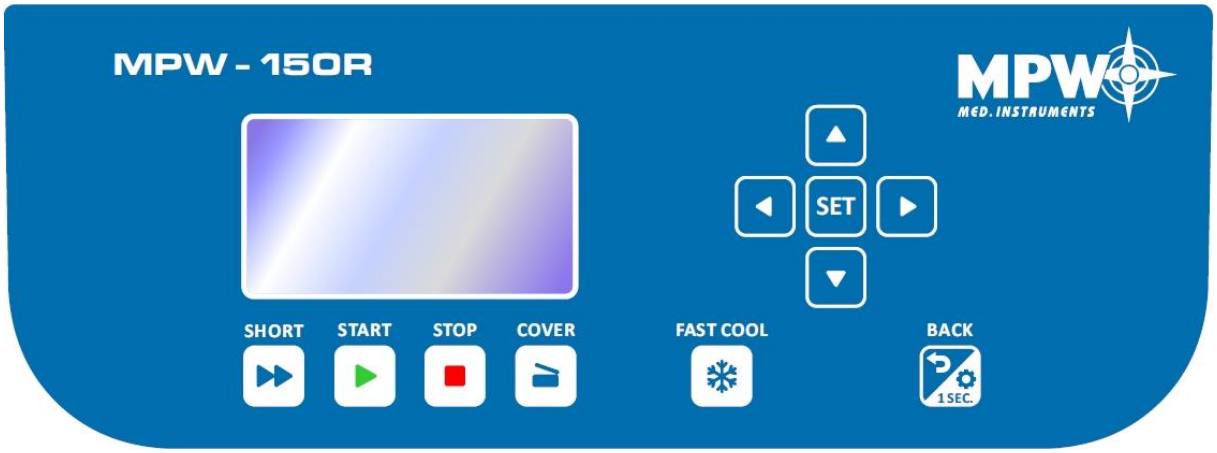
If temperature in rotation chamber exceeds 50°C caused by, for example, malfunction of cooling system, drive will be switched off and error message will be displayed. The reboot is only possible after chilling device.

6 Centrifugation

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

6.1 *Control panel*

The control panel placed on the front casing serves the purpose of controlling centrifuge operation.



Control panel

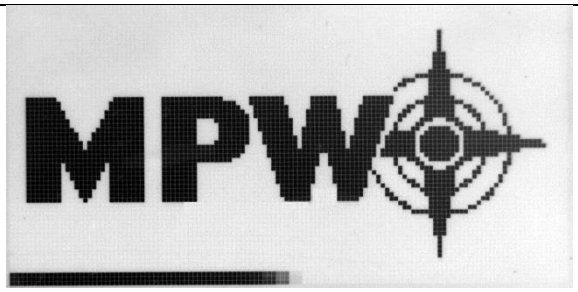
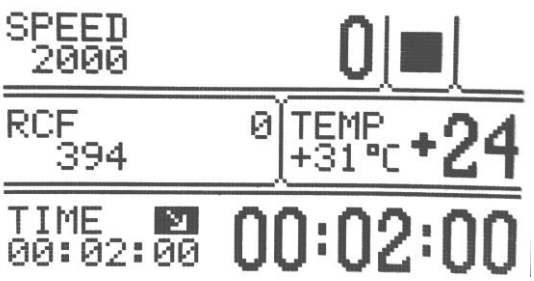
▶▶	SHORT[1]	short-time centrifuging
▶	START	start centrifugation run
■	STOP[2]	end centrifugation run
	COVER	cover opening
	FAST COOL	start fast cooling mode
	BACK RPM/RCF	exit the current menu / cancelling switching between SPEED display mode and RCF display mode
▲	UP	navigation in menu / increasing values
▼	DOWN	navigation in menu / decreasing values
◀	LEFT	navigation in menu
▶	RIGHT	navigation in menu
SET	SET	changing parameters / confirming changes

[1] the centrifuge is working as long as the key is pressed

[2] First-time pressing will make stopping centrifuging with acceleration characteristics set in the current program, second-time pressing will make braking as fast as possible.

6.2 *Display*

The display is located in the centre of the control panel. The main screen variants are presented below.

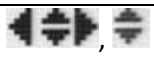
<table>
<tr><td> 
</td><td>After switching on centrifuge, welcome screen appear. After disappearing the welcome screen it is possible to setting up parameters.</td></tr>
<tr><td> 
</td><td>Simplified display mode is set as default, there is possible to switch to normal (see chapter 9.3) display mode (with two sub modes shown below).</td></tr>
<tr><td colspan="2">Normal display</td></tr>
<tr><td>RPM display mode</td><td>RCF display mode</td></tr>
<tr><td> 
</td><td> 
</td></tr>
</table>

Switching between RPM and RCF display mode

For normal display switching between RPM and RCF display mode may be obtain by pressing and keeping key by 1s :

then one should choose demand mode.

SPEED	rotor speed	assigned/measured
RCF	centrifugal force	assigned/measured
TIME	centrifuging time	assigned/measured
TEMP	temperature	assigned/measured
PRG	program no.	
11944	rotor no.	
PARA	parameters of the centrifuge	
MENU	configuration menu	

	changing values		
	density > 1,2 g/cm^3		
	centrifuging radius changed		
	counting time down (decreasing)		counting time up (increasing)
	centrifuging		centrifuging (with automatic cover opening)
	rotor stopped / closed cover		rotor stopped / opened lid
	braking		fastest decelerating
	rotor identification		
	thermal chamber		
	temperature delay		
	time delay		
	currently enlarged digits of TIME field		
	drop-down list		
	temporarily disabled		
	locked		
	time counting (blinking)		
	disabled option		active option

6.3 *Setting up RPM, RCF, time, temperature*

On the main screen, it is possible to set:

rotating speed - RPM	**SPEED**
relative centrifugal force (multiple of g-force)	**RCF**
centrifuging time	**TIME**
centrifuging temperature	**TEMP**

Exemplary change of **SPEED** setting:

- Press **SET** (to enter edit mode) – appears.
- Via ▲▼◄► keys mark **SPEED** field (highlited).
- Press **SET-** blinking.
- With ▲▼ choose demanded value.
- Via ◄► choose order of magnitude of changing value (highlited).
- Repeat above two steps for other orders of magnitude.
- Confirm settings by pressing **SET**.
- Press **BACK**.

When RPM is changed, RCF is automatically corrected.

Exemplary change of **RCF** setting:

- Press **SET** (to enter edit mode) – appears.
- Via ▲▼◄► keys mark **RCF** field (highlited).
- Press **SET-** blinking.
- With ▲▼ choose demanded value.
- Via◄► choose order of magnitude of changing value (highlited).
- Repeat above two steps for other orders of magnitude.
- Confirm settings by pressing **SET**.
- Press **BACK**.

When RCF is changed, RPM is automatically corrected.

Switching between SPEED and RCF.	
	On the screen appear an additional window, in which: ▪ Via ▲▼ keys mark field . ▪ Press **SET**. Change of screen mode will be active to switch off the centrifuge
Switching between basic and simplified screens is described in **9.3 Main screen modes.**	

Exemplary change of **TIME** setting::	
	▪ Press **SET** (to enter edit mode) - appears. ▪ Via▲▼◄► keys mark **TIME** field (highlited).
0 0 : 0 2 : 00 **[hh : mm : ss]** e.g.: centrifuging time – 2 minutes 00 seconds	▪ Press **SET** - blinking. ▪ With▲▼ choose demanded value. ▪ Via◄► choose order of magnitude of changing value (highlited). ▪ Repeat above two steps for other orders of magnitude. ▪ Confirm settings by pressing **SET**. ▪ Exit edit mode by pressing **BACK**.
	set value
	current calue (most significant digits)

HOLD mode	continuous run mode
	▪ To run centrifuging in **HOLD** mode set **00:00:00** time. ▪ To end centrifuging in HOLD mode press **STOP**.

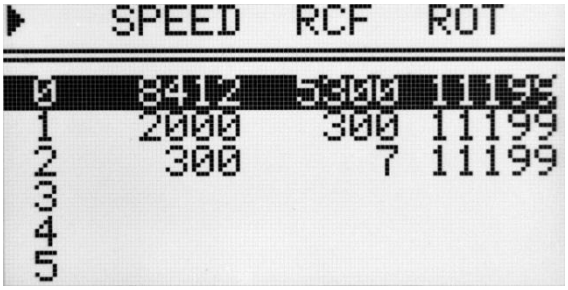
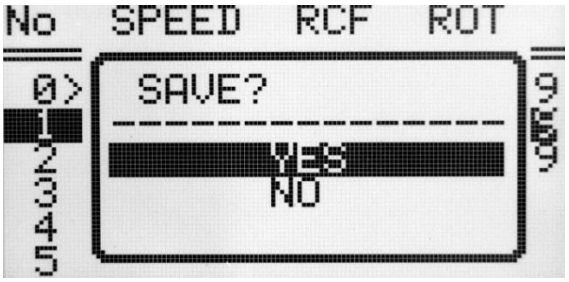
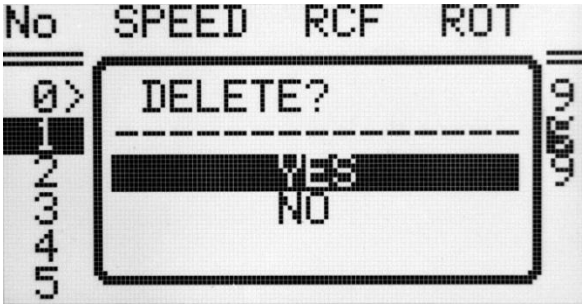
Exemplary change of **TEMP** setting:	
	▪ Press **SET** (to enter edit mode) – appears. ▪ Via ▲▼◄► keys mark **TEMP** field (highlited). ▪ Press **SET** key. ▪ With▲▼ choose demanded value. ▪ Confirm settings by pressing **SET**. ▪ Press **BACK**.

6.4 *Users programs*

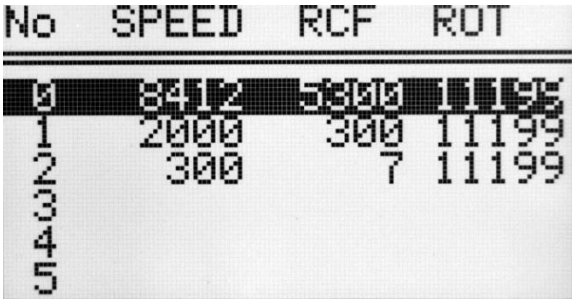
	After switching centrifuge on, program that was used in previous session is being loaded. If any program was not used in previous session, centrifuge resume the last choosen parameters.

Program choosing:	
Simplified display mode	
	▪ Press and hold BACK 1 SEC by 1 second. ▪ Choose PROG with▲▼ ▪ Press **SET**. ▪ Execute points descripted follow (below **Normal display mode** description)

Normal display mode	
	▪ Press **SET** key –  appears. ▪ Via▲▼◄► keys mark **PRG– –** field (highlited) ▪ Press **SET** key – list of programs is visible.

	▪ Via▲▼ choose demanded program. ▪ Confirm with **SET** key.
	**LOAD**, **SAVE**, **DELETE, NEW PROGRAM** refer choosen program which is highlited.
	**SAVE** – save settings as a program (confirm by selecting **YES** and pressing **SET**)
	**DELETE** – delete program (confirm by selecting YES and pressing **SET**)
	NEW PROGRAM– enter to create new program mode (as below)

Creating a new program:



- Press **SET** key.
- Via▲▼◄► keys mark **PRG** field (highlated).)
- Press **SET** key. List of programs is visible.
- Press **SET** key- menu of program settings will appear.
- Choose **NEW PROGRAM**, and then press demanded parameters of centrifuging (look chapter 6. Centrifugation).

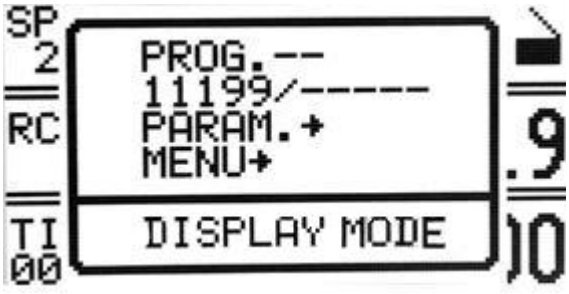
Changing parameters during centrifuging

There is a possibility to change parameters: **SPEED, RCF, TIME, and TEMP** during centrifuging. Such modifications inactivate currently running program. Modification during run is represented by **PRG – –** symbol (instead of the program number).

6.5 *Rotor choosing*

Rotor choosing

Simplified display mode

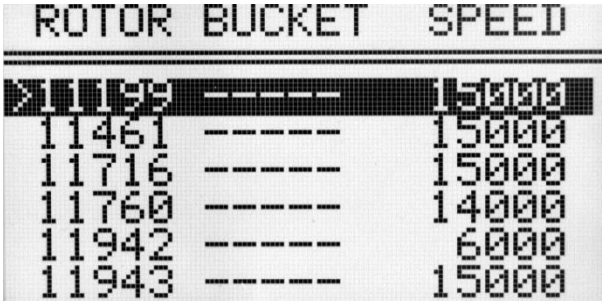


- Press and hold BACK by 1 second.
- Choose rotor number (exemplary **11199/-----)** with ▲▼.
- Press **SET**.
- Execute points descripted follow (below **Normal display mode** description)

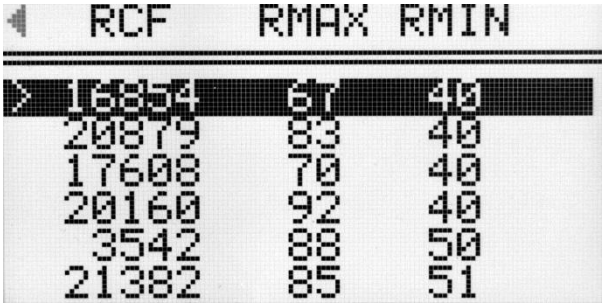
Normal display mode

- Press **SET**– appears.
- Via ▲▼◄► mark rotor choosing field.

  Press **SET** (Rotor list will appear).



- Via▲▼keys mark demanded rotor number
- Confirm by press **SET**.
- Press **BACK**.



- With ◄► keys one may switch between screens of rotors parameters

It is possible to set **AUTOMATIC ROTOR IDENTIFICATION**.

The procedure is described in subsection **9.8**.

6.6 *SHORT mode*

	SHORT MODE
	The **SHORT** mode is activated by pressing and holding ▶▶(**SHORT**). In **SHORT** mode the centrifuge is working as long as the **SHORT** key is pressed or when set time is over.

6.7 *Finishing the centrifuging*

	WAY OF END OF CENTRIFUGING
	When preselected time is reached, centrifugation will end automatically.
 **X1**	Before lapse preselected time one may stop centrifugation. Pressing **STOP** for the first time will stop centrifuging with the charasteristic set in loaded program. Confirm message by pressing any key (appart from **COVER**). 
 **x2**	Pressing **STOP** second time will stop centrifuging with the fastest characteristic. 
The message can be extinguished with the **STOP**, **SET, COVER, ▲▼◄►** or **BACK** key.	

7 Temperature control

Centrifuge is equipped with ecological refrigerating system with temperature control. During centrifugation, there may appear differences in temperature on the display and temperature of the samples in the rotor. It depends on thermal conductivity of the rotor, and samples, centrifugation time, initial temperature of rotor and samples

Exemplary change of **TEMP** setting:

	▪ Press **SET** (to enter edit mode) – appears. ▪ Via▲▼◄► keys mark TEMP field (highlated). ▪ Press **SET**. ▪ Via▲▼ set value. ▪ Confirm via SET key.
	When chamber is being cooled, symbol is visible on the screen (blinking).

7.1 *Initial cooling during centrifuging - FAST COOL*

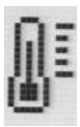
	▪ The parameters allowable to change at **FAST COOL** mode: ▪ temperature (lower than current temperature shown by centrifuge) ▪ In order to centrifuging reduced temperature samples (eg. storage in the external refrigerator) centrifuge chamber, rotor and centrifuge container must be pre-cooling to the predetermined temperature. It cause minimalization of temperature differences. ▪ Initial cooling may be activated by **FAST COOL** key (lid must be closed – rotor is spinning at **FAST COOL** mode) ▪ When **FAST COOL** mode is active, cooling system automatically set proper parameters to obtain demanded temperature the fastest way. ▪ It is possible to exit **FAST COOL** mode at any time by pressing **STOP** key.

	**FAST COOL** mode is marked by symbol  blinking in the right upper side of display.
	**ATTENTION** -to use FASTCOOL mode set temperature must be lower than current temperature shown by centrifuge. When set temperature is higher, **!** symbol is visible and accoustic signal is emmited.
	It is possible to exit **FAST COOL** mode at any time by pressing **STOP** key. Interruption of the function is signaled by a message.

7.2 *Initial cooling without centrifuging – THERMAL CHAMBER*

	PARA → **THERMAL CHAMBER**
	▪ There is a possibility of cooling chamber without centrifuging. ▪ Way of activate **THERMAL CHAMBER** is described in chapter **„Parameters of centrifugation/Thermal chamber".**

7.3 *Cooling in "START DELAY – OF TEMPERATURE" mode*

	PARA→ **START DELAY/OF TEMPERATURE**
	Centrifuging with set parameters process will start, when preselected temperature is reached. How to enable run **START DELAY – OF TEMPERATURE** function is described in **Parameters of centrifugation** chapter.

7.4 *Cooling in „SHORT" mode*

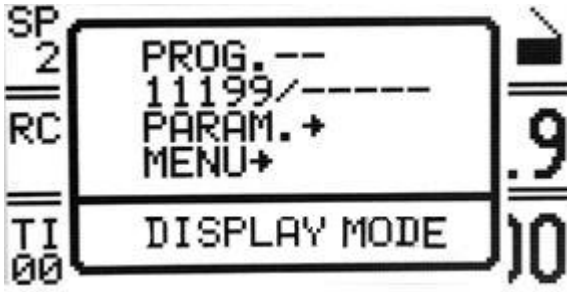
	Cooling feature is avalaible in **SHORT** mode. How to enable run centrifugation in **SHORT** mode is described in Centrifugation/**SHORT** mode.

7.5 *Cooling notes*

MPW-150R centrifuge is equipped with an efficient cooling system. It allows obtaining selected temperatures in the chamber even at maximum spin speed or fast obtaining desired temperatures (e.g. 4^{o}C). Note that time and possibility of obtaining a set temperature is dependent on multiple factors, including: the power of the cooling system, the shape of the rotor, the rotor speed, ambient temperature, etc. The accuracy of the temperature stability of ± 1 ^{o} C is determined by the installation place of the temperature sensor.

8 Parameters of centrifugation

Simplified display mode



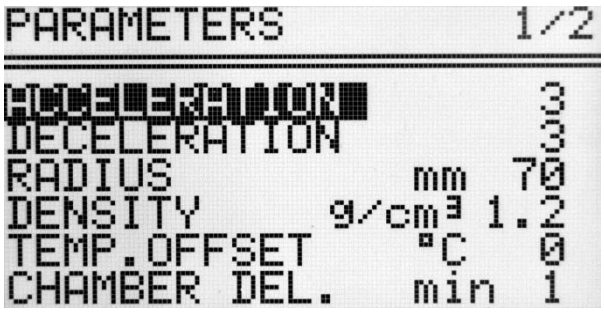
- Press and hold BACK 1 SEC. by 1 second.
- Choose **PARAM** with ▲▼
- Press **SET**.

Execute points descripted follow (below **Normal display mode** description)

Normal display mode

- Press **SET**– appears.
- With ▲▼◄► **keys** mark **PARA field**
- Press **SET**.

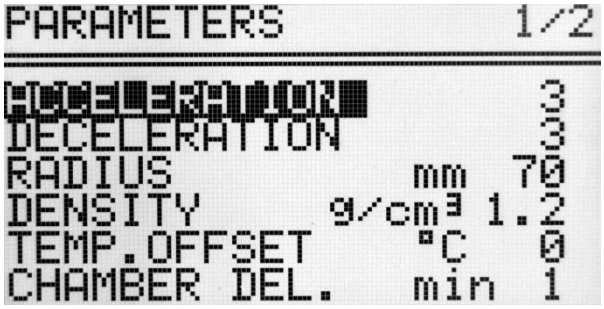
It is possible to switch between two different screens via▲▼ ◄►keys in **PARA** field



ACCELERATION	chosen acc. characteristic (0-the fastest, 9-the slowest)
DECELERATION	chosen dec. characteristic (0-the fastest, 9-the slowest)
RADIUS [mm]	current rotor radius [mm]
DENSITY (g/cm^3)	sample density [g/cm^3]
TEMP. OFFSET (^{O}C)	value of temperature correction
CHAMBER DEL. (min)	delay between set thermal chamber mode and start it

THERMAL CHAMBER	cooling of the chamber without centrifuging
AUTOM. LID OPENING	opening cover after centrifuging automatically
START DELAY	starting delayed (after pressing START)

8.1 *Acceleration/deceleration – characteristics choosing*



ACCELERATION – linear accelerating characteristics assigned to every rotor **(0 ÷ 9)**

DECELERATION – linear decelerating characteristics assigned to every rotor **(0 ÷ 9)**.

0-the fastest possible acceleration/deceleration, 9-the slowest possible acceleration/deceleration.

8.2 *Radius*

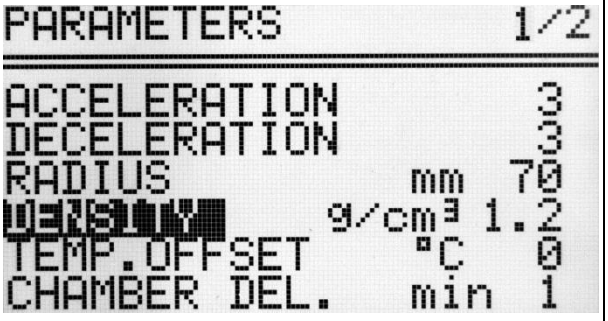
RADIUS [mm] - control of the radius of the rotor within the range from $\mathbf{R_{min}}$ to $\mathbf{R_{max}}$. Avalaible values depends on chosen rotor, see — / — (LIST OF ROTORS field).

- With ▲▼ keys mark **RADIUS**
- Press **SET**-+/− appears.
- Via▲▼ keys choose demanded values.
- Press **SET**.
- Press **BACK**.

When radius is changed is activated, symbol is visible on the screen.

Displayed **RCF** will be computed in accordance with changed value of radius.

8.3 *Density*



DENSITY (g/cm^3) - default density is set to **1,2 g/cm^3** (possible values **1,2 ÷ 9,9 g/cm^3**).

- With ▲▼ keys mark **DENSITY**
- press ►
- Via▲▼ keys choose demanded values.
- Press **SET**-+/− appears.
- Press **BACK**

When density is changed, symbol is visible on the screen.

Increasing density of the sample above **1,2 g/cm^3** (and limiting of the maximum speed of centrifuging resulting from it) applies until switching off power supply of the centrifuge or setting the device back to **1,2 g/cm^3**.

Increasing the density reduces the maximum speed of the rotor.

8.4 *Temperature offset*

- With ▲ ▼ keys select **TEMP. OFFSET**.
- Press **SET**- +/- appears.
- Use the ▲ ▼ keys to select the difference between the temperature that the cooling system will aim for, and set temperature.
- Confirm selection by pressing **SET**.
- Press **BACK**

Attention!
The use of the offset can not extend the temperature range achieved by the centrifuge.

Function description

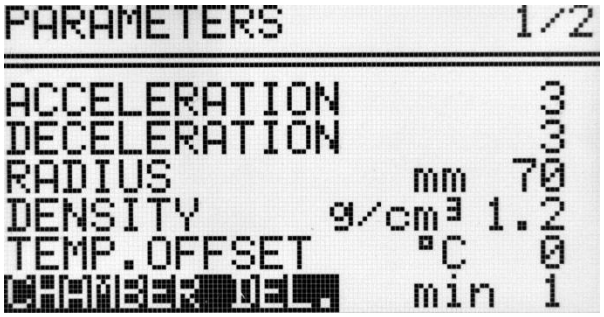
At a set temperature of 20°C and the set offset value equal to -5°C, cooling system will actually strive to reach 15°C. With a setpoint temperature of 20°C and a set offset value of 5°C the system will actually try to reach 25°C.

The temperature displayed on the main screen is corrected for offset value.

Offset can be selected range from -20°C to 20°C.

Activation of the function is signaled on the main screen with or depending on the offset value sign.

8.5 *Thermal Chamber delay*

<table>
<tr>
<td> 
</td>
<td>

With▲▼ keys choose CHAMBER DEL.
Press SET - +/− appears.
With ▲▼ keys select time value.
Set demanded value by pressing ▲▼.
Press SET.
Press BACK.

</td>
</tr>
</table>

8.6 *Thermal chamber (Constant temperature in chamber without centrifuging)*

<table>
<tr>
<td> 
</td>
<td>

Via▲▼◄► keys choose THERM. CHAMB.
Press SET (to switch off/on).
Via◄► keys mark value of temperature.
Press SET - +/− appears.
Via▲▼ keys SET demanded temperature.
Press BACK.
Activation of thermal chamber is delayed in accordance with information content in chapter 8.5 Thermal chamber delay.

</td>
</tr>
<tr>
<td> 
</td>
<td>

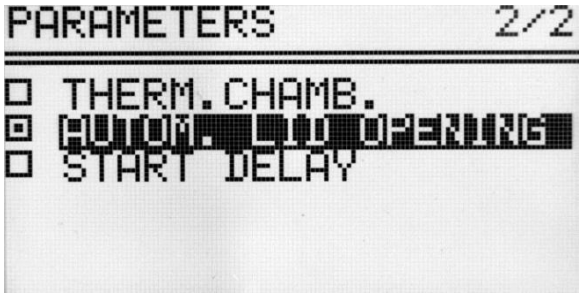
When THERMAL CHAMBER function is activated, T symbol is blinking on the screen.
Changing temperature from the main screen is not possible.
Opening cover terminates THERM. CHAMB. function (closing cover back turns it on).

</td>
</tr>
<tr>
<td colspan="2">

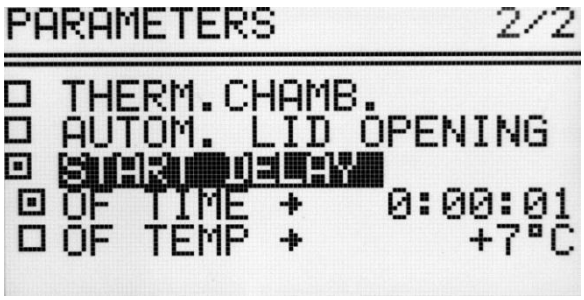
If THERMAL CHAMBER is turned on (in PARAM fold) and centrifugation completes, THERMAL CHAMBER will activate itself.
THEMRAL CHAMBER can be only activated when any other program is not running.

</td>
</tr>
</table>

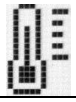
8.7 *Automatic lid open*

Automatic lid open	**OPEN LID AFTER RUN**
	▪ Via▲▼◄► keys choose AUTOM. LID OPENING. ▪ Press **SET** (to switch off/on). ▪ When centrifuge process is finished, cover will be opened automatically. ▪ When centrifuging is terminated by pressing **STOP**, opening cover is possible by pressing **COVER**. ▪ Press **BACK**.
	▪  symbol means that OPEN LID AFTER RUN is active.

8.8 *Start delay - of time*

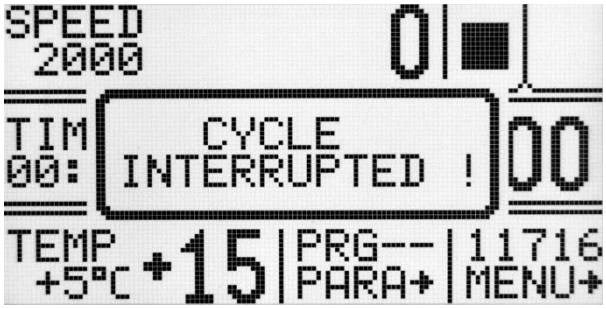
	Start centrifuging since preselected delay is reached.	STARY DELAY/**OF TIME**
		▪ Via▲▼ keys mark **START DELAY.** ▪ Press **SET.** ▪ Via ▼kays mark **OF TIME**. ▪ Press **SET** -  appears. ▪ Via ► keys mark field 0 : 0 0 : 05 (for example). ▪ Press **SET**. ▪ Start delay can be set from 0 : 0 0 : 0 1 to 9 : 5 9 : 5 9. ▪ Confirm by pressing **SET**. ▪ Press **BACK**.
		When **START DELAY-OF TIME** function is activated,  symbol is visible on the screen.
It is possible to exit **START DELAY –of time** mode at any time by pressing **STOP** key.		
START DELAY / **OF TIME** function cannot be run when START DELAY / **OF TEMP.** is activated.		

8.9 *Start delay – of temperature*

<table>
<tr><td>  </td><td>Start centrifuging since preselected delay is reached.</td><td>STARY DELAY / OF TEMP</td></tr>
<tr><td colspan="2"> 
</td><td>▪ Via▲▼ keys select START DELAY.
▪ Press SET.
▪ Via▲▼ keys select OF TEMP.
▪ Press SET.
▪ Via◄► keys select temperature zone.
▪ Press SET- +/- appears.
▪ Via▲▼ keys set demanded value.
▪ Press SET.
▪ Press BACK.</td></tr>
<tr><td colspan="2"> 
</td><td>When START DELAY – OF TEMP is turned on,  symbol is visible on the screen.</td></tr>
<tr><td colspan="3">When the function is active, the speed can be reduced to the optimum values for the FAST COOL function, when the set speed is lower than the optimum value, the rotor rotates at the set speed.</td></tr>
<tr><td colspan="3">It is possible to exit START DELAY –of temperature mode at any time by pressing STOP key.</td></tr>
<tr><td colspan="3">START DELAY / OF TEMP. function cannot be run when START DELAY / OF TIME is activated.</td></tr>
</table>

8.10 *Screen messages*

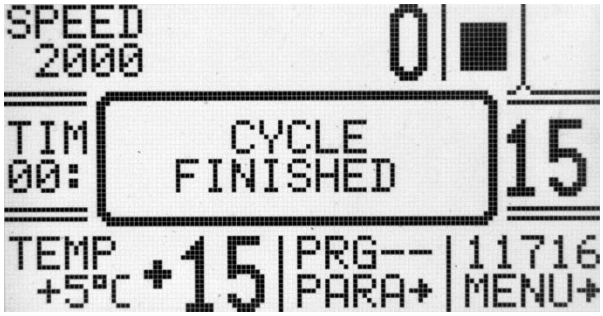
End of centrifuging – manual mode



Centrifuging may be stopped at the any moment via the **STOP** key. The information message:

CYCLE CANCELLED will be displayed.

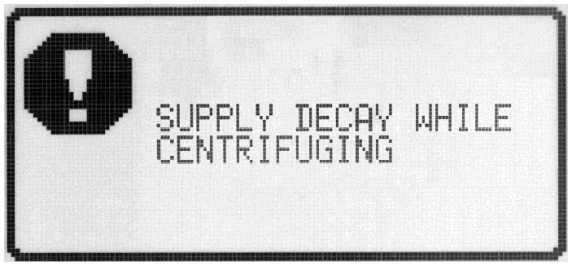
End of centrifuging – manual mode



Stopping centrifuging in accordance the set time causes generating **multiton audible signals** (after stopping the rotor) and displaying the message

FINISH OF CENTRIFUGING

Additional messages

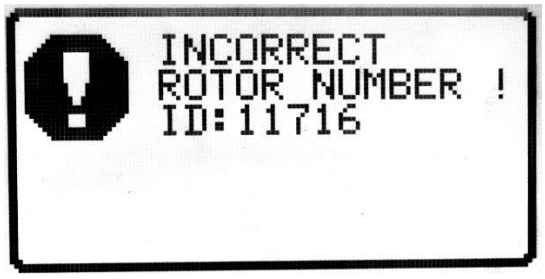


In case of power shortage while centrifuging, after repeated switching it on, the following error screen will be displayed:

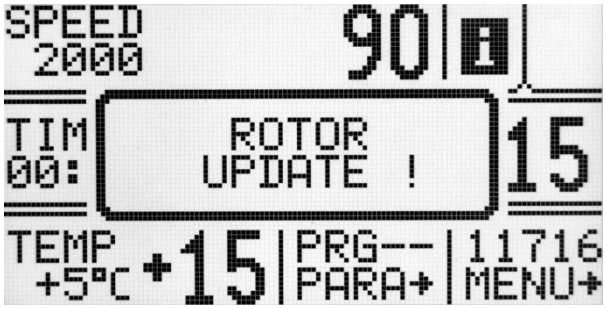
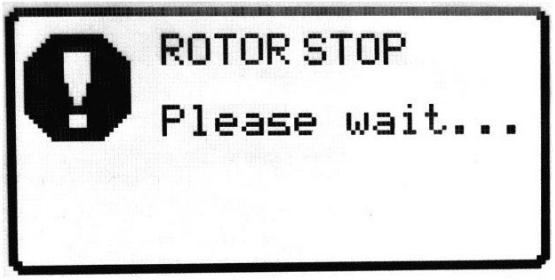
SUPPLY DECAY WHILE CENTRIFUGING

After operating for **2000 hours**, after every switching on the centrifuge the error screen is being displayed with information about the necessity to carry out servicing activities.

After pressing the **SET** key, the device proceeds to the main screen and the device may operate.



Identified number of the installed rotor is not compatible with the number of rotor remembered in program.

	The rotor is automatically updated (when auto-identification is enabled).
	Rotor is braking (only when centrifuge was switched off during rotor running).
After pressing the **SET** or **STOP** key, the device returns to the main screen.	

Screen messages that may occur during operation.

MESSAGE	EXPLANATION
"SPEED OF ROTOR" "IDENTIFICATION <> 90 RPM"	SPEED OF ROTOR IDENTIFICATION <> 90 RPM
"IMBALANCE FAST STOP !" "PLEASE REMOVE CAUSE" "THEN RESTART"	UNBALANCE DETECTED
"NO ROTOR OR IDENTIFICATION" "SENSOR DAMAGED !"	ERROR OF ROTOR IDENTIFICATION {LIMIT OF 6SEC. IS OVER}
"INCORRECT ROTOR NUMBER !"	ROTOR'S IDNOT CORRECT
"WRONG DIRECTION OF ROTATION" "OR UNKNOWN ROTOR !"	WRONG DIRECTION OF ROTATION / UNKNOWN ROTOR
"PLEASE CLOSE THE LID" "HAND !"	CLOSING THE LID MANUALLY
"ROTOR STOPPING !" "Please wait..."	INITIALIZING AFTER MAINS FAILURE WITH ROTATING ROTOR
" CYCLE'S ABORTED !"	CENTRIFUGING ENDED BECAUSE OF PRESSING STOP
" CYCLE'S FINISHED"	CENTRIFUGING ENDED {WITHOUT ERRORS}

Emergency messages

In case of emergency messages (centrifuge is not working properly) contact the manufacturer's authorized service centre.

MESSAGE
"OVERHEATING MOTOR !"
INVERTER ERROR !"
"INVERTER SERIAL BUS ERROR !"
"TEMPERATURE SENSOR ERROR"
"OPENING COVER in RUN!"
"SPEED METER ERROR"
"I2C BUS ERROR"
"OVERHEATING CENTRIFUGE !"
"ROTOR OVERSPEED !"
"COVER LOCK MALFUNCTION !"
"WORKING 2000 HOURS:" "CALL SERVICE FOR"

8.11 *Temporarily disabled functions*

Functions that could be temporarily disabled.

active	SPEED	RCF	TIME	TEMP	PRG ––	––– / –––	PARAM	MENU
THERMAL CHAMBER	●	●	●	○	●	●	●	●

During centrifuging

disabled	SPEED	RCF	TIME	TEMP	PRG ––	––– / –––	PARAM	MENU
Centrifuging	●	●	●	○	●	○	●	●
ACC/DEC 10-19	○	○	●	●	○	○	●	●

During setting of parameters

active	SPEED	RCF	TIME	TEMP	PRG ––	––– / –––	PARAM	MENU
Centrifuging	○	○	○	○	●	○	○	●
ACC/DEC 10-19	○	○	●	●	●	○	●	●

● active
○ disabled

8.12 *Unbalance*

The centrifuge is provided with the rotor unbalance sensor and when it will be activated, centrifugation process will be stopped through fast braking and at the same time an error message will be displayed. Cancellation of this error is possible only through pressing **COVER** key after stopping of the rotor.

One must check if rotor was correctly loaded, close the cover and once more start the program. In order to protect the rotor against beating in opposite areas of the rotor, it has to be provided with identically filled buckets, carriers, test-tubes etc. for getting the best balance possible.

	Unbalance causes noise and vibrations during operation, and adversely affects power transmission system (motor, shock absorbers). The better balance, the smoother will be the centrifuge operation and therefore longer life of usage of the driveline. Moreover, the ideal separation level is then obtained, as already separated constituents would not be moved up by vibration.

Emergency stop

In any moment of centrifuging it is possible interrupt the process and fast stop the rotor. Single-time pressing of the **STOP** key will make centrifuging stop with acceleration characteristics set in the program (after pressing the **SET** or **STOP** key, the device returns to the main screen). Pressing and holding it up to 1s will make the centrifuging stop with the strictest characteristic.

8.13 *Printing report (USB)*

When the centrifuging process is finished there is a possibility to obtain report. Report can be transferred to PC or printed.

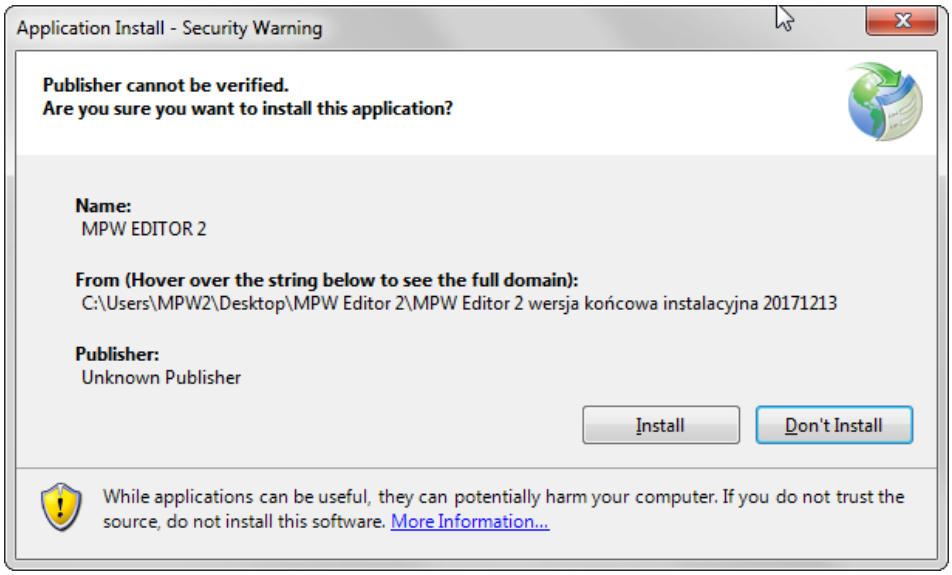
PC (USB)

The elements needed to make connecting your computer via USB:

name	quantity (pcs.)	cat. No.
USB A-A cable	1	16655
MPW Editor 2 application	1	to downloaded from the website: www.mpw.pl

Preparation

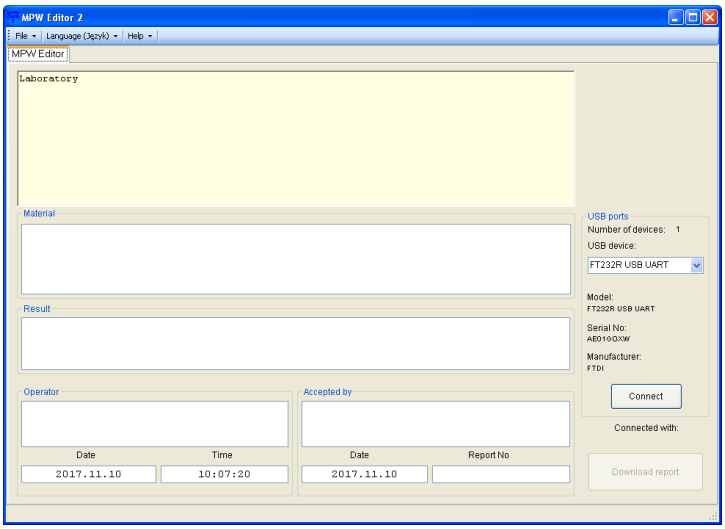
- Install **MPW Editor 2** application on the computer. Program is available for download from our website at www.mpw.pl**.**
  Operating System Requirements: **Microsoft Windows 10 (64bit).**
  The Manufacturer does not guarantee that the program will work correctly with other operating systems.



- If necessary install **FTDI USB drivers** and **.NET Framework 4.0** library
  (download with manufacturer's website: www.mpw.pl)

Centrifuging and printing

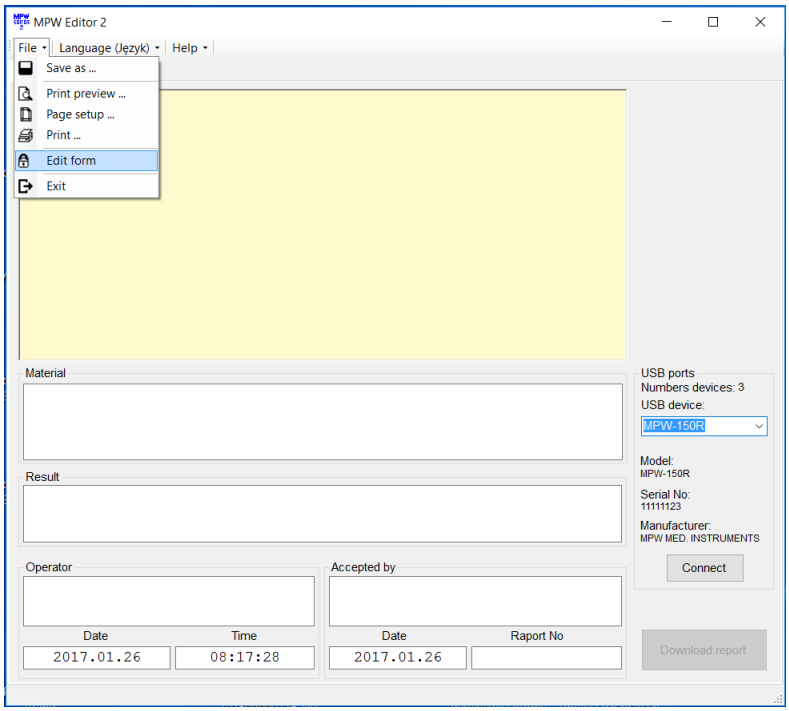
- Run **MPW Editor 2** application.
- Choose **Language\English**



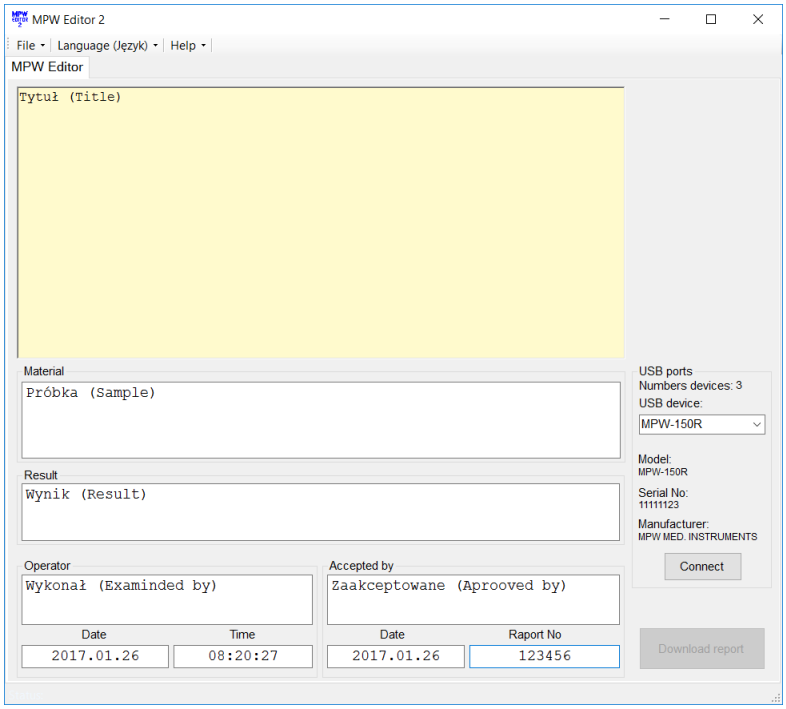
- Connect centrifuge to the PC in accordance with the „**Connection scheme”**
- Choose port assigned to the centrifuge (it will appear after connecting USB cable).

  Attantion:
  If the interface has not been programmed: name, serial number and manufacturer’s name, the device will be identified by Windows and MPW Editor 2 with the data programmed by FTDI (manufacturer USB integrated circuit) for example FT232R USB UART.

  - Choose **File\Edit form**

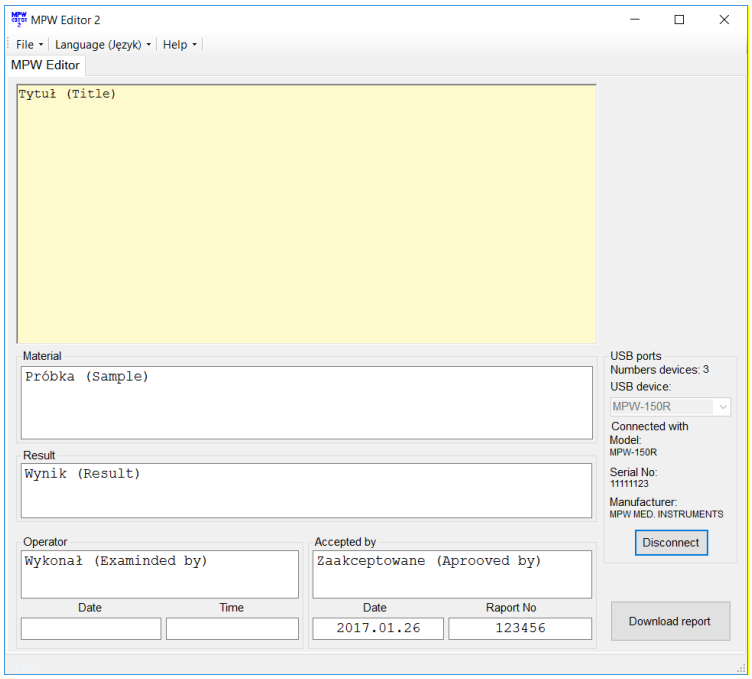


  - In the „Tytuł (Title)” field, you can place any text, for example name of the laboratory, for later use in the report template.



- Choose **File\Save form**.
- Ensure that USB device is selected from the list of devices.

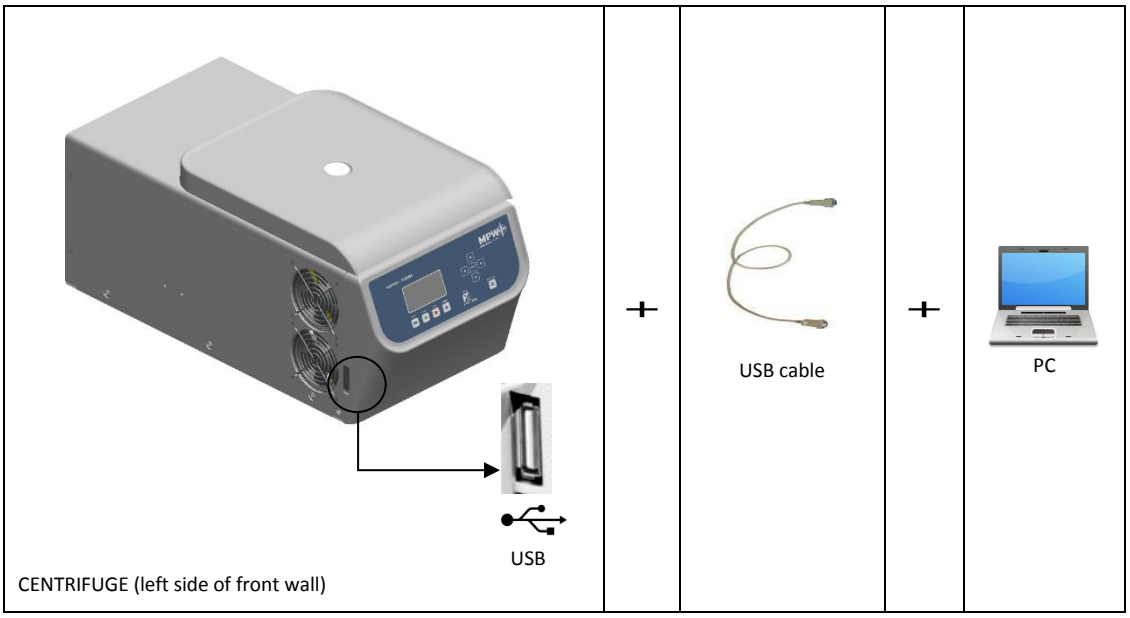
- Press Connect. After successful communication, "PC" appears in the display.



- Fill folds: „Material", „Result", „Operator", „Accepted by", „Raport no" (optionally).
- When the centrifuging process is finished, press **Download the report**.
- When centrifuging process is completed, report will appear.
- Save report **(File/Save as)** or print it **(File/Print).**
- In order to get another report, press New test and press Download the report.

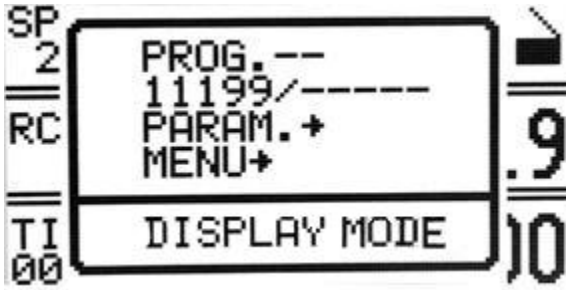
- After finishing the work, press **Disconnect** button (the "PC" disappears from the display of the centrifuge) and then closes MPW Editor 2.

Connection scheme



9 MENU

Simplified display mode



- Press and hold BACK 1SEC by 1 second.
- Choose **PARAM** with ▲▼
- Press **SET**.
- Execute points descripted follow (below **Normal display mode** description)

Normal display mode

- Press **SET** – ± appears.
- With ▲▼◄► keys select **MENU** (highlighted).
- Press **SET**.

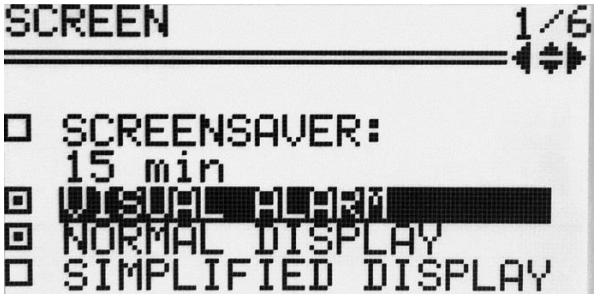
- Moving in the **MENU** is possible via ▲▼◄►keys.
- To open demended field one should mark it and press **SET**.

CONFIGURATION	centrifuge configuration
PASSWORD	password protection
LAST 10 CYCLES	10 last centrifugation cycles history
WORK TIME	total working time, working cycles counter
ROTOR RUNTIME	counting time mode
CONTACT US	manufacturer's details
DIAGNOSTICS	error codes (service field)
FACTORY SETTINGS	restore factory settings

9.1 *Screen saver*

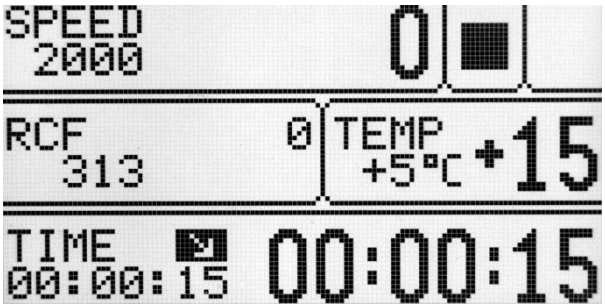
Setting time of screen saver	MENU / CONFIGURATION / **SCREEN MODE**
	▪ With ▲▼ keys select **SCREENSAVER**. ▪ Press **SET**. ▪ With ▲▼ keys choose 15 min (highlighted). ▪ Press **SET**-+/− appears. ▪ With ▲▼ keys select demanded value from 1 to 60 minutes. ▪ Mark selection by pressing **SET.** ▪ Leave the menu by pressing **BACK**.

9.2 *Visual alarm*

Visual alarm	MENU / CONFIGURATION / **SCREEN MODE**
	▪ Via ▲▼ keys choose VISUAL ALARM ▪ Mark it by pressing **SET**. ▪ Leave the menu by pressing **BACK**. **VISUAL ALARM** cause blinking screen after ending of centrifuging or after error occuring.

9.3 *Types of main screen*

Default setting is **NORMAL DISPLAY**.
To switch to **SIMPLIFED SCREEN**, follow the rules in section 9.3.1.

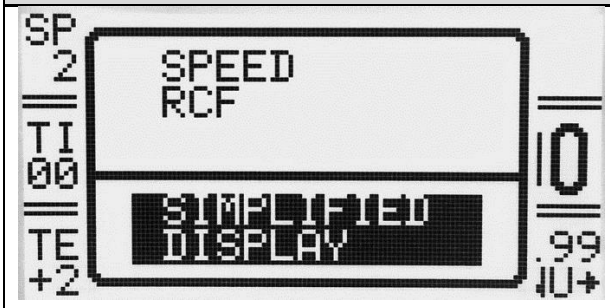
Types of main screen	
NORMAL DISPLAY	SIMPLIFIED DISPLAY
	

9.3.1 Switching the normal display to simplified screen

Method I

- **Press SET** – appears.
- Via▲▼◄► keys select **MENU.**
- Press **SET**.
- Via ▲▼ keys select **CONFIGURATION** tab.
- Press **SET**.
- Via▲▼ keys select **SIMPLIFIELD DISPLAY**.
- Press **SET**.
- Leave menu via **BACK** key.

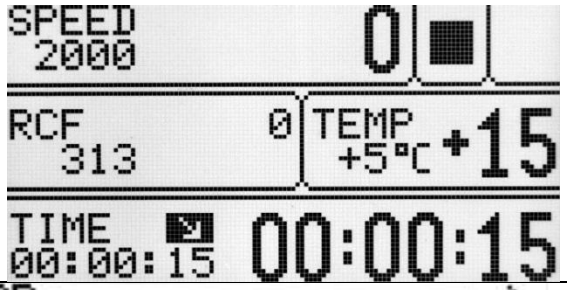
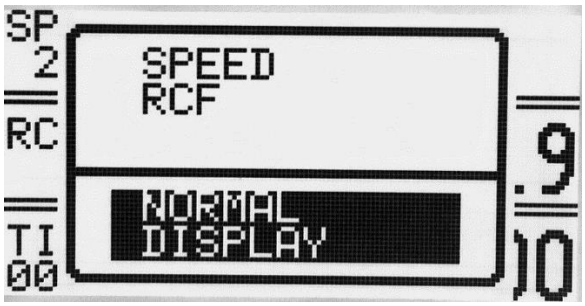
Method II



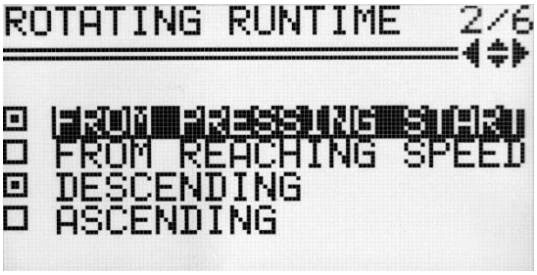
Press the **BACK** button for **1 sec.** to return to the basic display (a short menu is displayed on the screen), then:

- Via▲▼ keys select **SIMPLIFIED DISPLAY**.
- Press **SET**.

9.3.2 Switching the simplified screen to normal display

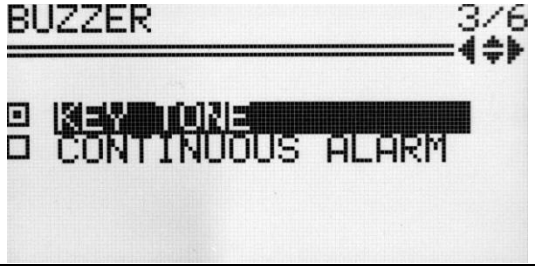
	Press the **BACK** button for **1 sec.** to return to the basic display (a short menu is displayed on the screen), then:
	▪ Via ▲▼ keys select **DISPLAY** tab. ▪ Press **SET**. (a new selection window is displayed on the screen)
	▪ Via ▲▼ keys select **NORMAL DISPLAY** tab. ▪ Press **SET**.

9.4 *Rotating time*

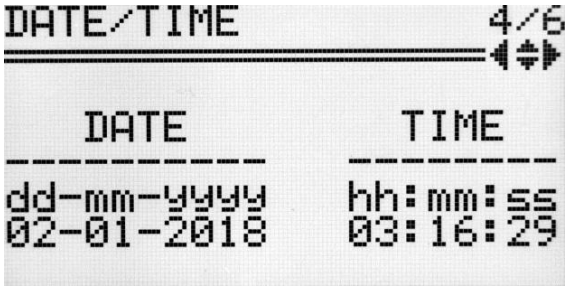
The method of counting time centrifuging	MENU/CONFIGURATION/ **ROTATING RUNTIME**
	▪ Via ▲▼ choose demanded option. ▪ Mark it by pressing **SET**. ▪ Leave menu via **BACK** key

<u>Counting since:</u>	
FROM PRESSING START	COUNTING SINCE ROTOR IS IDENTIFIED
FROM REACHING SPEED	COUNTING FROM ASSIGNED SPEED
<u>Presenting mode:</u>	
DESCENDING	COUNTING DOWN
ASCENDING	COUNTING UP

9.5 *Buzzer*

Switching ON/OFF short audible signals accompanying every pressing of any key.	MENU/ CONFIGURATION /**BUZZER**
	▪ With ▲▼ keys select demanded option. ▪ Mark selection by pressing **SET**. ▪ Leave menu via **BACK** key
Warning signals are always switched on.	

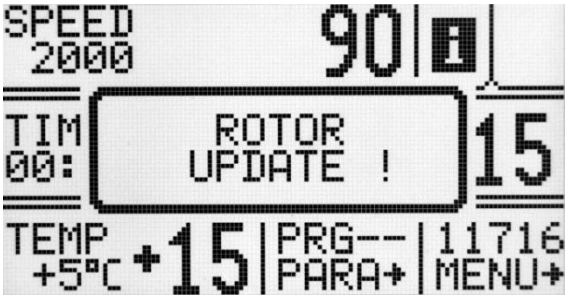
9.6 *Date/time*

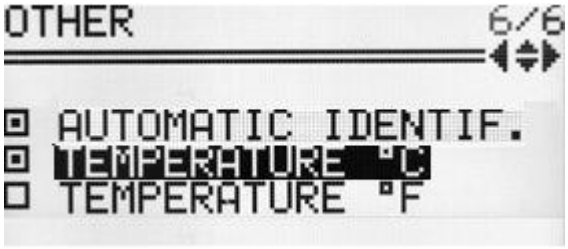
Setiing up time and date	MENU/ CONFIGURATION /**DATE/TIME**
	▪ Press **SET**. ▪ Via◄► **keys** choose demanded value. ▪ Press **SET** +/− appears. ▪ Via ▲▼ keys change choosen value. ▪ Repeat above steps for other values. ▪ Confirm by pressing **SET**. ▪ Press **BACK.**
Set date and time are still active even after restart of centrifuge.	

9.7 *Language*

Changing menu language	MENU / CONFIGURATION / **LANGUAGE**
	▪ Via▲▼◄► keys choose demanded menu language ▪ Mark it by pressing **SET.** ▪ Press **BACK.**

9.8 *Other*

Rotor automatic identification	MENU / CONFIGURATION / **OTHER**
 	Thanks to the **AUTOMATIC IDENTIFICATION**, the centrifuge automatically identifies the rotor in the chamber. Rotor identification is indicated by the message. When the function is deactivated, it is necessary to manually select the desired rotor as described in "6.5 Choosing rotors". The AUTOMATIC IDENTIF. is turned on by default. To enable the function: Via ▲▼ keys choose ☐ AUTOMATIC IDENTiF. Press **SET** (☐ change to ☒). After rotor automatic correction ROTOR UPDATE! is visible Autoidentification is not active for work in the loaded program mode.

Choice of temperature unit	MENU / CONFIGURATION / **OTHER**
	The TEMPERATURE in °C is turned on by default. To change the temperature unit: ▪ Via ▲▼ keys select unit ▪ Confirm by pressing **SET**.

9.9 *Password protection*

Setting up password	MENU / **PASSWORD**
To prevent from an unauthorized use, a **PASSWORD** can be set. **Note:** No PASSWORD is set by default. The PASSWORD can be set as follows when the rotor is at a standstill.	

<table>
<tr><td> 
</td><td>

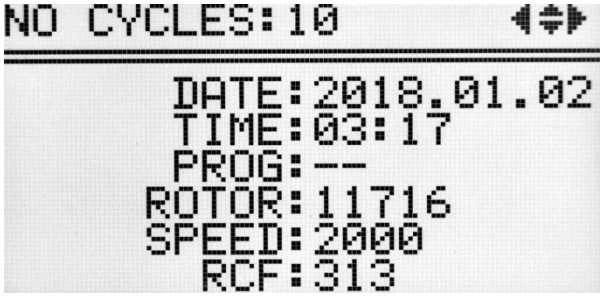
Press the ▲▼ keys until PASSWORD.
Press SET-+/- appears.
With ◄► keys set the valid 1000s place of the PASSWORD. e.g.: 1xxx. With ▲▼ keys set correct value.
Repeat above steps for all places.
Press SET.

</td></tr>
<tr><td> 
</td><td>

As a confirmation repeat instructions described above.

</td></tr>
<tr><td colspan="2">When the PASSWORD is set, the Key sign is displayed in the CODE zone. It is also displayed in the main menu (lower right corner of the screen).</td></tr>
<tr><td> 
</td><td> 
</td></tr>
<tr><td colspan="2">From then on, access to the MENU is possible after entering the password.
In case of incorrect password, it will show message: ACCESS DENIED!</td></tr>
<tr><td colspan="2">To delete the PASSWORD, “0000” must be set.
If the PASSWORD is forgotten, the emergency code “7654” should be used to clear password and remove all locks.</td></tr>
</table>

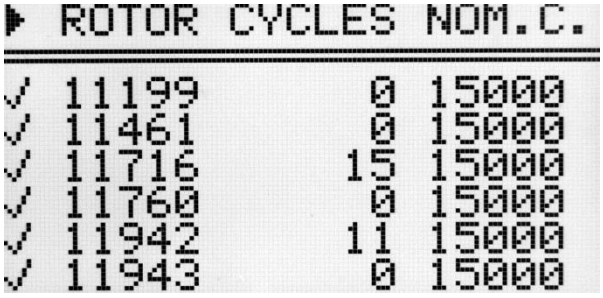
9.10 *Cycles history*

Information concerning parameters of last 10 centrifuging cycles.	CONFURATION / **LAST 10 CYCLES**
	▪ Number od cycle can be changed by ◄► keys. ▪ The list can be scrolled using ▲▼ keys. ▪ To exit press **BACK** key.

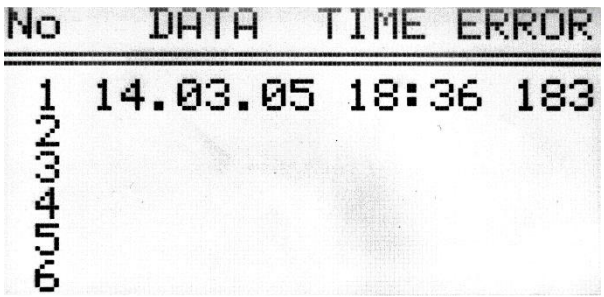
9.11 *Total work time*

Total working time of centrifuge	CONFIGURATION / **WORK TIME**
	In the CYCLES menu the following statistics are displayed: ▪ total working (centrifugation) time ▪ working cycles counter ▪ To exit press **BACK** key.

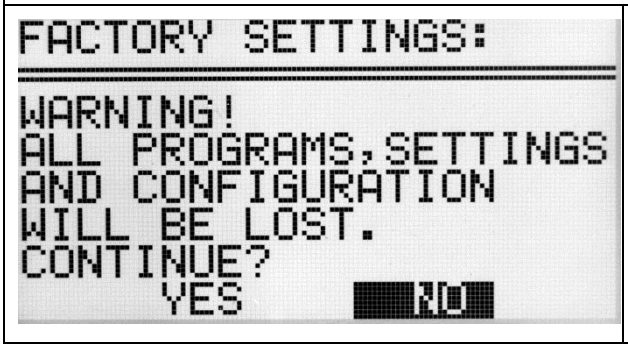
9.12 *Rotor cycles*

Information about the time of centrifuging and of the quantity of the working cycles of each rotor. The table also contains icons warning of the duty of execution of validation.	CONFIGURATION / **ROTOR RUNTIME**
	▪ The list can be scrolled using ▲▼ keys. ▪ To exit press **BACK** key. Symbols: ✓ – more than 100 cycles left !¡! – less than 100 cycles left ! – worn rotor **Rotors marked as worn must not be used.**

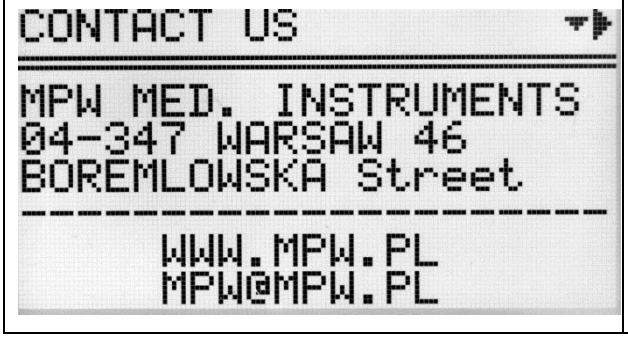
9.13 *Diagnostics*

Information about errors arisen in working of the centrifuge.	CONFIGURATION / **DIAGNOSTICS**
	**Intended for service purposes!**

9.14 *Factory settings*

Restoring factory setings.	MENU/ **FACTORY SETTINGS**
All settings of user programs will be deleted.	
	▪ Via ◄► keys choose **YES** or **NO**. ▪ Confirm by pressing **SET**.

9.15 *Manufacturer's details*

Information about the type of the centrifuge, firmware version, and contact details.	CONFIGURATION / **CONTACT US**
	▪ The list can be scrolled using ▼►◄►keys. ▪ To exit press **BACK** key.

10 Maintenance

10.1 *Cleaning of the centrifuge*

	Attention! ▪ 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. **Once a week** Using wiping cloth, remove condensate or residues of the products from the rotor chamber. **Once a month** Check the rotor clamping thread. In case of damage, replaced it. Check the centrifuging chamber whether it is damaged. In case of damage it can not be longer put into operation. Notify authorized service workshop.

10.2 *Maintenance of centrifuge elements*

	▪ In this way, the uniform deflection of the buckets and quiet centrifuge operation is ensured.

Cleaning of the accessories

	▪ 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. Wipe rotor's pins clean and dry with a paper towel after approx.400 uses, cleaning or/and autoclaving and then lubricate socket with the petroleum jelly (catalog no.**17201**). ▪ 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 prevent corrosion. ▪ 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.

▪ **HS** accessories maintenance.

	▪ 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. ▪ The rotor pins shall be always lubricated with **petroleum jelly**.

10.3 *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_2H_4O** (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).

10.3.1 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 to 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 reduce lifespan of plastic and mechanical components. PC tubes can become useless.
- 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.

10.4 *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, discolouring).
○	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, discolouring, bursting, and 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.

DANGER!

MPW accessorises are not biotight. For centrifuging infectious materials it is necessary to use hermetically closed tubes meeting demands of bio tightness, in order to prevent germs migration into the centrifuge and beyond it.

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.

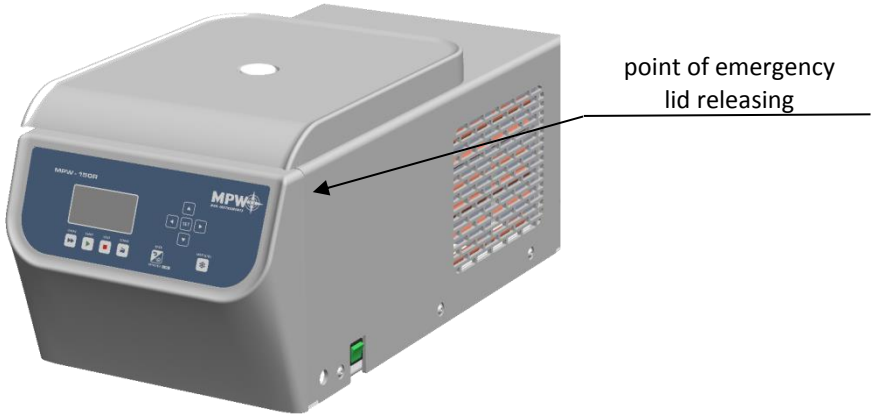
11 Troubleshooting

Majority of faults could be removed by restart the centrifuge. After switching the centrifuge ON, there shall be displayed parameters of the recently implemented program and sound signals comprising four successive tones shall be generated. In case of short-duration power failure the centrifuge terminates the cycle and displays PROGRAM ERROR code.

problem	question	remedy
Centrifuge does not start	*Is supply cable plugged into mains?*	*Plugs supply cable correctly.*
	Is master switch ON?	*Switch ON power supply.*
Motor error is displayed		Call service.
Centrifuge does not start (indications are proof for cycle in progress and motor does not start)	*Is*  *symbol displayed?*	Wait till rotor stops and the  symbol goes off.
	Is  *symbol displayed?*	Close cover.  symbol must switch off.
	Is  *symbol blinking?*	Centrifugation cycle in progress, press **STOP** key or wait till cycle ends.
Centrifuge does not accelerate *(unbalance error)*	*Unequal rotor load.*	Centrifuge load shall be balanced.
	Inclined centrifuge.	Centrifuge shall be levelled.
	Faulty drive (mechanical damage).	Call service.
	Was centrifuge displaced during operation.	Switch ON the centrifuge again after opening and closing the cover.
(rotor error)	*After stopping error rotor message is displayed*	Check if rotor number in started program is consistent with the number of the rotor installed in the centrifuge. Check rotor status (if there are coding magnets inserted)
	Centrifuge does not recognize the rotor and does not stop.	Switch the centrifuge OFF, then ON and check correctness of loaded program
It is not possible to open the cover	 *symbol on the display is blinking, after pressing COVER key single tone is audible*	Rotor is still rotating. Wait for stopping of the rotor and displaying of the  symbol.
	The sensor is connected correctly, and the error is still applying.	Call service.
Mains failure during run	*The message will be displayed on the display about the decay of tension.*	Wait for stopping of the rotor, clear the error by pressing the SET key.
Temperature sensor error	*The overheating message will be displayed.*	Switch the centrifuge OFF, then ON.
		Call service.
Error of the exceeding the temperature (50°C) in the chamber	*The overheating message will be displayed.*	Call service.

Emergency lid release

In case of e.g. mains failure it is possible to open cover manually. On the right side is plug, which should be unscrewed (via key for emergency lid release 18640 basic accessories). Then, one should pull the plug .



It is not allowed to emergency lid releasing when rotor is running!
One must be sure that rotor is not in the motion (use inspection glass).

Screen failure

If the information displayed on the screen disappears and there is no display backlight, press the **STOP** button twice to stop the centrifuging. Then, make sure to look through the viewfinder into the centrifuge chamber that the rotor has stopped rotating and turn off the power supply with the power switch.
For reasons of safety, do not use the lid emergency opening. 5 minutes after stopping the rotor turn on the power supply with the power switch.

12 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 carried out 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.

	▪ 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.

13 Disposal

- When you are disposing the device, the respective statutory rules must be observed.
- Pursuant to guideline 2002/96/EC (WEEE).
- The device belongs to 8th group (medical devices) and is categorized in business to business field.
- The icon of the crossed-out trash can shows that the device may not be disposed as part of domestic waste. The waste disposal guidelines of the individual EC countries might vary. If necessary, contact your supplier.

14 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

E0008530W - registration number given by Chief Inspectorate Of Environmental Protection

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

Distributor’s info

DISTRIBUTOR:

15 Annexes

A. Wyposażenie dodatkowe/Optional accessories

MPW-150R

WIRNIK / ROTOR

PARAMETRY WIRNIKA / ROTOR PARAMETERS

POJEMNIK/BUCKET

WKŁADKA / ADAPTER

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

11199

RPM 15000, RCF 16854, Rmax 67, ⍙ 45

bez pojemnika/without bucket

14084

[12] 15127 0,5 ml probówka PCR (7,8 x 31 mm)
0,5 ml PCR tube (7,8 x 31 mm)

14126

[12] 15124 0,4 ml probówka PCR (5,7 x 48,6 mm)
0,4 ml PCR tube (5,7 x 48,6 mm)

14133

[12] 15125 0,2 ml probówka PCR (6 x 21,6 mm)
0,2 ml PCR tube (6 x 21,6 mm)

bez wkładki/without adapter

[12] * 2-1,5 ml probówka (10,8x41,8 mm), Eppendorf®; [15011], 2 ml (10,8x41,8 mm); [15128], 1,5ml (10,8x40,5 mm)
2-1,5 ml tube (10,8x41,8 mm), Eppendorf®; [15011], 2 ml (10,8x41,8 mm); [15128], 1,5ml (10,8x40,5 mm)

11461

RPM 15000, RCF 20879, Rmax 83, ⍙ 45

bez pojemnika/without bucket

14084

[24] 15127 0,5 ml probówka PCR (7,8 x 31 mm)
0,5 ml PCR tube (7,8 x 31 mm)

14126

[24] 15124 0,4 ml probówka PCR (5,7 x 48,6 mm)
0,4 ml PCR tube (5,7 x 48,6 mm)

14133

[24] 15125 0,2 ml probówka PCR (6 x 21,6 mm)
0,2 ml PCR tube (6 x 21,6 mm)

bez wkładki/without adapter

[24] * 2-1,5 ml probówka (10,8x41,8 mm), Eppendorf®; [15011], 2 ml (10,8x41,8 mm); [15128], 1,5ml (10,8x40,5 mm)
2-1,5 ml tube (10,8x41,8 mm), Eppendorf®; [15011], 2 ml (10,8x41,8 mm); [15128], 1,5ml (10,8x40,5 mm)

** probówka niedostępna w ofercie MPW lub dostępny odpowiednik (np:[15050]), patrz kolumna z prawej*
tube is not offered by MPW or equivalent is available (e.g. [15050]), see column on the right

A. Wyposażenie dodatkowe/Optional accessories

11716

RPM 15000, RCF 17609, Rmax 70, ⌀ 45

bez pojemnika/without bucket

bez wkładki/without adapter

[4] 15131	4 x 0,2 ml probówki szeregowe PCR-strip (10,2 x 37,2 mm) 4 x 0,2 ml PCR strip (10,2 x 37,2 mm)
[4] 15122	8 x 0,2 ml probówki szeregowe PCR-strip (10,2 x 72,4 mm) 8 x 0,2 ml PCR strip (10,2 x 72,4 mm)
[32] 15125	0,2 ml probówka PCR (6 x 21,6 mm) 0,2 ml PCR tube (6 x 21,6 mm)
[4] 15130	8 x 0,2 ml probówki szeregowe PCR strip (7,3 x 77,2 mm) 8 x 0,2 ml PCR strip (7,3 x 77,2 mm)

11760

RPM 15000, RCF 21382, Rmax 85, ⌀ 45

bez pojemnika/without bucket

14084

[24] 15127	0,5 ml probówka PCR (7,8 x 31 mm) 0,5 ml PCR tube (7,8 x 31 mm)

14126

[24] 15124	0,4 ml probówka PCR (5,7 x 48,6 mm) 0,4 ml PCR tube (5,7 x 48,6 mm)

14133

[24] 15125	0,2 ml probówka PCR (6 x 21,6 mm) 0,2 ml PCR tube (6 x 21,6 mm)

bez wkładki/without adapter

[24]	*	2-1,5 ml probówka (10,8x41,8 mm), Eppendorf®; [15011], 2 ml (10,8x41,8 mm); [15128], 1,5ml (10,8x40,5 mm) 2-1,5 ml tube (10,8x41,8 mm), Eppendorf®; [15011], 2 ml (10,8x41,8 mm); [15128], 1,5ml (10,8x40,5 mm)
[24]	*	2 ml probówki z filtrem - spin columns (10,8 x 46 mm) 2 ml spin columns (with filter) (10,8 x 46 mm); [15011], 2 ml (10,8x41,8 mm); [15128], 1,5ml (10,8x40,5 mm)

** probówka niedostępna w ofercie MPW lub dostępny odpowiednik (np:[15050]), patrz kolumna z prawej*
tube is not offered by MPW or equivalent is available (e.g. [15050]), see column on the right

A. Wyposażenie dodatkowe/Optional accessories

11942

RPM 6000, RCF 3542, Rmax 88, ⌀ 30

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)

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 pokywką (17 x 70 mm) 10 ml tube, round bottom, with cap (17 x 70 mm)

11943

RPM 15000, RCF 21382, Rmax 85, ⌀ 45

bez pojemnika/without bucket

bez wkładki/without adapter

[20]	*	1,6 ml probówka Cryo (12,3 x 46,5 mm) 1,6 ml Cryo tube (12,3 x 46,5 mm)
[20]	*	1,8 ml probówka Cryo (12,3 x 46,5 mm) 1,8 ml Cryo tube (12,3 x 46,5 mm)

11944

RPM 15000, RCF 21382, Rmax 85, ⌀ 45

bez pojemnika/without bucket

bez wkładki/without adapter

[12]	*	5 ml probówka z korkiem wciskanym (17 x 54,2 mm), Eppendorf® 5 ml tube with snap cap (17 x 54,2 mm), Eppendorf®

** probówka niedostępna w ofercie MPW lub dostępny odpowiednik (np:[15050]), patrz kolumna z prawej*
tube is not offered by MPW or equivalent is available (e.g. [15050]), see column on the right

A. Wyposażenie dodatkowe/Optional accessories

12300

RPM 13000, RCF 16816, Rmax 89, ⌀ 90

bez pojemnika/without bucket

bez wkładki/without adapter

[24] 15100	37 µl kapilara hematokrytowa (1,4 x 75 mm) 37 µl micro-hematocrit capillary tube (1,4 x 75 mm)

** probówka niedostępna w ofercie MPW lub dostępny odpowiednik (np:[15050]), patrz kolumna z prawej*
tube is not offered by MPW or equivalent is available (e.g. [15050]), see column on the right

MPW®
MED. INSTRUMENTS

DECLARATION OF CONFORMITY

Product name: **Refrigerated laboratory centrifuge MPW-150R**

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 13612:2002
EN 13612:2002/AC:2002
EN 13975:2003
EN ISO 14971:2012
EN ISO 18113-1:2011
EN ISO 18113-3:2011
EN 61326-2-6:2006
EN 61010-2-101:2002
EN 62304:2006
EN 62304:2006/AC:2008
EN 62366:2008

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

EN 61010-1:2010
EN 61010-2-020:2006

· directive 2014/30/UE (EMC).

"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
Certifying authority:

"MPW MED. INSTRUMENTS"
SPÓŁDZIELNIA PRACY
w Warszawie

Członek Zarządu
Wojciech Anisiewicz

PREZES ZARZĄDU
mgr Łukasz Sałański

TÜV NORD Polska Sp. z o.o. PN-EN ISO 9001
TÜV NORD Polska Sp. z o.o. PN-EN ISO 13485

Warsaw, 2018. 09.15

no. 10.150R.02.en

DECLARATION OF CONFORMITY

(with RoHS 2 Directive 2011/65/EU)

DEKLARACJA ZGODNOŚCI

(z dyrektywą RoHS 2 2011/65/UE)

PRODUCT DETAILS/DANE PRODUKTU

Product name/Nazwa produktu:

Refrigerated laboratory centrifuge MPW-150R /

Wirówka laboratoryjna z chłodzeniem MPW-150R

Product type/Typ:

Laboratory centrifuge/Wirówka laboratoryjna

Manufactured by/Wytworzona przez:

"MPW MED. INSTRUMENTS"
SPÓŁDZIELNIA PRACY
ul. Boremlowska 46, 03-347 Warszawa, Polska

We hereby declare under our sole responsibility, that the product above is in compliance with the requirements of RoHS 2 Directive 2011/65/EU. /

Niniejszym deklarujemy z pełną odpowiedzialnością, że produkt, do którego odnosi się niniejsza deklaracja, jest zgodny z Dyrektywą RoHS 2 2011/65/UE.

„MPW MED. INSTRUMENTS"
SPÓŁDZIELNIA PRACY
w Warszawie

Warsaw/Warszawa, 2018.09.15

(place and date of issue/miejsce i data sporządzenia deklaracji)

Wojciech Anisiewicz
Member of Management Board/Członek Zarządu

Łukasz Sałański
President of Management Board/Prezes Zarządu

(name and signature of authorized person/imię i nazwisko osoby upoważnionej do sporządzenia deklaracji)

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)

   ……

   ……

   ……

   ……

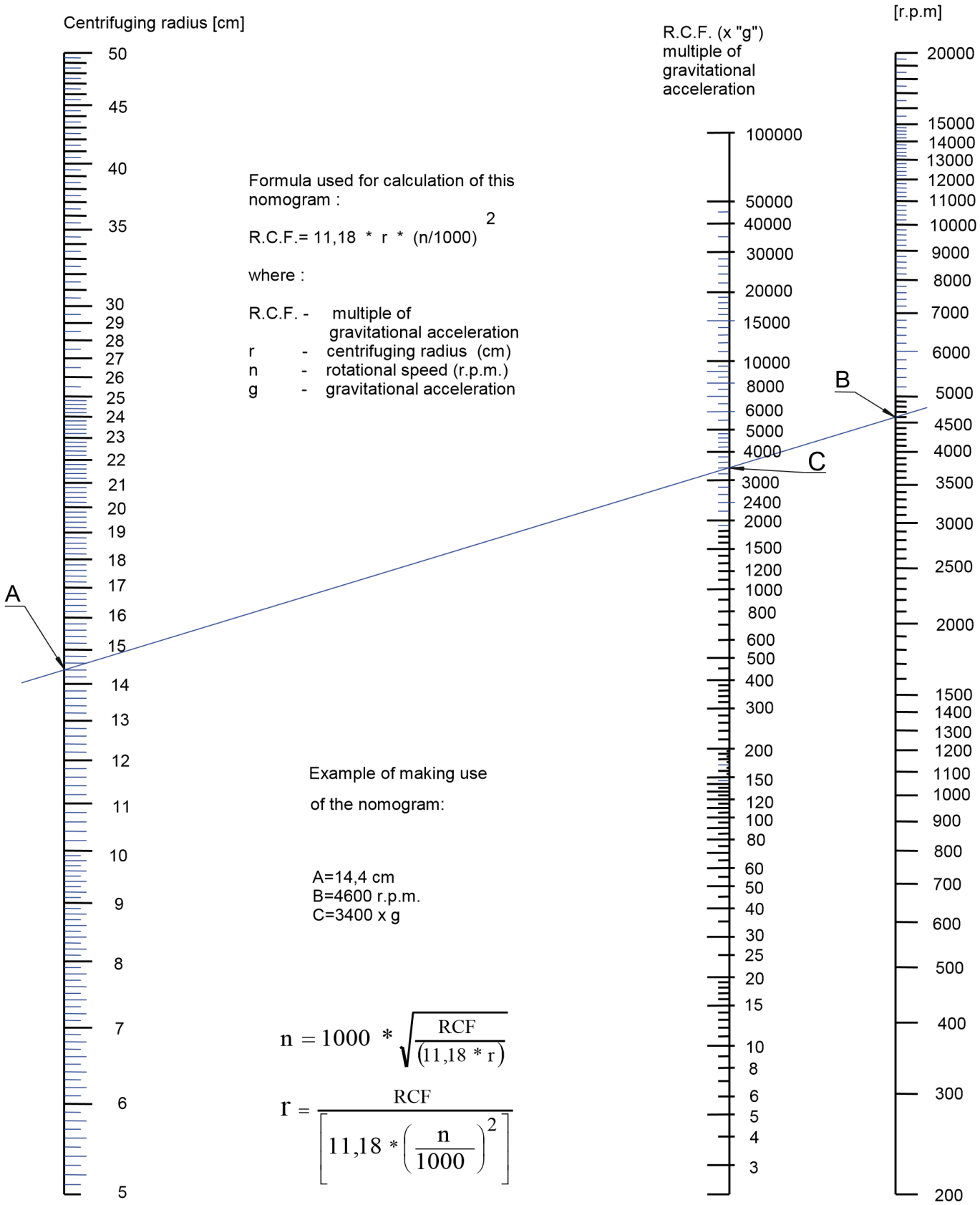
3. **Decontamination carried out by:**

   name: ……

4. **Date and signature:**

   …….

NOMOGRAM



Formula used for calculation of this nomogram :

$$R.C.F. = 11{,}18 * r * (n/1000)^2$$

where :

R.C.F. - multiple of gravitational acceleration
r - centrifuging radius (cm)
n - rotational speed (r.p.m.)
g - gravitational acceleration

Example of making use of the nomogram:

A=14,4 cm
B=4600 r.p.m.
C=3400 x g

$$n = 1000 * \sqrt{\frac{RCF}{(11{,}18 * r)}}$$

$$r = \frac{RCF}{\left[11{,}18 * \left(\frac{n}{1000}\right)^2\right]}$$