

Operating- and
service-instructions

UNIVERSAL 1200

Operating- and
service-instructions
UNIVERSAL Cat.-No. 1200

Index	Page
1. General technical data with reference to Medical Appliances Regulation (MedGV) valid from January 1, 1986	2
2. Description of the centrifuge	3
3. Putting into operation	4 - 5
4. Maintenance	6 - 7
4.1 Cultivation	
4.2 Servicing	
4.3 Testing of the carbon brushes	
5. Repairing	7 - 10
5.1 Hints	
5.2 Disturbance removal	
5.3 Table for disturbance removal	
5.4 Function-test of electronics	
5.5 Instructions for adjusting the speed indicator	
5.6 Exchange of the carbon brushes	
6. Wiring diagram	11
7. Spare-parts list with illustrations	12
8. After-sales service, transport	15
9. Technical modifications	15

1. General technical data

Medical Appliances Regulation

§ 2 This centrifuge will be classified into group 3

§ 3 These centrifuges are produced according to the generally accepted rules of technic as well as Industrial Safety- and Accident Prevention Regulations - UVV, VBG 7z.

Technical data are ascertained at 220 V ~ 50 Hz.

1.1	Manufacturer Place	HETTICH-Zentrifugen 7200 Tuttlingen
1.2	Type	UNIVERSAL
1.3	Cat.-No.	1200
1.4	Allowable speed	10.000 min ⁻¹
1.5	Allowable density	1,2 kg/dm ³
1.6	Electrical supply	220V, 50 Hz A.C.
1.7	Connected load	0,17 KVA
1.8	Current input	0,6 A
1.9	Power input	100 W
1.10	Allowable kinetic energy	3000 Nm
1.11	Test duty	none
1.12	Noise level	60 dB (A)
1.13	Radio interference suppression	VDE 0875, radio interference grade N
1.14	Dimensions:	
	width	370 mm
	depth	400 mm
	height	275 mm
1.15	Net weight	14 kg

1.16 To be inserted by the user

1.16.1 Inventory-No.:

1.16.2 Control-No.:

1.16.3 Location:

1.17 This centrifuge complies with the requirements of the Accident Prevention Regulation UVV-VBG 7z, published 1.4.1981.

1.18 This centrifuge is not intended for operation in explosion-endangered rooms.

2. Description of the centrifuge

2.1

The UNIVERSAL is a bench-top centrifuge.

The conception and technical equipment comply with all the safety requirements applicable to a bench-top centrifuge.

2.2

The housing and lid are made from a burn-in varnished cold formed alloy.

The lid is cushioned, and can be easily opened and closed. The UNIVERSAL can be easily armamented and cleaned because of the large diameter of the centrifuge chamber.

2.3

For safety reasons, and to improve the hygienic working conditions, the centrifuge chamber is made of stainless steel.

The centrifuge chamber, together with the rubber gasket, can be lifted out after removing the rotor and the motor housing.

The centrifuge therefore no longer needs to be dismantled for repairs or routine maintenance, and there is no longer any problem in cleaning the centrifuge chamber.

2.4

Operation is reduced to a minimum. The required centrifugation time, up to 60 min., is set with the time switch, and the required speed is set with the speed regulator. The speed is shown on the speed indicator.

2.5

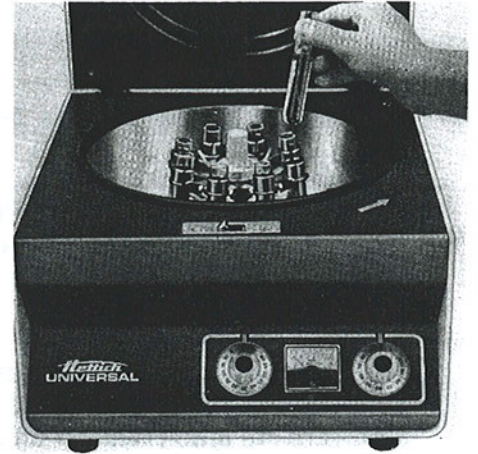
When the centrifugation period has elapsed, the UNIVERSAL is rapidly and gently brought to rest, with a speed-dependent 2-stage brake.

2.6

The centrifuge can only be started if the lid is closed (lid-locking device).

2.7

The centrifuge lid can only be opened if the rotor is stationary (lid holding device).



3 Putting into operation

3.1.1

Check whether the line voltage complies with that given on the type plate. Fit the connecting cable to the power socket.

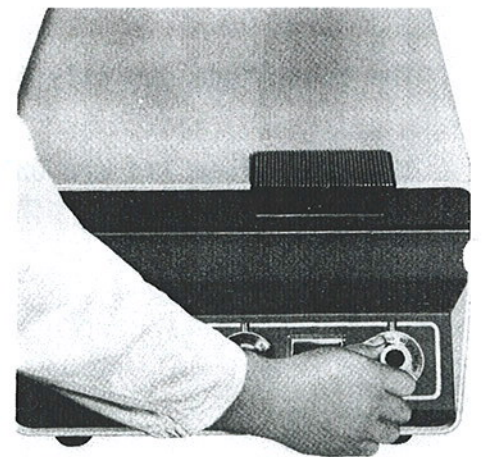
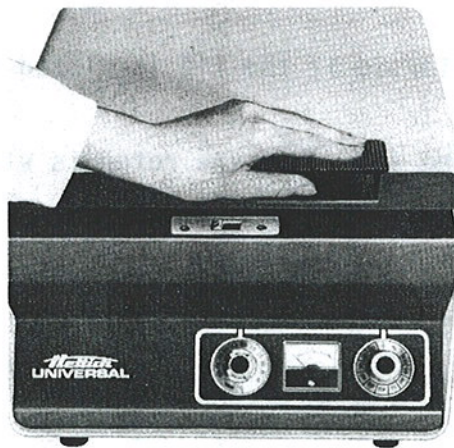
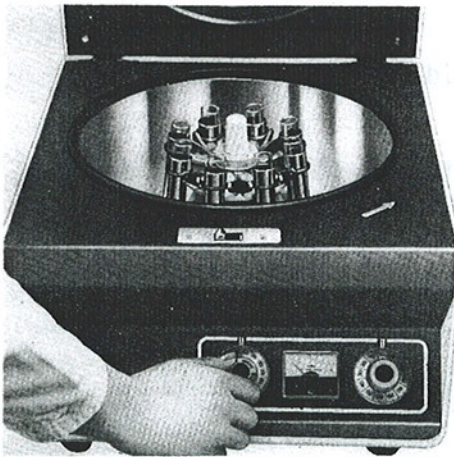
Lid - locking disengages. Lid can be opened.

3.1.2

Remove the transport security. Uncover the rotor. If there is no rotor on the motor shaft, the supplied rotor must be mounted on the motor shaft in such a way that the driver pin of the motor shaft engages in the rotor slot. Rotate the screw coupling clockwise until the rotor is held tightly on the taper of the motor shaft. Insert the suspensions in the rotor so that they can swing out freely.

3.1.3

Take care in so doing that the rotor is well balanced. Pay attention that the same quantity and size of suspensions, tubes and rubber inserts are always used in opposite.



3.1.4

Set the time switch to the required centrifugation time. For required times less than 5 min, the switch must first be set to approx. 15-20 min and then set to the required time. If the time switch is not switched on, the lid cannot be closed. At the end of the period the centrifuge switches off automatically and is then rapidly and gently brought to a standstill with a 2-stage brake.

3.1.5

Close the lid. Press the shackle down until there is an audible click of the lid-locking into position. If the lid is open or if the lid-locking is not engaged in position, the centrifuge cannot be started (UVV).

3.1.6

Adjust the required speed with speed control. Note the speed shown on speed indicator. If centrifugation processes have to be repeated at the set speed, only centrifugation time must be set and the lid must be closed.

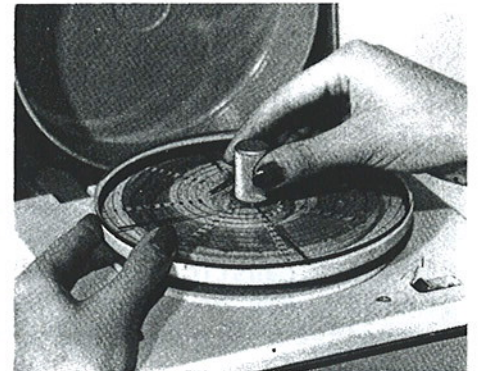
The figures on the speed control serve only as a guide.



3.17
After lapse of the set time, the lid-locking disengages. Then the lid can be opened.
The lid cannot be opened during the centrifugation (lid holding device).



3.18
Opening of the lid in the event of power failure or breakdown. Insert the wire rod (included in the accessories) up to its half length, into the hole.
On swinging it clockwise, the tumbler disengages.
The lid-locking disengages with an audible click, then the lid can be opened.



3.19
Evaluation disk No. 2015
After centrifugation open the lid, unscrew the protective cover by returning the centrifuge plate anti-clockwise. Place the evaluation disk in position. Secure the disk and turn the centre driving collar until the 0 % line is agreed with the lowest point of the erythrocyte column. Secure the centre drive collar and centrifuge plate. Turn the evaluation disk until the 100 % line is agreed with the top edge of the column of liquid. Then read off the haematocrit value at the upper end of the erythrocyte column.

4. Maintenance

4.1 Cultivation

For cleaning the centrifuge, use lukewarm soap suds, surfactant solution or other water-soluble cleaning agent.

Avoid highly corrosive substances and substances which are harmful in any way. Never use caustic solutions or powerful solvents. Do not use cleaning agents like VIM, ATA or other scouring powders containing scouring or scratching ingredients. For polishing, wax or polish whose action is not too severe, can be used.

4.2 Servicing

4.2.1

To prevent corrosion, the rotor, suspensions, frames, inserts and also the stainless steel buckets must be cleaned regularly. Cleaning should be carried out at least once a week but better still, after each use. Warm water, with a neutral soap, or a rinsing agent is the correct liquid for washing. The equipment must then be dried with a soft absorbent towel. Naturally, corrosion conditions exist for whatever purpose the rotors are used, and precautions should therefore be taken to minimise the unavoidable effects.

Additional care by the user extends the working life. If, however, all this is completely neglected, any claim under the guarantee in connection with possible corrosion may be rejected by the manufacturer.

4.2.2

In the event of glass breakage, all glass fragments must be removed since such fragments in the rubber insert cause further breakage of glass.

4.2.3

Supporting trunnions on the rotor should be greased (e.g. with Vaseline). Greased supporting trunnions ensure quiet running.

4.2.4

Haematocrit centrifuge plate No. 1371

Clean the centrifuge plate regularly. In the event of glass breakage, remove all glass fragments, including any in the support ring since these cause further glass breakage. If a capillary tube has punctured the support ring, the latter can be moved whenever necessary, and more than once, since it is not permanently fixed but retains its position without additional support. A support ring which is completely punctured must be replaced immediately. Replacement or insertion must be carried out as follows:

1. Remove the punctured support ring.
2. Insert the new support ring so that a bulge is produced near the centre. The diameter of the new support ring is greater than the centrifuge plate.
3. By rubbing the support ring, effect a shrinkage, i.e. rub it until the bulge disappears and the support ring fits without additional support, and lies flat in the centrifuge plate.

4.3

Testing of the carbon brushes

The working life of the carbon brushes, within wide limits, depends on the operating conditions, particularly on the frequency of switching on and off. The carbon brushes must be checked at regular intervals (approx. every 6 months). To prevent damage to the collector and changes in the motor output, it is essential to replace the brushes when their length has been reduced to 3 mm.

Use only replacement brushes of original quality. To test the carbon brushes, see para. 5.6 (Exchange of the carbon brushes).

5. Repairing

5.1 Hints

Repairs or modifications may only be carried out by the manufacturer or a service station expressly authorised by the manufacturer.

Spare parts and components which may affect the safety of the equipment may only be replaced by original components. The service-instructions are included with the equipment (VDE 0750 § 7).

5.2 Disturbance removal

If a disturbance occurs, the user should endeavour to determine the cause. Instructions for disturbance removal given on the following pages are useful for this purpose. If these prove unsuccessful in eradicating the disturbance, using the measures described, the HETTICH after-sales service must be consulted.

For repairing and the replacement of components, the following tables containing characteristic data and reference values which must be adhered to in order to ensure the safety of the equipment, should be consulted.

	What	UNIVERSAL
5.2.1	Rated voltage	220 V A.C., 50 Hz.
5.2.2	Starting current	1,0 A
5.2.3	Rated current	0,6 A
5.2.4	Protective conductor test	< 0,2
5.2.5	Insulation resistance	> 2 M
5.2.6	Leakage current	< 0,75 mA
5.2.7	Speed	see leaflet
5.2.8	Starting-time	see leaflet
5.2.9	Running-out-time	see leaflet
5.2.10	Temperature after 1h running-time: a) In the solid material b) Permissible on the motor housing c) Permissible on the collector	≤ 38°C/DIN 58970 room temperature + 90° K room temperature +100° K

5.3
Table for disturbance removal

Observed disturbance

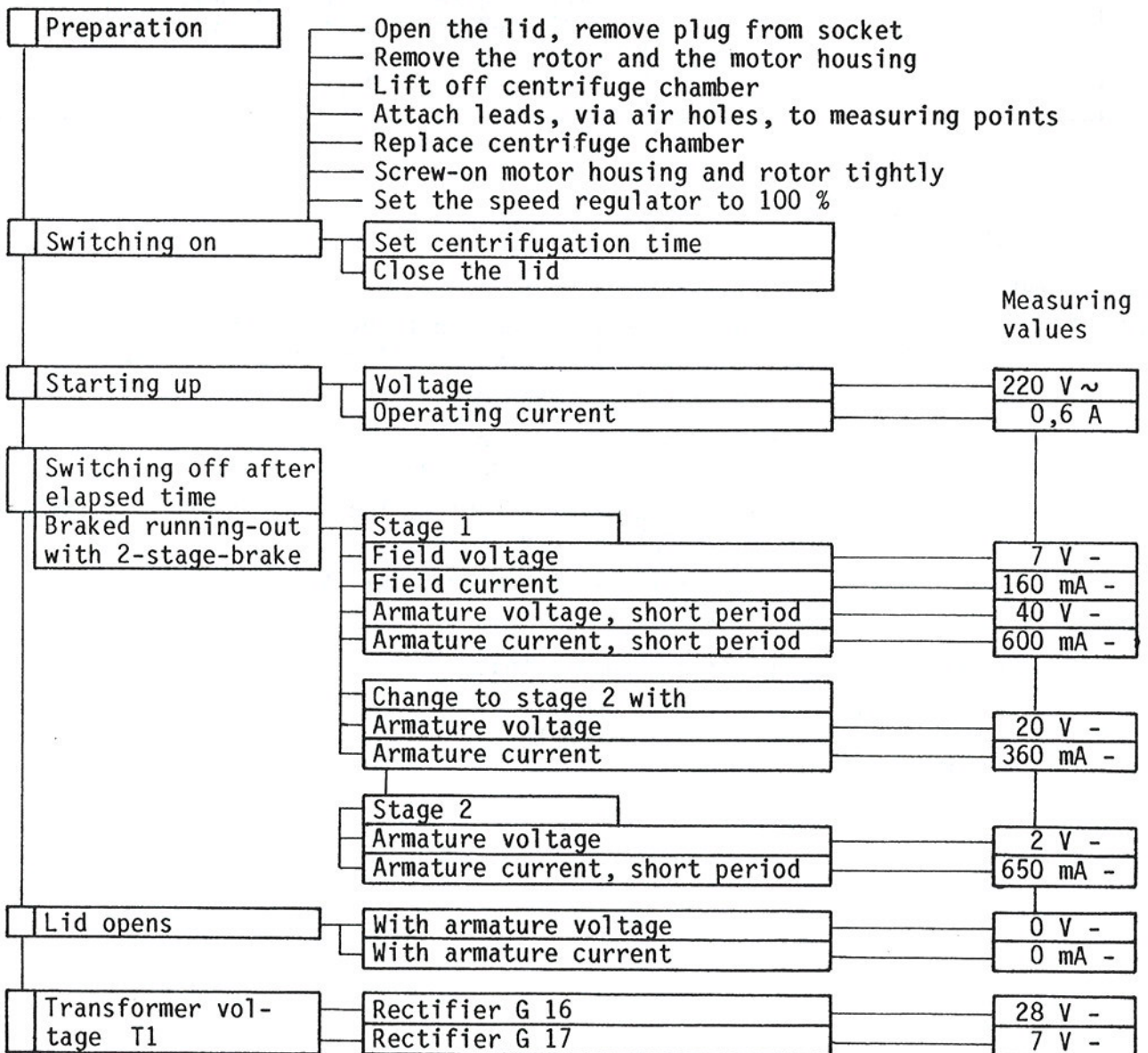
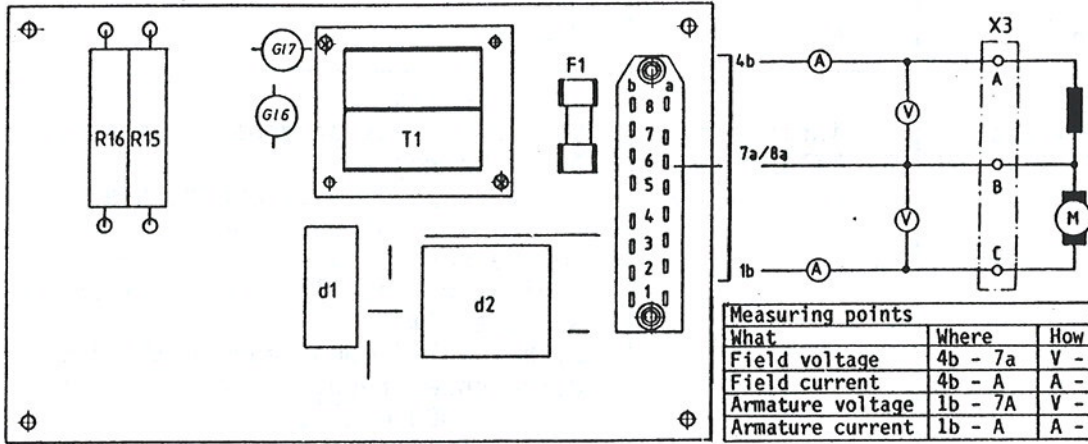
- A Lid does not open
- B Lid does not close, springs open
- C Centrifuge cannot be started, motor does not start
- D Motor starts but does not reach required speed
- E Speed cannot be regulated
- F No speed indication
- G Lock opens during running-out
- H No braking effect

A	B	C	D	E	F	G	H	I	Where	Possible causes
●		●							Power supply	No voltage
●		●							Radio suppression filter	Z1 Defective
●	●	●				●			Time switch	S2 Defective
	●									In 0-position
		●	●	●					Speed regulator	R18 Defective
		●								In 0-position
					●				Speed indicator	P1 Defective
		●			●				Balancing resistor	R17 Defective
●	●								Electrical lid locking	Y1 Magnetic coil defective
●		●								Microswitch is not actuated
●		●								Microswitch defective
●		●							Motor	M1 Defective
			●							Has short circuit in coil
		●								Carbon brushes worn out
							●			Carbon brushes not run in
						●			Tachogenerator on motor	Defective
●		●						●	Pin and socket connections	Discontinuity
●		●					●	●	Electronic system	A1 Defective
●								●	Fuse of electronic system	F1 Defective

5.4 Function test of electronics

The given test figures are recommended values, measured with the centrifuge during running with rotor 1323, plastic bucket 1366 and plastic insert 1326, using a moving coil measuring instrument. These measured values may vary, up or down, due to power supply fluctuations, the use of another rotor, or differences in the motor output.

For measurement points, see diagram.



5.5 Instructions for adjusting the speed indicator

What	Where	How
Speed indicator adjustment	Speed indicator balancing resistor R17	Open the lid Remove buckets or groove suspensions from the rotor. For the speed measurement, the rotor must not be loaded. Remove sealing plug below speed indicator (see fig. 10, position 3). Set the time. With the lid open, engage the lock. Using speed regulator and stroboscope, set to 3000 min ⁻¹ . Using an insulated screwdriver on balancing resistor R17, equalize the speed. Indicated speed must agree with measured speed. Re-insert sealing plug.

5.6 Exchange of the carbon brushes

- 5.6.1 Open the lid
- 5.6.2 Remove power cable from the wall-socket.
- 5.6.3 Disconnect the screw-coupling on the motor shaft by turning it anti-clockwise. Force off, and remove the rotor from the motor shaft taper.
- 5.6.4 Unscrew the cover (motor housing) on the motor.
- 5.6.5 Lift off the centrifuge chamber and rubber.
Remove protection conductor connection from the centrifuge chamber.
- 5.6.6 Screw off both screw caps on the side of the collector by using a suitable tool (screw driver, coin). Replace worn brushes.
- 5.6.7 Use only original-quality replacement brushes, Cat.-No. 0334.
- 5.6.8 Re-assemble in the reverse order.
- 5.6.9 Before putting into operation, ensure that:
 - a) all screw-connections are tight
 - b) all plug-connections are satisfactory
 - c) all parts are installed
- 5.6.10 Connect power cable to socket.

Spare parts list for		UNIVERSAL		
Item No.	Quantity	Description	Cat.-No. for performance 220V~ 50Hz/110V~ 60Hz	Additional data. Abbreviations see wiring diagram page 11
Fig. 10				
1	1	Rotary knob	0253	n-pre-selection
2	1	Variable resistor	E 345 E 344	A2 n-pre-selection
3	1	Sealing plug	3663	
4	1	Speed indicator	0242	P1 n-indicator
5	1	Balancing resistor	1361	R17 on speed indicator
6	1	Rotary knob	5898	min
7	1	Time switch	5893	S2 min
8	4	Rubber foot	2251	
9	1	Fastening blend	3679	
10	1	Electrical lock	2306 2307	Y1
11	1	Sealing ring	2253	
12	2	Hinge	2252	
13	1	Block	2257	
14	1	Handle-rubber plate	3584	
Fig. 11				
15	1	Radio suppr. filter	2377	Z1
16	1	Electronics	2245 2355	
	1	Replacement electronics	2256 1251	
17	1	Fuse link	2216 2262	F1 for electronics
18	4	Spacing bolt	3682	Below electronics
19	1	PVC sheet	3671	Cover for electronics
20	1	Silent bloc	1334	
21	1	Motor	1243 1232	
22	2	Carbon brushes	0334	
Not illustrated				
	1	Motor housing	0305	
	1	Connecting cable	0237	
	1	Pin housing	3605	X2 on Motor
	6	Pin contact	3606	In pin housing
	6	Socket contact	3607	In socket housing
	1	Socket housing	3608	X2

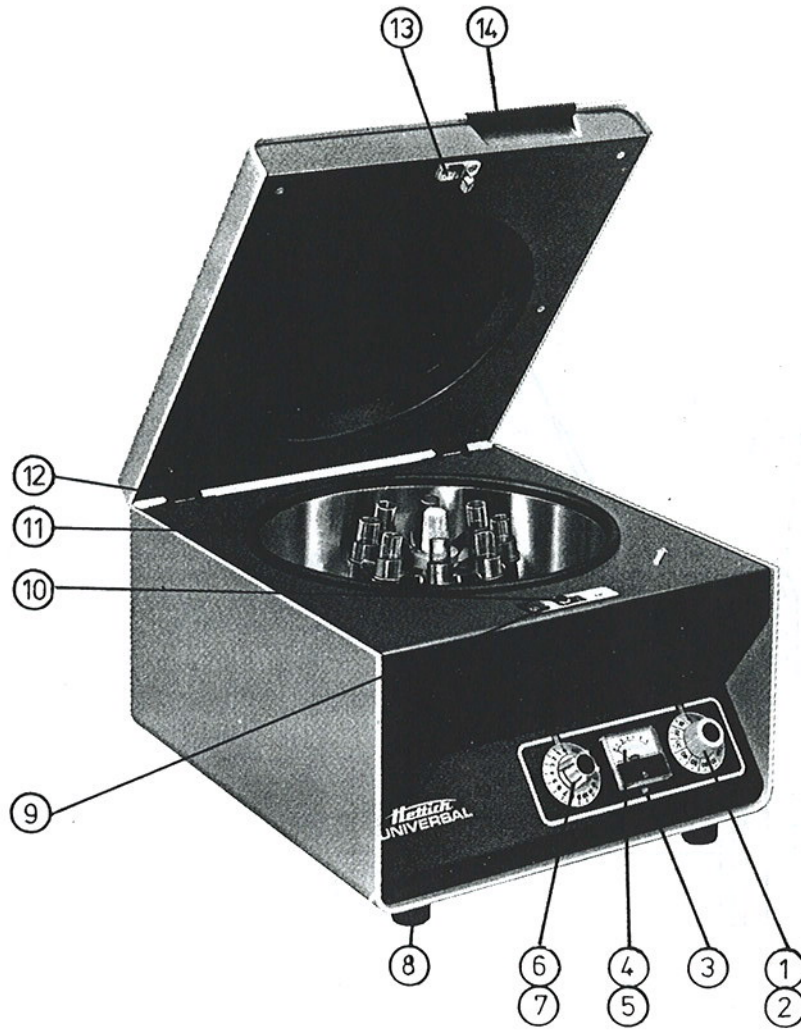


Abb.10

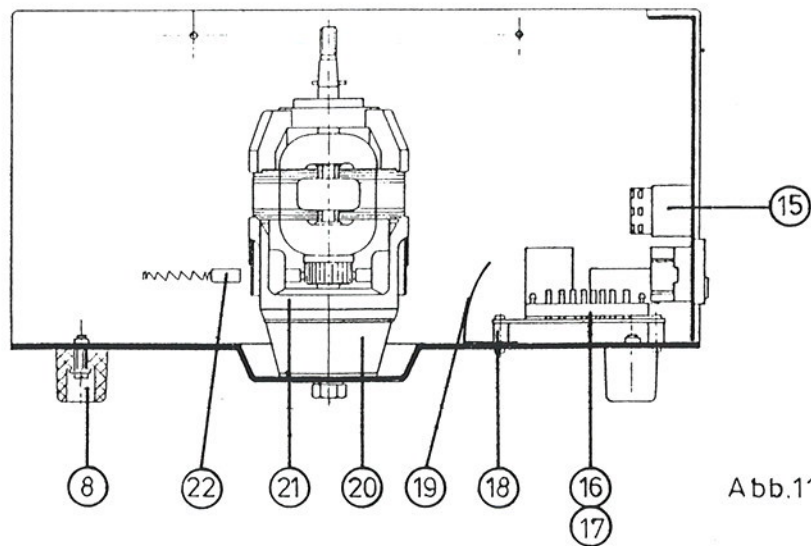
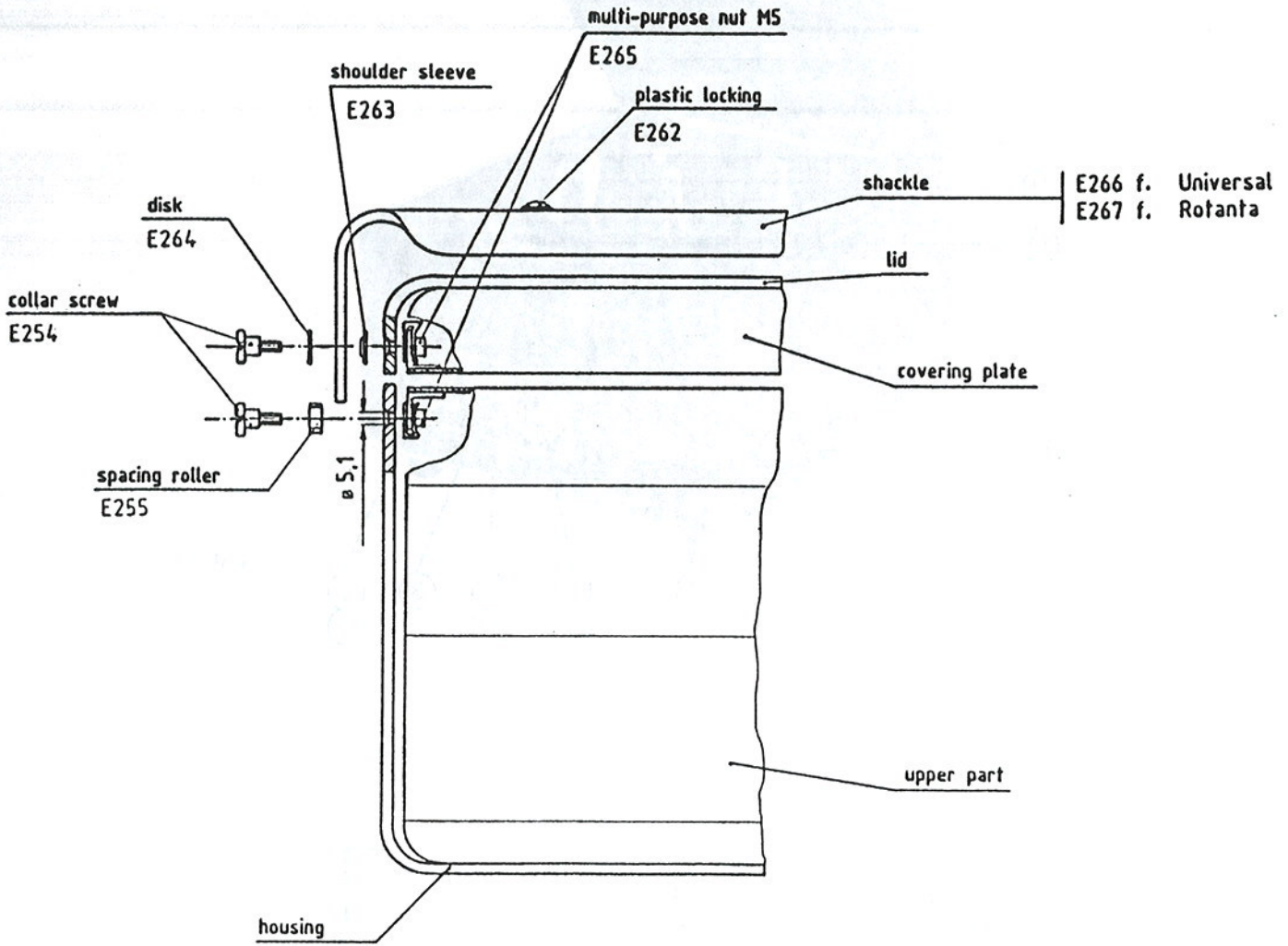


Abb.11



8. After-sales service and transport

8.1

You have made a wise choice since HETTICH builds and provides technically highly developed centrifuges.

But even should you experience some difficulty with your equipment, HETTICH has provided a

H E T T I C H after-sales service!

Take advantage of the HETTICH after-sales service.

Should the information regarding maintenance, disturbance removal and the suggested measures to be taken not be sufficient, or if a problem cannot be solved by these means, the nearest HETTICH after-sales service or your authorised supplier must be informed.

8.2

If the faulty machine has to be sent for repair to the manufacturer or to the HETTICH after-sales service, the transport security must be replaced for transport. If the device supplied has been mislaid, the motor must be suitably arrested so that it cannot bump against anything and damage built-in components.

If this precaution is neglected, additional damage may well result, making repair work on the instrument unnecessarily expensive.

9. Technical modifications are reserved by HETTICH.

