

aweel™
centrifugation

Valuable innovations designed for you

2010

Centrifuges
& Accessories
Specifications

06/2010

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Clinical Centrifuges

320000001 - 230V-50/60Hz
320000011 - 115V-60Hz



C 12

Benchtop Ventilated Centrifuge

4x100 ml

The unit comprises a multiparameter display with digital read out of speed, acceleration and time, Microprocessor-controlled integrating 10 programs setting Brushless drive

Includes:

AWELight System for clear information when process ends

Motorised lid opening

Max. Speed: 4400 RPM

Max. RCF: 3500 xg

Overall dimensions (DxWxH) mm: 520x420x280

Weight: 50 kg

Power consumption: 600W

Accessories for C 12

Swing-Out Rotor

330000001



SO-85

Swing-Out rotor – 4 x 100 ml

Up to angle 90° - 4400 RPM – 3500 xg

Without buckets – to be ordered separately

Buckets

330000005

N-85 - Set of 4 buckets – 100ml

330000008

BL-85 - Set of 4 sealing lids for N-85 bucket

Inserts

330000009

I 85-5-7 - Insert for 4 collection tubes 5/7 ml - diam. 13 mm x L 107mm
Set of 4 - Rotor capacity: 16 tubes

330000011

I 85-10 - Insert for 4 collection tubes 10 ml - diam. 16 mm x L 106mm
Set of 4 - Rotor capacity : 16 tubes

330000013

I 85-15 - Insert for 1 conical tube 15 ml - diam. 16.6 mm x L 121mm
Set of 4 - Rotor capacity : 4 tubes

330000015

I 85-50 - Insert for 1 conical tube 50 ml - diam. 29.6 mm x L 116 mm
Set of 4 - Rotor capacity : 4 tubes

Special insert

Adaptor for tubes (diameter - length) to be specified - average price to be confirmed after study

Fixed-Angle Rotor

330000018



A12-32.15

Fixed-angle rotor for 32 x 15 ml tubes

diam. 17.5 mm x L 105 mm

Angle: 37° - 4400 RPM – 2590/3030 xg

320000002 - 230V-50/60Hz
320000012 - 115V-60Hz



C 20
Benchtop Ventiladed Centrifuge 4x200 ml

The unit comprises a multiparameter display with digital read out of speed, acceleration and time, Microprocessor-controlled integrating 10 programs setting
Brushless drive
Includes:
AWELight System for clear information when process ends
Motorised lid opening
Max. Speed: 4400 RPM
Max. RCF: 3500 xg
Overall dimensions (DxWxH) mm: 520x420x280
Weight: 50 kg
Power consumption: 600W

320001001 - 230V-50/60Hz
320001011 - 115V-60Hz

C 20-R
Benchtop Refrigerated Centrifuge 4x200 ml

The unit comprises a multiparameter display with digital read out of speed, acceleration and time as well as temperature.
Microprocessor-controlled integrating 10 programs setting
Temperature setting : -9 to +40°C
Brushless drive
Includes:
AWELight System for clear information when process ends
Motorised lid opening
Max. Speed: 4400 RPM
Max. RCF: 3500 xg
Overall dimensions (DxWxH) mm: 710x420x280
Weight: 70 kg
Power consumption: 900W

Accessories for C 20 & C 20-R

Swing-Out Rotor

330000002



SO-180
Swing-Out rotor – 4 x 200ml
Up to angle 90° - 4400 RPM – 3500 xg
Without buckets – to be ordered separately

Buckets

330000006

N-180 - Set of 4 buckets – 200ml

330000008

BL-180 - Set of 4 sealing lids for N-180 bucket

Inserts

330000023

I 180-2 - Insert for 7 microtubes (1.5/2 ml) – diam. 10.7 mm x L 40 mm
Set of 4 - Rotor capacity: 28 tubes

330000017

I 180-5 - Insert for 12 open tubes (5 ml) – diam. 12.5 mm x L 75 mm
Set of 4 - Rotor capacity: 48 tubes

330000010

I 180-5.7 - Insert for 6 collection tubes (5/7 ml) – diam. 12.6 mm x L 107 mm
Set of 4 - Rotor capacity: 24 tubes

330000020

I 180-5-7 BD - Insert for 7 Vacutainer collection tubes (5-7 ml) – diam. 12.3 mm x L 106 mm
Set of 4 - Rotor capacity: 28 tubes

330000024

I 180-5-7 Terumo - Insert for 9 Terumo collection tubes (5-7 ml) – diam. 12 mm x L 105 mm
Set of 4 - Rotor capacity: 36 tubes

330000012

I 180-10 - Insert for 6 collection tubes (10 ml) - diam. 16 mm x L 106 mm
Set of 4 - Rotor capacity: 24 tubes

No.	Description	Page 3
330000021	I 180-10 BD - Insert for 7 Vacutainer collection tubes (10 ml) – diam. 15.4 mm x L 105.5 mm Set of 4 - Rotor capacity: 28 tubes	
330000014	I 180-15 - Insert for 3 conical tubes (15 ml) - diam. 16.6 mm x L 121 mm Set of 4 - Rotor capacity: 12 tubes	
330000016	I 180-50 - Insert for 1 conical tubes (50 ml) - diam. 29.6 mm x L 116 mm Set of 4 - Rotor capacity: 4 tubes	
330000022	I 180-U - Insert for 4 conical tubes - diam. 21 mm x L 105 mm Set of 4 - Rotor capacity: 16 tubes	
Special insert	Adaptor for tubes (diameter - length) to be specified - average price to be confirmed after study	

Fixed-Angle Rotor

330000004



A20-32.15

Fixed-angle rotor for 32 x 15 ml tubes
diam. 17.5 mm x L 105 mm
Angle: 37° - 4400 RPM – 2590/3030 xg

Swing-Out Rotor for Microplates

330000003



SO 20-MTP

Swing-Out rotor for microplates & Deep Well blocks
Up to angle 90° - 4100 RPM – 2380 xg
Without buckets – to be ordered separately

330000026

Set of 2 microtitration buckets

2x3 microplates or 2x1 Deepwell block

320002001 - 230V-50/60Hz
320002011 - 115V-60Hz



C 48
Benchtop Ventilated Centrifuge 4X400 ml

The unit comprises a multiparameter display with digital read out of speed, acceleration and time,
Microprocessor-controlled integrating 10 programs setting
Brushless drive
Includes:
AWELight System for clear information when process ends
Motorised lid opening
Max. Speed: 4500 RPM
Max. RCF: 3820 xg
Expected overall dimensions (DxWxH) mm: 520x420x280
Weight: 50 kg
Power consumption: 600W

320003001 - 230V-50/60Hz
320003011 - 115V-60Hz

C 48-R
Benchtop Refrigerated Centrifuge 4x400 ml

The unit comprises a multiparameter display with digital read out of speed, acceleration and time as well as temperature.
Microprocessor-controlled integrating 10 programs setting
Temperature setting : -9 to +40°C
Brushless drive
Includes:
AWELight System for clear information when process ends
Motorised lid opening
Max. Speed: 4500 RPM
Max. RCF: 3820 xg
Expected overall dimensions (DxWxH) mm: 710x420x280
Weight: 70 kg
Power consumption: 900W

Accessories for C 48 & C 48-R

Swing-Out Rotor

330002001



SO-250
Swing-Out rotor – 4 x400ml
Up to angle 90° - 4500 RPM – 3820 xg
Without buckets – to be ordered separately

Buckets

330002003 **N-250** - Set of 4 buckets – 400 ml

330002004 **BL-250** - Set of 4 sealing lids for N-250 bucket

Inserts

330002012 **I 250-2** - Insert for 13 microtubes 1.5/2ml – diam. 10.7 mm x L 40 mm
Set of 4 - Rotor capacity: 52 tubes

330002005 **I 250-5-7** - Insert for 14 collection tubes (5/7 ml) - diam. 12.6 mm x L 107 mm
Set of 4 - Rotor capacity: 56 tubes

330002009 **I 250-5-7 BD** - Insert for 15 BD collection tubes 5-7ml diam. 12.3 x L 106 mm
Set of 4 – Rotor capacity: 60 tubes


330002010 **I250-5-7 Terumo** - Insert for 19 Terumo collection tubes 5-7 ml diam. 12 mm x L 105 mm
Set of 4 - Rotor capacity: 76 tubes

330002006 **I 250-10** - Insert for 12 collection tubes (10 ml) - diam. 16 mm x L 106 mm
Set of 4 - Rotor capacity: 48 tubes

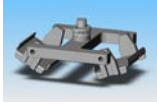
330002007 **I 250-15** - Insert for 7 conical tubes (15 ml) - diam. 16.6 mm x L 121 mm
Set of 4 - Rotor capacity: 28 tubes

330002008	I 250-50 - Insert for 3 conical tubes (50 ml) - diam. 29.6 mm x L 116 mm Set of 4 - Rotor capacity: 12 tubes
330002011	I250-U - Insert for 8 tubes diameter 21 mm x L 105 mm Set of 4 – Rotor capacity: 32 tubes
Special insert	Adaptor for tubes (diameter - length) to be specified - average price to be confirmed after study

Fixed-Angle Rotor

330022019	 <p>A48-32.15 Fixed-angle rotor for 32 x 15 ml tubes diam. 17.5 mm x L 105 mm Angle: 37° - 4400 RPM – 2590/3030 xg</p>
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Swing-Out Rotor for Microplates

330002002	 <p>SO 48-MTP Swing-Out rotor for microplates & Deep Well blocks Up to angle 90° - 4100 RPM – 2380 xg Without buckets – to be ordered separately</p>
330000026	<p>Set of 2 microtitration buckets 2x3 microplates or 2x1 Deepwell block</p>

Multifunction Centrifuges with AWELock® System

32002001 - 230V-50/60Hz
32002011 - 115V-60Hz



MF 20

Multifunction Benchtop Ventilated Centrifuge

4X200ml

The unit comprises a multiparameter display with digital read out of speed/acceleration, time and acceleration/brake slopes. Microprocessor-controlled integrating 10 programs setting Brushless drive

Includes:

AWELock System for rotor changes without tools

AWELight System for clear information when process ends

Motorised lid opening

Max. Speed: 4400RPM sw/o - 13800 RPM angle rotor

Max. RCF: 3500 xg sw/o – 20350 xg angle rotor

Overall dimensions (DxWxH) mm: 520x420x280

Weight: 50 kg

Power consumption: 600W

320021001 - 230V-50/60Hz
320021011 - 115V-60Hz



MF 20-R

Multifunction Benchtop Refrigerated Centrifuge

4x200ml

The unit comprises a multiparameter display with digital read out of speed, acceleration, time and acceleration/brake slopes as well as temperature. Pre-cool function is also available on this version

Microprocessor-controlled integrating 10 programs setting

Temperature setting : -9 to +40°C

Brushless drive

Includes:

AWELock System for rotor changes without tools

AWELight System for clear information when process ends

Motorised lid opening

Max. Speed: 4400RPM sw/o - 13800 RPM angle rotor

Max. RCF: 3500 xg sw/o – 20350 xg angle rotor

Overall dimensions (DxWxH) mm: 710x420x280

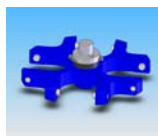
Weight: 70 kg

Power consumption: 900W

Accessories for MF 20 & MF 20-R

Swing-Out Rotor

330020001



SL-180

Swing-Out rotor – 4 x200ml

Up to angle 90°- 4400 RPM – 3500 xg

With integrated AWELock® System

Without buckets – to be ordered separately

Buckets

330000006

N-180 - Set of 4 buckets – 200ml


330000008

BL-180 - Set of 4 sealing lids for N-180 bucket

Inserts

330000023	I 180-2 - Insert for 7 microtubes (1.5/2 ml) – diam. 10.7 mm x L 40 mm Set of 4 - Rotor capacity: 28 tubes
330000017	I 180-5 - Insert for 12 open tubes (5 ml) – diam. 12.5 mm x L 75 mm Set of 4 - Rotor capacity: 48 tubes
330000010	I 180-5.7 - Insert for 6 collection tubes (5/7 ml) – diam. 12.6 mm x L 107 mm Set of 4 - Rotor capacity: 24 tubes
330000020	I 180-5-7 BD - Insert for 7 Vacutainer collection tubes (5-7 ml) – diam. 12.3 mm x L 106 mm Set of 4 - Rotor capacity: 28 tubes
330000024	I 180-5-7 Terumo - Insert for 9 Terumo collection tubes (5-7 ml) – diam. 12 mm x L 105 mm Set of 4 - Rotor capacity: 36 tubes
330000012	I 180-10 - Insert for 6 collection tubes (10 ml) - diam. 16 mm x L 106 mm Set of 4 - Rotor capacity: 24 tubes
330000021	I 180-10 BD - Insert for 7 Vacutainer collection tubes (10 ml) – diam. 15.4 mm x L 105.5 mm Set of 4 - Rotor capacity: 28 tubes
330000014	I 180-15 - Insert for 3 conical tubes (15 ml) - diam. 16.6 mm x L 121 mm Set of 4 - Rotor capacity: 12 tubes
330000016	I 180-50 - Insert for 1 conical tubes (50 ml) - diam. 29.6 mm x L 116 mm Set of 4 - Rotor capacity: 4 tubes
330000022	I 180-U - Insert for 4 conical tubes - diam. 21 mm x L 105 mm Set of 4 - Rotor capacity: 16 tubes
Special insert	Adaptor for tubes (diameter - length) to be specified - average price to be confirmed after study

Swing-Out Rotor for Microplates

330020002		SL20-MTP Swing-Out rotor for microplates & Deep Well blocks Up to angle 90° - 4100 RPM – 2380 xg Without buckets – to be ordered separately With integrated AWELock® System
330000026		Set of 2 microtitration buckets 2x3 microplates or 2x1 Deepwell block

Fixed-Angle Rotors

330020003		AMF20-32.15 Fixed-angle rotor for 32 x 15 ml tubes With integrated AWELock® System for MF 20 series diam. 17.5 mm x L 105 mm Angle: 37° - 4400 RPM – 2590/3030 xg
330020008		AMF20-24 Sealed angle rotor for 24 x 1.5-2 ml Microtubes With integrated AWELock® System for MF 20 series diam. 11 mm Angle: 45° - 13800 RPM – 20350 xg
330020016		AMF20-30 Sealed angle rotor for 30 x 1.5-2 ml Microtubes With integrated AWELock® System for MF 20 series diam. 11 mm Angle: 45° - 12500 RPM – 16590 xg

330020006

**AMF20-10**

Fixed-angle rotor for 10 x 10 ml round tubes

With integrated AWELock[®] System for MF 20 series

diam. 16 mm

Angle: 30° - 13000 rpm – 18130 xg

330020007

**AMF20-8**

Fixed-angle rotor for 8 x 50 ml conical tubes

With integrated AWELock[®] System for MF 20 series

diam. 29.5 mm

Angle: 25° - 11300 rpm – 15000 xg

320022001 - 230V-50/60Hz
320022011 - 115V-60Hz



MF 48
Multifunction Benchtop Ventilated Centrifuge 4x400 ml

The unit comprises a multiparameter display with digital read out of speed/acceleration, time and acceleration/brake slopes. Microprocessor-controlled integrating 10 programs setting
Brushless drive
Includes:
AWELock System for rotor changes without tools
AWELight System for clear information when process ends
Motorised lid opening
Max. Speed: 4500 RPM sw/o – 13800 RPM angle rotor
Max. RCF: 3820 xg sw/o – 20350 xg angle rotor
Overall dimensions (DxWxH) mm: 520x420x280
Weight: 50 kg
Power consumption: 600W

320023001 - 230V-50/60Hz
320023011 - 115V-60Hz



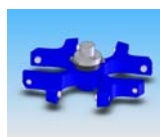
MF 48-R
Multifunction Benchtop Refrigerated Centrifuge 4x400 ml

The unit comprises a multiparameter display with digital read out of speed, acceleration, time and acceleration/brake slopes as well as temperature. Pre-cool function is also available on this version
Microprocessor-controlled integrating 10 programs setting
Temperature setting : -9 to +40°C
Brushless drive
Includes:
AWELock System for rotor changes without tools
AWELight System for clear information when process ends
AWELine
Motorised lid opening
Max. Speed: 4500 RPM sw/o – 13800 RPM angle rotor
Max. RCF: 3820 xg sw/o – 20350 xg angle rotor
Overall dimensions (DxWxH) mm: 710x420x280
Weight: 70 kg
Power consumption: 900W

Accessories for MF 48 & MF 48-R

Swing-Out Rotor

330022001



SL-250
Swing-Out rotor – 4 x 400ml
Up to angle 90° - 4500 RPM – 3820 xg
With integrated AWELock® System
Without buckets – to be ordered separately

Buckets

330002003

N-250 - Set of 4 buckets – 400ml

330002004

BL-250 - Set of 4 sealing lids for N-250 bucket

Inserts

330002012

I 250-2 - Insert for 13 microtubes 1.5/2ml – diam. 10.7 mm x L 40 mm
Set of 4 - Rotor capacity: 52 tubes

330002005

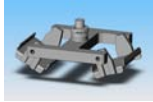
I 250-5-7 - Insert for 14 collection tubes (5/7 ml) - diam. 12.6 mm x L 107 mm
Set of 4 - Rotor capacity: 56 tubes

330002009

I 250-5-7 BD - Insert for 15 BD collection tubes 5-7ml diam. 12.3 x L 106 mm
Set of 4 – Rotor capacity: 60 tubes

No.	Description	Page 10
330002010	I250-5-7 Terumo - Insert for 19 Terumo collection tubes 5-7 ml diam. 12 mm x L 105 mm Set of 4 - Rotor capacity: 76 tubes	
330002006	I 250-10 - Insert for 12 collection tubes (10 ml) - diam. 16 mm x L 106 mm Set of 4 - Rotor capacity: 48 tubes	
330002007	I 250-15 - Insert for 7 conical tubes (15 ml) - diam. 16.6 mm x L 121 mm Set of 4 - Rotor capacity: 28 tubes	
330002008	I 250-50 - Insert for 3 conical tubes (50 ml) - diam. 29.6 mm x L 116 mm Set of 4 - Rotor capacity: 12 tubes	
330002011	I250-U - Insert for 8 tubes diameter 21 mm x L 105 mm Set of 4 – Rotor capacity: 32 tubes	
Special insert	Adaptor for tubes (diameter - length) to be specified - average price to be confirmed after study	

Swing-Out Rotor for Microplates

330022002		SL48-MTP Swing-Out rotor for microplates & Deep Well blocks Up to angle 90° - 4100 RPM – 2380 xg Without buckets – to be ordered separately With integrated AWELock® System
330000026		Set of 2 microtitration buckets 2x3 microplates or 2x1 Deepwell block

Fixed-Angle Rotors

330022003		AMF48-32.15 Fixed-angle rotor for 32 x 15 ml tubes With integrated AWELock® System for MF 48 series diam. 17.5 mm x L 105 mm Angle: 37°
330022009		AMF48-24 Fixed angle rotor for 24 x 1.5-2 ml Microtubes With integrated AWELock® System for MF 48 series diam. 11 mm Angle: 45° - 13800 RPM – 20350 xg
330022012		AMF48-30 Sealed angle rotor for 30 x 1.5-2 ml Microtubes With integrated AWELock® System for MF 48 series diam. 11 mm Angle: 45° - 12500 RPM – 16590 xg
330022006		AMF48-10 Fixed-angle rotor for 10 x 10 ml round tubes With integrated AWELock® System for MF 48 series diam. 16 mm Angle: 30° - 13000 rpm – 18130 xg
330022007		AMF48-8 Fixed-angle rotor for 8 x 50 ml conical tubes With integrated AWELock® System for MF 48 series diam. 29.5 mm Angle: 25° - 11300 rpm – 15000 xg
330022008		AMF48-6 Fixed-angle rotor for 6 x 100 ml round tubes With integrated AWELock® System for MF 48 series diam. 38 mm Angle: 25° - 9300 rpm – 10000 xg

Storage Support Stand for Centrifuges

M420-2



Ergonomic storage support stand
For C 12/20/20-R/48/48-R & MF 20/20-R/48/48-R
Two drawers
Expected overall dimensions (DxWxH) mm: 720x420x535

M750-2



Large ergonomic bench storage support stand
For C 108/108-R/200/200-R & MF 108/108-R/200/200-R
Two drawers
Expected overall dimensions (DxWxH) mm: 720x750x535

M750-T

Optional shelf for large ergonomic support stand M750-2

CENTRIFUGATION FORMULA

Parameters:

R = Radius (in millimeters)

N = Speed (in RPM) / 1000

RCF = Relative Centrifugal Force, in "g"

CALCULATION

RCF (xg) = 1.118 R N²

Speed (RPM) = 946 $\sqrt{\frac{RCF}{R}}$

Radius (mm) = $\frac{RCF}{1.118N^2}$

TRANSFORMATIONS

To calculate the number of "g" reached with a different speed:

RCF2 = RCF1 $\left(\frac{N2}{N1}\right)^2$

To calculate the desired speed to reach a different number of "g" with a similar radius:





N2 = N1 $\sqrt{\frac{RCF2}{RCF1}}$

To calculate the desired speed to reach the same number of "g" with a different radius:

N2 = N1 $\sqrt{\frac{R1}{R2}}$











Insert Specifications

C 12

				
Tube	Collection	Collection	Conical	Conical
Volume	5 - 7 ml	10 ml	15 ml	50 ml
Tube Diameter	12.6	16	16.6	29.6
Cap Diameter	17.5	18	22.5	34.7
Min. height bottom-cap	60	60	75	75
Max. Total Height	116	114	121	116.4
Insert				
Cat N°	330000009	330000011	330000013	330000015
Capacity/Insert	4	4	1	1
Capacity/Rotor	16	16	4	4
Hole Dia.	13.5	17.5	17	30
Hole Depth	59	59	74	74
Radius	159.7	157.7	159.7	159.7







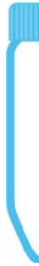

Insert Specifications

C / MF 20

										
Tube	Microtubes	Round Bottom	Collection	Collection BD	Collection Terumo	Collection	Collection BD	Conical	Conical	Conical
Volume	1.5 / 2 ml	5ml	5 - 7 ml	5 - 7 ml	5 - 7 ml	10 ml	10 ml	15 ml	50 ml	20 ml
Tube Diameter	10.7	12.8	12.6	12.3	12.1	16	15.4	16.6	29.6	21.1
Cap Diameter	19.7	13	17.5	16	14.7	18	17.5	22.5	34.7	21.1
Min. height bottom-cap	31	60	57	58	57	64	63	81	76	73
Max. Total Height	107	114	115	115	114	114	114	121	116.4	114
Insert										
Cat N°	330000023	330000017	330000010	330000020	330000024	330000012	330000021	330000014	330000016	330000022
Capacity/Insert	7	12	6	7	9	6	7	3	1	4
Capacity/Rotor	28	48	24	28	36	24	28	12	4	16
Hole Dia.	11	13	13.5	13.5	13.5	17.5	17.5	17	30	22
Hole Depth	30	59	56	57	56	63	62	80	75	72
Radius	150.7	157.7	158.7	158.7	157.7	157.7	157.7	161.7	158.7	157.7

Insert Specifications

C / MF 48

								
Tube	Microtubes	Collection	Collection BD	Collection Terumo	Collection	Conical	Conical	Conical
Volume	1.5 / 2 ml	5 - 7 ml	5 - 7 ml	5 - 7 ml	10 ml	15 ml	50 ml	20 ml
Tube Diameter	10.7	12.6	12.3	12.1	16	16.6	29.6	21.1
Cap Diameter	19.7	17.5	16	14.7	18	22.5	34.7	21.1
Min. height bottom-cap	31	57	57	57	63	84	76	73
Max. Total Height	107	110	110	111	110	121	116.5	113
Insert								
Cat N°	330002012	330002005	330002009	330002010	330002006	330002007	330002008	330002011
Capacity/Insert	13	14	15	19	12	7	3	8
Capacity/Rotor	52	56	60	76	48	28	12	32
Hole Dia.	11	13.5	13.5	13.5	17.5	17	30	22
Hole Depth	30	56	56	56	62	83	75	72
Radius	158.2	161.2	161.2	162.2	161.2	166.2	168.2	164.2