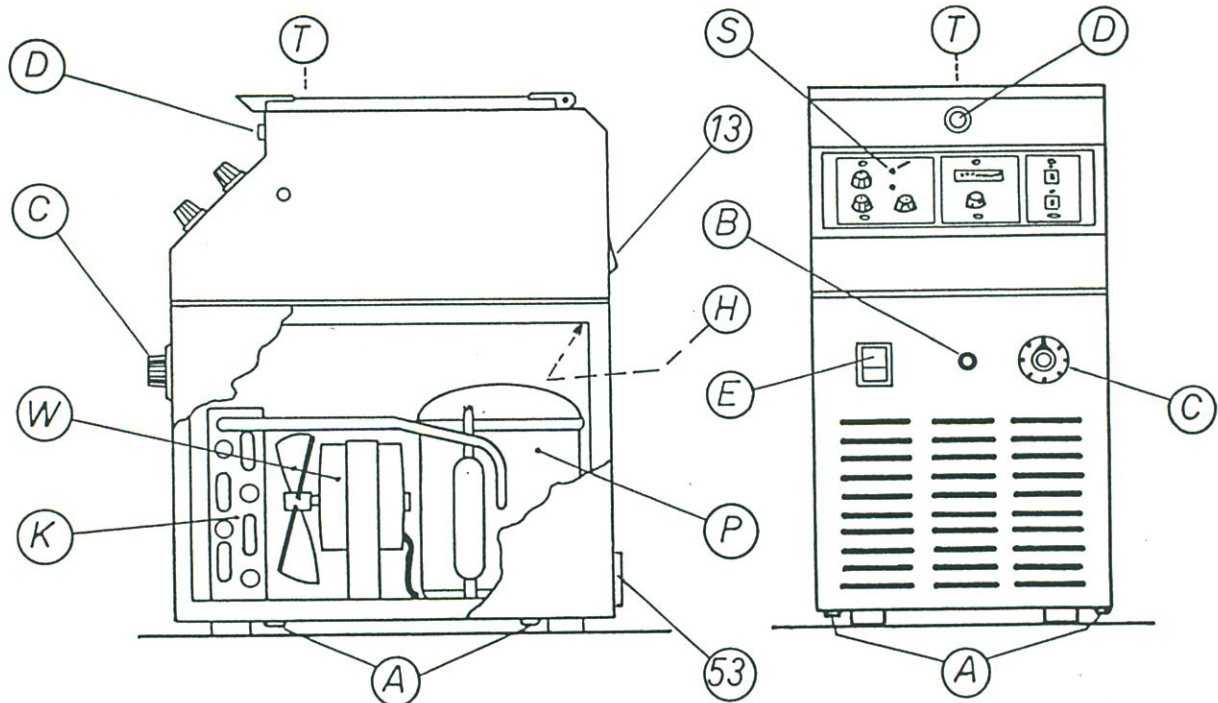


(17-03-95GB3)

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I N S T R U C T I O N  
M I C R O C E N T R I F U G E  
T Y P E 1 5 4 R F

---



- 
- A - Screws for securing cabinet sideplates
  - B - Control lamp for the temperature in rotor chamber
  - C - Knob for adjusting the temperature in rotor chamber
  - D - Push button for release of manual lid-lock
  - E - Main switch with built-in control lamp
  - K - Condenser
  - P - Compressor
  - S - Frontplate
  - T - Pressure point for manual locking of lid
  - W - Ventilator
- 

**Accessories**

- 1 Mains lead
- 1 Three-hole key (154.08.20) for changing rotor
- 1 Hexagon key (154.02.50) for emergency opening of lid

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In order to utilize the COOLING CENTRIFUGE type 154.RF to the best possible extent, it is absolutely essential that these instructions be read before taking the centrifuge into use.

After the actual instructions for use, guidance is provided in the rectification of minor operational failures together with instructions for the despatch (transport) of the centrifuge.

If the centrifuge cannot be made to function in the normal manner without dismantling, please contact us or our agents.

If the centrifuge is to be shipped or transported to another place of use, or returned for service (repair), it is essential that the packing instructions (section 6.0.0) are followed carefully.

If the transport security is not carried out as described, the motor and rotor system can give rise to internal damage to the centrifuge.

We cannot be held responsible for any failure or damage arising during transport (despatch) as a result of poor packing and inadequate transport security not conforming with section 6.0.0

The factory guarantee will no longer apply if, during the guarantee period, the centrifuge is interfered with (dismantled) without our express consent or the consent of our agents.

---

## T E C H N I C A L     D A T A

---

MAX. SPEED: 22.600 rpm.

G-VALUES: 200 - 20.000 x g stepless.

MAINS SUPPLY: 230 volt AC +- 10 %.

POWER CONSUMPTION COOLING UNIT: 150 watt.

POWER CONSUMPTION CENTRIFUGE: 50/400 watt.

ELECTRONIC TIMER: 10 sek. - 30 min.

CABINET: 6 mm aluminium.

WEIGHT: Ca. 32 kg.

H x B x D: 415 mm x 260 mm x 387 mm.

REFIGERANT: CFC free type R 134a

INSULATION: CFC free type ISOFOAM S 311

ROTORTEMPERATURE: - 5° + 30° .

LOWEST TEMPERATURE AT 10.000 x g: - 5° .

LOWEST TEMPERATURE AT 20.000 x g: 0° .

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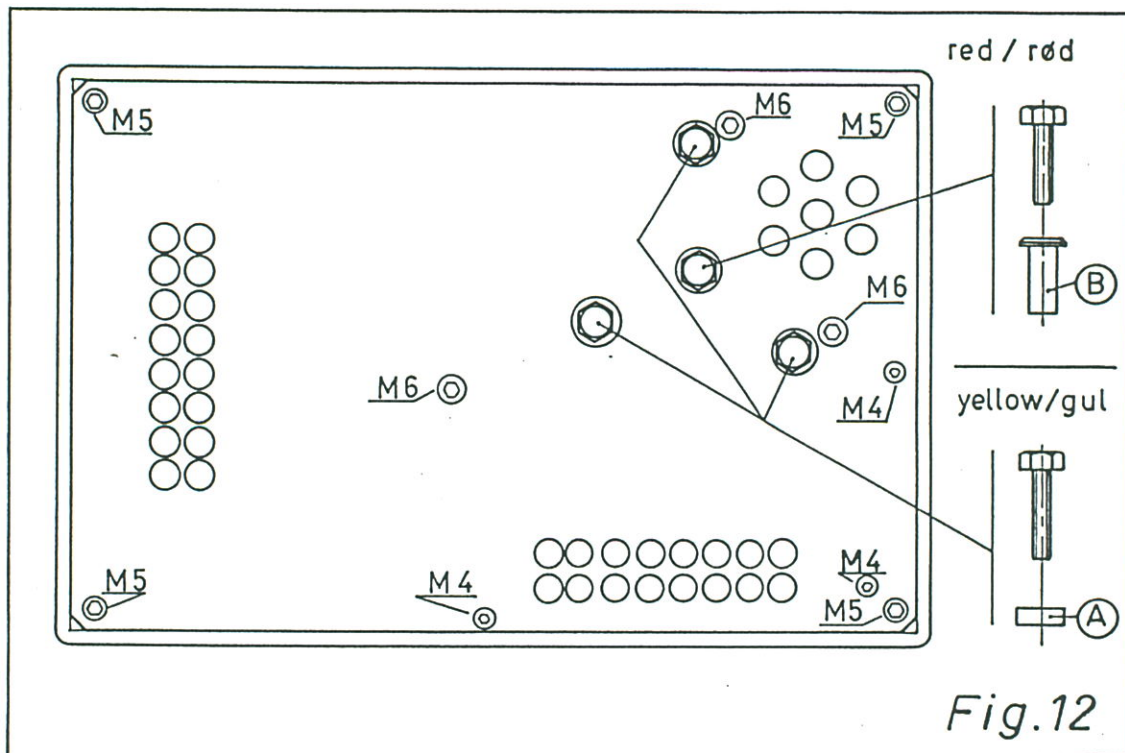


Fig.12

- 
- 1 - Rotor-flange
  - 2 - Lamp which indicates that the cover can be opened
  - 3 - Rotor radius from 3,5 to 8,0 cm
  - 4 - Setting of g-value 200 - 20,000 g
  - 5 - Acceleration and braking time max - minimum
  - 6 - Setting of centrifuging time Min. Sek (max. 30 minutes)
  - 7 - Display for check on centrifuging time
  - 8 - Start with indication of activated start function
  - 9 - Servo-lamp which indicates that the set g-value has been reached and maintained
  - 10 - Stop with indication that braking has commenced
  - 11 - Hole for key for emergency opening
  - 12 - Driving pins for rotor
- E + 13 - Main switch
- 14 + 52 - Mains cable
- 15 + 50 - Fuses
-





#### 0.0.0 PREPARATION FOR USE

Upon receipt, check the cooling centrifuge for possible transport damage, and ensure that the operation voltage (see type plate) conforms with the mains voltage to which it is to be connected.

The cover is always locked upon receipt, and no attempt must be made to open it by force. In the event of an emergency, it can be opened with the hexagon key 154.02.50 provided - see: section "GENERAL".

#### 0.1.0 REMOVAL OF TRANSPORT SECURITY SCREWS

- .1 In order to remove the centrifuge's transport security screws, it is necessary to remove the cabinet sideplates.
- .2 Screw out the bottom screws (A) and then remove the sideplates by pulling them downwards and free of the guides in the upper edge of the cabinet. (see: front page)

To avoid damage to the guides and earth terminals, the side plates must only be pulled **downwards**.

- .3 The centrifuge's yellow and red transport security screws can now be removed. The red one is removed first.  
see: front page (H) and fig.12.
- .4 Remount the sideplates using the screws (A).  
The cooling centrifuge can now be connected to the mains.

The mains connection (14), the main switch (13) and the fuses (15) are located on the back of the cabinet.

The cooling centrifuge must be connected  
to the protective earth of the mains supply

#### 1.0.0 POSITIONING OF COOLING CENTRIFUGE

- .1 The ambient temperature must not be in excess of 35°c.
- .2 If the cooling centrifuge is required to be used at ambient temperatures higher than 35°c, kindly contact us or our agent.
- .3 There must be ample circulation of air around the cabinet, and the openings in the cabinet must not be covered.

#### 2.0.0 STARTING THE COOLING CENTRIFUGE

2.0.1 The microcentrifuge must not be used until the cooling unit has been started.  
Check: light in control lamp (E).

- .2 If the centrifuge is started **without** the cooling unit has been started, the rotor will be overheated and the rotor system's ball-bearings can be ruined.

2.0.3 The centrifuge must only be connected to 230 volt AC, and is protected with two 3,15 amp. FF fuses (15) and the cooling unit with two 6,3 amp. T fuses (50). (see fig. 2).

The mains connection (14) and (53), the main switch (13) and the fuses (15) and (50) are located on the back of the cabinet. (see: Fig.2)

The cover is **always** locked upon receipt, and no attempt must be made to open it by force.

In the event of an emergency, it can be opened with the hexagon key 154.02.50 provided.

The cover can always be opened when the centrifuge is connected to the mains and the main switch (13) is on. (See fig. 2).  
Check: Light in control lamp (2) for "Lid open". (See fig. 1).

Press the button (D) and open the lid and press the START button (8), and the last figure in the display should now light constantly.

If, upon receipt, the centrifuge is not provided with a rotor, mount a rotor as described under section 2.5.0 **CHANGING THE ROTOR**.

The centrifuge is now ready for use.

2.1.0 The temperature in the rotor (samples) depends upon the temperature of the rotor chamber

- .1 The temperature in the rotor chamber can be adjusted from  $-5^{\circ}\text{C}$  to  $+30^{\circ}\text{C}$  by means of the knob (C). (See front page).
- .2 When light in control lamp (B) the centrifuge has achieved the adjusted temperature  $\pm 1,5^{\circ}\text{C}$  independent of rotor size and g-value.

$-5^{\circ}\text{C}$  only for g-values below 10,000 g.

2.2.0 When the cooling centrifuge is started up, a stable rotor temperature is achieved most quickly when the centrifuge is started at 200 g in the cooling period.

- .1 A stable rotor temperature is achieved in a max. of 20 minutes after start-up of the centrifuge.

2.3.0 When the centrifuge and the cooling unit have been stopped, the lid must be left open until any frost which may have formed during the centrifuging has disappeared.

- .1 To prevent the unnecessary formation of frost, the lid must be fully closed as soon as the cooling unit has been started.
- .2 In order to avoid damage to the centrifuge's ball bearings when the cooling unit is working constantly (24 hour operation), it is imperative that the rotor be dismantled at least twice a week for the removal of rime and condensate from the bottom and sides of the container.







The acceleration and braking times are set with knob (5). (See fig. 1).

The centrifuging time (max. 30 mins.) is set with knob (6) and is shown by the read-out display (7).

The time is calculated from start (incl. acceleration) to the commencement of the braking down.

Press START button (8)

After the start button (8) has been pressed, the clock shows the remaining centrifuging time and the servo-lamp (9) lights up when the desired g-value has been reached.

When the time has expired, the centrifuge will start braking automatically, and the lid can be opened when the lamp (2) lights up and the release button has been pressed.

Should it be desired to stop the centrifuge before the expiry of the time at which it has been set, press the stop button (10).

Control: Light in lamp over pushbutton.

If the mains voltage fails, or should a malfunction arise, the cover can always be opened with the accompanying hexagonal key 154.02.50, which is inserted in the lock (11).

Turn the key clockwise. and press button (D).

The centrifuge is provided with a special suspension for the motor and rotor spindle, and thus it is only necessary to balance the inserts visually.

In the event of excessive unbalance or a strong shock, an unbalance switch will cut off the motor and the centrifuge is braked with max. effect.

If, for some reason or another, the centrifuge stops before the "clock" has shown 00.00 (power failure - unbalance - shock etc.), the last figure in the display (7) will blink as an indication that the samples have not been centrifuged for the set period of time.

The indication of failure is cancelled by pressing the start button (8) while lid is open.

A current limiter built into the centrifuge ensures that the motor is not ruined, even in the event of gross misuse.

### 3.0.0 MAINTENANCE

.1.0 Maintenance of centrifuge unit (upper part).

.1 The hinges of the lid must be lubricated periodically with a thin oil.

.2 The rotor chamber must always be kept dry and clean and free of possible condensed water

see also sections 2.3.0 -2.3.2

### 3.2.0 Maintenance of cooling unit (lower part).

- .1 If the cooling centrifuge 154.RF is used in dust-filled surroundings, the cooling unit must be inspected and cleaned at least twice a year and possibly more frequently.
- .2 The cooling centrifuge's cable must be removed from the supply socket so that the connection to the mains is completely broken
- .3 Remove the cabinet's sideplates.

see points 0.1.0 - 0.1.4

### 3.3.0 Carefully clean all dust and dirt from the following parts.

The condensator's segments (K).

The compressor (P).

The ventilator (W) and its blades.

- .1 Use a soft brush together with a vacuum cleaner or compressed air.
- .2 In order to achieve maximum performance from the cooling centrifuge, it is very important that the segments of the condenser (K) are completely clean and free of dust.

## OPERATIONAL FAILURES

### 4.0.0 Testing and fault-finding without dismantling.

- .1.0 There is no light in display or control lamps.  
check the following points:
  - .1 Mains power supply 230 volts  $\pm$  10% 50 Hz
  - .2 The mains cable (14) must be pressed completely into the centrifuge's supply socket.
  - .3 The switches (E) and (13) is on (light in display).
  - .4 The two 3,15 Amp FF (15) or 6,3 Amp. T fuses has not blown.
  - .5 The power cable (14) is checked for intermittent failure, e.g. when the cable is moved (bent at the plugs).

4.2.0 There is light in display and control lamps, but the centrifuge does not function in the normal manner.

Check the following points:

- .1 The electronic clock must be set at a minimum of 10 secs.

The centrifuge will not start if the clock shows 00.00

- .2 The lid must be completely closed.
- .3 Both microswitches at (C) must be activated when the lid is opened and closed (can be heard).
- .4 Immediately after the main switch (13) has been switched on and there is light in the display, the lid is normally able to be opened. The lid can always be opened with the hexagonal key 154.02.50, which is inserted in the hole (11) in the right hand side of the centrifuge and button is pressed.

The key must be turned clockwise.

- .5 When the mains voltage is switched off, the lid must be locked.
- .6 The lid must be able to be opened a few seconds after connecting the mains voltage by means of the main switch (13).

#### 5.0.0 TESTING OF THE CENTRIFUGE'S FUNCTIONS WITHOUT DISMANTLING

##### 1.0 Unbalance switch

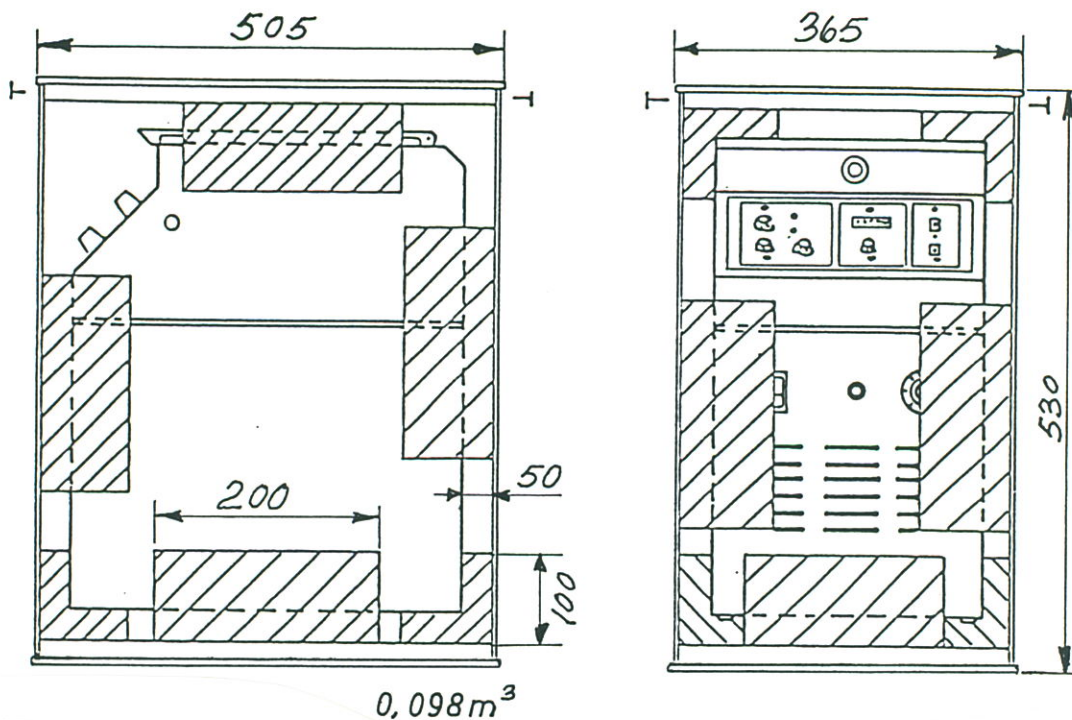
- .1 The unbalance switch must be activated if the centrifuge, with slowly rotating rotor, tilts approx. 45 deg. to the right and the last figure in the display (7) must blink.
- .2 It must always be possible to annul the failure blink by briefly pressing START (8).

##### 5.2.0 Lid-locking system.

- .1 The lid locking system with opto-tacho unit is tested by turning the rotor shaft (1) quickly with the fingers, whereby the locking system must shift. This can be heard and observed in the locking pin holes (c) in the cabinet.

If the cooling centrifuge does not function in the normal manner after going through section 4.0.0 operational failures and section 5.0.0 testing the centrifuge, please contact us or our agent.





NETT WEIGHT: 29,5 KGS  
GROSS WEIGHT: 37,5 KGS

The following instructions must be observed very closely in order to avoid damage to the cooling centrifuge during transport.

- 6.0.0 The centrifuge motor and rotor system **must** be secured with the one red and the three yellow screws.
- .1 The side panels must be removed in order to mount to mount the transport security, see points 0.1.0 - 0.1.4
  - .2 Screw the three **yellow screws** with washers (A) into the base plate as shown (fig. 12).
  - .3 The system is finally secured with the **red** screw and the associated bush (B).
  - .4 The rotor **must not** be mounted during transport. This is to be wrapped carefully in paper or the like and then placed with the underside upwards in the cooling chamber.
- 6.1.0 **PACKING**
- .1 Protect the centrifuge with plastic foil.
  - .2 Place the centrifuge in a special wooden crate and secure it firmly with ten angle blocks of hard plastic foam.
  - .3 Ensure that the centrifuge is held firmly in all directions before nailing on the lid of crate.
  - .4 Bind the crate with at least two steel or plastic bands.

7.0.0 SERVICE PLAN FOR MICROCENTRIFUGE TYPE 154.00 AND 154.RF

1.0 All centrifuges once a year: points 7.0.1 - 7.0.9

Can be carried out without dismantling the centrifuge.

- .1 Check the lid for cracks, crackling and the like, particularly around the screw holes.
- .2 Check the functions of the microswitches.  
See servicemanual.
- .3 Check the lock hooks for breakage and overload.
- .4 Check the working ability of the locking pawls. The locking system have to shift, when mainswitch is switched on and off.
- .5 Check the centrifuge rotor for cracks and impact marks. Examine particularly whether the fixing surface is free of foreign bodies and impact marks. The centre screw must be able to be turned with the fingers.
- .6 Check the rotor flange for impurities, crooked pins and marks.
- .7 Test the function of the unbalance switch by tilting the centrifuge 45° to the right with slowly rotating rotor.
- .8 Test all of the electrical functions and examine whether the centrifuge's plug are of the correct type with earth. Check with an ohmmeter whether there is connection from the earth pin of the mains cable to frame.
- .9 Check that the fuses at the rear of the centrifuge are of the right type: FF 3,15 Amp superfast.

7.2.0 154.RF. ONLY

- .1 Clean the cooling unit with a vacuum cleaner or compressed air.
- .2 Inspect the spindle bellows and lid gasket for cracks and the like.

7.3.0 The following points apply **once a year** for centrifuges with a daily motor operation time of **more than four hours**.

For centrifuges with motor operation time of **less** than four hours daily, only **every third year** or if one of the points 7.0.1 - 7.0.8

- .1 Dismantle the cabinet - see servicemanual.
- .2 Change the drive belt. See servicemanual.
- .3 With belt removed, check the spindle bearings - must run easily without noise when rotated with fingers.
- .4 The opto-tacho unit is to be brushed or blown free of dust - can also be cleaned with a pipe cleaner in the notch.
- .5 Check the motor brushes must be changed if less than 9 mm length.

## S P A R E P A R T S

- 154.00.13 Rotor shaft system complete.
- 154.00.23 Unbalance switch.
  
- 154.01.14 Plastic foot for baseplate.
  
- 154.02.00 Motor / Rotor system complete.
- 154.02.16 Rotor-spindle complete.
- 154.02.19 Guide pin.
- 154.02.26 Drivebelt.
- 154.02.50 Hexagonal key for emergency opening.
  
- 154.03.03 Cover.
- 154.03.09 Lock-pin.
  
- 154.04.01 Motor complete.
- 154.04.02 Brush holder cap.
- 154.04.03 1 set brushes (state cent. serial nbr).
  
- 154.08.20 Rotor key.
  
- 154.10.01 Fuse 3,15 Amp FF.
- 154.10.02 Microswitch.
- 154.10.06 Main switch.
- 154.10.06A Main switch with light.
- 154.10.07 Fuse holder complete.
- 154.10.08 Hum eliminator without switch.
- 154.10.11 1 set control knobs.
- 154.10.14 Locking magnet coil.
- 154.10.15 O ring for control knobs.
- 154.10.16 Main transformer.
- 154.10.17 Flat cable.
- 154.10.18 Mains lead.
- 154.10.21 Opto-tacho component.
- 154.10.22 7 segment display.
- 154.10.24 Opto-tacho unit complete incl. leads.
- 154.10.25 Control-PCB.
- 154.10.26 Servo-PCB.
- 154.11.01 Frontplate.
  
- 154.19.23 Rubber packing for lid.
- 154.19.24 Packings for spindle (old model).
- 154.19.22 Temperature-PCB.
  
- 155.01.20 Vibration damper.
  
- 157.07.23 Protective sheet for power-PCB.
  
- 157.12.06 Mains switch with hum eliminator.
- 157.12.21 Temperature feeler complete.
- 157.12.27 Power-PCB.
  
- 157.19.24 Packing for spindle (new model).



## SAFETY REGULATIONS FOR USE OF CENTRIFUGES

### INSTRUCTIONS

A centrifuge must only be operated by personnel who are thoroughly trained in its use, and instructions must be available containing prescribed max. revolutions or g-values. The supplier's instructions for use and maintenance must be adhered to.

### BEFORE STARTING

Check that the rotor's securing nut is sufficiently tight.

Inflammable liquids give off vapours which can be explosive, and must not be centrifuged without special precautions (possibly test tubes with screw caps). Corresponding precautions must also apply for the centrifuging of acids. Never use centrifuge glasses which are cracked or chipped.

The samples must be equally and symmetrically distributed in the centrifuge rotor. When rubber inserts are used, it must be checked that there is one and only one inserts in each hole. When using adaptors, these must in pairs of the same type and be placed symmetrically in the rotor.

Never set the centrifuge to run at a higher rpm or g-value than that stated on the rotor being used.

### AFTER STARTING

If the centrifuge vibrates excessively, creates noise or shows other signs of irregularities, the centrifuge must be stopped immediately and the cause must be found. If the cause is not found, the centrifuge must be returned for service immediately.

### NEVER USE A DEFECTIVE CENTRIFUGE!

Rotor buckets, glass holders, rotor and rotor-chamber must be washed and disinfected immediately if there is splintered glass or spilt liquid. In the event of visible pollution of the centrifuge with blood, tissue fluids or the like, disinfection must be carried out immediately.

### CLEANING AND MAINTENANCE

With daily use: At least once every week.

With less frequent use: At least once every month.

When used for the centrifuging of corrosive liquids, the centrifuge must be cleaned immediately after use. Before cleaning/maintenance, remove the plug from the supply socket. Disinfection is to be carried out either as hot disinfection or as chemical disinfection.

In order to avoid chemical disinfection agents, it is recommended to carry out hot disinfection in a dish-washing machine. This is carried out as follows:

- Remove the rotor and holders and place them in the washing machine.
- Clean the centrifuge's rotor chamber using one of the disinfection agents mentioned below.

With hot disinfection, the items being disinfected must reach a temperature of at least 80°C and a maximum of 90°C (most plastic materials cannot tolerate temperatures above 90°C, and it is recommended that plastic items are chemically disinfected).

Where hot disinfection is inadequate or impossible, a chemical disinfection must be carried out as follows:

- Rotor, buckets and adaptors are to be removed and placed in a bath so that they are completely submerged. They must remain in the bath for a minimum of 1 hour.
- The centrifuge's rotor-chamber must be cleaned with one of the chemical disinfection agents mentioned below.

It is recommended that in the event of the risk of infection with virus, (AIDS, hepatitis, or the like), 3% Korsolin must be used (see medicament recommendations), and gloves must be used in the event of direct contact.

In the event of the risk of infection from bacteria, 2% Bacillotox can be used. As an alternative, 62% hospital spirit can be used.

After cleaning, the centre-screw for the rotor **must** be lubricated with a small amount of thin oil.

**ALWAYS REMEMBER TO TIGHTEN THE ROTOR SECURELY.** (If the centrifuge is to be inspected or serviced, the rotor must not be mounted).

#### NOTE!

Before service/repair/maintenance of the centrifuge that is to be undertaken by OLE DICH INSTRUMENTMAKERS APS or supplier, it must be cleaned and disinfected in accordance with the instructions above. This cleaning and disinfection is the user's responsibility.

In all correspondence with OLE DICH concerning repair, reference must be made to the centrifuge type and its serial number.



## CONDITIONS OF GUARANTEE

Should this apparatus be found to have defects or deficiencies, use can be made of the guarantee as stipulated in this written guarantee.

The guarantee does not restrict your rights with respect to prevailing law.

### PERIOD OF GUARANTEE

This guarantee is valid for 12 months from the documented date of purchase from us or our agents.

### EXTENT OF GUARANTEE

Our service department or our agents undertake at our expense to rectify production or material failures which can be ascertained in normal use of the apparatus.

When possible failures are to be rectified, the purchaser must at his own expense and risk deliver the apparatus with reference to its date of purchase and serial number to our service department or to the agent from whom the product was purchased. If the apparatus is to be dispatched or transported for service (repair), the packaging instructions must be closely adhered to. If the transport safety precautions and/or the packing are not in accordance with the instructions, the motor/rotor system will suffer damage. Damages and defects which arise during transport (dispatch) as a result of incorrect or inadequate packing etc. are not covered by the guarantee.

Repairs effected under the guarantee will be carried out free of charge. The repair will not extend nor give rise to a new start date for the period of the guarantee. Parts which are replaced will become our property. After repair, the apparatus will be returned at our expense.

### THE GUARANTEE DOES NOT COVER

Defects or damages arising directly or indirectly as a result of incorrect operation or use, or failure to allow us or our agents to undertake an annual inspection of the apparatus as prescribed in the instructions for use (the safety inspection is carried out at the customer's expense).

Defects or damages arising as a result of the ingress of water, incorrect installation or connection, or as the result of fire, accident, lightning, extraordinary voltage variations or other electrical disturbances such as, e.g. defective fuses in the electrical power supply installations, and repair or other maintenance not carried out by us or our agent, without our written consent.

DATE OF PURCHASE:

STAMP:

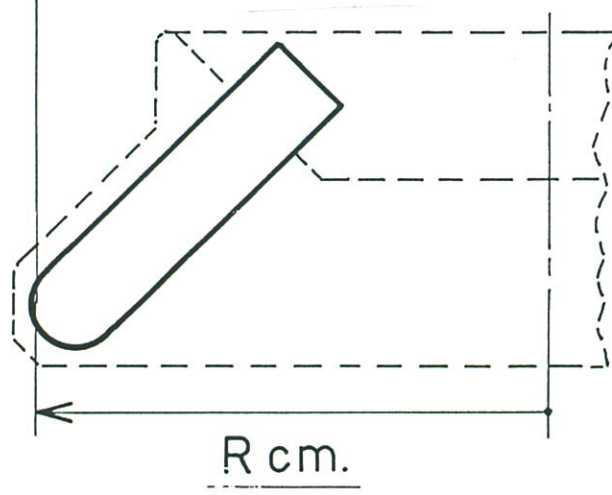
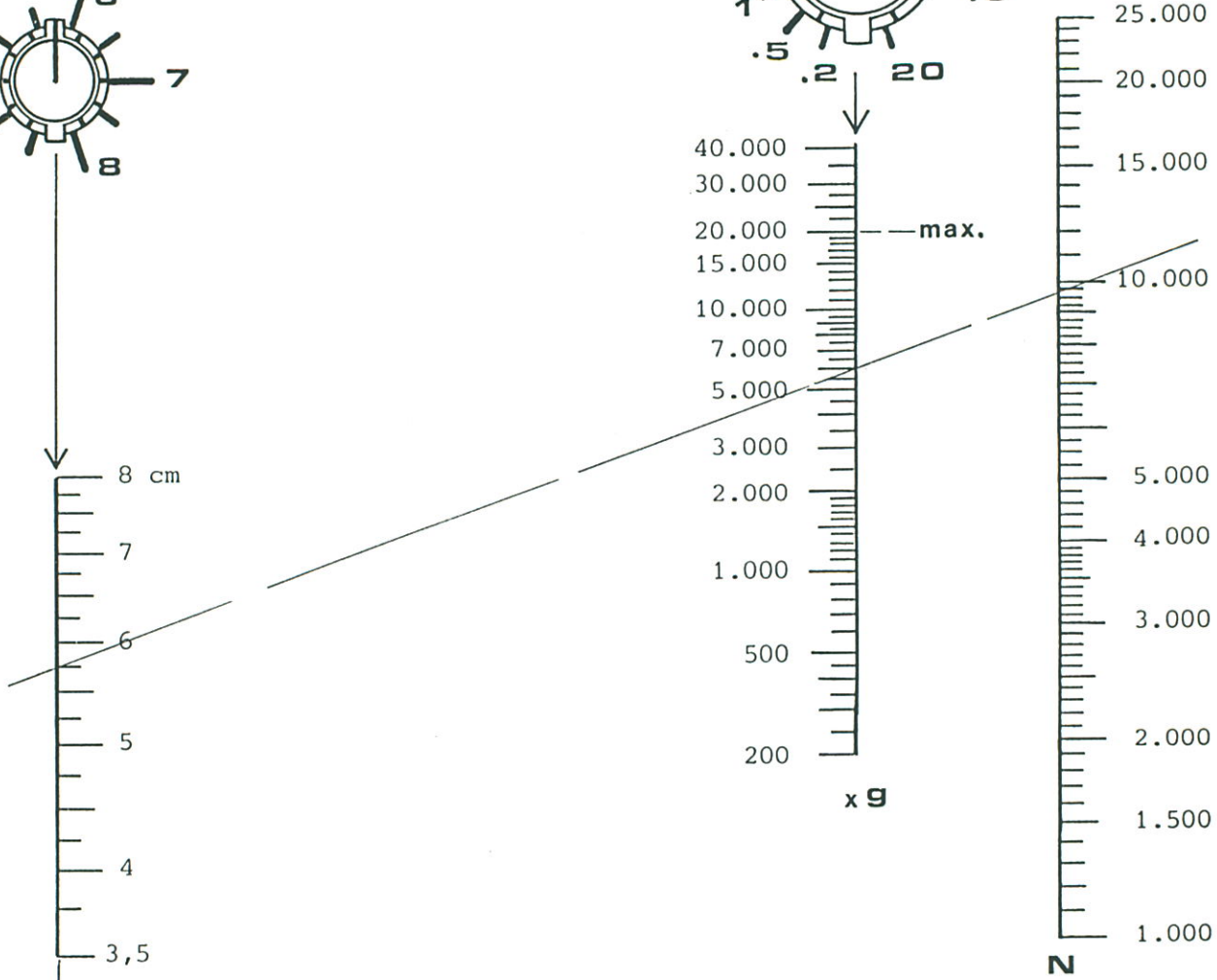
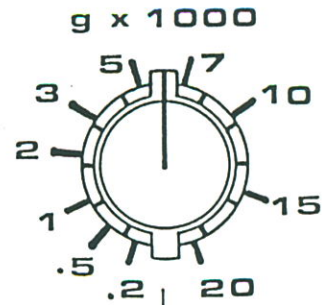
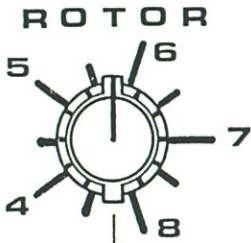
INVOICE NO.

TYPE/SERIAL NO.

AGENT:



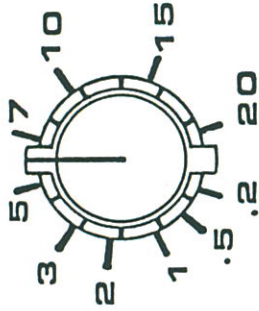
$$g = 11,18 \times R(\text{cm}) \times N^2 \times 10^{-6}$$



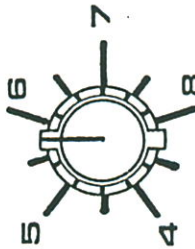
$$N = \left| \begin{array}{l} \text{Umdrehungen} \\ \text{Omdrejninger} \\ \text{Revolutions} \end{array} \right| / \text{Minute}$$

	20.000	10.000	5.000	2.000	1.000	500	200
3,5	22.608	15.986	11.305	7.150	5.055	3.575	2.261
4	21.148	14.954	10.574	6.688	4.729	3.344	2.115
4,5	19.938	14.098	9.969	6.305	4.458	3.153	1.994
5	18.915	13.375	9.458	5.981	4.230	2.991	1.891
5,5	18.035	12.753	9.017	5.703	4.033	2.852	1.803
6	17.267	12.210	8.634	5.460	3.861	2.730	1.727
6,5	16.590	11.731	8.295	5.246	3.710	2.623	1.659
7	15.986	11.304	7.993	5.055	3.574	2.528	1.598
7,5	15.444	10.920	7.722	4.884	3.453	2.442	1.544
8	14.954	10.574	7.477	4.729	3.343	2.364	1.495

9 x 1000



ROTOR



Umdrehungen  
 Omdrejninger — / Minute  
 Revolutions

# ROTORS

For OLE DICH MICROCENTRIFUGES there is a wide selection of standard inserts of glass, polypropylene, polystyrene etc.

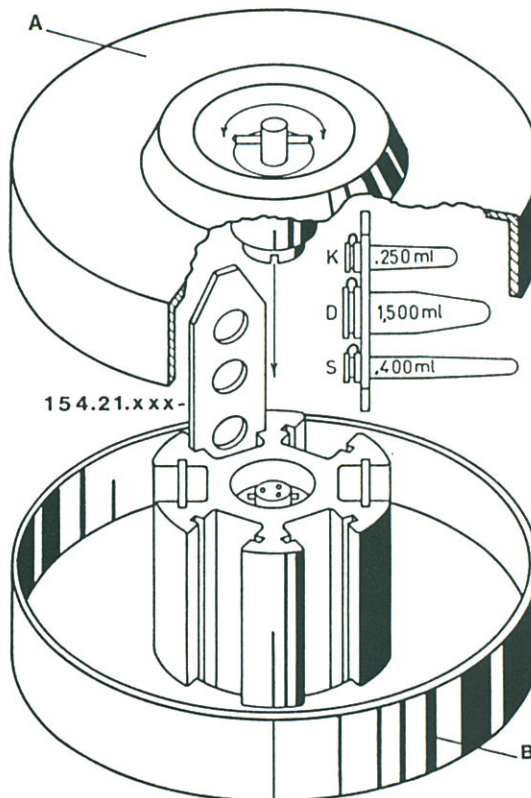
For the most popular inserts we can offer a large programme of standard rotors, as shown on the next page. The type designations (order numbers) of the rotors are stated in the right-hand column opposite the relevant inserts.

All rotors are of aluminium and produced with great precision. Rotors, holders and slides are anodized.

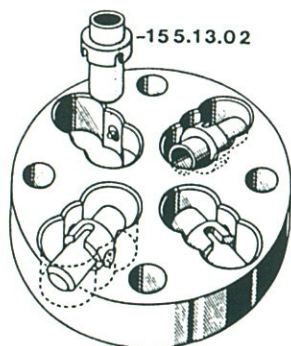
## ANGLE ROTOR



## SLIDE ROTOR



## SWING-OUT ROTOR



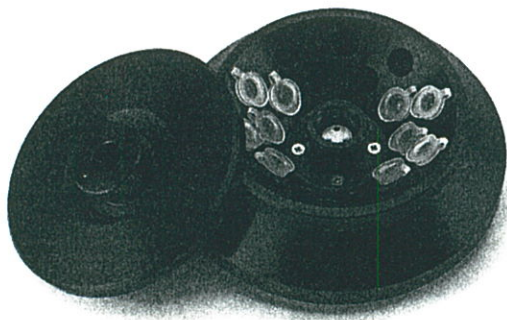
The Swing-out ROTOR type 154.120.U is available with 4 type 155.13.02 holders for type "H" inserts.

SLIDE ROTOR type 154.012.23 has a max. capacity of 6 slides (holders) of the type 154.21.xxx.

Type designations (order numbers) for standard slides for different inserts are stated in the table.

## SEALED ROTOR

Type: 154.TT.137.D



Sealed rotor with "O" ring for safe centrifuging of 20 pcs "D" tubes.  
 All rotors marked with 154.TT..... in scheme are sealed.

TYPE	INSERTS	CAPACITY
154.21.KS.5	K N S	5
154.21.KS.8	K N S	8
154.21.D.3	D	3
154.21.P.4	P	4

TYPE 154.012.02 is SLIDE ROTOR 154.012.23 **without** the closed two-part casing (part A and B).


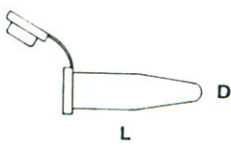
Special accessories can be provided upon request, for example:  
 Rotors for special inserts.  
 Reduction inserts (adaptors).  
 Combi-rotors.  
 Slides for special inserts.



# INSERTS

# ROTORS

Rotor types marked with \*\* cannot be used in cooling centrifuge type 154.RF

TYPE	Ø D x L mm	ml	MATERIAL						R cm	g max.	TYPE		
			POLYPROPYLENE	POLYSTYRENE	GLASS	CAPACITY	SLIDE ROTOR	ANGLE ROTOR					
	A	8x30	0,5	●				12	●	4,4	20.000	154.099.A	
	B	10x30	1	●				10	●	4,5	20.000	154.099.B	
	B2	9x50	1,5	●				20	●	6,1	15.000	** 154.150.B2	
	C	12x35	2	●				6	●	4,3	20.000	154.099.C	
	E	13x50	4		●	●			6	●	5,3	20.000	154.120.E
					●	●			12	●	6,7	20.000	154.140.E
	F	11x70	3,5		●	●			10	●	7,2	15.000	** 154.150.F
	G	10x75	3,9	●					8	●	7,2	15.000	** 154.150.G
	H	12,5x38	2,5			●			6	●	4,4	20.000	154.099.H
	L	7x50	0,8		●								
					●				16	●	5,3	20.000	154.119.L
	M	8,2x41	1			●			12	●	4,9	20.000	154.105.M
	O	16x65	6		●				6	●	6,5	15.000	154.137.O
	R	11x56	3		●				6	●	5,6	20.000	154.119.R
	T	13x75	7		●	●			8	●	7,2	15.000	** 154.150.T
	X	17x67	10		●	●			6	●	6,5	15.000	154.139.X
					●	●			6	●	6,5	15.000	154.TT.139.X
	Z	20x47	8,5			●			8	●	6,3	15.000	154.135.Z
01	8x45	0,8			●			24	●	6,1	20.000	** 154.145.01	
02	25x55	14			●			6		6,6	10.000	154.140.02	
	D	10.8x39	1,5			●		8	●	5,0	20.000	154.110.D	
						●		12	●	6,2	20.000	154.130.D	
						●		20	●	5,4	15.000	154.137.D	
						●		24	●	6,1	15.000	** 154.150.D	
						●	●	18		6,2	9.000	** 154.012.02	
						●	●	18	●	6,2	17.200	** 154.012.23	
						●		20	●	5,4	15.000	154.TT.137D	
P	7,8x30	0,75			●			12	●	4,3	20.000	154.099.P	
					●	●		24		5,3	11.000	** 154.012.02	
					●	●		24	●	5,3	14.700	** 154.012.23	
		●		24	●	5,1	20.000	154.127.P					
K	5,8x29	0,25			●			16	●	5,0	20.000	154.119.N	
					●	●		48		5,3	10.000	** 154.012.02	
					●	●		48	●	5,3	14.700	** 154.012.23	
S	5,8x47,5	0,4			●			16	●	5,5	20.000	154.119.N	
					●	●		48		7,2	7.000	** 154.012.02	
					●	●		48	●	7,2	20.000	** 154.012.23	
N	5,8x47,5	0,45			●			16	●	5,5	20.000	154.119.N	
					●	●		48		7,2	7.000	** 154.012.02	
					●	●		48	●	7,2	20.000	** 154.012.23	
W	13x46	2			●			6	●	5,3	20.000	154.120.E	
					●			12	●	6,7	20.000	154.140.E	
					●								
I	11x45				●			6	●	4,7	20.000	154.114.I	
					●			12	●	6,1	20.000	154.140.I	
					●								

	∅ D x L mm	ml.	MATERIALE	LEVERANDØR	ORDRE NR.
A	8 x 30	0,5	GLAS	OLE DICH	A/8 x 30
B	10 x 30	1	GLAS	OLE DICH	B/10 x 30
B2	9 x 30	1,5	GLAS	OLE DICH	B2/9 x 50
C	12 x 35	2	GLAS	OLE DICH	C/12 x 35
D	10,8 x 39	1,5	POLYPROPYLEN	SARSTEDT	72.690
E	13 x 50	4	POLYPROPYLEN	NUNC	341 378
			POLYSTYREN	NUNC	361 239
F	11 x 70	3,5	POLYETHYLEN	NUNC	466 982
G	10 x 75	3,9	POLYSTYREN	SARSTEDT	55.480
H	12,5 x 38	2,5	POLYPROPYLEN	NUNC	349 638
I			F.EKS.	SARSTEDT	CB.300
K	5,8 x 29	0,25	POLYETHYLEN	MILIAN INSTRUMENTS	ETH-26
L	7 x 50	0,8	POLYSTYREN	SPEC. HOLLAND	
M	8,2 x 41	1	POLYPROPYLEN	MILIAN INSTRUMENT	
N	5,8 x 47,5	0,55	POLYPROPYLEN	MILIAN INSTRUMENT	PAT-22
O	15 x 65	6	POLYSTYREN	NUNC	341 440
P	7,8 x 30	0,75	POLYPROPYLEN	SARSTEDT	72.699
R	11 x 56	3	POLYSTYREN	ELLERMANN	
S	5,8 x 47,5	0,4	POLYPROPYLEN	MILIAN INSTRUMENT	PRO-22
			POLYETHYLEN	MILIAN INSTRUMENT	EET-23
			POLYETHYLEN	SARSTEDT	72.700
			POLYPROPYLEN	SARSTEDT	72.701
T	13 x 75	7	POLYPROPYLEN	SARSTEDT	55.525
			POLYSTYREN	SARSTEDT	55.475
W	13 x 46	2	POLYPROPYLEN	NUNC	341 173
X	16,8 x 67	10	POLYPROPYLEN	SARSTEDT	55.533
			POLYSTYREN	SARSTEDT	55.481
Z	20 x 47	8,5	POLYPROPYLEN	SPEC. BELGIEN	
01	8 x 45	0,8	POLYPROPYLEN	MILIAN INSTRUMENT	
02	25 x 55	14	POLYPROPYLEN	OLE DICH	01/25 x 55