

*Laboratory
Centrifuges*
Ventilated





Centrifuge R-8D



- Very compact construction
- Stainless steel centrifugation bowl with easy access
- Digital bright display
- Easy to read intuitive interface
- Programmable centrifugation timer
- Automatic locking system of the lid (motorized)
- Short acceleration and braking time with function BREAK
- Imbalance detection system with automatic functioning stop to avoid accidents
- Safety opening of the lid in case of absence of electric power
- Brushless motor with silenced functioning, maintenance free and no carbon deposits for a healthy and safe work environment
- Compact sizes to optimize the space on laboratory benchtop
- High quality raw materials for a long life
- Construction in accordance with following directives:
 - Safety EN 60950, EN 60825
 - EMC EN 55022 Class B
 - EN 50082-1: EN 61000-4-2 (IEC 801-2), (IEC 801-3), (IEC 801-4)
 - Low voltage directives (72/23/EEC)
 - EMCdirectives (89/336/EEC).

Centrifuge R-8D / R-10M

Technical specification



Maximum capacity	
Swing out rotor	4 x 100 ml
Fixed angle rotor	4 x 100 ml
Maximum speed	
Swing out rotor	4.500 giri/min.
Fixed angle rotor	6.000 giri/min.
Maximum RCF	
Swing out rotor	3.530 x g
Fixed angle rotor	5.070 x g
Speed and other characteristics	
Speed range	200 - 6.000 giri/min.
Timer	from 1 to 99 min. (continuous only for R-10M)
Braking rates	Quick or slow (quick, medium, slow for R-10M)
Acceleration rates	Quick, medium, slow (only for R-10M)
Control system	Microprocessor (only for R-10M)
Program	10 storable program (only for R-10M)
Imbalance control system	Yes
Transmission system	Direct
Motor	Induction brushless motor
Power	325 W
Maximum noise level	53 dBA
Power supply	220 Volt – 50Hz
Standard	
Safety	EN 60950 – EN 60825
EMC	EN 55022, Class B EN 50082-1, con : EN 61000-4-2 (IEC 801-2) EN 61000-4-2 (IEC 801-3) EN 61000-4-2 (IEC 801-4) Directive 89/336/EEC
Dimensions / Weight	
Height (with lid closed)	305 mm
Height (with lid open)	690 mm
Width	380 mm
Depth	460 mm
Net weight (without Rotors)	28 Kg
Gross weight (without Rotors)	37 Kg
Part number centrifuge R-10M	40000052
Part number centrifuge R-8D	40000042

Centrifuge R-10M



- 10 storable programs
- Program protection from inadvertent changes
- Controlled by microprocessor
- Multicolor backlit LCD digital display
- Viewing of RCF on display
- Acceleration and braking rates with digital adjusting
- Programmable centrifugation time
- Imbalance detection system with safety automatic interruption of the cycle to avoid accidents
- Automatic locking system of the lid (motorized)
- Safety opening of the lid in case of absence of electric power
- Induction brushless motor, noiseless and maintenance free
- Easy to read intuitive interface
- Stainless steel centrifugation bowl with easy access
- Compact sizes to optimize the space on laboratory benchtop
- High quality raw materials for a long life
- Construction in accordance with following directives:

Safety	EN 60950, EN 60825
EMC	EN 55022 Class B
	EN 50082-1: EN 61000-4-2 (IEC 801-2), (IEC 801-3), (IEC 801-4)
- Low voltage directives (72/23/EEC) EMCdirectives (89/336/EEC).



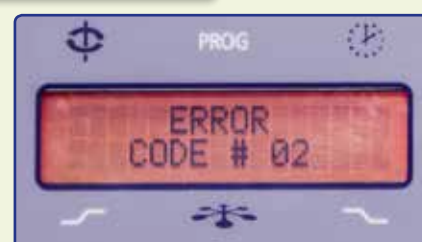
Stand By



Protection of a program



Centrifugation cycle



Alarm signal

The multicolor display helps and guides the user through various phases: programming, program protection and start of centrifugation



Centrifuge R-5S Basic

Ideal for:

- School laboratories
- Production departments
- Controlling laboratories
- Test and routine analyses

- Supplied with fixed angle rotor R-83A 12 x15ml and 12 steel buckets with 15 ml plastic tubes
- Bright digital display
- Imbalance detection control with acoustic and light alarm
- Easy to access painted metal centrifugation chamber
- Easy to read intuitive interface
- Automatic locking system of the lid
- Brushless motor with silenced functioning, maintenance free and no carbon deposits for a healthy and safe work environment
- Extremely compact construction with high quality raw materials for a long life cycle
- Compact sizes to optimize the space on laboratory benchtop



Technical specifications

Maximum capacity	
Fixed angle rotor	12 x 15 ml
Maximum speed	.
Fixed angle rotor	5.250 rpm
Maximum RCF	
Fixed angle rotor	4.280 x g
Characteristics	
Timer	from 1 to 60 min. or continuous
Braking rates	Quick or slow
Transmission system	Direct
Motor	Induction brushless motor
Maximum noise level	53 dB
Power supply	220 Volt ±10% – 50Hz
Standard	
Safety	EN 60950 – EN 60825
	EMC EN 55022, Class B
	EN 50082-1, con :
	EN 61000-4-2 (IEC 801-2)
	EN 61000-4-2 (IEC 801-3)
	EN 61000-4-2 (IEC 801-4)
Directives	89/336/EEC
Dimensions / Weight	
Height	280 mm
Width	330 mm
Depth	370 mm
Weight	24 Kg
Centrifuge R-5S Supplied with fixed angle rotor R-83A 12 x15 ml and 12 steel buckets with 15 ml plastic tubes	Part number 4000022



Spare tubes and rotor head

Part number	Description
40000422	Metal buckets 15-P with plastic tube 15 ml
40000272	Rotor head R-83A supplied with buckets and tubes



Rotor heads for centrifuges R-8D and R-10M

15 ml

R-83

Fixed angle rotor



Tube holes n. 16
Max speed: 5.250 rpm
RCF max: 4.280 g
Part number 40000202

R-89

Fixed angle rotor



Tube holes n. 24*
Max speed: 6.000 rpm
RCF max: 5.070 g
Part number 40000252



R-81

Swing out rotor



Tube holes n. 16
Max speed: 4.500 rpm
RCF max: 3.485 g
Part number 40000212

Tube type	 type Falcon®	 glass	 plastic
Ø x L mm	17 x 120	17 x 100	17 x 100
Metal buckets model	 15-F 0912601	 15-V 0912600	 15-P 0912600
Bottom	conical	conical	round
Part number	40000402	40000412	40000422

Reducers for tubes Monovette®, Vacuette®, Vacutainer® 4 ml	Reducers for tubes Monovette®, Vacuette®, Vacutainer® 6 ml
13 x 75	13 x 100
 RA-155	 RA-156
round	round
40000662	40000672

The buckets for tubes are sold individually and complete with tube.

The rotor heads are supplied without buckets for tubes.

* The rotor head permits use of 12 Falcon® tubes instead of 24





Rotor heads for centrifuges R-8D and R-10M

50 ml

R-84

Fixed angle rotor



Tube holes n. 6
 Max speed: 6.000 rpm
 Max RCF: 4.700 g
 Part number 40000222

Tube type	 type Falcon®	 glass	 plastic	Reductor for tubes 15 ml	Reductor for tubes 15 ml Falcon®
Ø x L mm	29 x 115	29 x 107	29 x 95	17 x 100	17 x 100
Metal buckets model	 50-XF 0912605	 50-XV 0912603	 50-XP 0912603	 RA-501	 RA-501 F
Bottom	conical	round	round	round	conical
Part number	40000432	40000442	40000452	40000602	40000612

The buckets for tubes are sold individually and complete with tube.
 The rotor heads are supplied without buckets for tubes.

R-82

Swing out rotor



Tube holes n. 6
 Max speed: 4.500 rpm
 Max RCF 3.530 g
 Part number 40000232

Tube type	 type Falcon®	 glass	 plastic	Reductor for tubes 15 ml	Reductor for tubes 15 ml Falcon®
Ø x L mm	29 x 115	29 x 107	29 x 95	17 x 100	17 x 100
Metal buckets model	 50-F 0912604	 50-V 0912602	 50-P 0912602	 RA-501	 RA-501 F
Bottom	conical	round	round	round	conical
Part number	40000462	40000472	40000482	40000602	40000612

The buckets for tubes are sold individually and complete with tube.
 The rotor heads are supplied without buckets for tubes.

Rotor heads for centrifuges R-8D and R-10M

100 ml

R-90

Swing out rotor





Tube holes n. 4
 Max speed: 4.000 rpm.
 Max RCF: 2.500 g
 Part number 40000262

Autoclavable 121 °C - 20 min



Swing out rotor R-90 with metal buckets 100-V bio, glass tubes and biosafety cap bio for aerosol tight

Tube type	 glass	 plastic
Ø x L mm	45 x 102	48 x 99
Metal buckets model	 100-V bio L22000402	 100-P bio L22000402
Bottom	round	round
Part number	40000512	40000522

Reductor for tubes 50 ml Autoclavable 121°C-20'	Reductor for tubes 3 x 15 ml Autoclavable 121°C-20'
29 x 107	17 x 100
 RA-157 bio	 RA-159 bio
round	round
40000642	40000652





The buckets for tubes are sold individually complete of bio cap and tube.
 The rotor heads are supplied without buckets for tubes.



R-88

Fixed angle rotor



Tube holes n. 4
 Max speed: 6.000 rpm.
 Max RCF: 4.550 g
 Part number 40000242

Tube type	 glass	 plastic
Ø x L mm	45 x 102	48 x 99
Metal buckets model	 100-V 0912606	 100-P 0912606
Bottom	round	round
Part number	40000492	40000502

Reductor for tubes 50 ml	Reductor for tubes 50 ml Falcon®
29 x 107	29 x 115
 RA-161	 RA-161 F
round	conical
40000622	40000632

The buckets for tubes are sold individually complete of bio cap and tube.
 The rotor heads are supplied without buckets for tubes.



Spare tubes and bio cap

Part number	Description	Ø x L mm
40003412	Glass tube ml 15	17 x 100
40003422	Plastic tube ml 15	17 x 100
40003442	Glass tube ml 50	29 x 107
40003452	Plastic tube ml 50	29 x 95
40003462	Glass tube ml 100	45 x 102
40003472	Plastic tube ml 100	48 x 99
40003482	Cap bio for metal buckets bio	



On the buckets 100 bio series it's possible screw the biosafety cap "bio" aerosol tight, for potential dangerous samples. Autoclavable 121 °C - 20 '

Example how to order a centrifuge with metal buckets, 50 ml Falcon® tubes and fixed angle rotor



Model **R-10M**
1 x Part number **40000052**



Rotor head



Model **R-84**
1 x Part number **40000222**



Metal buckets with tubes



Model **50-XF**
6 x Part number **40000432**

Centrifuging

The centrifuges are instruments used, in any scientific laboratory, to separate particles in solution by applying a centrifugal field through an artificial system rotating at high speed.

The use of centrifuges allows to develop a force considerably higher than the force of gravity, which makes possible the separation of particles suspended in liquids or liquids with different densities. In this way the sedimentation occurs more rapidly than using only the force of Earth's gravity.



Angle rotors (angle fixed)

They are usually used for high speed application. The oblique angle of the tubes reduces the distance the total distance of the path of the particles, this requires a greater speed in the process of sedimentation.



Swing out rotors (variable angle)

During centrifugation cycle the tubes are in horizontal position, the sediment is deposited in the center of the tube and the limits of the phases are formed horizontally. The variable angle rotors are used when it's necessary to centrifuge higher amounts of sample at medium speeds

Calculation of the centrifugation force

Often the performance of a centrifuge are specified in terms of the maximum achievable speed. However, it explains approximately the real force into the centrifugated sample, that is the cause of the separation of the products. This force is called relative centrifugation force (RCF). The numeric value indicates the multiple of how many times the centrifugal force exceeds the acceleration due to gravity "g". This means that RCF doubling the radius doubles and quadruples doubling the speed. So the performance of the centrifuges should be compared only on the RCF values.

The formula to calculate the RCF:

$$RCF = (n/1000)^2 \times r \times 11,18$$

n = speed (RPM) and r = radius in cm

