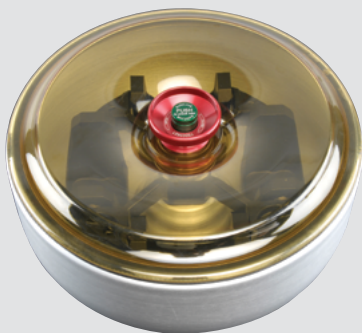




Rotors and adapters for swinging buckets rotors



BIOShield 720 Swinging Bucket Rotor, 90°, R_{max} 162 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | n/a | n/a |
| Megafuge ST4/ST4F Plus | n/a | n/a |
| Multifuge X1 Pro | 6300 | 7188 |
| Megafuge ST1 Plus | 5300 | 5088 |

| Cat. No. | Adapter Image | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|-------------------------------------|---------------|---|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | | |
| 75003183 | | BIOShield 720 ♦ | 4 x 180 mL | n/a |
| 75003693 | | 180 mL Bio-Bottle - Polypropylene (Set of 12) | | |
| BIOShield 720A Adapters (Sets of 4) | | | | |
| 75003813 | 1 | 150 mL Round Bottom Open-Top Tube | 4 x 150 mL | 50 x 122 |
| 75003814 | 2 | 100 mL Round Bottom Open-Top Tube | 4 x 100 mL | 44 x 120 |
| 75003677 | 3 | 50 mL Conical Tube | 8 x 50 mL | 30 x 116 |
| 75003816 | 4 | 50 mL DIN Round Bottom Tube | 8 x 50 mL | 34 x 109 |
| 75003818 | 5 | 30 mL Sterilin Universal Tube | 16 x 30 mL | 26 x 105 |
| 75003817 | 6 | 25 mL DIN Round Bottom Tube | 20 x 25 mL | 25 x 107 |
| 75003678 | 7 | 15 mL Conical Tube | 24 x 15 mL | 17 x 120 |
| 75003820 | 8 | 15 mL Sarstedt Tube | 44 x 15 mL | 17 x 103 |
| 75003701 | 9 | 10 mL Blood Collection Tube (16 x 100 mm) | 48 x 10 mL | 17 x 105 |
| 75003821 | 10 | 5/7 mL Blood Collection Tube (13 x 75-100 mm) | 48 x 5/7 mL | 13 x 106 |
| 75003822 | 11 | 5/7 mL Round Bottom Open-Top Tube | 80 x 5/7 mL | 13 x 104 |
| 75003823 | 12 | 1.5/2 mL Conical Microtube | 160 x 2 mL | 11 x 45 |

Adapters



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♦ Biocontainment certification by Public Health England, Porton Down, UK.



Rotors and adapters for swinging buckets rotors



TX-200 Swinging Bucket Rotor¹, 90°, R_{max} 165 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|----------------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | n/a | n/a |
| Megafuge ST4/ST4F Plus | n/a | n/a |
| Multifuge X1R Pro 230V and 120V | 5500 | 5580 |
| Multifuge X1 Pro 120V | 5250 | 5084 |
| Megafuge ST1R Plus 230V and 120V | 5500 | 5580 |
| Megafuge ST1 Plus 120V | 5250 | 5084 |

| Cat. No. | Adapter Image | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|---------------------------------------|---------------|---|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | | |
| 75003658 | | TX-200 Rotor Cross | | |
| 75003659 | | TX-200 Round Buckets (Set of 4) | 4 x 180 mL | |
| 75003660 | | TX-200 Round ClickSeal Biocontainment Lids (Set of 4) ♦ | | |
| 75003687 | | Replacement TX-200 O-rings for lids (Set of 4) | | |
| 75003800 | | 180 mL Bio-Bottle - Polypropylene (Set of 12) | | |
| Adapters for TX-200 Rotor (Sets of 4) | | | | |
| Direct | | 180 mL Bio-Bottle | 4 x 180 mL | 56.5 x 123 |
| 75003801 | 1 | 100 mL Round Bottom Open-Top Tube | 4 x 100 mL | 48 x 122 |
| 75003802 | 2 | 50 mL DIN Round Bottom Tube | 4 x 50 mL | 35 x 126 |
| 75003815 | 3 | 50 mL Round Bottom Tube | 4 x 50 mL | 32 x 126 |
| 75003803 | 4 | 50 mL Conical or Skirted Tube | 4 x 50 mL | 30 x 126 |
| 75003804 | 5 | 30 mL Sterilin™ Universal Tube | 4 x 30 mL | 26 x 118 |
| 75003805 | 6 | 25 mL DIN Round/Flat Bottom Tube | 8 x 25 mL | 25 x 118 |
| 75003806 | 7 | 20 mL Round Bottom Tube | 12 x 25 mL | 22 x 125 |
| 75003771 | 8 | 15 mL Conical Tube | 20 x 20 mL | 17 x 121 |
| 75003809 | 9 | 15 mL Blood Collection Tube | 16 x 15 mL | 17 x 121 |
| 75003807 | 10 | 14 mL Conical Urine Tube | 8 x 14 mL | 17 x 114 |
| 75003808 | 11 | 10 mL Blood Collection (16 x 100 mm) or 15 mL Corex/Kimble Tube | 28 x 10/15 mL | 17 x 121 |
| 75003785 | 12 | 5/7 mL or 4.5/6 mL Blood Collection Tube (13 x 75-100 mm) | 32 x 5/7 mL | 13 x 122 |
| 75003810 | 13 | 5/7 mL Round Bottom Open-Top Tube | 36 x 5/7 mL | 13 x 118 |
| 75003811 | 14 | 3/5 mL RIA or Round Bottom Tube (without cap) | 48 x 3/5 mL | 12 x 124 |
| 75003812 | 15 | 1.5/2 mL Microtube | 48 x 2 mL | 11 x 45 |

Adapters



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¹Rotor, buckets and lids sold separately.
♦ Biocontainment certification by Public Health England, Porton Down, UK.

Rotors and adapters for swinging buckets rotors



HIGHPlate 6000 Swinging Bucket Rotor, 90°, R_{max} 139 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | 6300 | 6168 |
| Megafuge ST4/ST4 Plus | n/a | n/a |
| Multifuge X1 Pro | n/a | n/a |
| Megafuge ST1 Plus | n/a | n/a |

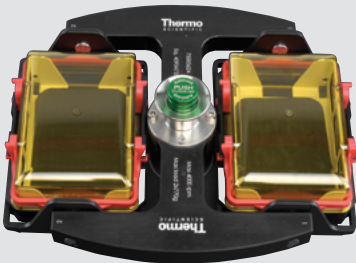
| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Height |
|----------|------------------------|--|----------------|
| Rotor | | | |
| 75003606 | HIGHPlate 6000 Rotor ♦ | 2 x 5 Standard Microplate or 2 x 1 Filter plates | < 80 mm |



Fiberlite H3-LV Swinging Bucket Rotor, 90°, R_{max} 189 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | 3600 | 2738 |
| Megafuge ST4/ST4F Plus | n/a | n/a |
| Multifuge X1 Pro | n/a | n/a |
| Megafuge ST1 Plus | n/a | n/a |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Height |
|----------|-----------------------|---|----------------|
| Rotor | | | |
| 75003665 | Fiberlite H3-LV Rotor | 4 x 7 Standard Microplate or 2 x 4 Deepwell | < 100 mm |



M-20 Swinging Bucket Rotor¹, 90°, R_{max} 127 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | 4000 | 2272 |
| Megafuge ST4/ST4F Plus | 4000 | 2272 |
| Multifuge X1 Pro | 4000 | 2272 |
| Megafuge ST1 Plus | 4000 | 2272 |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Height |
|-----------------------|--|--------------------------------------|----------------|
| Rotor and Accessories | | | |
| 75003624 | M-20 Microplate Rotor including standard open carriers | 2 x 3 Standard Microplate | < 65 mm |
| 75003625 | ClickSeal Carriers including Carrier and lids ♦ | 2 x 1 Deepwell | < 45 mm |
| 75002011 | ClickSeal Replacement lids (Set of 2) | | |
| 75002012 | Replacement M-20 O-rings for lids | | |

¹Biocontainment system sold separately.
♦ Biocontainment certification by Public Health England, Porton Down, UK.

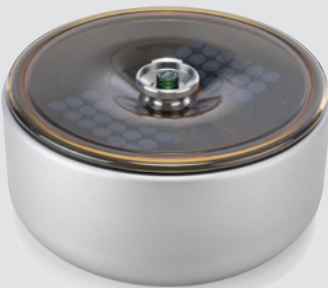


Rotors and adapters for swinging buckets rotors



H-Flex 1 Swinging Bucket Rotor, 90°, R_{max} 170 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X1 Pro | 4700 | 4297 |
| Megafuge ST1 Plus | 4700 | 4297 |
| Multifuge X4 Pro/X4F Pro | n/a | n/a |
| Megafuge ST4/ST4F Plus | n/a | n/a |



H-Flex HS4 Swinging Bucket Rotor, 90°, R_{max} 170 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X1 Pro | n/a | n/a |
| Megafuge ST1 Plus | n/a | n/a |
| Multifuge X4 Pro/X4F Pro | 6100 | 7197 |
| Megafuge ST4/ST4F Plus | n/a | n/a |

Rotors and Adapters



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3



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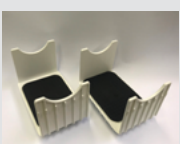
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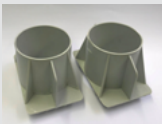
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| Cat. No. | Adapter Image | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|---|---------------|--|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | | |
| 75003300 | 1 | H-Flex 1 Rotor Cross (Buckets and Lids sold separately) | | |
| 75003301 | 2 | H-Flex 1 Rotor Buckets (Set of 2) | | |
| 75003302 | 3 | H-Flex 1 Rotor Biocontainment Lids (Set of 2) | | |
| 75003309 | | H-Flex 1 Rotor Biocontainment Lid Replacement O-Rings (Set of 2) | | |
| 75003330 | | H-Flex HS4 Rotor | | |
| 75003338 | | H-Flex HS4 Spare Bucket (Set of 2) | | |
| 75003339 | | H-Flex HS4 Spare Windshield Lid | | |
| Adapters for H-Flex 1 Rotor (Sets of 2) | | | | |
| 73003303 | 4 | 50 mL Conical Tube | 16 x 50 mL | 30 x 126 |
| 73003304 | 5 | 15 mL Conical Tube | 36 x 15 mL | 17 x 121 |
| 73003305 | 6 | 10/12 mL Blood Collection Tube (16x100) | 66 x 10/15mL | 16 x 133 |
| 73003306 | 7 | 5/7 mL Blood Collection Tube (13x75-100mm) | 84 x 5/7 mL | 13 x 110 |
| 73003307 | 8 | Microplate Carriers | 10 standard, 2 deepwell | n/a |
| 73003308 | 9 | H-Flex 1 Rotor 400m Bottle and Centri-lab Adapter* | n/a | n/a |

*A software update requiring a service call by your Thermo Scientific representative may be required. Please contact your local salesperson for more information; 400mL Bottle/Centrilab Adapter maximum speed is 3800 rpm and 2800 x g.
✦ Biocontainment certification by Public Health England, Porton Down, UK.



Fixed angle rotors

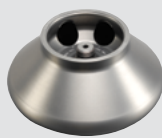


| Thermo Scientific Rotor Name | | Fiberlite F14-6x250 LE | Fiberlite F15-6x100y | Fiberlite F10-6x100 LEX | Fiberlite F13-14x50cy | Fiberlite F15-8x50cy | CLINIConic |
|-----------------------------------|---|------------------------|----------------------|-------------------------|-----------------------|----------------------|------------|
| Maximum Capacity (mL) | | 6 x 250 mL | 6 x 100 mL | 6 x 100 mL | 14 x 50 mL | 8 x 50 mL | 30 x 15 mL |
| Maximum Speed (rpm ¹) | | 11000 rpm | 15000 rpm | 10,500 rpm | 10000 rpm | 14500 rpm | 5650 rpm |
| Maximum RCF (x g ¹) | | 18533 x g | 24652 x g | 15038 x g | 17105 x g | 24446 x g | 4997 x g |
| Biocontainment | | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Multifuge X4 Pro/X4F Pro | | ✓ | ✓ | ✓ | ✓ | ✓ | |
| Megafuge ST4/ST4F Plus | | | ✓ | ✓ | | | |
| Multifuge X1 Pro | | | ✓ | ✓ | ✓ | ✓ | ✓ |
| Megafuge ST1 Plus | | | ✓ | ✓ | | | ✓ |
| Maximum Capacity | 250 mL Nalgene Bottle | 6 | – | – | – | – | – |
| | 85 mL Nalgene Oak Ridge Tube | 6 | 6 | 6 | – | – | – |
| | 50 mL Nalgene Oak Ridge Tube | 6 | 6 | 6 | 14 | 8 | – |
| | 50 mL Conical Tube | 6 | 6 | 6 | 14 | 8 | – |
| | 30 mL Nalgene Oak Ridge Tube | 12 | 6 | 6 | 14 | 8 | – |
| | 16 mL Nalgene Oak Ridge Tube | 30 | 6 | 6 | 14 | 8 | – |
| | 15 mL Conical Tube | 30 | 6 | 6 | 14 | 8 | 30 |
| | 10 mL Nalgene Oak Ridge Tube | 42 | 12 | 12 | 14 | 8 | – |
| | 10 mL Blood Collection Tube (16 x 100 mm) | – | – | – | – | – | 30 |
| | 5/7 mL Blood Collection Tube (13 x 75-100 mm) | – | – | – | – | – | 30 |
| | 6.5 mL Round Tube | – | 12 | 12 | – | – | – |
| | 1.5/2 mL Microtube | – | 24 | 24 | – | – | – |

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¹Maximum speed based on top performance models.
 Biocontainment certification by Public Health England, Porton Down, UK.
Labware not shown to scale.

Fixed angle rotors



| Thermo Scientific Rotor Name | | 8 x 50 Sealed | HIGHConic II | MicroClick 18 x 5 | Fiberlite F21-48x2 | Microliter 48 x 2 | MicroClick 30 x 2 | Microliter 30 x 2 |
|------------------------------|---|----------------|--------------|-------------------|--------------------|-------------------|--------------------------------|-------------------|
| Maximum Capacity (mL) | | 8 x 50 mL | 6 x 100 mL | 18 x 5 mL | 3.12.2.1 48 x 2 mL | 48 x 2 mL | 30 x 2 mL | 30 x 2 mL |
| Maximum Speed (rpm¹) | | 6700 rpm | 10350 rpm | 15000 rpm | 15200 rpm 3.12.2.3 | 15200 rpm | 14000 rpm | 15200 rpm |
| Maximum RCF (x g¹) | | 7177 x g | 15090 x g | 24652 x g | 3.12.2.2 25055 x g | 25314 x g | 21693 x g | 25830 x g |
| Biocontainment 🏠 | | ✓ (Individual) | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Multifuge X4 Pro/X4F Pro | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Megafuge ST4/ST4F Plus | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Multifuge X1 Pro | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Megafuge ST1 Plus | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Maximum Capacity | 250 mL Nalgene Bottle | – | – | – | – | – | – | – |
| | 85 mL Nalgene Oak Ridge Tube | – | 6 | – | – | – | – | – |
| | 50 mL Nalgene Oak Ridge Tube | – | 6 | – | – | – | – | – |
| | 50 mL Conical Tube | 8 | 6 | – | – | – | – | – |
| | 30 mL Nalgene Oak Ridge Tube | – | 6 | – | – | – | – | – |
| | 16 mL Nalgene Oak Ridge Tube | – | 6 | – | – | – | – | – |
| | 15 mL Conical Tube | 8 | 6 | – | – | – | – | – |
| | 10 mL Nalgene Oak Ridge Tube | – | 12 | – | – | – | – | – |
| | 10 mL Blood Collection Tube (16 x 100 mm) | 8 | – | – | – | – | – | – |
| | 5/7 mL Blood Collection Tube (13 x 75-100 mm) | 8 | – | – | – | – | – | – |
| | 6.5 mL Round Tube | – | 12 | 18 | – | – | – | – |
| | 1.5/2 mL Microtube | – | 24 | 18 | 48 | 48 | 30 (Including spin columns) | 30 |

¹Maximum speed based on top performance models.
🏠Biocontainment certification by Public Health England, Porton Down, UK.
Labware not shown to scale.

Rotors and adapters for fixed angle rotors



Fiberlite F14-6x250 LE Fixed Angle Rotor, 23°, R_{max} 137 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|-------------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro 230V | 11000 | 18533 |
| Multifuge X4 Pro/X4F Pro 120V | 10000 | 15317 |
| Megafuge ST4/ST4F Plus | n/a | n/a |
| Multifuge X1 Pro | n/a | n/a |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|---|--|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | |
| 75003662 | Fiberlite F14-6 x 250LE Rotor for 250 mL Nalgene Bottles | 6 x 250 mL | 62 x 125 |
| 021-062153 | Replacement O-Ring Kit | | |
| 3141-0250 | 250 mL Nalgene Polypropylene Bottle (Set of 36) | | |
| 3140-0251 | 250 mL Nalgene Polycarbonate Bottle (Set of 36) | | |
| Adapters for F14-6 X 250LE Rotor (Sets of 2, unless stated otherwise) | | | |
| 010-1119 | 85 mL Nalgene Oak Ridge Tube | 6 x 85 mL | 38 x 109 |
| 010-0138 | 50 mL Nalgene Oak Ridge Tube | 6 x 50 mL | 29.5 x 121 |
| 75100136 | 50 mL Conical Tube | 6 x 50 mL | 30 x 121 |
| 010-1072 | 30 mL Nalgene Oak Ridge Tube / 38 mL Round Tube | 12 x 30 mL | 26 x 105 |
| 010-1074 | 16 mL Nalgene Oak Ridge Tube | 30 x 16 mL | 18 x 107 |
| 010-1410 | 15 mL Conical Tube | 30 x 15 mL | 17 x 121 |
| 00389 | 10 mL Nalgene Oak Ridge Tube / 12 mL Round Tube (each) | 42 x 10 mL | 17 x 110 |

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✦ Biocontainment certification by Public Health England, Porton Down, UK.



Rotors and adapters for fixed angle rotors



Fiberlite F15-6x100y Fixed Angle Rotor, 25°, R_{max} 98 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | 15000 | 24652 |
| Megafuge ST4/ST4F Plus | 13000 | 18516 |
| Multifuge X1 Pro | 15000 | 24652 |
| Multifuge ST1 Plus | 13000 | 18516 |



Fiberlite F10-6x100 LEX Fixed Angle Rotor, 45°, R_{max} 122 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | 10500 | 15038 |
| Megafuge ST4/ST4F Plus | 10500 | 15038 |
| Multifuge X1 Pro | 10500 | 15038 |
| Megafuge ST1 Plus | 10500 | 15038 |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|---|--|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | |
| 75003698 | Fiberlite F15-6 x 100y Rotor for 100 mL/85 mL Nalgene ♦ | 6 x 100 mL | 38 x 106 |
| 021-069031 | Replacement O-Ring Kit | | |
| 75003340 | Fiberlite F10-6 x 1000 LEX Rotor for 100 mL/85mL Nalgene ♦ | 6 x 100 mL | 38 x 106 |
| 021-06935 | Replacement O-Ring Kit | | |
| 3118-0085 | 85 mL Nalgene Oak Ridge Tube (Set of 50) | 6 x 85 mL | 38 x 106 |
| Adapters for F15-6 x 100y Rotor (Each, unless stated otherwise) | | | |
| 75003102 | 50 mL Nalgene Oak Ridge Tube | 6 x 50 mL | 29.5 x 117 |
| 75003103 | 50 mL Conical Tube | 6 x 50 mL | 30 x 121 |
| 75003094 | 30 mL Nalgene™ Oak Ridge Tube / 38 mL Round Tube | 6 x 30 mL | 26 x 110 |
| 76002906 | 16 mL Nalgene Oak Ridge Tube | 6 x 16 mL | 18 x 123 |
| 75003095 | 15 mL Conical Tube | 6 x 15 mL | 17 x 123 |
| 75003093 | 10 mL Nalgene Oak Ridge Tube / 12 mL Round Tube | 12 x 12 mL | 17 x 95 |
| 75003092 | 6.5 mL Round Bottom Tube | 12 x 6.5 mL | 13 x 114 |
| 75003091 | 1.5/2 mL Microtube | 24 x 2 mL | 11 x 40 |

♦ Biocontainment certification by Public Health England, Porton Down, UK.



Rotors and adapters for fixed angle rotors



Fiberlite F13-14x50cy Fixed Angle Rotor, 34°, R_{max} 153 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|-------------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro 230V | 10000 | 17105 |
| Multifuge X4 Pro/X4F Pro 120V | 9250 | 14636 |
| Megafuge ST4/ST4F Plus | n/a | n/a |
| Multifuge X1 Pro | 8,500 | 12,359 |
| Megafuge ST1 Plus | n/a | n/a |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|--|---|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | |
| 75003661 | Fiberlite F13-14x50cy for 50 mL Conical Tubes ♦ | 14 x 50 mL | 30 x 121 |
| 021-149027 | Replacement O-Ring Kit | | |
| Adapters for F13-14x50cy Rotor (Set of 2, unless otherwise stated) | | | |
| 010-0377 | 50 mL Nalgene Oak Ridge Tube | 14 x 50 mL | 29.5 x 108 |
| 010-1147 | 30 mL Nalgene Oak Ridge Tube | 14 x 30 mL | 26 x 102 |
| 010-0376 | 16 mL Nalgene Oak Ridge Tube | 14 x 16 mL | 18 x 123 |
| 75100378 | 15 mL Conical Tube (for Corning tubes) | 14 x 15 mL | 17 x 121 |
| 010-1340 | 15 mL Nunc Conical Tube and Filtration Devices | 14 x 15 mL | 17 x 121 |
| 010-1311 | 10 mL Nalgene Oak Ridge Tube / 12 mL Round Tube | 28 x 12 mL | 17 x 95 |



Fiberlite F15-8x50cy Fixed Angle Rotor, 25°, R_{max} 104 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | 14500 | 24446 |
| Megafuge ST4/ST4F Plus | n/a | n/a |
| Multifuge X1 Pro 230V | 14500 | 24446 |
| Multifuge X1 Pro 120V | 14000 | 22789 |
| Megafuge ST1 Plus | n/a | n/a |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|---|--|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | |
| 75003663 | Fiberlite F15-8 x 50cy for 50 mL Conical Tubes ♦ | 8 x 50 mL | 30 x 121 |
| 021-149027 | Replacement O-Ring Kit | | |
| Adapters for F15-8x50cy Rotor (Set of 2, unless otherwise stated) | | | |
| 010-0377 | 50 mL Nalgene Oak Ridge Tube | 8 x 50 mL | 29 x 108 |
| 010-1147 | 30 mL Nalgene Oak Ridge Tube | 8 x 30 mL | 26 x 102 |
| 010-0376 | 16 mL Nalgene Oak Ridge Tube | 8 x 16 mL | 18 x 123 |
| 75100378 | 15 mL Conical Tube (for Corning tubes) | 8 x 15 mL | 17 x 121 |
| 010-1340 | 15 mL Nunc Conical Tube and Filtration Devices | 8 x 15 mL | 17 x 121 |
| 010-1311 | 10 mL Nalgene Oak Ridge Tube / 12 mL Round Tube | 8 x 12 mL | 17 x 95 |

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♦ Biocontainment certification by Public Health England, Porton Down, UK.

Rotors and adapters for fixed angle rotors



CLINIConic Fixed Angle Rotor, 37°, R_{max} 140 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | n/a | n/a |
| Megafuge ST4/ST4F Plus | n/a | n/a |
| Multifuge X1 Pro | 5650 | 4997 |
| Megafuge ST1 Plus | 5650 | 4997 |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|--------------------------------------|--|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | |
| 75003623 | CLINIConic Fixed Angle Rotor for 15 mL Round and Conical Tubes | 30 x 15 mL | 17 x 121 |
| Adapters for CLINIConic Rotor (Each) | | | |
| 75003702 | 10 mL Round Bottom Tube | 30 x 10 mL | 17 x 131 |
| 11172596 | 7 mL Blood Collection Tubes (13 x 100 mm) | 30 x 7 mL | 17 x 131 |
| 11172595 | 5 mL Blood Collection Tubes (13 x 75 mm) | 30 x 5 mL | 13 x 95 |



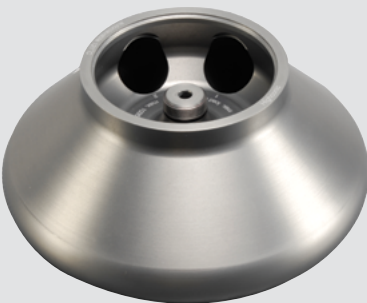
8 x 50 Individually Sealed Fixed Angle Rotor, 45°, R_{max} 143 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | n/a | n/a |
| Megafuge ST4/ST4F Plus | n/a | n/a |
| Multifuge X1 Pro 230V | 6700 | 7177 |
| Multifuge X1 Pro 120V | 6500 | 6755 |
| Megafuge ST1 Plus 230V | 6700 | 7177 |
| Megafuge ST1 Plus 120V | 6500 | 6755 |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|---|--|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | |
| 75003694 | 8 x 50 Individually Sealed for 50 mL Conical Tubes ♦ | 8 x 50 mL | 30 x 121 |
| 75003689 | Replacement O-Ring Kit | | |
| Adapters for 8 x 50 Sealed Rotor (Set of 6) | | | |
| 75005755 | 15 mL Conical Tube | 8 x 50 mL | 17 x 121 |
| 75005747 | 10 mL Blood Collection Tube (16 x 100 mm) | 8 x 10 mL | 16 x 110 |
| 75005805 | 7 mL Blood Collection Tube (13 x 100 mm) (set of 2) | 8 x 7 mL | 13 x 110 |
| 75005749 | 3.5 mL Blood Collection Tube | 16 x 3.5 mL | 11 x 75 |

♦ Biocontainment certification by Public Health England, Porton Down, UK.

Rotors and adapters for fixed angle rotors



HIGHConic II Aluminium Fixed Angle Rotor, 45°, R_{max} 126 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | 10350 | 15090 |
| Megafuge ST4/ST4F Plus | 10350 | 15090 |
| Multifuge X1 Pro | 10350 | 15090 |
| Megafuge ST1 Plus | 10350 | 15090 |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|--|---|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | |
| 75003620 | HIGHConic Fixed Angle Rotor for 100 mL/85 mL Nalgene Oak Ridge Tube ♦ | 6 x 100 mL | 38 x 123 |
| 75003058 | Replacement O-Ring Kit | | |
| 3118-0085 | 85 mL Nalgene Oak Ridge Tube (Set of 50) | 6 x 85 mL | 38 x 106 |
| Adapters for HIGHConic Rotor (Each, unless stated) | | | |
| 75003102 | 50 mL Nalgene Oak Ridge Tube | 6 x 50 mL | 30 x 117 |
| 75003103 | 50 mL Conical Tube | 6 x 50 mL | 30 x 121 |
| 75003094 | 30 mL Nalgene Oak Ridge Tube / 38 mL Round Tube | 6 x 30 mL | 26 x 110 |
| 76002906 | 16 mL Nalgene Oak Ridge Tube | 6 x 16 mL | 18 x 123 |
| 75003095 | 15 mL Conical Tube | 6 x 15 mL | 17 x 123 |
| 75003093 | 10 mL Nalgene Oak Ridge Tube / 12 mL Round Tube | 12 x 12 mL | 17 x 95 |
| 75003092 | 6.5 mL Round Bottom Tube | 12 x 6.5 mL | 13 x 114 |
| 75003091 | 1.5/2 mL Microtube | 24 x 2 mL | 11 x 40 |



MicroClick 18x5 Aluminum Fixed Angle Rotor, 45°, R_{max} 102 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | 15000 | 24652 |
| Megafuge ST4/ST4F Plus | 15000 | 24652 |
| Multifuge X1 Pro | 15000 | 24652 |
| Megafuge ST1 Plus | 15000 | 24652 |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|-------------------------------|--|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | |
| 75005765 | 18 x 5 MicroClick Rotor for 5mL Conical and Flip Top Tubes ♦ | 18 x 5 mL | 17 x 6 |
| 20059119 | ClickSeal | n/a | n/a |
| 75005726 | O-Ring Set | n/a | n/a |
| 75003500 | O-Ring Grease | n/a | n/a |
| Adapters for MicroClick Rotor | | | |
| 75005756 | 1.5/2 mL Microtube | 18 x 5 | 11 x 45 |

♦ Biocontainment certification by Public Health England, Porton Down, UK.



Rotors and adapters for fixed angle rotors



Fiberlite F21-48x2 Fixed Angle Rotor, 45°, R_{max} 97 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | 15200 | 25055 |
| Megafuge ST4/ST4F Plus | 15200 | 25055 |
| Multifuge X1 Pro | 15200 | 25055 |
| Megafuge ST1 Plus | 15200 | 25055 |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|-----------------------|--|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | |
| 75003664 | Fiberlite F21-48 x 2 for 1.5/2 mL Microtubes ♦ | 48 x 2 mL | 11 x 50 |
| 021-489021 | Replacement O-Ring Kit | | |



Microliter 48 x 2 Aluminium Fixed Angle Rotor, 45°, R_{max} 98 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | 15200 | 25314 |
| Megafuge ST4/ST4F Plus | 15200 | 25314 |
| Multifuge X1 Pro | 15200 | 25314 |
| Megafuge ST1 Plus | 15200 | 25314 |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|-----------------------|--|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | |
| 75003602 | 48 x 2 Aluminium for 1.5/2 mL Microtubes ♦ | 48 x 2 mL | 11 x 50 |
| 75003349 | Replacement O-Ring Kit | | |

♦ Biocontainment certification by Public Health England, Porton Down, UK.

Rotors and adapters for fixed angle rotors



MicroClick 30 x 2 Aluminum Fixed Angle Rotor, 45°, R_{max} 99 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | 14000 | 21693 |
| Megafuge ST4/ST4F Plus | 14000 | 21693 |
| Multifuge X1 Pro | 14000 | 21693 |
| Megafuge ST1 Plus | 14000 | 21693 |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|-----------------------|--|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | |
| 75005719 | 30 x 2 MicroClick for 1.5/2 mL Microtubes and Spin Columns ✦ | 30 x 2 mL | 11 x 50 |
| 75005726 | Replacement O-Ring Kit | | |



Microliter 30 x 2 Aluminum Fixed Angle Rotor, 45°, R_{max} 100 mm

| Centrifuge | Maximum Speed (rpm) | Maximum RCF (x g) |
|--------------------------|---------------------|-------------------|
| Multifuge X4 Pro/X4F Pro | 15200 | 25830 |
| Megafuge ST4/ST4F Plus | 15200 | 25830 |
| Multifuge X1 Pro | 15200 | 25830 |
| Megafuge ST1 Plus | 15200 | 25830 |

| Cat. No. | Description | Rotor Capacity (places x volume, mL) | Maximum Tube Dimensions (Ø x L, mm) |
|--|---|--------------------------------------|-------------------------------------|
| Rotor and Accessories | | | |
| 75003652 | 30 x 2 Aluminum for 1.5/2 mL Microtubes ✦ | 30 x 2 mL | 11 x 50 |
| 75003349 | Replacement O-Ring Kit | | |
| Adapters for all Microliter Rotors (Set of 30) | | | |
| 75005753 | 0.5 mL Microtube | | 8 x 44 |
| 75005754 | 0.25 mL Microtube | | 6 x 46 |
| 75005752 | 0.2 mL PCR Tube | | 5 x 20 |

✦ Biocontainment certification by Public Health England, Porton Down, UK.



01

02

03

04

05

Meet our family of centrifuges

Click on the sizing tool below to explore the best options for your lab space and applications

General Purpose

1.6 L Ventilated >

General Purpose

1.6 L Refrigerated >

General Purpose

4 L Floor Model

Ventilated &

Refrigerated >

General Purpose

4 L Ventilated >

General Purpose

4 L Refrigerated >

View All >

56.6 cm/22.3" x 69 cm/27.2" x 83.5 cm/83.5"

56.6 cm/22.3" x 69 cm/27.2" x 36.1 cm/14.2"

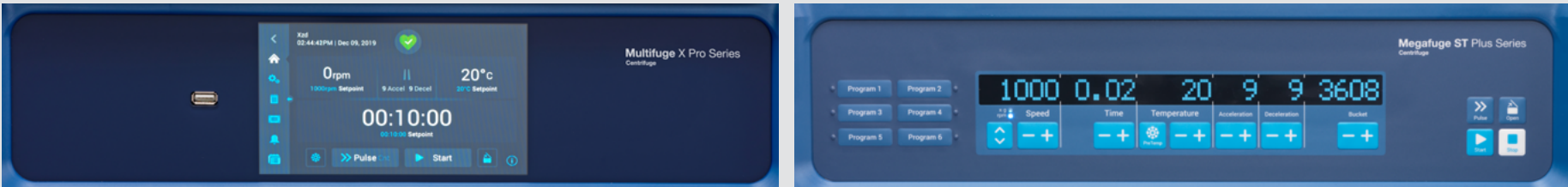
44.5 cm/17.5" x 66 cm/26" x 36.2 cm/14.3"

62.5 cm/24.6" x 66 cm/26" x 36.2 cm/14.3"

74.6 cm/29.4" x 69 cm/27.2" x 36.1 cm/14.2"

width x depth x height

General Purpose Pro and Plus Centrifuge Series specifications



General Purpose Pro Centrifuge

General Purpose Plus Centrifuge

| | | |
|--------------------|---|---|
| Screen | Full color Touchscreen | LCD Display |
| Amount of programs | 100 Programs with the ability to do step programming | 6 Programs |
| Speed | Increments in 1 RPM | Increments in 100 RPM |
| G-Force | Increments in 1 x g | Increments in 100 x g |
| Time Setting | In HH x MM x SS format, continuous and ACE modes | In HH x MM format as well as continuous mode |
| Time Control | At start of the centrifugation run and at speed | At start of the centrifugation run |
| Pulse button | Pulse duration is customizable | Pulse duration is fixed |
| Number of rotors | 16 optional rotors for 1.6 L versions and 17 optional rotors for 4 L versions | 12 optional rotors for 1.6 L versions and 11 optional rotors for 4 L versions |
| Buckets selection | Selection based on bucket shape and complete product number | Selection based on 4 last digits of the product number |
| Error message | Error Code with User directions | Error Code |
| Data logging | Data is stored and can be accessed through the Health Status Button | External logging in lab journals |
| Data extraction | USB Port | RS232 port |
| Centrifuge access | 2 modes of centrifuge access: open and secure | Open mode of access |

4 L Benchtop Centrifuges: specifications and ordering information

| Specifications | Multifuge X4 Pro | | Multifuge X4R Pro | | Megafuge ST4 Plus | | Megafuge ST4R Plus | |
|-------------------------------|--|------------------|---------------------------------|----------------------|---|------------------|------------------------|----------------------|
| | IVD | General Use Only | IVD | General Use Only | IVD | General Use Only | IVD | General Use Only |
| Swinging Buckets Rotors | | | | | | | | |
| Maximum Capacity | 3.2 Max talpa 4 x 1000 mL with TX-1000 rotor | | | | | | | |
| Maximum Speed | 6000 rpm with BIOShield 1000A rotor | | | | 5300 rpm with BIOShield 1000A rotor | | | |
| Maximum RCF | 7164 x g with BIOShield 1000A rotor | | | | 5590 x g with BIOShield 1000A rotor | | | |
| Fixed Angle Rotors | | | | | | | | |
| Maximum Capacity | 6 x 250 mL with F14-6x250LE rotor 3.2 Max talpa | | | | 6 x 100 mL with F15-6x100 or F10-6x100 rotor | | | |
| Maximum Speed | 3.3.1 Max sukimosi greitis 15200 rpm with F21-48x2, Microliter 48x2 or Microliter 30x2 | | | | | | | |
| Maximum RCF | 3.3.2 Max j ga 25830 x g with Microliter 30x2 | | | | | | | |
| Centrifuge Details | | | | | | | | |
| Control System | Microprocessor 3.4.1 Valdymas | | | | | | | |
| Drive System | Direct, Brushless induction low profile motor | | | | | | | |
| Accel/Decel Profiles | 3.3.3 Greit jimo / l t jimo b dai Choices of 9 Accel / 10 Decel Rates | | | | | | | |
| Material | front, top, sides: PC-ABS plastic painted with 2K PUR-based lacquer; metal housing: cold rolled steel with powder paint; centrifuge bowl: stainless steel; centrifuge feet: rubber | | | | | | | |
| Safety Features | 3.4.1 Disbalanco steb jimas SMARTSpin Imbalance detection, finger-pinch prevention, crash-proof construction | | | | | | | |
| Warranty | 5 Year Limited (2 years standard warranty + 3 additional years on motor and refrigeration) | | | | | | | |
| Includes | printed English user manual, USB stick with 28 languages of user manual, corrosion resistance oil (70009824), power cord, declaration of conformity | | | | | | | |
| Temperature Range | N/A | 3.10.1 | -10°C to +40°C 3.1 su atšaldymu | | N/A | -10°C to +40°C | | |
| Number of Compatible Rotors | 17 | | 17 | | 12 | | 12 | |
| Display Details | | | | | | | | |
| Display | Full color touch screen interface | | | | Push button and high contrast LCD interface | | | |
| Run Time | max 99h, 59min, 59sec; also with continuous and customizable pulse 3.9 Laikmatis | | | | max 9h, 59min; also with continuous and pulse modes | | | |
| Timer | count up or down | | | | count down only | | | |
| Program Storage | 3.5 Atmintis up to 100 run programs | | | | up to 6 run programs | | | |
| Programmability | via easy access touch screen menu | | | | via 6 direct access buttons | | | |
| Dimensions, Weight | | | | | | | | |
| Width (inches) Exterior | 22.3 | | 29.4 | | 22.3 | | 29.4 | |
| Width (cm) Exterior | 56.6 | | 74.6 | | 56.6 | | 74.6 | |
| Depth (inches) Exterior | 27.2 | | 27.2 | | 27.2 | | 27.2 | |
| Depth (cm) Exterior | 69.0 | | 69.0 | | 69.0 | | 69.0 | |
| Height (inches) Exterior | 14.3 | | 14.2 | | 14.3 | | 14.2 | |
| Height (cm) Exterior | 36.2 | | 36.1 | | 36.2 | | 36.1 | |
| Height (inches) Open Cover | 33.9 | | 33.9 | | 33.9 | | 33.9 | |
| Height (cm) Open Cover | 86.1 | | 86.0 | | 86.1 | | 86.0 | |
| Footprint Dimensions (inches) | 22.3 x 23.1 | | 29.4 x 23.0 | | 22.3 x 23.1 | | 29.4 x 23.0 | |
| Footprint Dimensions (cm) | 56.6 x 58.8 | | 74.6 x 58.4 | | 56.6 x 58.8 | | 74.6 x 58.4 | |
| Net Weight (lbs) | 196 | | 265 | | 196 | | 265 | |
| Net Weight (kgs) | 89 | | 120 | | 89 | | 120 | |
| Certifications and Standards | | | | | | | | |
| IVD/MD | X | | X | | X | | X | |
| Certifications | EN/UL/IEC 61010-1, EN/UL/IEC 61010-2-020 and 61010-2-101, EN/UL/IEC 61326-1, EN/UL/IEC 61326-2-6, FCC part 15 | | | | | | | |
| Standards | ISO 14971, ISO 13485, ISO 9001 | | | | | | | |
| Ordering Information | Multifuge X4 Pro | | Multifuge X4R Pro | | Megafuge ST4 Plus | | Megafuge ST4R Plus | |
| | IVD | General Use Only | IVD | General Use Only | IVD | General Use Only | IVD | General Use Only |
| 230V§ | 75009500* | 75009900 | 75009515* / 75009615*§ | 75009915 / 75009815§ | 75009503* | 75009903 | 75009518* / 75009618*§ | 75009918 / 75009818§ |
| 120V | 75009501* | N/A | 75009516* | N/A | 75009504* | N/A | 75009519* | N/A |

*Indicates a centrifuge, rotor and/or adapter product approved for use in clinical applications; see user manual for details.

§ 220V / 60 Hz [Korea, etc.]

4 L Floor Model Centrifuges: specifications and ordering information

| Specifications | Multifuge X4F Pro | | Multifuge X4RF Pro | | Megafuge ST4F Plus | | Megafuge ST4RF Plus | |
|-------------------------------|--|------------------|--------------------|------------------|---|------------------|---------------------|------------------|
| | IVD | General Use Only | IVD | General Use Only | IVD | General Use Only | IVD | General Use Only |
| Swinging Buckets Rotors | | | | | | | | |
| Maximum Capacity | 4 x 1000 mL with TX-1000 rotor | | | | | | | |
| Maximum Speed | 6000 rpm with BIOShield 1000A rotor | | | | 5300 rpm with BIOShield 1000A rotor | | | |
| Maximum RCF | 7164 x g with BIOShield 1000A rotor | | | | 5590 x g with BIOShield 1000A rotor | | | |
| Fixed Angle Rotors | | | | | | | | |
| Maximum Capacity | 6 x 250 mL with F14-6x250LE rotor | | | | 6 x 100 mL with F15-6x100 or F10-6x100 rotor | | | |
| Maximum Speed | 15200 rpm with F21-48x2, Microliter 48x2 or Microliter 30x2 | | | | | | | |
| Maximum RCF | 25830 x g with Microliter 30x2 | | | | | | | |
| Centrifuge Details | | | | | | | | |
| Control System | Microprocessor | | | | | | | |
| Drive System | Direct, Brushless induction low profile motor | | | | | | | |
| Accel/Decel Profiles | Choices of 9 Accel / 10 Decel Rates | | | | | | | |
| Material | front, top, sides: PC-ABS plastic painted with 2K PUR-based lacquer; metal housing: cold rolled steel with powder paint; centrifuge bowl: stainless steel; centrifuge feet: rubber | | | | | | | |
| Safety Features | SMARTSpin Imbalance detection, finger-pinch prevention, crash-proof construction | | | | | | | |
| Warranty | 5 Year Limited (2 years standard warranty + 3 additional years on motor and refrigeration) | | | | | | | |
| Includes | printed English user manual, USB stick with 28 languages of user manual, corrosion resistance oil (70009824), power cord, declaration of conformity | | | | | | | |
| Temperature Range | N/A | | -10°C to +40°C | | N/A | | -10°C to +40°C | |
| Number of Compatible Rotors | 17 | | 17 | | 12 | | 12 | |
| Display Details | | | | | | | | |
| Display | Full color touch screen interface | | | | Push button and high contrast LCD interface | | | |
| Run Time | max 99h, 59min, 59sec; also with continuous and customizable pulse | | | | max 9h, 59min; also with continuous and pulse modes | | | |
| Timer | count up or down | | | | count down only | | | |
| Program Storage | up to 100 run programs | | | | up to 6 run programs | | | |
| Programmability | via easy access touch screen menu | | | | via 6 direct access buttons | | | |
| Dimensions, Weight | | | | | | | | |
| Width (inches) Exterior | 22.3 | | 22.3 | | 22.3 | | 22.3 | |
| Width (cm) Exterior | 56.6 | | 56.6 | | 56.6 | | 56.6 | |
| Depth (inches) Exterior | 27.2 | | 27.2 | | 27.2 | | 27.2 | |
| Depth (cm) Exterior | 69.0 | | 69.0 | | 69.0 | | 69.0 | |
| Height (inches) Exterior | 32.8 | | 32.8 | | 32.8 | | 32.8 | |
| Height (cm) Exterior | 83.5 | | 83.5 | | 83.5 | | 83.5 | |
| Height (inches) Open Cover | 54.1 | | 54.1 | | 54.1 | | 54.1 | |
| Height (cm) Open Cover | 135 | | 135 | | 135 | | 135 | |
| Footprint Dimensions (inches) | 22.3 x 23.1 | | 22.3 x 23.0 | | 22.3 x 23.1 | | 22.3 x 23.0 | |
| Footprint Dimensions (cm) | 56.6 x 58.8 | | 56.6 x 58.4 | | 56.6 x 58.8 | | 56.6 x 58.4 | |
| Net Weight (lbs) | 335 | | 319 | | 335 | | 319 | |
| Net Weight (kgs) | 152 | | 145 | | 152 | | 145 | |
| Certifications and Standards | | | | | | | | |
| IVD/MD | X | | X | | X | | X | |
| Certifications | EN/UL/IEC 61010-1, EN/UL/IEC 61010-2-020 and 61010-2-101, EN/UL/IEC 61326-1, EN/UL/IEC 61326-2-6, FCC part 15 | | | | | | | |
| Standards | ISO 14971, ISO 13485, ISO 9001 | | | | | | | |
| Ordering Information | Multifuge X4F Pro | | Multifuge X4RF Pro | | Megafuge ST4F Plus | | Megafuge ST4RF Plus | |
| | IVD | General Use Only | IVD | General Use Only | IVD | General Use Only | IVD | General Use Only |
| 230V [§] | 75009530* | 75009930 | 75009536* | 75009936 | 75009961* | 75009947 | 75009962* | 75009948 |
| 120V | 75009531* | N/A | 75009537* | N/A | 75009960* | N/A | 75009946* | N/A |

*Indicates a centrifuge, rotor and/or adapter product approved for use in clinical applications; see user manual for details.
[§] 220V / 60 Hz [Korea, etc.]

1.6 L Benchtop Centrifuges: specifications and ordering information

| Specifications | Multifuge X1 Pro | | Multifuge X1R Pro | | Megafuge ST1 Plus | | Megafuge ST1R Plus | |
|-------------------------------|--|------------------|-------------------|------------------|---|------------------|--------------------|------------------|
| | IVD | General Use Only | IVD | General Use Only | IVD | General Use Only | IVD | General Use Only |
| Swinging Buckets Rotors | | | | | | | | |
| Maximum Capacity | 4 x 400 mL with TX-400 rotor | | | | | | | |
| Maximum Speed | 6300 rpm with BIOShield 720 rotor | | | | 5300 rpm with BIOShield 720 rotor | | | |
| Maximum RCF | 7188 x g with BIOShield 720 rotor | | | | 5088 x g with BIOShield 720 rotor | | | |
| Fixed Angle Rotors | | | | | | | | |
| Maximum Capacity | 6x100 mL with F15 6x100y | | | | 6x100 mL with F15 6x100y | | | |
| Maximum Speed | 15200 rpm with F21-48x2, Microliter 48x2 or Microliter 30x2 | | | | | | | |
| Maximum RCF | 25830 x g with Microliter 30x2 | | | | | | | |
| Centrifuge Details | | | | | | | | |
| Control System | Microprocessor | | | | | | | |
| Drive System | Direct, Brushless induction low profile motor | | | | | | | |
| Accel/Decel Profiles | Choices of 9 Accel / 10 Decel Rates | | | | | | | |
| Material | front, top, sides: PC-ABS plastic painted with 2K PUR-based lacquer; metal housing: cold rolled steel with powder paint; centrifuge bowl: stainless steel; centrifuge feet: rubber | | | | | | | |
| Safety Features | SMARTSpin Imbalance detection, finger-pinch prevention, crash-proof construction | | | | | | | |
| Warranty | 5 Year Limited (2 years standard warranty + 3 additional years on motor and refrigeration) | | | | | | | |
| Includes | printed English user manual, USB stick with 28 languages of user manual, corrosion resistance oil (70009824), power cord, declaration of conformity | | | | | | | |
| Temperature Range | N/A | | -10°C to +40°C | | N/A | | -10°C to +40°C | |
| Number of Compatible Rotors | 16 | | 16 | | 14 | | 14 | |
| Display Details | | | | | | | | |
| Display | Full color touch screen interface | | | | Push button and high contrast LCD interface | | | |
| Run Time | max 99h, 59min, 59sec; also with continuous and customizable pulse | | | | max 9h, 59min; also with continuous and pulse modes | | | |
| Timer | count up or down | | | | count down only | | | |
| Program Storage | up to 100 run programs | | | | up to 6 run programs | | | |
| Programmability | via easy access touch screen menu | | | | via 6 direct access buttons | | | |
| Dimensions, Weight | | | | | | | | |
| Width (inches) Exterior | 17.5 | | 24.6 | | 17.5 | | 24.6 | |
| Width (cm) Exterior | 44.5 | | 62.5 | | 44.5 | | 62.5 | |
| Depth (inches) Exterior | 26 | | 26 | | 26 | | 26 | |
| Depth (cm) Exterior | 66 | | 66 | | 66 | | 66 | |
| Height (inches) Exterior | 14.3 | | 14.2 | | 14.3 | | 14.2 | |
| Height (cm) Exterior | 36.2 | | 36.1 | | 36.2 | | 36.1 | |
| Height (inches) Open Cover | 33.6 | | 33.6 | | 33.6 | | 33.6 | |
| Height (cm) Open Cover | 85.5 | | 85.5 | | 85.5 | | 85.5 | |
| Footprint Dimensions (inches) | 17.5 x 23.1 | | 24.6 x 23.0 | | 17.5 x 23.1 | | 24.6 x 23.0 | |
| Footprint Dimensions (cm) | 44.5 x 58.8 | | 62.5 x 58.4 | | 44.5 x 58.8 | | 62.5 x 58.4 | |
| Net Weight (lbs) | 134 | | 207 | | 134 | | 207 | |
| Net Weight (kgs) | 61 | | 94 | | 61 | | 94 | |
| Certifications and Standards | | | | | | | | |
| IVD/MD | X | | X | | X | | X | |
| Certifications | EN/UL/IEC 61010-1, EN/UL/IEC 61010-2-020 and 61010-2-101, EN/UL/IEC 61326-1, EN/UL/IEC 61326-2-6, FCC part 15 | | | | | | | |
| Standards | ISO 14971, ISO 13485, ISO 9001 | | | | | | | |
| Ordering Information | Multifuge X1 Pro | | Multifuge X1R Pro | | Megafuge ST1 Plus | | Megafuge ST1R Plus | |
| | IVD | General Use Only | IVD | General Use Only | IVD | General Use Only | IVD | General Use Only |
| 230V§ | 75009210* | 75009710 | 75009250* | 75009750 | 75009230* | 75009730 | 75009270* | 75009770 |
| 120V | 75009210* | N/A | 75009251* | N/A | 75009230* | N/A | 75009271* | N/A |

*Indicates a centrifuge, rotor and/or adapter product approved for use in clinical applications; see user manual for details.

[§] 220V / 60 Hz [Korea, etc.]



Find out more at
thermofisher.com/gp-pro-centrifuge

This product is intended for General Laboratory Use. It is the customer's responsibility to ensure that the performance of the product is suitable for customers' specific use or application.

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Thermo Scientific Multifuge X Pro / Megafuge ST Plus Series Centrifuges

Instructions for Use

50158487-g • 11 / 2022

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Preface

Before starting to use the centrifuge, read through these instructions for use carefully and follow the instructions. The information contained in these instructions for use is the property of Thermo Fisher Scientific; it is prohibited to copy or pass on this information without explicit approval in writing by its owner.

Failure to follow the instructions and safety information in these instructions for use will result in the expiration of the seller's warranty.

About this Manual

This manual is subdivided into the following chapters:

- **Preface** (this chapter): Contains general introductory information, explains how to identify your centrifuge, spells out the intended use, explains the safety labels, and contains precautions.
- **Transport and Setup:** Contains the list of items supplied, explains how to transport the centrifuge to its intended location, how to connect power and Ethernet cables and how to accomplish the basic set-up.
- **Operation:** Contains instructions for centrifugation, including basic operations like loading and installing the rotor, entering centrifugation parameters, and running the centrifuge.
- **Graphical User Interface:** Explains the touchscreen and its menus.
- **LCD Control Panel:** Explains the LCD display, its front-panel controls and its functions.
- **Maintenance and Care:** Explains how to perform basic care activities like cleaning, disinfection, decontamination of the centrifuge and its rotors, and explains which parts are suitable for autoclaving. Also lists regular maintenance tasks like visual inspection, ventilation grid cleaning, and more specific maintenance tasks for selected rotor types, plus parts to be replaced by Thermo Fisher Scientific authorized service during preventive maintenance. And it contains general advice for storage and shipping.
- **Troubleshooting:** Explains how to use the emergency door release in order to open the centrifuge lid when the device is out of power, how to remove icing from the centrifugation chamber, how to troubleshoot error messages that appear on the display, and how to gather device information before you call Thermo Fisher Scientific service.
- **Technical Specifications:** Lists the technical data for all centrifuge models described in this manual.
- **Rotors:** Contains rotor tables for all centrifuge models described in this manual as well as specifications and accessory information for all compatible rotors.
- **Chemical Compatibility Chart:** Contains a reference chart that indicates how centrifuge and rotor materials respond to attack through frequently-used chemical agents.
- **Index:** Lists keywords in alphabetical order, with pointers to pages where they occur.

Where Do I Find Information about my Centrifuge?

This manual covers multiple Thermo Scientific Multifuge X Pro / Megafuge ST Plus Series centrifuge models.

You can identify your centrifuge model by gathering two items of information:

- the product series from the front panel—for example, Thermo Scientific Multifuge X Pro Series
- the product number and product name from the nameplate—for example, “75009900” and “Thermo Scientific Multifuge X4 Pro” as shown in “List of Thermo Scientific Centrifuges” on page x.

Intended Use

Intended Use for Laboratory Use Centrifuges

This centrifuge is designed to separate sample mixtures of different densities like chemicals, environmental samples and other non-human body samples.

Intended Use for IVD Centrifuges

This centrifuge can be used as IVD (In vitro diagnostic) laboratory equipment if used together with IVD tubes and IVD diagnostic analysis systems.

The centrifuge separates human blood. Blood is used in numerous diagnostic tests such as hematological screening (e.g. measurement of free hemoglobin), immunological screening (e.g. measurement of thrombocytes levels), cardio-vascular system assessment (e.g. analysis of potassium level).

Intended User

This centrifuge must be operated by trained personnel only.

Trained personnel can be a clinical laboratory technologist, a medical laboratory technician, or a person with an equivalent education.

| Laboratory Use Centrifuges | | In Vitro Diagnostic Centrifuges | |
|----------------------------|---|---------------------------------|---|
| Article No. | Benchtop Centrifuge | Article No. | Benchtop Centrifuge |
| 75009710 | Multifuge X1 Pro 100–240 V \pm 10%, 50 / 60 Hz | 75009210 | Multifuge X1 Pro-MD 100–240 V \pm 10%, 50 / 60 Hz |
| 75009750 | Multifuge X1R Pro 220–230 V \pm 10%, 50 / 60 Hz | 75009250 | Multifuge X1R Pro-MD 220–230 V \pm 10%, 50 / 60 Hz |
| | | 75009251 | Multifuge X1R Pro-MD 120 V \pm 10%, 60 Hz |
| 75009900 | Multifuge X4 Pro 208–240 V \pm 10%, 50 / 60 Hz | 75009500 | Multifuge X4 Pro-MD 208–240 V \pm 10%, 50 / 60 Hz |
| | | 75009501 | Multifuge X4 Pro-MD 120 V \pm 10%, 60 Hz |
| 75009915 | Multifuge X4R Pro 220–240 V \pm 10%, 50 Hz / 230 V \pm 10%, 60 Hz | 75009515 | Multifuge X4R Pro-MD 220–240 V \pm 10%, 50 Hz / 230 V \pm 10%, 60 Hz |
| 75009815 | Multifuge X4R Pro 220 V \pm 10%, 60 Hz | 75009615 | Multifuge X4R Pro-MD 220 V \pm 10%, 60 Hz |
| | | 75009516 | Multifuge X4R Pro-MD 120 V \pm 10%, 60 Hz |
| 75009930 | Multifuge X4F Pro 208–240 V \pm 10%, 50 / 60 Hz | 75009530 | Multifuge X4F Pro-MD 208–240 V \pm 10%, 50 / 60 Hz |
| | | 75009531 | Multifuge X4F Pro-MD 120 V \pm 10%, 60 Hz |
| 75009936 | Multifuge X4RF Pro 220–240 V \pm 10%, 50 Hz / 230 V \pm 10%, 60 Hz | 75009536 | Multifuge X4RF Pro-MD 220–240 V \pm 10%, 50 Hz / 230 V \pm 10%, 60 Hz |
| | | 75009537 | Multifuge X4RF Pro-MD 120 V \pm 10%, 60 Hz |
| 75009730 | Megafuge ST1 Plus 100–240 V \pm 10%, 50 / 60 Hz | 75009230 | Megafuge ST1 Plus-MD 100–240 V \pm 10%, 50 / 60 Hz |
| 75009770 | Megafuge ST1R Plus 220–230 V \pm 10%, 50 / 60 Hz | 75009270 | Megafuge ST1R Plus-MD 220–230 V \pm 10%, 50 / 60 Hz |
| | | 75009271 | Megafuge ST1R Plus-MD 120 V \pm 10%, 60 Hz |
| 75009903 | Megafuge ST4 Plus 208–240 V \pm 10%, 50 / 60 Hz | 75009503 | Megafuge ST4 Plus-MD 208–240 V \pm 10%, 50 / 60 Hz |
| | | 75009504 | Megafuge ST4 Plus-MD 120 V \pm 10%, 60 Hz |
| 75009918 | Megafuge ST4R Plus 220–240 V \pm 10%, 50 Hz / 230 V \pm 10%, 60 Hz | 75009518 | Megafuge ST4R Plus-MD 220–240 V \pm 10%, 50 Hz / 230 V \pm 10%, 60 Hz |
| 75009818 | Megafuge ST4R Plus 220 V \pm 10%, 60 Hz | 75009618 | Megafuge ST4R Plus-MD 220 V \pm 10%, 60 Hz |
| | | 75009519 | Megafuge ST4R Plus-MD 120 V \pm 10%, 60 Hz |
| 75009947 | Megafuge ST4F Plus 208–240 V \pm 10%, 50 / 60 Hz | 75009961 | Megafuge ST4F Plus-MD 208–240 V \pm 10%, 50 / 60 Hz |
| | | 75009960 | Megafuge ST4F Plus-MD 120 V \pm 10%, 60 Hz |
| 75009936 | Megafuge ST4F Plus 220–240 V \pm 10%, 50 Hz / 230 V \pm 10%, 60 Hz | 75009962 | Megafuge ST4RF Plus-MD 220–240 V \pm 10%, 50 Hz / 230 V \pm 10%, 60 Hz |
| 75009948 | Megafuge ST4RF Plus 220–240 V, 50 Hz / 230 V 60 Hz | 75009946 | Megafuge ST4RF Plus-MD 120 V \pm 10%, 60 Hz |

Table i: List of Thermo Scientific Centrifuges

Signal Words and Symbols

| Signal Word and Colors | Degree of Hazard |
|------------------------|---|
| WARNING | Indicates a hazardous situation that, if not avoided, could result in death or serious injury. |
| CAUTION | Indicates a hazardous situation that, if not avoided, could result in minor or moderate injury. |
| NOTICE | Indicates information considered important, but not hazard-related. |

Table ii: Signal Words and Symbols

Symbols used on Unit and Accessories

Observe the information contained in the instructions for use to keep yourself and your environment safe.








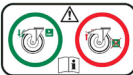
| | | | |
|---|--|---|---|
|  | General hazard |  | Refer to instruction manual |
|  | Biological hazard |  | Disconnect mains plug |
|  | Danger of cuts |  | Direction of rotation |
|  | Reminds you to ensure that the rotor is installed properly by lifting it slightly at the handle. |  | Floorstanding centrifuges: Cautions you to lock the castors before starting the centrifuge. |

Table iii: Symbols used on Unit and Accessories

Symbols used in the Instructions for Use

Observe the information contained in the instructions for use to keep yourself and your environment safe.










| | | | |
|---|--------------------------------------|---|---|
|  | General hazard |  | Electrical hazard |
|  | Biological hazard |  | Danger of cuts |
|  | Hazard caused by flammable materials |  | Indicates information considered important, but not hazard-related. |
|  | Risk of crushing |  | Wear protective gloves |
|  | Wear protective goggles | | |

Table iv: Symbols used in the Instructions for Use

Safety Instructions



WARNING

Not following these safety instructions can lead to hazardous situations that, if not avoided, could result in death or serious injury.

Observe the safety instructions.

The centrifuge is to be used for its intended use only. Improper use can cause damages, contamination, and injuries with fatal consequences.

The centrifuge must be operated by trained personnel only.

It is the obligation of the operator to make sure that the proper protective clothing is used. Mind the “Laboratory Biosafety Manual” of the World Health Organization (WHO) and the regulations in your country.

Keep a safety zone of minimum 30 cm around the centrifuge. Refer to “Figure 1–1: Safety Zone”. Persons and hazardous substances must be kept out of this safety zone while centrifuging.

Do not modify the centrifuge and its accessories in any unauthorized way.

Do not operate a centrifuge if its housing is open or incomplete.



WARNING

Risk of damage due to incorrect power supply.

Make sure that the centrifuge is plugged only into a power outlet that has been properly grounded.



WARNING

Risk from handling hazardous substances.

When working with corrosive samples (salt solutions, acids, bases), the accessories and the centrifuge have to be cleaned thoroughly.

Extreme care should be taken with highly corrosive substances that can cause damage and impair the mechanical stability of the rotor. These should only be centrifuged in fully sealed tubes.

The centrifuge is neither inert nor protected against explosion. Never use the centrifuge in an explosion-prone environment.

Do not centrifuge toxic or radioactive materials or any pathogenic micro-organisms without suitable safety precautions.

When centrifuging any hazardous materials mind the “Laboratory Biosafety Manual” of the World Health Organization (WHO) and any local regulations. When centrifuging microbiological samples from the Risk Group II (according to the “Laboratory Biosafety Manual” of the World Health Organization (WHO)), aerosol-tight biological seals have to be used. Visit the internet page of the World Health Organization (www.who.int) for the “Laboratory Biosafety Manual”. For materials in a higher risk group, extra safety measures must be taken.

If toxins or pathogenic substances have contaminated the centrifuge or its parts, appropriate disinfection measures have to be taken (“Disinfection” on page 5-4).

If a hazardous situation occurs, turn off the power supply to the centrifuge and leave the area immediately.

Make sure to use the proper accessories for your applications to avoid hazardous contamination.

In any case of severe mechanical failure, such as rotor or bottle crash, personnel should be aware that the centrifuge is not aerosol-tight. Leave the room immediately. Contact the customer service. Aerosols need time to settle before opening the centrifuge after a crash. Ventilated centrifuges bear a higher risk of being contaminated after a crash than refrigerated centrifuges.



WARNING

Risk of contamination.

Potential contaminations will not remain in the centrifuge while the device is operated.

Take appropriate protection measures to prevent spread of contaminations.

A centrifuge is no closed containment.

**WARNING****Damage to health from centrifuging explosive or flammable materials or substances.**

Do not centrifuge explosive or flammable materials or substances.

**WARNING****Serious injuries can occur if you touch a spinning rotor with your hands or tools.**

A rotor can still be spinning after a power failure occurs.

Do not open the centrifuge before the rotor has stopped spinning. Do not touch a spinning rotor. Open the centrifuge only if the rotor has stopped spinning.

Never use your hands or tools to stop a spinning rotor.

The emergency door release may be used in emergencies only to recover the samples from the centrifuge, for example, during a power failure ("Mechanical Emergency Door Release" on page 6-1).

**WARNING**

The magnets built into the rotors can have a negative effect on active implants, such as cardiac pacemakers.

The magnets are mounted on the bottom of the rotor.

Always keep a distance of 20 cm between the rotor and the active implant, as the product generates permanent magnetic fields. The magnetic field strength at a distance of 20 cm is less than 0.1 mT, so there should be no interference.

**CAUTION****Risk of injuries from defective gas spring**

Make sure that the centrifuge lid can be opened completely and that it will stay in its position.

Regularly check gas springs for their proper function.

Let an authorized service technician replace defective gas springs.

**CAUTION****Cutting injuries from broken display glass.**

Do not touch a damaged display.

**CAUTION****Safety can be impaired by wrong loading and worn accessories.**

Always make sure that the load is as equally distributed as possible.

Do not use rotors and accessories which show any signs of corrosion or cracks. Contact customer service for further information.

Do not operate the centrifuge with an unbalanced rotor. Use only rotors which have been loaded properly.

Never overload the rotor.

Make sure that rotors and accessories are installed properly before operating the centrifuge. Follow the instructions in section "How to Install and Remove a Rotor" on page 2-5.

**CAUTION****Physical harm caused by ignoring operative basics.**

Operate the centrifuge with a properly installed rotor.

Do not move the centrifuge while it is running.

Do not lean on the centrifuge.

Do not put anything on the centrifuge while it is running.

The centrifuge housing is not to be opened by the operator.

**CAUTION****Risk of accident while moving floorstanding centrifuge**

Assign at least two persons as handlers for moving a floorstanding centrifuge model. Instruct the handlers to push the centrifuge from both sides and stay out of the path of the moving centrifuge at all times.

**CAUTION****Due to air friction sample integrity may be affected.**

The temperature of the rotor may rise significantly while the centrifuge is spinning.

Ventilated units lead to a heat up of the rotor above the ambient temperature.

Refrigerated units can have a deviation from displayed and set temperature to the sample temperature.

Make sure the centrifuge temperature control capabilities meet your application specification. If necessary make a test run.

**NOTICE****Protection capability may be impaired due to using unapproved accessories.**

Use only accessories for this centrifuge which have been approved by Thermo Fisher Scientific. For a list of approved accessories refer to "Rotor Specifications" on page B-1.

Exceptions to this rule are commercially available glass or plastic centrifuge labware, provided they have been designed to fit in the rotor or the adapter cavities and are approved for the speed or the RCF value of the rotor.

**NOTICE****Damage to device or malfunction due to a damaged touch screen.**

Do not operate the device.

Power off the centrifuge. Disconnect the mains plug. Let an authorized service technician replace the touchscreen.

**NOTICE****To shut down the centrifuge:**

Press the "Stop" key. Turn off the centrifuge at the main switch. Pull out the power supply plug. In an emergency disconnect the power supply.

Make sure that the main switch and power supply plug can be accessed easily when setting up the centrifuge. The grounded electrical socket should be well accessible and located outside of the safety zone.

**NOTICE**

Working with the user interface of a floor-standing centrifuge is not ergonomic over the long term.

We recommend to use a seat if you are working on the user interface for long periods.

1. Transport and Set Up

NOTICE

It is your responsibility to ensure that all requirements are met for safety reasons.

1.1. Unpacking

The shipping carton should be inspected upon delivery. When received, carefully examine for any shipping damage before unpacking. If damage is discovered, the delivering carrier should specify and sign for the damage on your copy of the delivery receipt.

Open the carton carefully making certain that all parts (Table 1–1) are accounted for before packaging materials are discarded. Remove the packaging completely. After unpacking, if damage is found, report it to the carrier and request a damage inspection. Dispose of the packaging in accordance with local waste disposal regulations.

Failure to request an inspection of damage within a few days after receipt of shipment absolves the carrier from any liability for damage. You must call for a damage inspection.

Items Supplied

Please note that the centrifuge is supplied without a rotor. Rotors and items supplied with rotors are listed in the chapter “Rotor Specifications” on page B-1.

| Item | Art. No. | Quantity |
|------------------------------|----------|----------|
| Thermo Scientific Centrifuge | | 1 |
| Power Supply Cable | | 1 |
| Printed Instructions for Use | 50158487 | 1 |
| Instructions for Use on USB | 50158526 | 1 |
| Anti-corrosion oil | 70009824 | 1 |

Table 1–1: Items Supplied

If any parts are missing, please contact the nearest Thermo Fisher Scientific representative.

1.2. Location

Operate the centrifuge only indoors.

The set up location must meet these requirements:

- Keep a safety zone of minimum 30 cm around the centrifuge. Refer to “Safety Zone” on page 1-2.

Persons and hazardous substances must be kept out of this safety zone while centrifuging.

Centrifuges cause vibrations. Do not store sensitive devices or dangerous objects or substances in the safety zone.

⚠ WARNING Risk of impact. The centrifuge can crush objects and persons in a radius of 30 cm while spinning. Keep a safety zone of 30 cm around the centrifuge for safe operation. Make sure that no one is in the safety zone while the centrifuge is spinning.

- The supporting structure must meet these requirements:

- » Be stable, solid, rigid and free of resonance.

- » Be applicable for horizontal set up of the centrifuge.

It is not allowed to put anything under the centrifuge to compensate for an uneven surface.

Do not operate the centrifuge on carts or stand-alone shelving that could move during operation or is inadequately sized for the centrifuge.

- » Be able to hold the weight of the centrifuge.

- The centrifuge is not equipped with any means for leveling. The supporting structure must be suitably level to allow proper set up.

⚠ CAUTION If you do not level the centrifuge, the centrifuge can crash because of imbalance. If you move the centrifuge, you must level it again. Do not move the centrifuge with a rotor attached to the drive shaft because damage can occur to the drive. Do not put anything below the centrifuge feet to level the centrifuge.

- Do not expose the centrifuge, accessories and samples to heat and strong sunlight.

⚠ CAUTION UV rays reduce the stability of plastics. Do not subject the centrifuge, rotors and plastic accessories to direct sunlight.

- The set up location must be well ventilated at all times.
- The main switch and power supply plug must be easily accessible at all times. The grounded electrical socket should be well accessible and located outside of the safety zone.

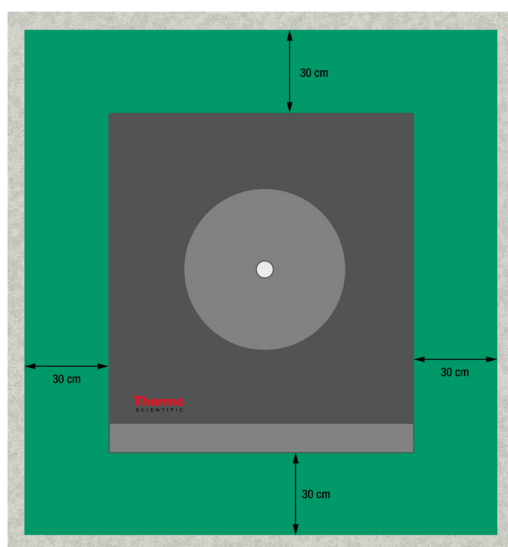


Figure 1-1: Safety Zone

1. 3. Transporting

Before transporting a centrifuge make sure that

- the power supply cable is unplugged and removed from the centrifuge.
- the rotor is removed.
 ⚠ **CAUTION** Damage to centrifuge or drive shaft due to movement of an installed rotor. Always remove the rotor before you transport the centrifuge.
- the centrifuge door is closed.
 ⚠ **CAUTION** Hands can be squeezed by an open centrifuge door. Always close the centrifuge door before you transport the centrifuge.

Before transporting a rotor make sure that

- all components, like adapters and buckets are removed to prevent dropping damage.

1. 3. 1. Handling Benchtop Centrifuges

When handling a benchtop centrifuge make sure that

- the centrifuge is lifted at both sides and not at the front or back.

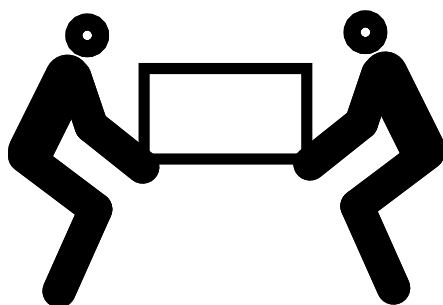


Figure 1-2: Lifting the Tabletop Centrifuge at Both Sides

⚠ **WARNING** Always lift the centrifuge on both sides. Never lift the centrifuge by its front or back. The centrifuge is heavy (see “Technical Specifications” on page A-1). Assign a minimum of 4 persons to lift and carry a refrigerated centrifuge. Assign a minimum of 2 persons to lift and carry a ventilated centrifuge.

1. 3. 2. Handling and Unpacking a Floorstanding Centrifuge

Floorstanding centrifuges come strapped to a custom-made shipping pallet. The pallet has angular stops on all four corners to prevent the centrifuge from rolling off. Supplied with each pallet is a pair of rails that serve as ramps for rolling off the centrifuge to level ground.

When moving a floorstanding centrifuge make sure that

- for long-haul transport, the centrifuge must be mounted on its original shipping pallet.
- for relocation on the premises, the castors and brakes of the centrifuge are fully functional.

⚠ **CAUTION** The centrifuge is heavy (see “Technical Specifications” on page A-1). Do not try to lift the centrifuge manually. To move the centrifuge using a forklift truck, strap it to its original shipping pallet. Never lift the centrifuge without the original shipping pallet.

⚠ **WARNING** Assign a minimum of 2 persons for moving the centrifuge. Instruct the handlers to push the centrifuge from both sides and stay out of the path of the moving centrifuge. A runaway centrifuge may crush a person in its path and inflict serious or lethal injury.

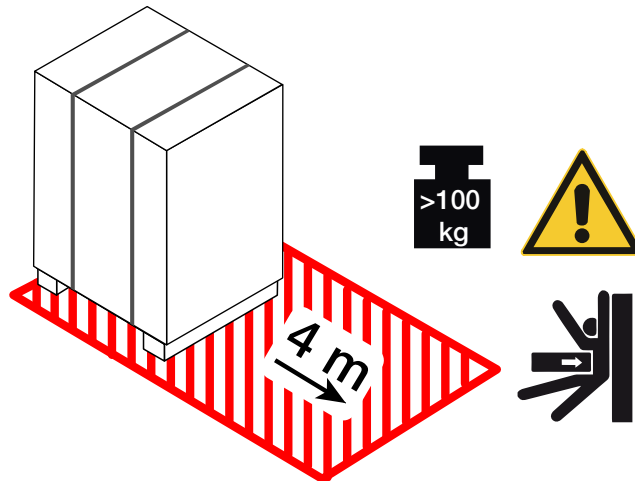


Figure 1–3: Space Required for Unloading

1. Place the pallet with the centrifuge so that you have at least 4 m of space in front of the pallet, as indicated by the cross-hatched area in Figure 1–3.

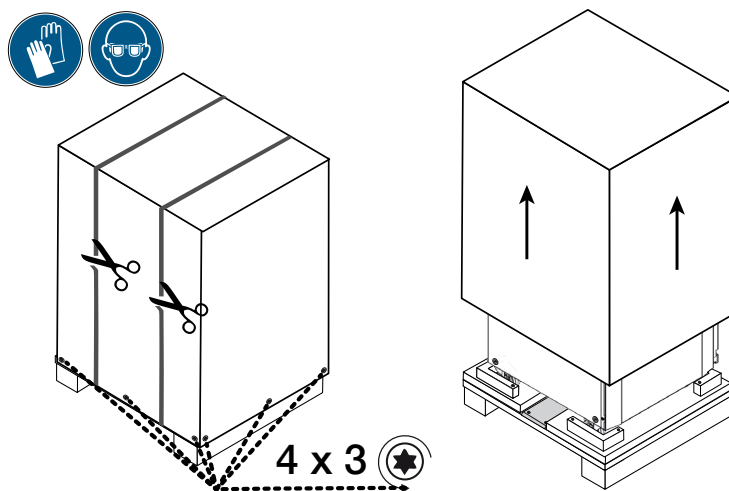


Figure 1–4: Removing the Outer Strapping and Packaging

2. Using a pair of scissors, cut and remove the outer strapping around the shipping package, as shown on the left side in Figure 1–4.
3. Using a screwdriver, remove the woodscrews (four times three pieces, as indicated in Figure 1–4 from the bottom of the cardboard box or wooden crate outer packaging.
4. Lift off the cardboard box or wooden crate, as shown on the right side in Figure 1–4.

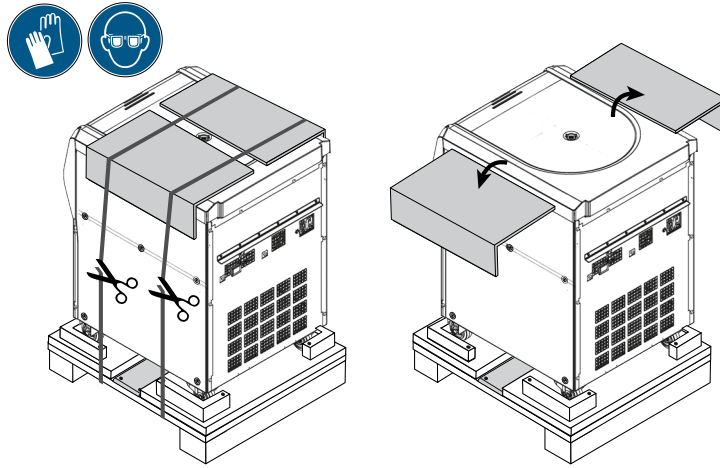


Figure 1-5: Removing the Inner Strapping and Cardboard Protectors

5. Using a pair of scissors, cut and remove the second set of straps securing the centrifuge to the pallet, as shown on the left side in Figure 1-5.
6. Remove the two cardboard protectors from the top of the centrifuge, as shown on the right side in Figure 1-5.
7. Remove the shrinkwrap foil wrapped around the centrifuge.

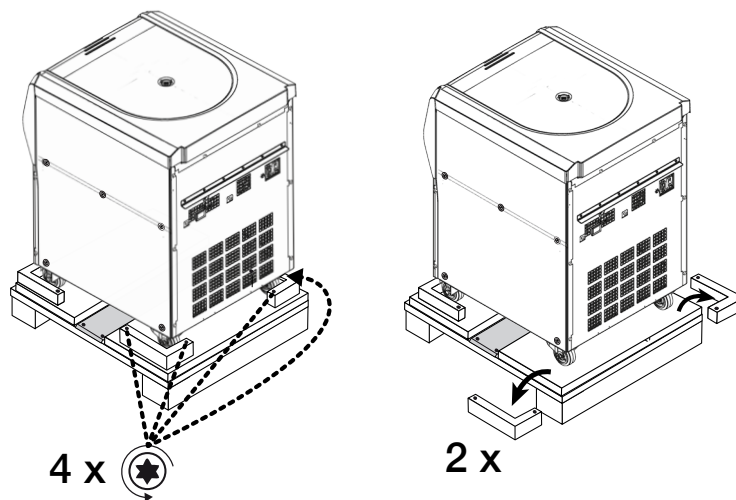


Figure 1-6: Removing the Stops from the Pallet

8. Using a screwdriver, unscrew the woodscrews (two times two pieces, as indicated on the left side of Figure 1-6) from the angular stops on the rear corners of the pallet.
9. Remove the two rear stops from the pallet, as shown on the right side in Figure 1-6.

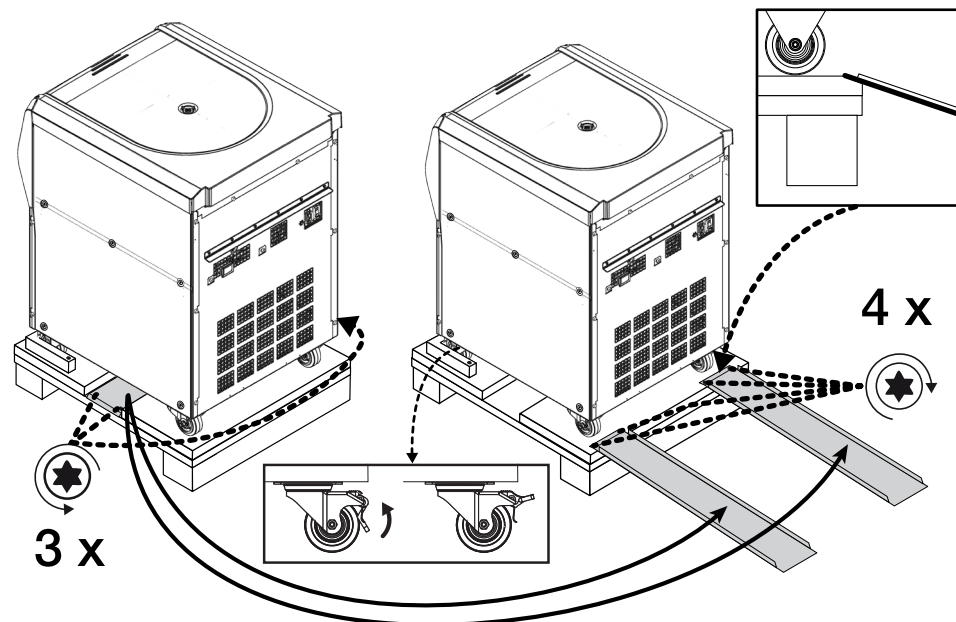


Figure 1-7: Mounting the Rails for Unloading

10. Locate the rails in the middle of the pallet underneath the centrifuge, as shown on the left side in Figure 1-7.
11. Using a screwdriver, remove the three woodscrews that secure the rails to the pallet. There are two screws on one side and a third screw on the opposite side of the rail that need to be removed.
12. Remove the rails from underneath the centrifuge and place one just before each of the two front castors, as shown on the right side in Figure 1-7.
13. Make sure the rails are correctly positioned:
 - a. The rails must be placed centered on the castors, so the castor wheels run exactly in the middle of each rail.
 - a. The pallet has a beveled edge. The end of the tab must rest on the beveled edge and be completely flush with the top surface of the pallet, as shown in the square box in the upper right corner of Figure 1-7.
14. Using two of the leftover woodscrews, fasten each rail to the pallet, as shown on the right side in Figure 1-7.

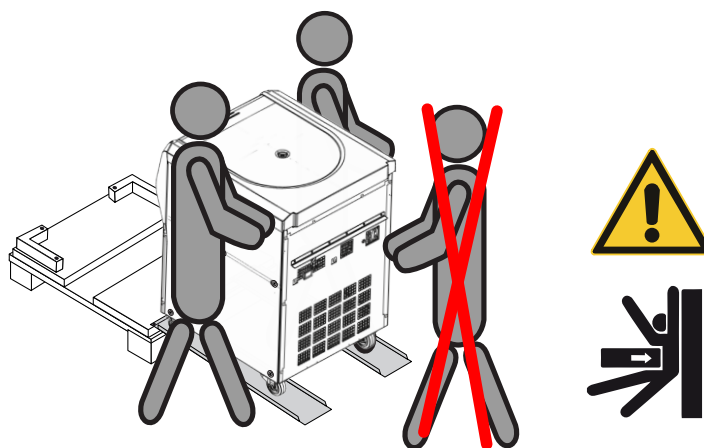


Figure 1-8: Rolling the Centrifuge off the Pallet

15. Place one person on each side of the centrifuge, as shown in Figure 1-8.

⚠ **CAUTION** Do not allow any persons in the path of the moving centrifuge. A runaway centrifuge may crush a person in its path and inflict serious injury.
16. Unlock the swiveling castors on the front side of the centrifuge by flipping up their locking levers, as shown in the rectangular box at the bottom center of Figure 1-7.
17. Have both persons grasp the rear corners of the centrifuge, so they can control the speed of the unit as it rolls down the ramp.

18. Push the centrifuge off the pallet and run it slowly down the rails, carefully controlling the speed until it reaches level ground.
19. Once the centrifuge has reached its intended location, lock the swiveling castors on the front side of the centrifuge to immobilize the centrifuge.

NOTICE

The swiveling castors can be identified by their brake levers. If you do not see the brake levers, turn the castors by 180 degrees so they stick out from under the front side of the centrifuge.

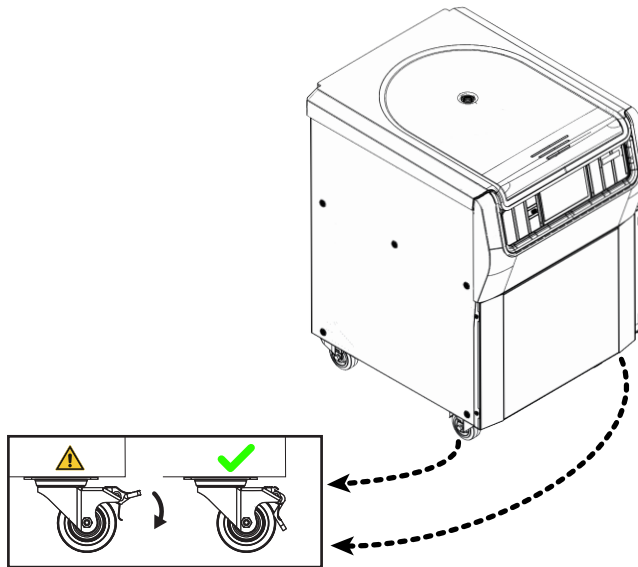


Figure 1-9: Locking the Centrifuge Castors

20. To lock the castors, step on the lever that sticks out from underneath the front side of the centrifuge, as shown in Figure 1-9.

1. 4. Product Overview

This chapter describes the locations of signal and power connectors, and the main power switch.

1. 4. 1. 1 L Refrigerated Benchtop Centrifuges

With Graphical User Interface (GUI)

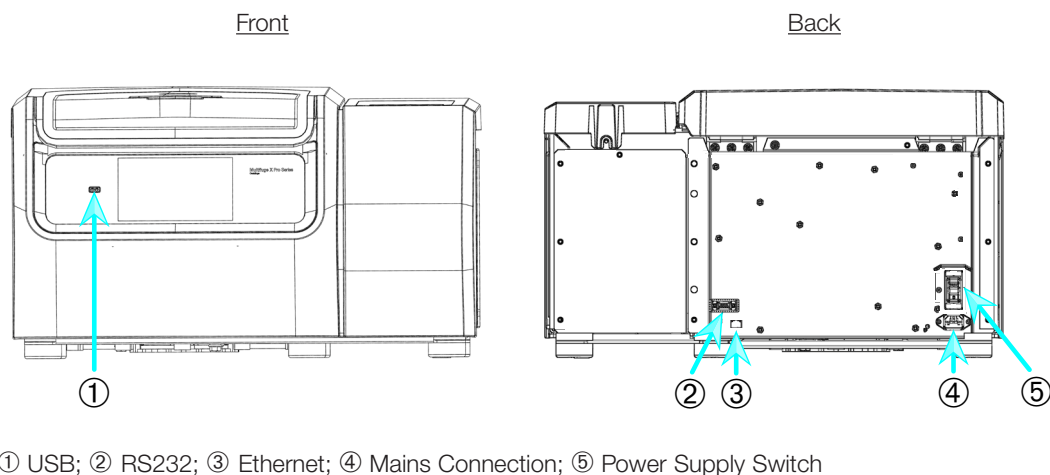


Figure 1-10: Product overview — refrigerated benchtop 1 L centrifuge with GUI

With LCD Control Panel

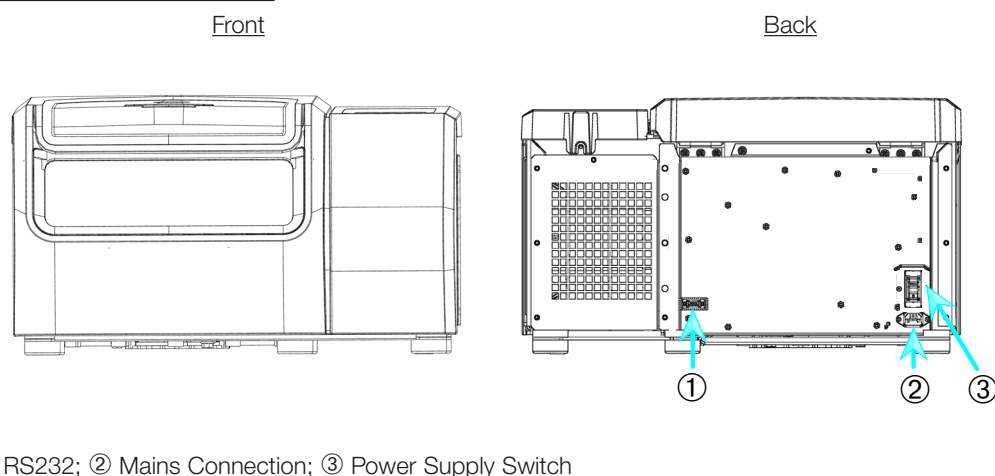


Figure 1-11: Product overview — refrigerated 1 L benchtop centrifuge with LCD control panel

1. 4. 2. 1 L Ventilated Benchtop Centrifuges

With Graphical User Interface

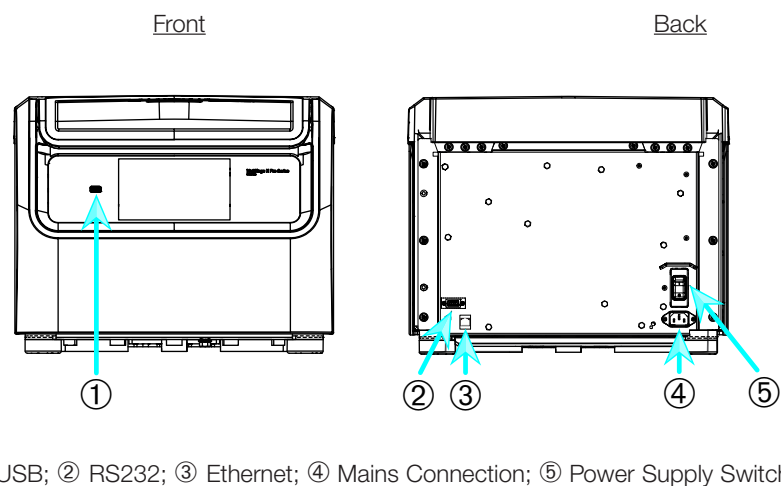
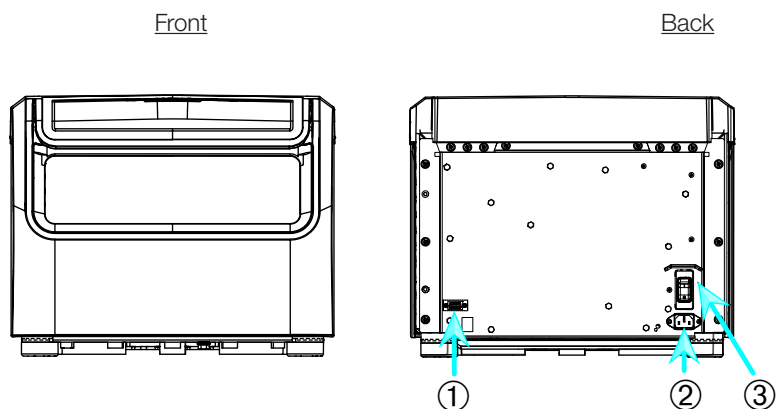


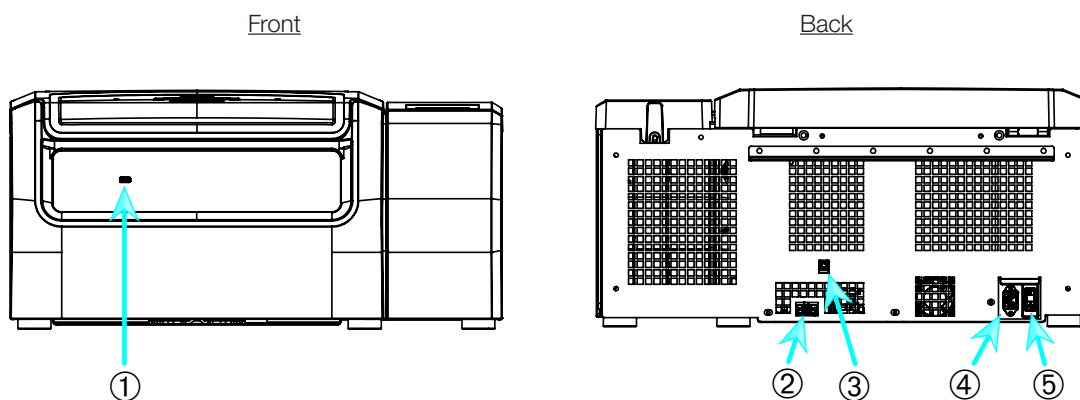
Figure 1-12: Product overview — ventilated 1 L benchtop centrifuge with GUI

With LCD Control Panel

① RS232; ② Mains Connection; ③ Power Supply Switch

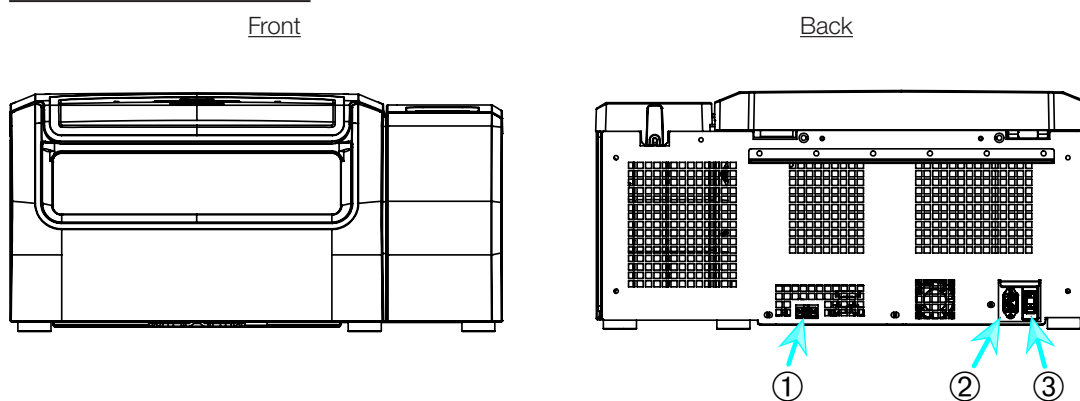
Figure 1-13: Product overview — ventilated 1 L benchtop centrifuge with LCD control panel

1. 4. 3. 4 L Refrigerated Benchtop Centrifuges

With Graphical User Interface (GUI)

① USB; ② RS232; ③ Ethernet; ④ Mains Connection; ⑤ Power Supply Switch

Figure 1-14: Product overview — refrigerated 4 L benchtop centrifuge with GUI

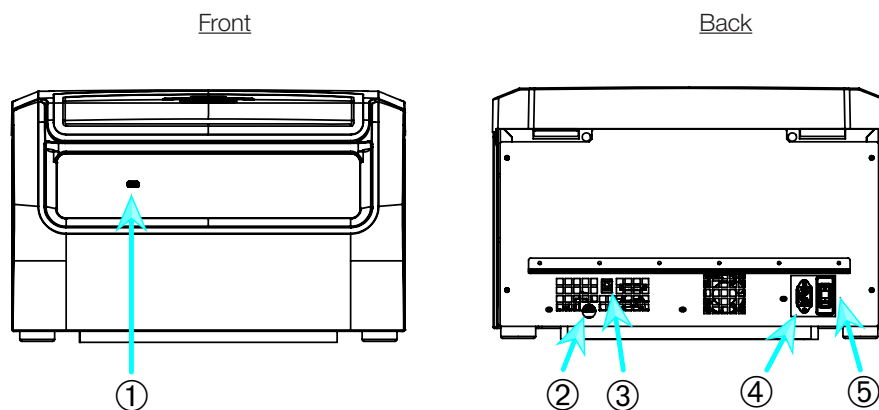
With LCD Control Panel

① RS232; ② Mains Connection; ③ Power Supply Switch

Figure 1-15: Product overview — refrigerated 4 L benchtop centrifuge with LCD control panel

1. 4. 4. 4 L Ventilated Benchtop Centrifuges

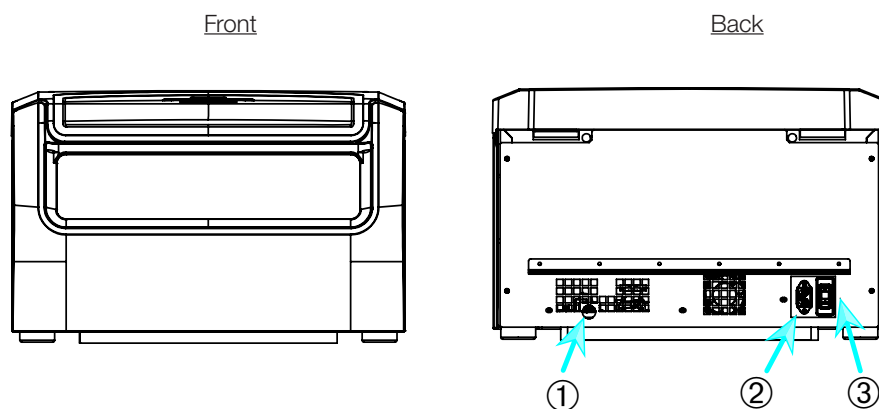
With Graphical User Interface



① USB; ② RS232; ③ Ethernet; ④ Mains Connection; ⑤ Power Supply Switch

Figure 1-16: Product overview — ventilated 4 L benchtop centrifuge with GUI

With LCD Control Panel

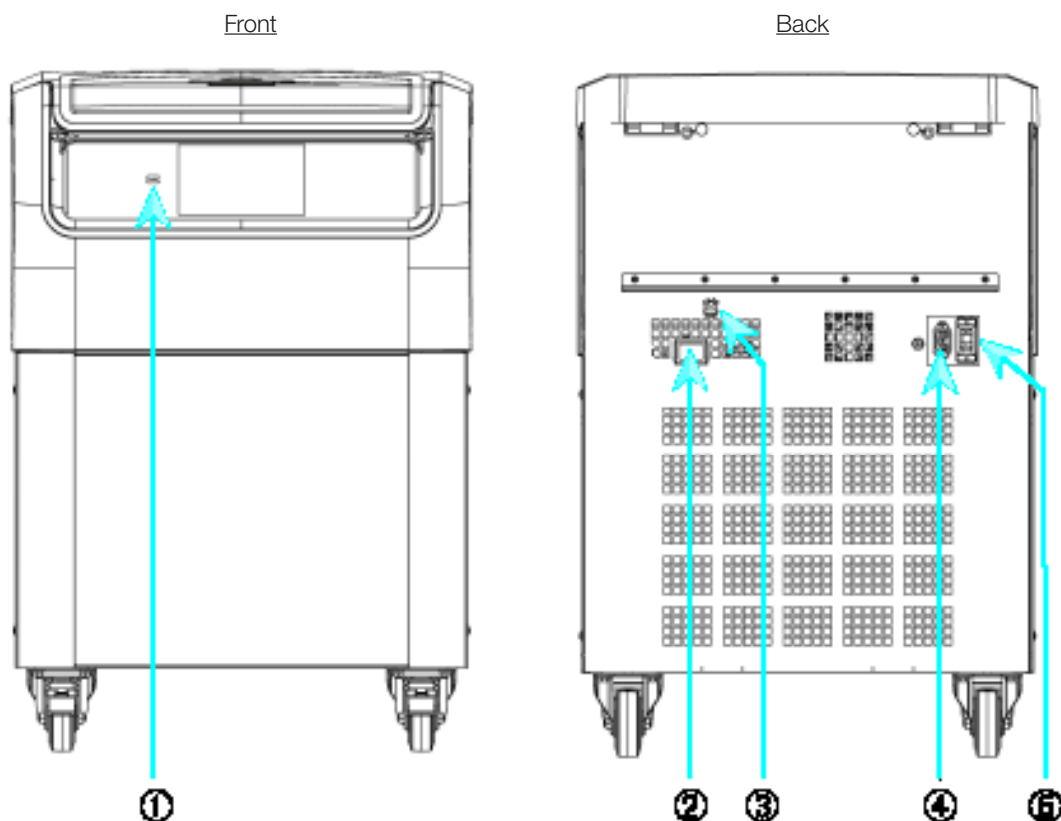


① RS232; ② Mains Connection; ③ Power Supply Switch

Figure 1-17: Product overview — ventilated 4 L benchtop centrifuge with LCD control panel

1. 4. 5. 4 L Refrigerated Floorstanding Centrifuges

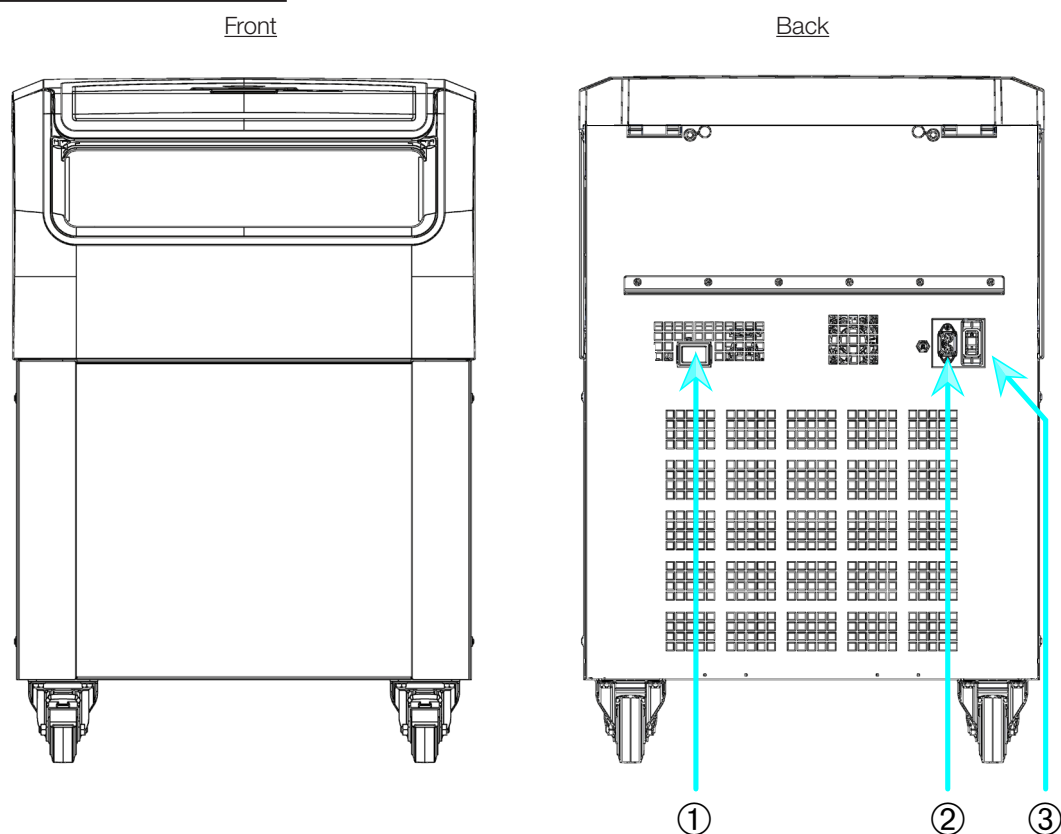
With Graphical User Interface (GUI)



① USB; ② RS232; ③ Ethernet; ④ Mains Connection; ⑤ Power Supply Switch

Figure 1-18: Product overview — refrigerated 4 L floorstanding centrifuge with GUI

With LCD Control Panel

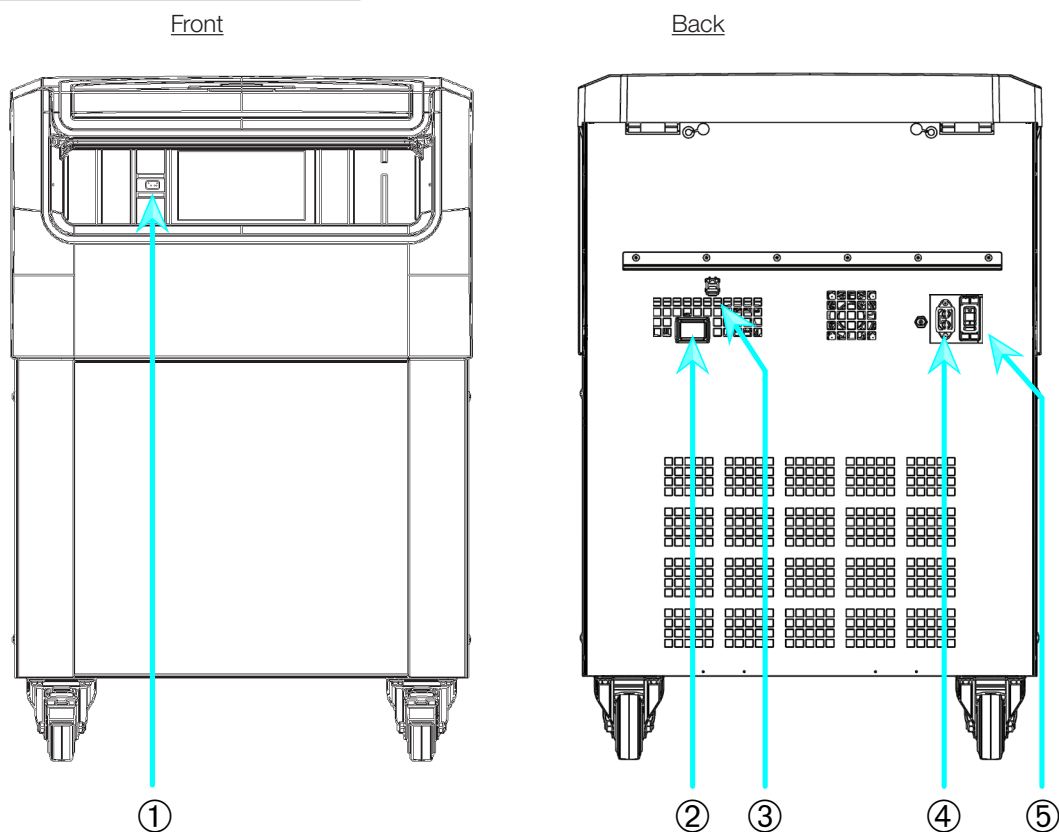


① RS232; ② Mains Connection; ③ Power Supply Switch

Figure 1-19: Product overview — refrigerated 4 L floorstanding centrifuge with LCD control panel

1. 4. 6. 4 L Ventilated Floorstanding Centrifuges

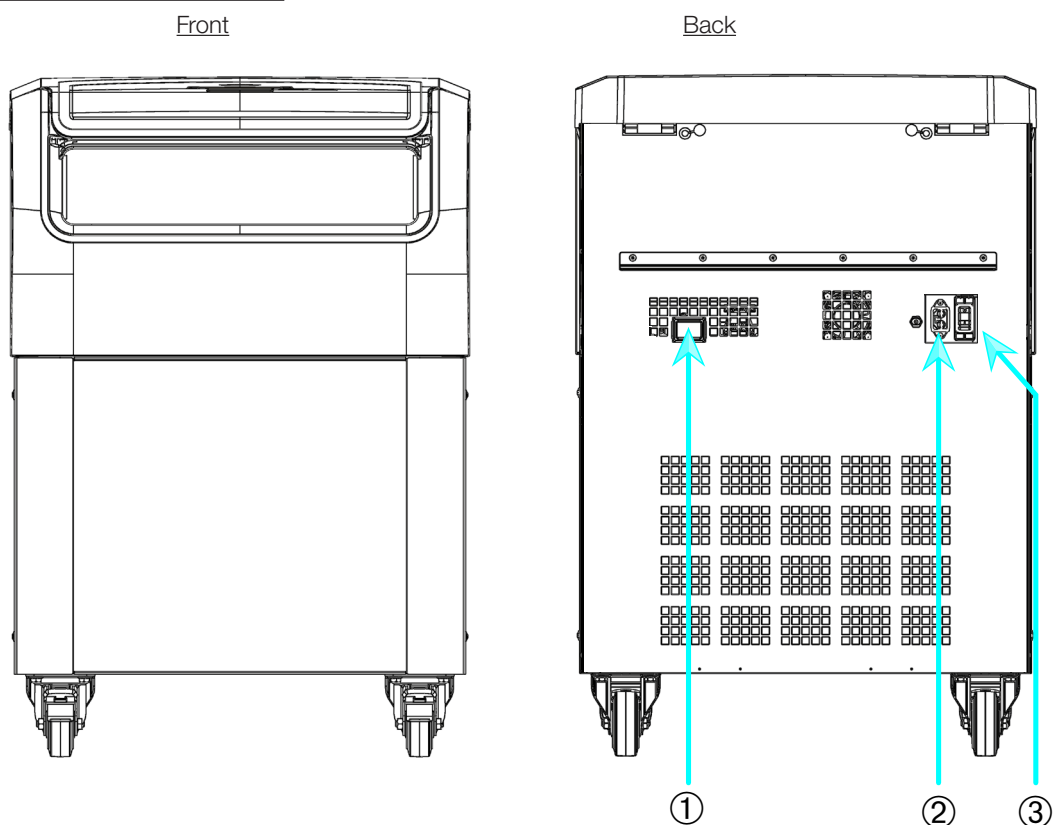
With Graphical User Interface



① USB; ② RS232; ③ Ethernet; ④ Mains Connection; ⑤ Power Supply Switch

Figure 1–20: Product overview — ventilated 4 L floorstanding centrifuge with GUI

With LCD Control Panel



① RS232; ② Mains Connection; ③ Power Supply Switch

Figure 1–21: Product overview — ventilated 4 L floorstanding centrifuge with LCD control panel

1. 5. Connections

1. 5. 1. Mains Connection

NOTICE

Connect the centrifuge into grounded electrical sockets only.

1. Turn off the Power Supply Switch.
2. Make sure that the power supply cable specification agrees with the safety standards of your country.
3. Make sure that the voltage and frequency are the same as the figures on the nameplate.
4. Make sure that the power supply cable is plugged in properly.

1. 5. 2. RS232

The centrifuge has a RS232 interface, which can be used to connect to a terminal device.

1. 5. 3. Ethernet

Some centrifuge models have a RJ45 ethernet interface, which can be used to connect to a Local Area Network (LAN). Use only equipment conforming to the IEC 60950-1 standard with the RJ45 ethernet interface.

1. 5. 4. USB

Some centrifuge models have an USB-A 2.0 port, which can be used with an USB drive. Use only equipment conforming to the USB 2.0 standard with the USB connection.

1. 6. Initial Startup

Centrifuges with a graphical user interface (GUI)

In the initial startup sequence you must make some first settings:

- Language
- Unit Name
- City and Country
- Date Format
- Current Date

Complete these steps before using the unit. These settings can be changed again later. Refer to “Display” on page 3-41.

Centrifuges with a LCD control panel

LCD control panel centrifuges are factory setup using English as preset language. Settings can be changed later. Refer to “System Menu” on page 4-8.

2. Operation

2. 1. Position of parts

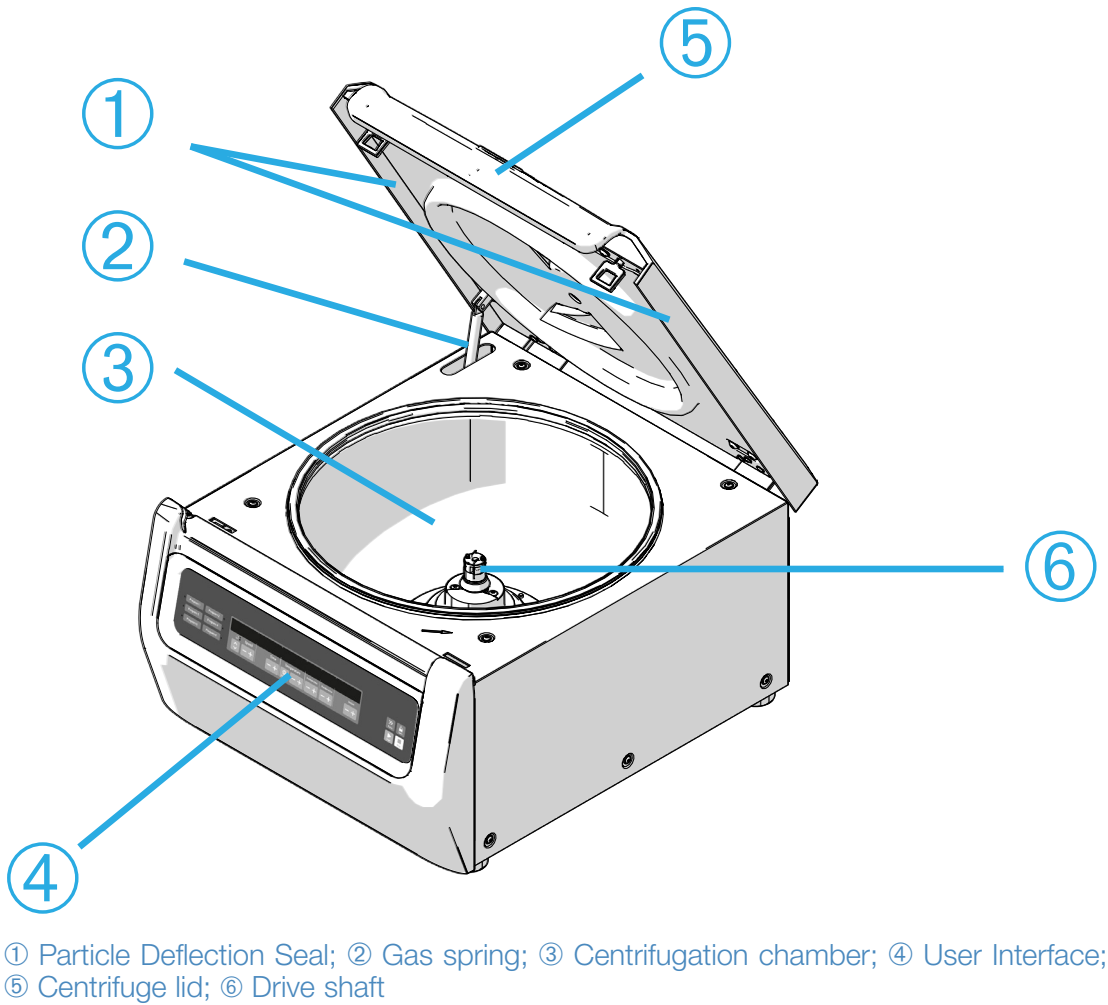


Figure 2-1: Position of centrifuge parts shown on a ventilated centrifuge with LCD control panel



Figure 2-2: Position of rotor parts shown on a fixed angle rotor



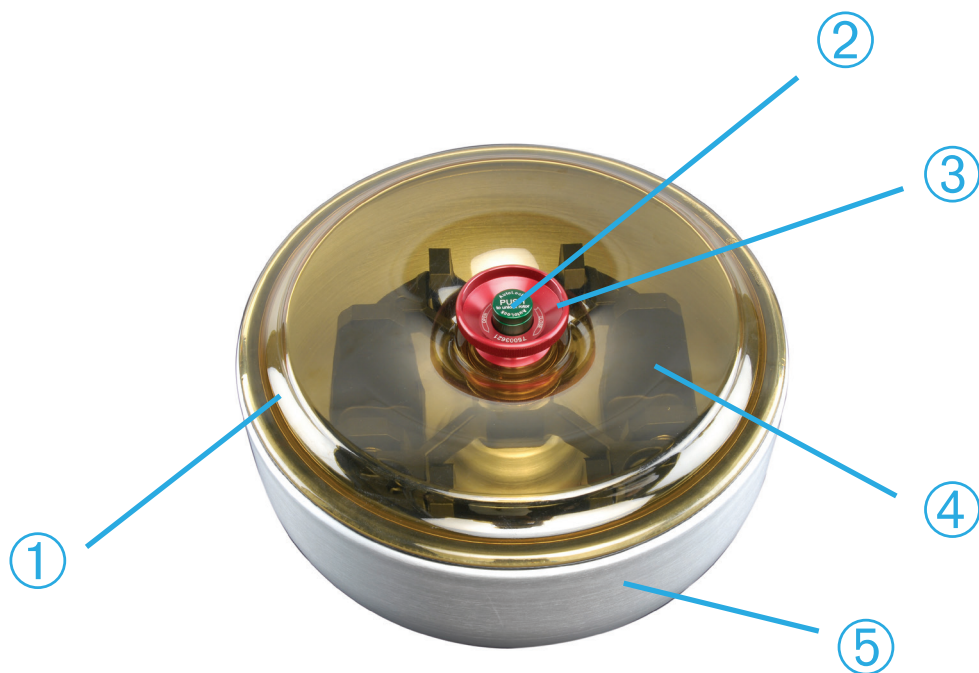
① Slot; ② Key

Figure 2-3: Position of the slot in the bucket and the corresponding adapter key



① Bucket; ② Cap latch; ③ Bucket cap; ④ Rotor knob; ⑤ Auto-Lock button; ⑥ Rotor cross

Figure 2-4: Position of rotor parts shown on a swinging bucket rotor



① Rotor lid; ② Auto-Lock button; ③ Rotor lid knob; ④ Rotor cross with buckets within the windshield bowl; ⑤ Windshield bowl

Figure 2-5: Position of rotor parts shown on a windshielded swinging bucket rotor

2. 2. Power on/off the Centrifuge

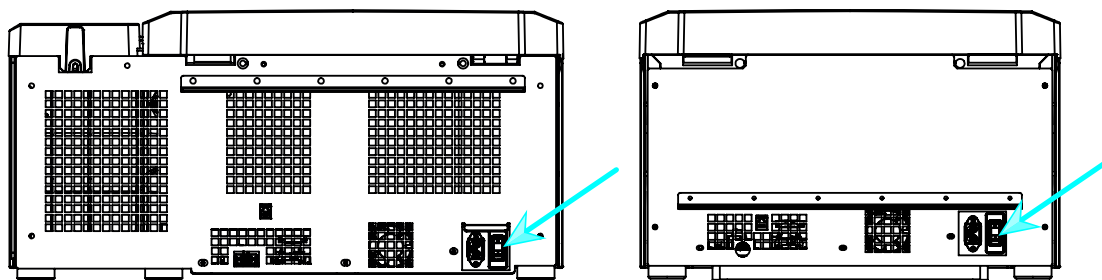


Figure 2-6: Rear view of benchtop centrifuge, position of the mains switch

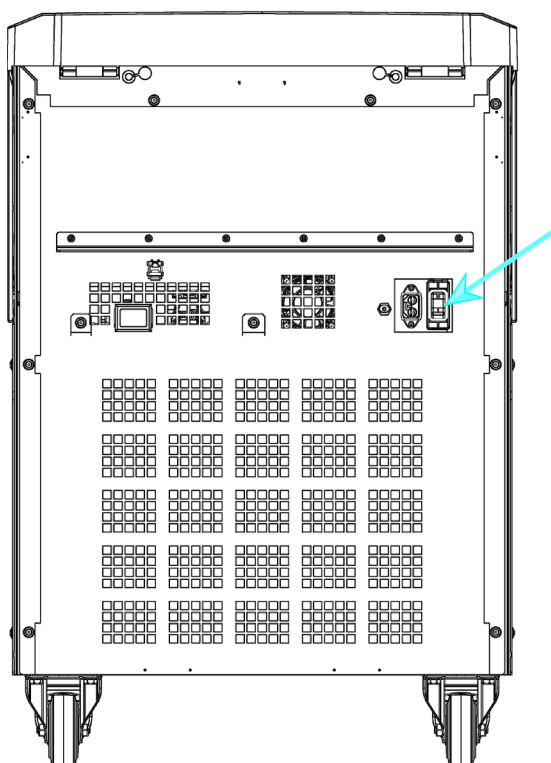


Figure 2-7: Rear view of floorstand centrifuge, position of the mains switch

To power on the centrifuge:

Push on the mains switch of the centrifuge to “1” to power it on.

When the centrifuge has completed booting it is ready for operation.

Once you have started running the centrifuge with your own parameters, it will show the settings from the last session after powering up.

To power off the centrifuge:

Set the mains switch of the centrifuge to “0” to power it off.

2. 3. Open/Close the Centrifuge Lid

To open the centrifuge lid:

Press the Lid Open button  on the home screen of the GUI or  on the LCD control panel.

To close the centrifuge lid:

Close the centrifuge lid by pressing down on it lightly in the middle or on both sides. The locking mechanism engages to close the lid safely. The lid should audibly click into place.



Double-check whether the locking mechanism has engaged properly.

⚠ WARNING Do not reach into the gap between the lid and the casing. The lid is drawn shut automatically and may pinch your fingers.

⚠ **WARNING** Do not use the mechanical emergency door release as regular procedure to open the centrifuge. Use the mechanical emergency door release only if a malfunction or power failure occurs and only when you have made sure that the rotor has stopped spinning (see “Mechanical Emergency Door Release” on page 6-1).

2. 4. How to Install and Remove a Rotor

To install a rotor:

1. Press the Open button  on the home screen of the GUI or  on the LCD control panel to open the lid of the centrifuge.
2. Place the rotor over the drive shaft and let it slide down slowly.
The rotor clicks into place automatically.
3. Make sure that the rotor is properly installed by lifting it slightly on the handle. If the rotor can be pulled up, then it must be reclamped to the drive shaft.
4. Make sure the rotor spins freely by turning it manually.
5. Swinging bucket rotors only: make sure that a full complement of buckets is installed before operating the rotor.
6. Rotor lid installation:
 - a. Put the rotor lid on the rotor.
Make sure the rotor lid is put centered on the rotor.

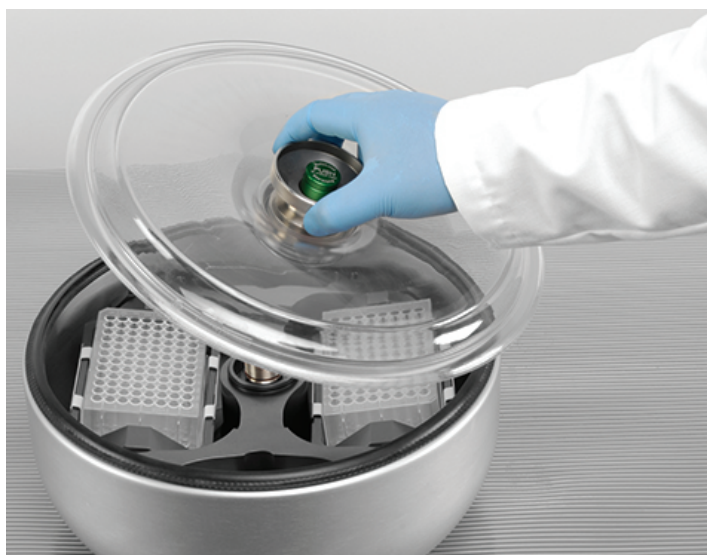


Figure 2-8: Put on/off the rotor lid

- b. Turn the rotor knob clockwise to close the rotor. Turn it counter-clockwise to open rotor.
There is no need to press the Auto-Lock key to close or open the rotor.