

Operating Instructions

ROTIXA 120 S ROTIXA 120 RS

Please enter the following details :

Stock no.
Monitoring no.
Location

This operating instruction has to be used for the centrifuges bearing the following Manufacturing Nos. :
(the Manufacturing No. of a centrifuge can be see from its name plate)

Type of centrifuge	Voltage	Article No.	Manufacturing No.
ROTIXA 120 S	230 V/240 V	4261	XXXX
ROTIXA 120 S	115V	-----	-----
ROTIXA 120 RS	230 V/240 V	4271	XXXX
ROTIXA 120 RS	115 V	-----	-----



Certificate of EU - Conformity

as defined by the EU regulations

- for machines 89/392/EWG, amended by regulations 91/368/EWG, 93/44/EWG and 93/68/EWG, appendix II A
- for electro-magnetic compatibility 89/336/EWG, amended by regulations 91/263/EWG, 92/31/EWG and 93/68/EWG
- for low voltage 73/23/EWG, amended by regulation 93/68/EWG

We, Messrs. Andreas Hettich
Gartenstraße 100
D-78532 Tuttlingen,

hereby certify that centrifuge model(s)

ROTIXA 120 S, ROTIXA 120 RS

is (are) manufactured in accordance with the following standards and regulations:

EN 61010 part 1 and 2

EN 55011

in addition the following national standards and regulations are applied:

VBG 1 DIN 58970

VBG 4 BS 4402

VBG 7z

VBG 20

Tuttlingen 10.02.1998

Hettich Zentrifugen

i. V. H. Pistor, sales manager

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1. Intended application

The centrifuge is used for separating substances or mixtures with a density of up to max. 1.2 kg/dm³.

Through the production of centrifugal force it can separate mixtures or alter the proportions in a mixture.

If the substance or mixture to be centrifuged is denser than 1.2 kg/dm³, the rated speed should be reduced (see section "Centrifuging of denser substances").

2. Notes on safety



- This centrifuge is a state-of-the-art piece of equipment which is extremely safe to operate.
 - However, it can lead to danger for users or others if used by untrained staff, in an inappropriate way or for a purpose other than that it was designed for.
- Before the initial operation of your centrifuge you should read and pay attention to the operating instructions.
- Along with the operating instructions and the legal regulations on accident prevention, you should also follow the recognised professional regulations for working in a safe and professional manner.

These operating instructions should be read in conjunction with any other instructions concerning accident prevention and environmental protection based on the national regulations of the country where the device is to be used.
- The centrifuge should be installed on a good, stable base.
- When setting the equipment up you should pay attention to the following points:
 - A 300 mm safety zone must be established around the centrifuge in accordance with IEC 1010-2-2.
 - This safety zone must be kept clear of both people and hazardous substances at all times when the centrifuge is in operation.
- The centrifuge should always be loaded evenly.
- Centrifuge containers must not be filled beyond the capacity specified by the manufacturer.
 - Centrifuge containers should only be filled outside the centrifuge.
- Standard centrifuge containers of glass will not stand RCF values exceeding 4000 (DIN 58970, pg. 2)
- No attachments should be used other than those authorised by the manufacturer.
- The centrifuge may only be operated when the balance is within the bounds of acceptability.
- The centrifuge must not be operated in areas subject to danger of explosions.
- The centrifuge must not be used with:
 - inflammable or explosive materials
 - materials that react with one another producing a lot of energy.
- If users have to centrifuge hazardous materials or compounds contaminated with toxic, radioactive or pathogenic micro-organisms, they must take appropriate measures.

In the case of material belonging to risk group II (see the World Health Organisation's "Laboratory Biosafety Manual") they should employ a biosafety system. Under this system small drips and aerosols are prevented from escaping by a bioseal (packing ring) located between the hanger and the lid. Centrifuge containers with special screw caps, as obtainable through trade suppliers, can also be used for hazardous substances.

In the case of materials from the higher risk groups greater safety provision is required than the arrangements described above. In a biosafety system, centrifuge containers with special screw caps must be used.

- For further details of available biosafety systems see section "Rotors and accessories".
- The centrifuge must not be operated with highly corrosive substances which could impair the mechanical integrity of rotors, hangers and accessories.
- Any rotors, hangers or accessories showing clear signs of corrosion or mechanical defects must not be used for centrifuging.
- In order to prevent corrosion developing through cleaning or disinfectant agents, it is most important that any specific instructions from the manufacturers of such agents should be followed carefully.

If in doubt, you should obtain relevant information from the manufacturers.

- Only original spare parts and authorised original accessories may be used.
- In case of fault or emergency release, never touch the rotor before it has stopped turning.
- This centrifuge is classified in Germany as a Group 3 device according to the *Medizinische Geräteverordnung MedGV* (the regulations on medical equipment).
- It conforms to safety regulations based on:

IEC 1010-1/-2

DIN - EN61010 Parts 1 and 2

- The safe operation and reliability of the centrifuge can only be guaranteed if:
 - the centrifuge is operated in accordance with the operating instructions,
 - repairs are carried out by engineers approved by the manufacturer,
 - the electrical installation on the site where the centrifuge is installed conforms to the demands of IEC stipulations,
 - prescribed tests to UVV-VBG7z §15 (1) are carried out by an expert.

No claim under guarantee will be considered by the manufacturer unless the above instructions have been adhered to.

3. Warning symbols



Caution! Follow instructions carefully.



Load centrifuge rotor evenly.
All positions on rotor must be filled.



Do not fill centrifuge containers inside the centrifuge.

4. Delivery checklist

The following items and accessories are delivered with the centrifuge:

		Order no.
1	Connecting cable	E979
1	Fuse T 2 A; 250 V	E911
1	One open-end wrench SW 17	E1117
1	Lubricating grease for supporting lugs	4051
2	Distance bolt	E002
2	Setting foot bolt	5776
2	Setting foot bushing	E388
1	Square spanner	6327
1	Release pin	E003-01
1	Notes on moving the equipment safely	TS005
1	Operating instructions	B005
1	Rotor instructions	B032

The rotor(s) and associated accessories are included in the delivery in the quantity ordered.

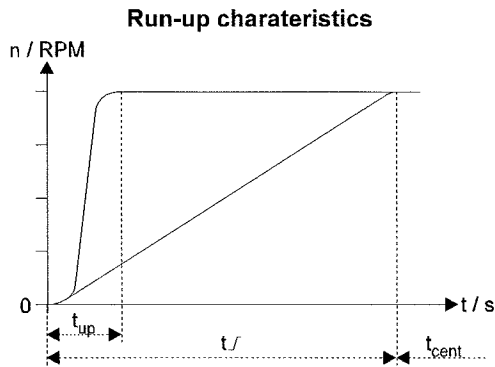
5. Technical specifications

Data table 5-A

Manufacturer	Hettich Zentrifugen D-78532 Tuttlingen			
Model	ROTIXA 120 S		ROTIXA 120 RS	
Product no.	4261		4271	
Mains voltage ($\pm 10\%$)	230/240 V ac		230/240 V ac	
Mains frequency	50/60 Hz		50/60 Hz	
Current consumption	11 A		15A	
Power consumption	1700 W		2800 W	
Connected load	2500 VA		3500 VA	
Refrigerant	-----		R 134a	
Max. capacity	4000 ml			
Max. density	1.2 kg/dm ³			
Speed RPM	7500			
Force RCF	5320			
Kinetic energy	65000			
Obligatory inspection	yes			
Environment	5°C up to 40°C			
- Ambient temperature	max. 80% up to 31°C,			
- Relative humidity	descending in a linear pattern down to 50% at 40°C			
Sample overtemp.	≤ 15 K		-----	
Class of protection	I			
Radio interference suppression	230 V, 50 / 60 Hz EN 55011 ISM Class B			
Noise level (dependent on rotor)	70 dB(A)		56 - 64 dB(A)	
Dimensions				
• Width	650 mm			
• Depth	720 mm			
• Height	1030 mm			
Weight ca.	115 kg		165 kg	

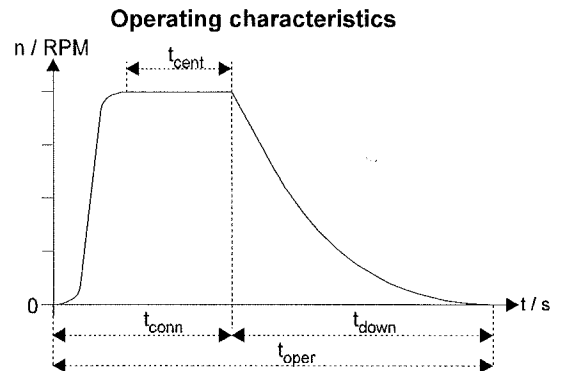
6. Diagrams of operating conditions

Diagram 1



t_{up} = not selectable current-controlled run-up (run-up period dependent on the rotor)
 t_r = selectable speed-regulated run-up
 t_{cent} = selectable centrifuging time

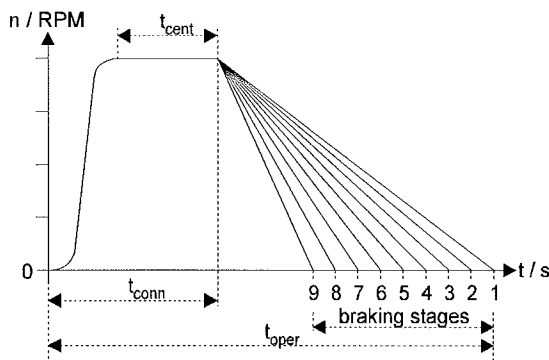
Diagram 2



t_{conn} = selectable power-on time $t_{conn} = t_{up} + t_{cent}$
 t_{down} = not susceptible slow-down time (depend. on the rotor)
 t_{oper} = operating time $t_{oper} = t_{conn} + t_{down}$
 t_{cent} = selectable centrifuging time

Diagram 3

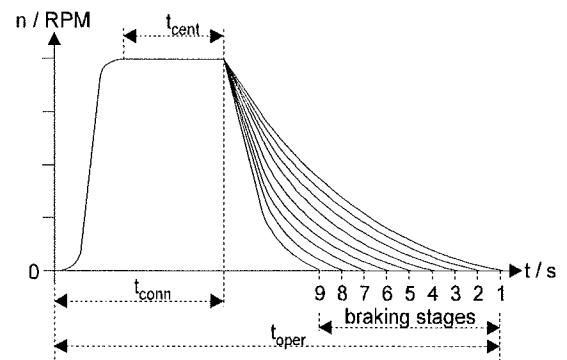
Operating time with braked slow-down (braking stages R1 - R9)



t_{conn} = selectable power-on time
 t_{oper} = operating time
 t_{cent} = selectable centrifuging time

Diagram 4

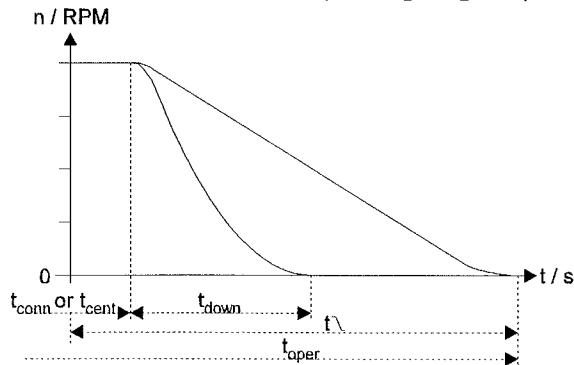
Operating time with braked slow-down (braking stages B1 - B9)



t_{conn} = selectable power-on time
 t_{oper} = operating time
 t_{cent} = selectable centrifuging time

Diagram 5

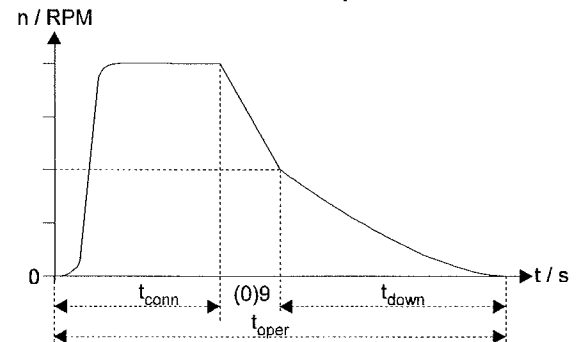
characteristics with speed-regulated and unbraked slow-down (braking stage R0)



t_{conn} = selectable power-on time
 t_{cent} = selectable centrifuging time
 t_{down} = not susceptible slow-down time (depend. on the rotor)
 t_r = selectable speed-regulated slow-down

Diagram 6

Characteristics in case of entering a brake switch-off speed



t_{conn} = selectable power-on time
 $(0)9$ = braking stage (e.g. 9)
 t_{oper} = operating time
 $n^{(0)}$ / RPM = 2000
 t_{down} = not susceptible slow-down time (depend. on the rotor)

7. Initial operation

- The amount of space required is given under dimensions in the "Technical specifications" section.

The centrifuge should be set up in a suitable position on a good, firm surface.

When setting up the equipment, care should be taken to provide the required safety area of 300 mm around the centrifuge in accordance with IEC 1010-2-2.






The safety area must be clear of all persons and hazardous substances at all times when the centrifuge is in operation.

- You should check that the mains voltage corresponds to that stipulated on the model plate.
- Using the connecting cable provided, the centrifuge should be connected to a standard mains socket.
- Mains switch "ON" - switch position "I".

The following information will be displayed on the screen:

1. Centrifuge type.
2. The rated speed "n-max-Rotor" acquired most recently through rotor identification.
3. The version number corresponding to the model.
4. The entry field containing centrifuge data as used in the last run or entered as parameters.

If the  symbol is displayed in the top left-hand corner, this means that the lid is locked.

Rotate the turning handle on the front panel to the left. The  symbol will change to .

- Open the lid.



The lid can only be opened when the centrifuge is switched on and the rotor is at rest. If it cannot be opened under these circumstances, see the section on "Emergency release".


- Remove the transport safety device (see instruction sheet on "Moving the equipment safely.").

8. Installing the rotor and fitting attachments

See Rotor Instructions B032 or the section "Changing the rotor".

- All spaces must be filled on rotors with free-swinging hangers. No empty rotor positions are permitted.
- Always fill the centrifuge containers outside the centrifuge.
- Check by eye that each container is filled to the same level.
- Loads must be equal between opposing positions.

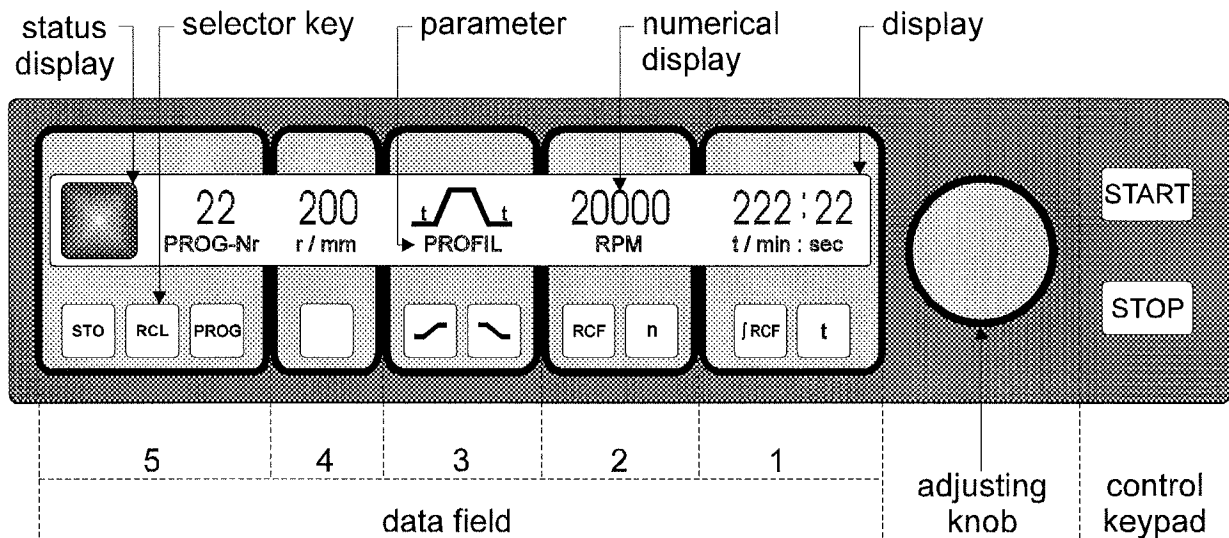
For details of allowable combinations see the section "Rotors and accessories" in the appendix.

Close the lid. Turn the handle on the front panel to the right. The  symbol must be visible.



The centrifuge can only be started when the  symbol is visible.

9. Control and display elements



9.1. Control elements

Selector key Key for selecting the parameters.

Press key until the numerical field above the selected parameter is displayed in reverse (dark background).

Data can only be entered into an reverse numerical field.

Adjusting knob For setting the key data in the numerical field.

START

Start centrifuging.

The rotation light will come on in the display.

STOP

Stop centrifuging.

The run-down will be performed in a manner laid down in advance.

If the key is pressed twice an EMERGENCY STOP is executed.

The run-down will be performed as rapidly as possible (braking level 9).

9.2. Display symbols



Lid locked. Start centrifuge or open lid.

■ symbol flashing, centrifuging finished



Lid not locked. Centrifuge can not be started.

Lid can be opened or locked.



Rotation light is on from the moment the start command is issued until the rotor comes to rest.

STOP

After a timed switch-off or after **STOP** key pressed.

After an EMERGENCY STOP the display light flashes.