

GIORGIO BORMAC
s.r.l.

NEW CENTRIFUGES PROJECT

NEYA

PASSION

changes

everything



NEYA

Derived from the Hindi word “NAYA”, that means “new”, “novelty”, “innovation”, “NEYA” is the name given to the new generation of centrifuges developed in synergy by **REMI** and **GIORGIO BORMAC**.

The big experience of a historical manufacturer as **REMI**, combined to the Italian style and design of **GIORGIO BORMAC**, make a perfect combination in developing products with performance and characteristics suitable to all the operational requests.

It is with these premises that we are pleased to present the new project “NEYA”!

NEYA...a new concept... a new project... a new generation!

*PASSION
changes
everything*



2006



2011



2013



2016

New rotors and accessories

FIRST LETTER

- A**= Fixed angle rotor
- S**= Swing out rotor
- B**= Bucket or carrier
- SB**= Swing out rotor + Buckets (KIT)
- L**= Lid of bucket
- I**= Insert for bucket
- C**= Cushion
- RE**= Reductor
- T**= Tube
- PCR**= PCR rotor

MIDDLE NUMBERS*

- 1° NUMBER**= maximum number of tubes
- 2° NUMBER**= capacity of tubes (ml)

LAST LETTER

- F**= Falcon® tube included or suitable for conical bottom tube
- P**= Plastic round bottom tube included
- G**= Glass round bottom tube included
- R**= Suitable for round bottom tube
- X**= Extra metal bucket (long version)

** Only for reductors (RE), the middle numbers identify the capacity reduction (ml)
In case of only one middle number, it represents the capacity (ml)
For PCR rotor the middle numbers represent number of PCR strips and the number of tubes for each strip.*

A 32-15

Fixed angle rotor for 32 tubes 15 ml

S 4-175

Swing out rotor for 4 buckets 175 ml

B 16-5/7

Aluminum carrier for 16 tubes 5/7 ml

SB 4-175

*Kit composed by swing out rotor S 4-175
and 4 buckets B 175 of 175 ml*

I 4-15R

Insert for 4 round bottom tubes 15 ml

RE 50-15F

Reductor from 50 ml to 15 ml conical bottom

B 50XF

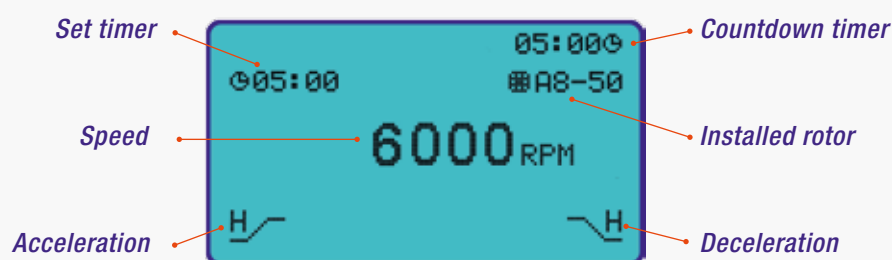
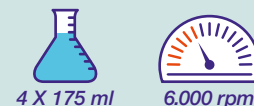
*Metal bucket 50 ml extra version
with 50 ml Falcon® tube included*

maximum capacity 4 x 175 ml
maximum speed 6.000 rpm

NEYA 8

Basic

- **Automatic rotor detection, check of presence of accessories and compatibility with maximum speed**
- **Safety speed limiter function**
- Controlled by microprocessor
- Backlit color LCD display with contemporary visualization of all parameters
- Digital adjustment of acceleration and deceleration levels
- Compact sizes to optimize the space in laboratory
- Stainless steel internal bowl with optimal height for load and download of samples
- Imbalance detection system with automatic functioning stop to avoid accidents
- Automatic locking system of the lid
- Safety opening of the lid in case of absence of electric power
- Brushless motor maintenance free and no deposits
- Construction in accordance with European directives



Standby



Centrifugation cycle



Alarm signal

Features	NEYA 8
Maximum capacity	4 x 175 ml (swing out) - 6 x 100 ml (fixed angle)
Maximum speed	4.500 rpm (swing out) - 6.000 rpm (fixed angle)
Setting RPM	Yes
Setting RCF	-
Display RCF	-
Timer	00:30 ÷ 99:50 (mm:ss) and continuous mode
Date and Time	-
Acceleration levels	L-M-H (Low - Medium - High)
Deceleration levels	L-M-H (Low - Medium - High)
Spin function	-
Programs	-
Indication of rotor	Yes
Noise	≤ 55 dB
Directive / Standard	EN 61010-1; EN 61010-2-020; EN 61326-1
External dimensions WxDxH/Weight	450 x 590 x 330 mm / 40 Kg
Height of access to the chamber	275 mm
Voltage / Power	220 ±10% V 50 Hz / 450 W
Part number	40100302



Optimal height for load and download of samples



Low speed rotor for all NEYA models

maximum capacity 4 x 175 ml
maximum speed 6.000 rpm

NEYA 10

Professional

NEYA 10R

Professional Refrigerated

- Automatic rotor detection, check of presence of accessories and compatibility with maximum speed
- Safety speed limiter function
- 10 storable programs with protection function
- Setting of speed in RPM and RCF
- Short Spin function and precool*
- Temperature range from -10°C to +40°C*
- Controlled by microprocessor and backlit color LCD display with contemporary visualization of all parameters
- Digital adjustment of acceleration and deceleration levels
- Stainless steel internal bowl with optimal height for load and download of samples
- Imbalance detection system with automatic functioning stop to avoid accidents
- Automatic locking system of the lid, safety opening of the lid in case of absence of electric power
- Brushless motor maintenance free and no deposits



4 X 175 ml



6.000 rpm



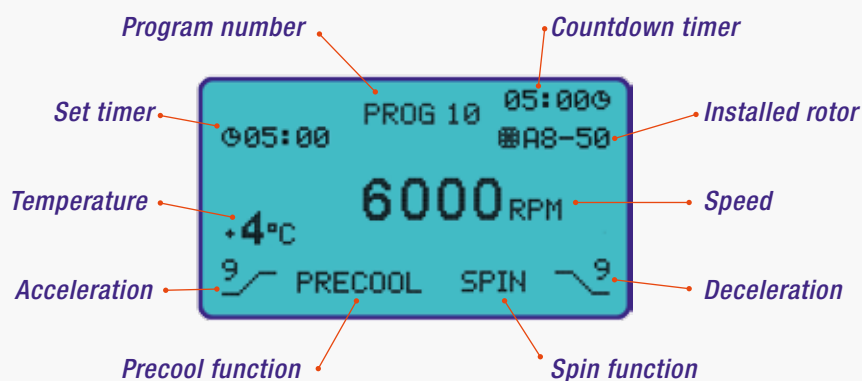
10 prog.



refrigerated



* Only NEYA 10R



Standby



Centrifugation cycle



Program protection



Alarm signal

Features	NEYA 10	NEYA 10R
Maximum capacity	4 x 175 ml (swing out) - 6 x 100 ml (fixed angle)	
Maximum speed	4.500 rpm (swing out) - 6.000 rpm (fixed angle)	
Setting RPM	Yes	
Setting RCF	Yes	
Display RCF	Yes	
Timer	00:30 ÷ 99:50 (mm:ss) and continuous mode	
Date and Time	Yes	
Acceleration levels	0÷9 (0 = min - 9 = max)	
Deceleration levels	0÷9 (0 = no brake, 1= min - 9 = max)	
Temperature range	-	-10 ÷ +40°C / +14 ÷ +114°F
Precool function	-	Yes
Display temperature	-	Yes (°C and °F)
Spin function	Yes	
Programs	10 programs with protection function	
Indication of rotor	Yes	
Noise	≤ 55 dB	≤ 55 dB
Directive / Standard	EN 61010-1; EN 61010-2-020; EN 61326-1	
External dimensions WxDxH/Weight	450 x 590 x 330 mm / 40 Kg	730 x 640 x 330 mm / 70 Kg
Height of access to the chamber	275 mm	
Voltage / Power	220 ±10% V 50 Hz / 450 W	220 ±10% V 50 Hz / 750 W
Part number	40100312	40100332



Ventilated centrifuge NEYA 10



Visual signal of end of centrifugation

maximum capacity 4 x 175 ml
maximum speed 16.000 rpm

NEYA 16

High Speed

- Automatic rotor detection, check of presence of accessories and compatibility with maximum speed
- Safety speed limiter function
- 10 storable programs with protection function
- Setting of speed in RPM and RCF
- Short Spin function and precool*
- Temperature range from -10°C to +40°C*
- Controlled by microprocessor and backlit color LCD display with contemporary visualization of all parameters
- Digital adjustment of acceleration and deceleration levels
- Stainless steel internal bowl with optimal height for load and download of samples
- Imbalance detection system with automatic functioning stop to avoid accidents
- Automatic locking system of the lid, safety opening of the lid in case of absence of electric power
- Brushless motor maintenance free and no deposits

* Only NEYA 16R

NEYA 16R

High Speed Refrigerated



4 X 175 ml



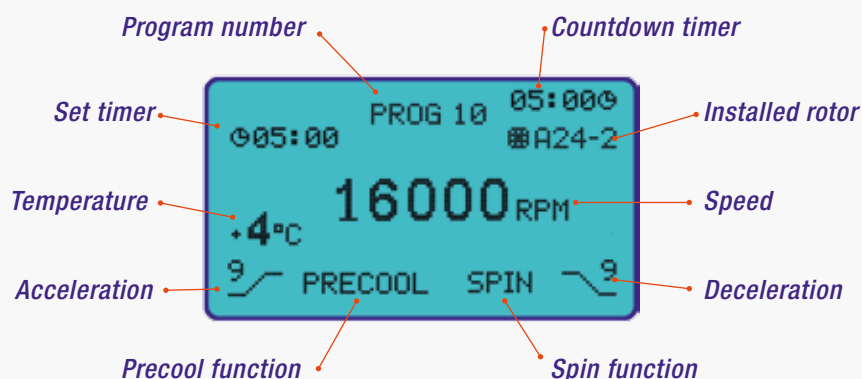
16.000 rpm



10 prog.



refrigerated*



Standby



Centrifugation cycle



Program protection



Alarm signal

Features	NEYA 16	NEYA 16R
Maximum capacity	4 x 175 ml (swing out) - 6 x 100 ml (fixed angle)	
Maximum speed	4.500 rpm (swing out) - 16.000 rpm (fixed angle)	
Setting RPM	Yes	
Setting RCF	Yes	
Display RCF	Yes	
Timer	00:30 ÷ 99:50 (mm:ss) and continuous mode	
Date and Time	Yes	
Acceleration levels	0÷9 (0 = min - 9 = max)	
Deceleration levels	0÷9 (0 = no brake, 1= min - 9 = max)	
Temperature range	-	-10 ÷ +40°C / +14 ÷ +114°F
Precool function	-	Yes
Display temperature	-	Yes (°C and °F)
Spin function	Yes	
Programs	10 programs with protection function	
Indication of rotor	Yes	
Noise	≤ 55 dB	≤ 55 dB
Directive / Standard	EN 61010-1; EN 61010-2-020; EN 61326-1	
External dimensions WxDxH/Weight	450 x 590 x 330 mm / 40 Kg	730 x 640 x 330 mm / 70 Kg
Height of access to the chamber	275 mm	
Voltage / Power	220 ±10% V 50 Hz / 450 W	220 ±10% V 50 Hz / 750 W
Part number	40100322	40100342



Ventilated centrifuge NEYA 16



High speed rotor for NEYA 16 and 16R

Swing out rotors

4

I 4-15F



Set of 4 pieces
P/N 40100632

For conical
bottom tubes as
Falcon®

Max tubes for
insert 4

Max tubes
for rotor 16



Capacity 15 ml
Ø max. 16,5 mm
H max. 120 mm

3

I 7-10



Set of 4 pieces
P/N 40100622

For collection
tubes
Vacutainer®

Max tubes for
insert 7

Max tubes
for rotor 28



Capacity 10 ml
Ø max. 16 mm
H max. 114 mm

2

I 7-5/7



Set of 4 pieces
P/N 40100612

For collection
tubes
Vacutainer®

Max tubes for
insert 7

Max tubes
for rotor 28



Capacity 5-7 ml
Ø max. 13 mm
H max. 116 mm

1

I 12-2



Set of 4 pieces
P/N 40100602

For microtubes
Eppendorf®

Max tubes for
insert 12

Max tubes
for rotor 48



Capacity 1,5-2 ml
Ø max. 10,6 mm
H max. 42 mm

SB 4-175

Kit composed by swing out rotor
S 4-175, 4 buckets **B 175** and 4 Biosafe
lids **L 175**

Maximum capacity	4x175 ml
Maximum speed	4.500 rpm
Maximum acceleration	3.600 xg
Part number	40100502



S 6-96 MP

Swing out rotor
for microplates

Max plates for tray 3
Max plates for rotor 6

Max speed: 3.200 rpm
Max acceleration: 1.950 xg

Part number: 40100522

*Supplied complete
with 2 trays*

S 4-175

Swing out rotor
for aluminum carriers

Max speed: 4.500 rpm
Max acceleration: 3.600 xg

Codice: 40101502



5

I 4-15R

Set of 4 pieces
P/N 40100642

For round bottom tubes

Max tubes for insert 4

Max tubes for rotor 16



Capacity 15 ml
Ø max. 17 mm
H max. 110 mm

6

I 1-50F

Set of 4 pieces
P/N 40100652

For conical bottom tubes as Falcon®

Max tubes for insert 1

Max tubes for rotor 4



Capacity 50 ml
Ø max. 29 mm
H max. 116 mm

7

I 1-50

Set of 4 pieces
P/N 40100662

For round bottom tubes

Max tubes for insert 1

Max tubes for rotor 4



Capacity 50 ml
Ø max. 30 mm
H max. 110 mm

8

I 1-100

Set of 4 pieces
P/N 40100672

For round bottom tubes

Max tubes for insert 1

Max tubes for rotor 4



Capacity 100 ml
Ø max. 45,5 mm
H max. 102 mm

Direct insertion of bottles

It is possible insert flat bottom plastic bottles with 175 ml capacity without reducers



T 175 Flat bottom plastic bottle 175 ml with lid
Part number 40003492

Aluminum carriers for swing out rotor S 4-175 (minimum 4 pieces)

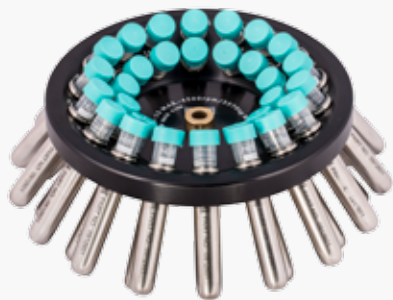
	B 2-50F	B 2-50R	B 7-15F	B 7-15R	B 12-10	B 14-5/7	B 16-5/7
For tube	50 ml conical	50 ml round	15 ml conical	15 ml round	10 ml	5/7 ml	5/7 ml
Max tubes for carrier	2	2	7	7	12	14	16
Max tubes for rotor	8	8	28	28	48	56	64
Part number	40101532	40101582	40101542	40101592	40101552	40101562	40101572

Fixed angle rotors

For high capacity

All the rotors are supplied without metal buckets. The metal buckets are sold singularly and complete of tube.

A 32-15



Fixed angle rotor 37°

n. tubes for rotor 32

Max speed: 4.500 rpm

Max acceleration: 3.280 xg

Part number: 40100802

For tube of 15 ml

Metal bucket model	B 15F	B 15G	B 15P	RE 15-5/7S	RE 15-5/7L
Tube type	type Falcon®	glass	plastic	Reductor for Vacutainer® tube 5/7 ml short type 75 mm	Reductor for Vacutainer® tube 5/7 ml long type 100 mm
Ø x H mm	16,5 x 120	17 x 110	17 x 102	13 x 75	13 x 100
Bottom	conical	round	round	round	round
Part number	40101002	40101012	40101022	40101302	40101312

A 8-50



Fixed angle rotor 37°

n. tubes for rotor 8

Max speed: 6.000 rpm

Max acceleration: 4.800 xg

Part number: 40100812

For tube of 50 ml

Metal bucket model	B 50XF	B 50XG	B 50XP	RE 50-15F	RE 50-15R	RE 50-10
Tube type	type Falcon®	glass	plastic	Reductor for tube of 15 ml type Falcon®	Reductor for tube of 15 ml round	Reductor for tube of 10 ml Vacutainer®
Ø x H mm	29 x 116	30 x 110	30 x 100	16,5 x 120	17 x 110	15,5 x 114
Bottom	conical	round	round	conical	round	round
Part number	40101032	40101042	40101052	40101322	40101332	40101342

A 6-100



Fixed angle rotor 37°

n. tubes for rotor 6

Max speed: 5.000 rpm

Max acceleration: 3.330 xg

Part number: 40100822

For tube of 100 ml

Metal bucket model	B 100G	B 100P	RE 100-50F	RE 100-50R	RE 100-15F	RE 100-15R
Tube type	glass	plastic	Reductor for tube of 50 ml type Falcon®	Reductor for tube of 50 ml round	Reductor for tube of 15 ml type Falcon®	Reductor for tube of 15 ml round
Ø x H mm	45,5 x 104	45,5 x 104	29 x 116	30 x 110	16,5 x 120	17 x 110
Bottom	round	round	conical	round	conical	round
Part number	40101092	40101102	40101352	40101362	40101372	40101382

Fixed angle rotors

For high speed

A 6-50



Fixed angle rotor *HIGH SPEED 34°*

n. tubes for rotor 6

Supplied with Biosafe lid

Max speed: 9.500 rpm

Max acceleration: 10.050 xg

Part number: 40100862

For tube of 50 ml

Metal bucket model	B 50XF	B 50XG	B 50XP	RE 50-15F	RE 50-15R	RE 50-10
Tube type				Reductor for tube of 15 ml type Falcon®	Reductor for tube of 15 ml round	Reductor for tube of 10 ml Vacutainer®
Ø x H mm	29 x 116	30 x 110	30 x 100	16,5 x 120	17 x 110	15,5 x 114
Bottom	conical	round	round	conical	round	round
Part number	40101032	40101042	40101052	40101322	40101332	40101342



A 12-5

Fixed angle rotor 45°

For Eppendorf® tubes 5 ml

n. tubes for rotor 12

Supplied with Biosafe lid

Max speed: 14.000 rpm

Max acceleration: 20.380 xg

Part number: 40100832



A 24-2

Fixed angle rotor 45°

For Eppendorf® tubes 1,5/2,0 ml

n. tubes for rotor 24

Supplied with Biosafe lid

Max speed: 15.000 rpm

Max acceleration: 21.000 xg

Part number: 40100842



A 36-05

Fixed angle rotor 37°

For Eppendorf® tubes 0,5 ml

n. tubes for rotor 36

Supplied with Biosafe lid

Max speed: 15.000 rpm

Max acceleration: 21.000 xg

Part number: 40100852

RE 2-05

Reductor for microtubes of 0,5 ml for rotor A 24-2. **Set of 24 pieces.**

Part number: 40101262

RE 2-02

Reductor for microtubes of 0,2 ml for rotor A 24-2. **Set of 24 pieces.**

Part number: 40101272

RE 05-02

Reductor for microtubes of 0,2 ml for rotor A 36-05. **Set of 36 pieces.**

Part number: 40101282



PCR 4-8

Fixed angle rotor 45°

For PCR strips of 8 tubes

n. strips for rotor 4

Supplied with Biosafe lid

Max speed: 15.000 rpm

Max acceleration: 21.000 xg

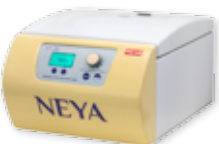
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Selection guide for centrifuge and rotor

In the following pages useful guides for choice of centrifuge, rotor and accessories suitable for different applications are provided.

In the various table-guide, icons and symbols are used to simplify their reading.

For the right comprehension it is necessary verify the performance of individual accessories.

	S 4-175  4 x 175 ml max 4.500 rpm max 3.600 xg	S 6-96 MP  6 x 96 deep wells max 3.200 rpm max 1.950 xg	A 32-15  32 x 15 ml max 4.500 rpm max 3.280 xg	A 8-50  8 x 50 ml max 6.000 rpm max 4.800 xg	A 6-100  6 x 100 ml max 5.000 rpm max 3.330 xg	
NEYA 8  max 6.000 rpm	✓	✓	✓	✓	✓	
NEYA 10  max 6.000 rpm	✓ PROG	✓ PROG	✓ PROG	✓ PROG	✓ PROG	
NEYA 10R  max 6.000 rpm	✓ PROG °C °F	✓ PROG °C °F	✓ PROG °C °F	✓ PROG °C °F	✓ PROG °C °F	
NEYA 16  max 16.000 rpm	✓ PROG	✓ PROG	✓ PROG	✓ PROG	✓ PROG	
NEYA 16R  max 16.000 rpm	✓ PROG °C °F	✓ PROG °C °F	✓ PROG °C °F	✓ PROG °C °F	✓ PROG °C °F	



max 6.000 rpm

Centrifuge with maximum speed
6.000 rpm

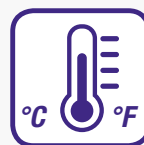


Centrifuge Professional
with 10 programs



max 16.000 rpm

Centrifuge High Speed
with maximum speed 16.000 rpm



Centrifuge Refrigerated
-10 ÷ +40 °C / +14 ÷ +104 °F

	A 6-50  6 x 50 ml max 9.500 rpm max 10.050 xg	A 12-5  12 x 5 ml max 14.000 rpm max 20.380 xg	A 24-2  24 x 2 ml max 15.000 rpm max 21.000 xg	A 36-05  36 x 0,5 ml max 15.000 rpm max 21.000 xg	PCR 4-8  4 strip of 8 PCR max 15.000 rpm max 21.000 xg	
	—	—	—	—	—	
	—	—	—	—	—	 max 6.000 rpm
	—	—	—	—	—	
	✓ PROG	✓ PROG	✓ PROG	✓ PROG	✓ PROG	
	✓ PROG °C °F	✓ PROG °C °F	✓ PROG °C °F	✓ PROG °C °F	✓ PROG °C °F	 max 16.000 rpm

Selection guide for accessories

		S 4-175  4 x 175 ml max 4.500 rpm max 3.600 xg		S 6-96 MP  6 x 96 deep wells max 3.200 rpm max 1.950 xg	A 32-15  32 x 15 ml max 4.500 rpm max 3.280 xg	A 8-50  8 x 50 ml max 6.000 rpm max 4.800 xg	A 6-100  6 x 100 ml max 5.000 rpm max 3.330 xg
		buckets B 175	other carriers				
Microtubes 0,2 ml		-	-	-	-	-	-
Microtubes 0,5 ml		-	-	-	-	-	-
Microtubes 1,5-2 ml		48 with inserts I 12-2	-	-	-	-	-
Microtubes 5 ml		-	-	-	-	-	-
Collection tubes 5/7 ml		28 with inserts I 7-5/7	64 with carriers B 16-5/7	-	32 with reducers RE 15-5/7S RE 15-5/7L	-	-
Collection tubes 10 ml		28 with inserts I 7-10	48 with carriers B 12-10	-	32 with metal buckets B 15P	8 with reducers RE 50-10	-
Round bottom 15 ml		16 with inserts I 4-15R	28 with carriers B 7-15R	-	32 with metal buckets B 15P o B 15G	8 with reducers RE 50-15R	6 with reducers RE 100-15R
Conical bottom 15 ml		16 with inserts I 4-15F	28 with carriers B 7-15F	-	32 with metal buckets B 15F	8 with reducers RE 50-15F	6 with reducers RE 100-15F
Round bottom 50 ml		4 with inserts I 1-50R	8 with carriers B 2-50R	-	-	8 with metal buckets B 50XP o B 50XG	6 with reducers RE 100-50R
Conical bottom 50 ml		4 with inserts I 1-50F	8 with carriers B 2-50F	-	-	8 with metal buckets B 50XF	6 with reducers RE 100-50F
Round bottom 100 ml		4 with inserts I 1-100	-	-	-	-	6 with metal buckets B 100P o B 100G
Flat bottom bottle 175 ml		4 direct insertion	-	-	-	-	-
Microplates		-	-	6 microplates of 96 deep wells	-	-	-
PCR strips		-	-	-	-	-	-

A 6-50  6 x 50 ml max 9.500 rpm max 10.050 xg	A 12-5  12 x 5 ml max 14.000 rpm max 20.380 xg	A 24-2  24 x 2 ml max 15.000 rpm max 21.000 xg	A 36-05  36 x 0,5 ml max 15.000 rpm max 21.000 xg	PCR 4-8  4 strips of 8 PCR max 15.000 rpm max 21.000 xg
-	-	24 with reducers RE 2-02	36 with reducers RE 05-02	-
-	-	24 with reducers RE 2-05	36 direct insertion	-
-	-	24 direct insertion	-	-
-	12 direct insertion	-	-	-
-	-	-	-	-
6 with reducers RE 50-10	-	-	-	-
6 with reducers RE 50-15R	-	-	-	-
6 with reducers RE 50-15F	-	-	-	-
6 with metal buckets B 50P o B 50G	-	-	-	-
6 with metal buckets B 50F	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	4 strips of 8 PCR direct insertion

Selection guide for accessory

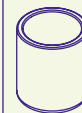
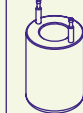
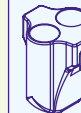
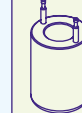
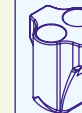
Only for swing out rotor S 4-175



SB 4-175 Kit composed by swing out rotor S 4-175, 4 buckets B 175 and 4 Biosafe lids L 175



Configuration example of rotor S 4-175 with two buckets B 175, two inserts I 7-5/7 and two carriers B 12-10

											
Type / Brand	Bottle/ REMI	Round / REMI	Round / REMI	Conical / Falcon®	Round / REMI	Round / REMI	Conical / Falcon®				
Max volume (ml)	175	100	100	50	50	50	15				
Material	Plastic	Glass	Plastic	Plastic	Glass	Plastic	Plastic				
Tube diameter (mm)	56,5	45,5	45,5	29	30	30	16,5				
Total height (mm)	97	102	100	116	110	100	120				
Bucket/carrier	B 175	B 175	B 175	B 175	B 2-50F	B 175	B 2-50R	B 175	B 2-50R	B 175	B 7-15F
Insert		I 1-100	I 1-100	I 1-50-F		I 1-50R		I 1-50R		I 4-15F	
											
N° tubes insert/carrier	1	1	1	1	2	1	2	1	2	4	7
N° tubes for rotors	4	4	4	4	8	4	8	4	8	16	28
Hole diameter (mm)	57	46	46	29,5	29,5	30,5	30,5	30,5	30,5	17	17
Hole depth (mm)	92	65	65	76	85	74	85	74	85	76	45
Insert/carrier height (mm)	99	77	77	80	90	80	90	80	90	79	88

 Inserts for bucket B 175

 Buckets or carriers for rotor S 4-175

Aluminum carriers for swing out rotor S 4-175 (minimum 4 pieces)



	B 2-50F	B 2-50R	B 7-15F	B 7-15R	B 12-10	B 14-5/7	B 16-5/7
<i>For tube</i>	50 ml conical	50 ml round	15 ml conical	15 ml round	10 ml	5/7 ml	5/7 ml
<i>Max tubes for carrier</i>	2	2	7	7	12	14	16
<i>Max tubes for rotor</i>	8	8	28	28	48	56	64
<i>Maximum speed</i>	4500 rpm	4500 rpm	4500 rpm	4500 rpm	4500 rpm	4500 rpm	4500 rpm
<i>Maximum RCF</i>	3600 xg	3600 xg	3600 xg	3600 xg	3600 xg	3600 xg	3600 xg
<i>Part number</i>	40101532	40101582	40101542	40101592	40101552	40101562	40101572

* Inside carrier B 16-5/7 it is not possible to put tubes with height (without cap) less than 60 mm. Refer to below table in the section "hole depth".

Round / REMI	Round / REMI	Collection tube / Becton Dickinson- Terumo - Sarstedt	Collection tube / Becton Dickinson- Terumo - Sarstedt	Collection tube / Becton Dickinson- Terumo - Sarstedt	Microtube/ Eppendorf®
15	15	10	5-7	5-7	2
Glass	Plastic	Plastic	Plastic	Plastic	Plastic
17	17	15,5	12,5	12,5	10,6
110	102	114	116	81	42

B 175	B 7-15R	B 175	B 7-15R	B 175	B 12-10	B 175	B 14-5/7	B 175	B 16-5/7	B 175
I 4-15R		I 4-15R		I 7-10		I 7-5/7		I 7-5/7		I 12-2
4	7	4	7	7	12	7	14	7	16	12
16	28	16	28	28	48	28	56	28	64	48
17,5	17,5	17,5	17,5	16	16	13	13	13	13	11
76	45	76	45	75	44	56	38	56	60	34
80	88	80	88	70	88	59	88	59	63	39

Centrifuging

Centrifuges are instruments used in many laboratories to separate particles in liquid solutions or liquids with different density, applying them an artificial centrifugal force.

Use of centrifuges permits developing of a much higher force than gravity earth force, thus accelerating separation and sedimentation process.

Swing out rotors (with variable angle)

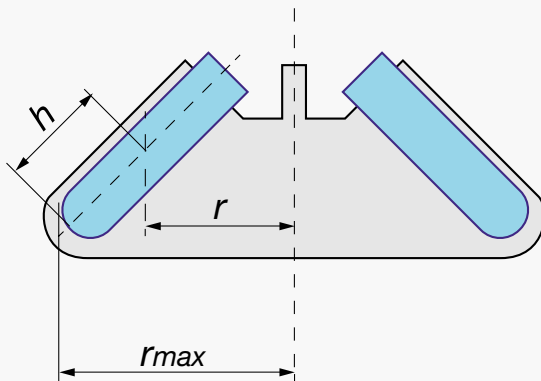
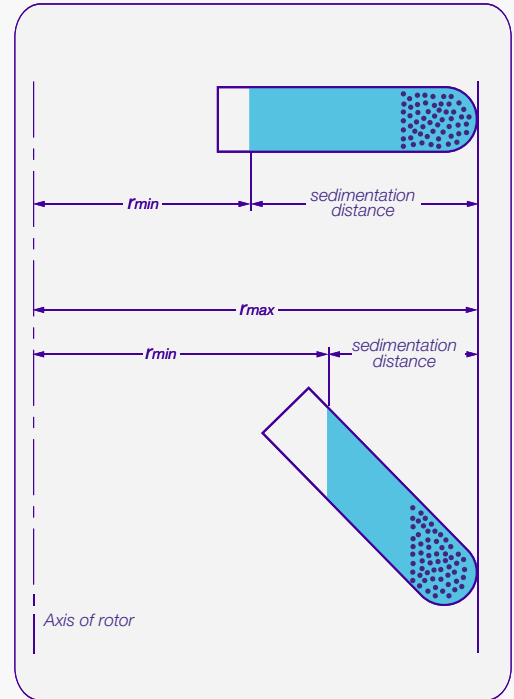
During centrifugation the tubes go in perpendicular position than axis of rotor. As a consequence the sedimentation distance and time are greater, but separation borders are perpendicular to the tube and more net.

The swing out rotors are generally used to centrifuge big quantity of sample with medium speed.



Angular rotors (with fixed angle)

The oblique angle of tubes reduces sedimentation distance, thus reducing the necessary time for separation, but borders are inclined respect the tube and less net. The fixed angle rotors are generally used to centrifuge minor quantity of sample with high speed.



The simplified formula to calculate RCF is:

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

n = speed (rpm) and **r** = radius in cm

r = **r** max - **h** x cos (rotor angle)

Calculation of centrifugal force

Generally the performance of centrifuge are specified in function of the maximum achievable speed. However the speed represents only approximately the real force developed into the sample that generates the separation.

This force is expressed like relative centrifugation force (RCF). Its value indicates how many times the centrifugation force exceeds the natural gravity acceleration "g".

Observing the lateral formula it is clear that RCF is directly proportional to the axis of rotor and linked to the square of speed. It means that, for example doubling radius, RCF doubles and it quadruples with doubling of speed.

As a consequence the performance of centrifuges should be compared only on RCF values.



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