MICROCENTRIFUGE TYPE 154.00

INSTRUCTION FOR USE

In order to utilize the MICROCENTRIFUGE type 154.00 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.

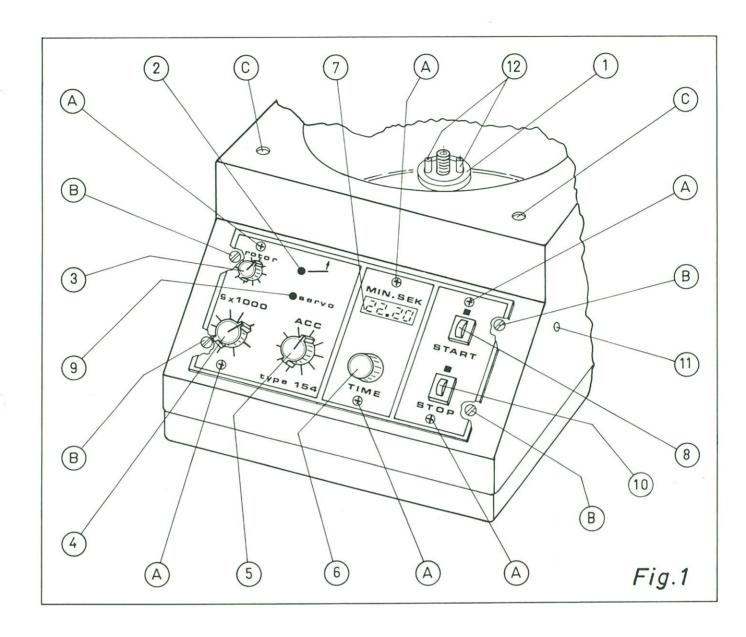
If the centrifuge cannot be made to function in the normal manner without dismantling, please contact us or our agents.

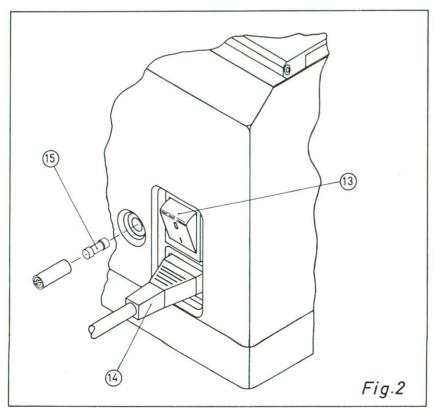
If the centrifuge is to be shipped or transported to another place of use, or returned for service (repair), it is essential that the packing instructions are followed carefully.

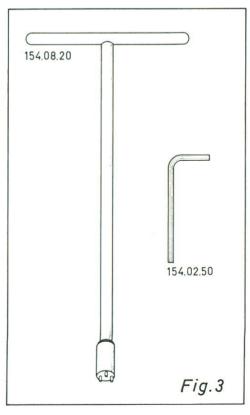
If the transport security is not carried out as described, the motor and rotor system can give rise to internal damage to the centrifuge.

We cannot be held responsible for any failure or damage arising during transport (depatch) as a result of poor packing and inadequate transport security not conforming with section 6.

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.







Accessories

1 mains lead

1 three-hole key for changing rotor

1 hexagon key for emergency opening of cover

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- 1. Rotor-flange
- 2. Lamp which indicates that the cover can be opened.
- 3. Rotor radius in cm from 3.5 to 8.0
- 4. Setting of g-value 200 20.000 g.
- 5. Acceleration and braking time maximum/minimum.
- 6. Setting of centrifuging time min. secs. (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. Guide pins.
- 13. Main switch
- 14. Mains cable
- 15. 3,15 amp. fuse type FF

General

Check the centrifuge for possible transport damage.

The red transport securing screw in the bottom of the centre

The red transport securing screw in the bottom of the centrifuge must be removed first, after which the 3 yellow screws can be removed, see fig. 12.

The centrifuge must only be connected to $220V\ AC$, and is protected with a $3,15\ amp.$ fuse.

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

The cover is <u>always</u> 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.

Check: Light in display.

Open the cover and press the start button (8). The last figure in the display (7) should now light constantly.

If, upon receipt, the centrifuge is not provided with a rotor, mount the rotor as described under "Changing the rotor".

The centrifuge is now ready for use.

Centrifuging

The rotor's number disc is marked with the radius and the max. g value, for example; R-6.3

20.000 g max.

Adjust the rotor knob (3) to the <u>correct setting</u> (for example 6.3) corresponding to the radius indicated on the number disc.

3-1-8-

Set the centrifuge to the desired g value by means of the knob (4), though never higher than the max. value indicated on the rotor.

The repetition accuracy of the set g-value is $\frac{+}{2}$ 1% within the voltage range of 190-240V.

Results of incorrect setting:

Incorrect g effect on samples. Unnecessary heating-up of motor.

The acceleration and braking times are set with control (5). The centrifuging time (max. 30 mins.) is set with control (6) and is shown by the read-out display (7).

The time is calculated from start (including acceleration) to the beginning of the braking time.

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

The cooling holes in the cover of the centrifuge <u>must not</u> be covered, as this will result in unnecessary heating of the samples.

When the time has expired, the centrifuge will start braking automatically, and the cover can be opened when the lamp (2) lights up.

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).

Check: Light in lamp over pushbutton.

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

The motor and the drive shaft of the centrifuge are provided with a special suspension, and the sample glasses therefore need only to be balanced visually.

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

If, for one reason of another, the centrifuge stops before the clock has been at zero (current failure, unbalance or shock), 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 the cover is open.

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

Changing the rotor.

When changing the rotor, the accompanying rotor key 154.08.20 must be used.

The rotor shaft is provided with a right-hand thread.

The nut must be turned $\underline{\text{anti-clockwise}}$ until the rotor has been drawn completely free of the flange (1).

Before fitting a new rotor, check that the rotor and the flange are clean.

When fitting the rotor, the pins (12) in the flange (1) must engage the holes in the rotor before the thread can take hold. The nut must be turned clockwise until it stops (tighten well). The centrifuge is ready to start.

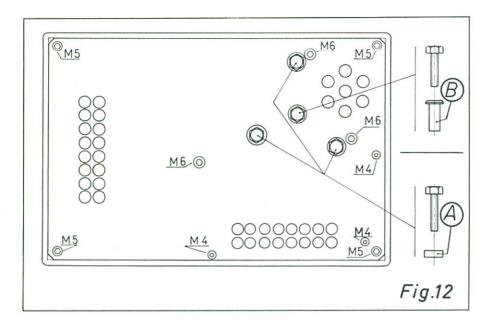
Remember correct setting of rotor switch and g-value.

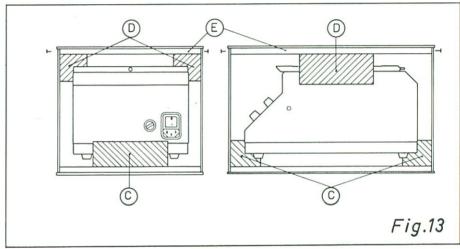
- 1.0.0 Operational failures.

 Testing and fault-finding without dismantling.
 - 1.0 There is no light in the display or control lamps. Check the following points:
 - .1 Main power supply 220v 50Hz.
 - .2 The mains cable (14) must be pushed right into the centrifuge's supply socket.
 - .3 The main switch (13) is on (I).
 - .4 The 3.15 amp fuse (15) has not blown.
 - .5 Check the mains cable (14) for periodic failure, for example by bending it at the plugs.
- 1.2.0 There is light in the display and control lamps, but the centrifuge does not function in the normal manner.
 Check the following:
 - .1 That the electronic clock (6) and (7) is set at, at least 10 secs. The centrifuge cannot be started if the clock shows 00.00.
 - .2 That the lid is completely closed.
 - .3 Both microswitches 154.10.02 <u>must</u> be activated when the cover is opened and closed (can be heard).
 - .4 When the main switch (13) is switched on, the lid is normally able to be opened. The lid can always be opened with the hexagonal key, which is inserted in the hole (11) in the right-hand side of the centrifuge and turned clockwise.
 - .5 When the power supply 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).

If the centrifuge does not function after all the points under the main section 1.0.0 have been checked, please contact us or our agent.

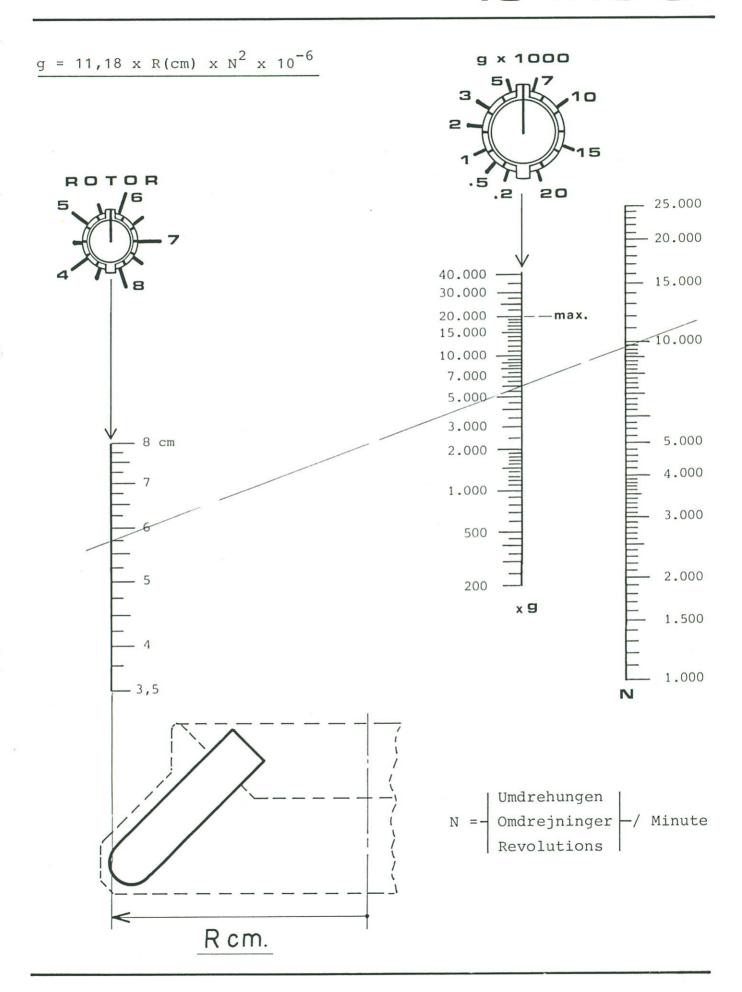
- 2.0.0 Testing of the centrifuge without dismantling.
 - 1.0 Unbalance switch.
 - .1 The last figure in the display (7) must blink when the side of the centrifuge cabinet is hit with the flat of the hand.
 - .2 The indication of failure (blink) $\underline{\text{must always}}$ be able to be annulled by briefly pressing START (8).
 - 2.0 Lid-locking system.
 - .1 The 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.





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

- 6.0.0 The centrifuge motor and rotor system <u>must</u> be secured with one red and three yellow securing screws.
 - .1 Place the centrifuge bottom upwards.
 - .2 Screw the three <u>yellow screws</u> with washers (A) into the <u>baseplate</u> as shown.
 - .3 The system is finally secured with the <u>red screw</u> and the associated bush (B).
- 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 four angle blocks of plastic (C) and (D).
 - .3 Ensure that the centrifuge is held firmly in all directions before nailing on the lid of the crate.
 - .4 Bind the crate with at least two steel or plastic bands.



		g x 1000 3 5 7 10 2 15 1 .5 .2 20									
		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			
ROTOR	4,5	19.938	14.098	9.969	6.305	4.458	3.153	1.994			
5	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			
4 /4	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			

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

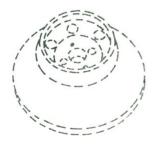


SWING-OUT ROTOR



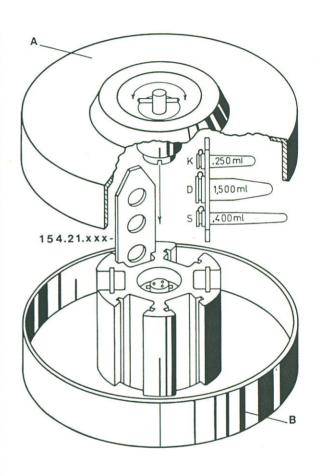
The Swing-out ROTOR type 154.120.U is available with 4 type 155.13.02 holders for type »H« inserts.

SPECIAL ROTORS



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

SLIDE ROTOR



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.

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	Р	4			

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

Tlf: + 45 31 78 41 85 Fax: + 45 31 78 64 65

INDSATSE

ROTORER

Rotortyper mærket med ** kan ikke anvendes i KØLECENTRIFUGE type 154.RF

POLYPROPYLEN						\neg						KAPACITE
POLYSTYROL -					\neg			Г				- SLIDE ROTO
GLAS —		***************************************		7	\perp	\perp		_	F			- VINKELROTO
TYPE		Ø D×L mm	ml	+	+	+	+	+	+	R cm	g max.	TYPE
	Α	8×30	0,5	•			12	_	•	4,4	20.000	154.099.A
	В	10×30	1	•			10	_	•	4,5	20.000	154.099.B
	B2	9×50	1,5	•	_	_	20	_	•	6,1	15.000	** 154.150.B2
	С	12×35	2	•			6	_	•	4,3	20.000	154.099.C
	_			_	•	•	6	_	•	5,3	20.000	154.120.E
	Е	13×50	4	_	•	•	12	-	•	6,7	20.000	154.140.E
				-	•	•		-	_	7.0	45.000	
	F	11×70	3,5	-	•	•	10	-	•	7,2	15.000	** 154.150.F
	G	10×75	3,9	•		_	8	-	•	7,2	15.000	** 154.150.G
D	н	12,5×38	2,5		_	•	6	-	•	4,4	20.000	154.099.H
	L	7×50	0,8		•		16		•	5,3	20.000	154.119.L
L		0.0.41	-		•	•	12	-	•	4,9	20.000	154.105.M
	М	8,2×41	1		•	•	6		•	6,5	15.000	154.137.O
	0	16×65	6		•		- 0			0,3	15.000	134.137.0
	R	11×56	3		•		6	-	•	5,6	20.000	154.119.R
	Т	13×75	7		•	•	8		•	7,2	15.000	** 154.150.T
	х	17×67	10		•	•	6		•	6,5	15.000	154.139.X
		17×07	10		•	•	6		•	6,5	15.000	154.TT.139.
	Z	20×47	8,5			•	8	_	•	6,3	15.000	154.135.Z
	01	8×45	0,8	+		•	24	-	•	6,1	20.000	** 154.145.01
	02	25×55	14	+		•	6	-	-	6,6	10.000	154.140.02
	- 02	23×33	14	+		•	8		•	5,0	20.000	154.110.D
	D			\vdash		•	12	-	•	6,2	20.000	154.130.D
		10.8×39	1,5		-	•	20	_	•	5,4	15.000	154.137.D
						•	24	\vdash	•	6,1	15.000	** 154.150.D
			.,,			•	18	•		6,2	9.000	** 154.012.02
2						•	18	•		6,2	17.200	** 154.012.23
						•	20		•	5,4	15.000	154.TT.137E
D .	Р					•	12		•	4,3	20.000	154.099.P
L		7,8×30	0,75		_	•	24			5,3	11.000	** 154.012.02
						•	24	•		5,3	14.700	** 154.012.23
						•	24		•	5,1	20.000	154.127.P
						•	16		•	5,0	20.000	154.119.N
		5.0.00	0,25			•	48	•		5,3	10.000	** 154.012.02
_ ,	K	5,8×29				•	48	•		5,3	14.700	** 154.012.23
) ´						•						
						•	16		•	5,5	20.000	154.119.N
D	6	50. 17.5	0.4			•	48	•		7,2	7.000	** 154.012.02
L	S	5,8×47,5	0,4			•	48	•		7,2	20.000	** 154.012.23
			-	\vdash	_	•	16	-	•	5,5	20.000	154.119.N
						•	48	•	-	7,2	7.000	** 154.012.02
D	N	5,8×47,5	0.45			•	48	•		7,2	20.000	** 154.012.23
L						•		_				
						•	6		•	5,3	20.000	154.120.E
D	w	13×46	2	\vdash		•	12	-	•	6,7	20.000	154.140.E
h []			1	\vdash		•	6		•	4,7	20.000	154.114.1
D	1	11×45				•	12		•	6,1	20.000	154.140.1
ا لــــــــــــــــــــــــــــــــــــ						•						

	ØDxLmm ml.		MATERIALE	LEVERANDØR	ORDRE NR.
A	8 x 30	0,5	GLAS	OLE DICH	A/8 x 30
В	10 x 30	1	GLAS	OLE DICH	B/10 x 30
В2	9 x 30	1,5	GLAS	OLE DICH	B2/9 x 50
С	12 x 35	2	GLAS	OLE DICH	C/12 x 35
D	10,8 x 39	1,5	POLYPROPYLEN	SARSTEDT	72.690
Е	13 x 50	4	POLYPROPYLEN	NUNC	341 378
L	13 X 30	4	POLYSTYREN	NUNC	361 239
F	11 x 70	3,5	POLYETHYLEN	NUNC	466 982
G	10 x 75	3,9	POLYSTYREN	SARSTEDT	55.480
Н	12,5 x 38	2,5	POLYPROPYLEN	NUNC	349 638
I			F.EKS.	SARSTEDT	СВ.300
K	5,8 x 29	0,25	POLYETHYLEN	MILIAN INSTRUMENTS	ETH-26
L	7 x 50	0,8	POLYSTYREN	SPEC. HOLLAND	
М	8,2 x 41	1	POLYPROPYLEN	MILIAN INSTRUMENT	
N	5,8 x 47,5	0,55	POLYPROPYLEN	MILIAN INSTRUMENT	PAT-22
0	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	
			POLYPROPYLEN	MILIAN INSTRUMENT	PRO-22
S	5,8 x 47,5	0,4	POLYETHYLEN	MILIAN INSTRUMENT	EET-23
۵	3,0 x 47,3	0,4	POLYETHYLEN	SARSTEDT	72.700
			POLYPROPYLEN	SARSTEDT	72.701
Т	13 x 75	7	POLYPROPYLEN SARSTEDT		55.525
T	13 X /3	,	POLYSTYREN	SARSTEDT	55.475
W	13 x 46	2	POLYPROPYLEN	NUNC	341 173
v	16,8 x 67	10	POLYPROPYLEN	SARSTEDT	55.533
X	10,0 x 0/	10	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	1 4	POLYPROPYLEN	OLE DICH	01/25 x 55