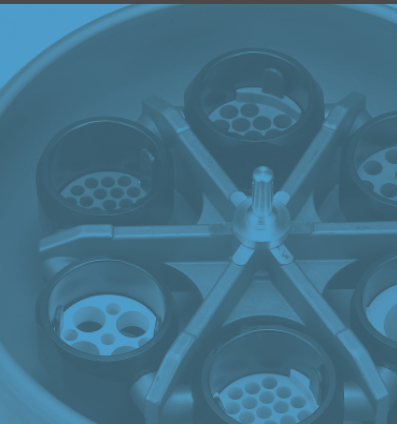
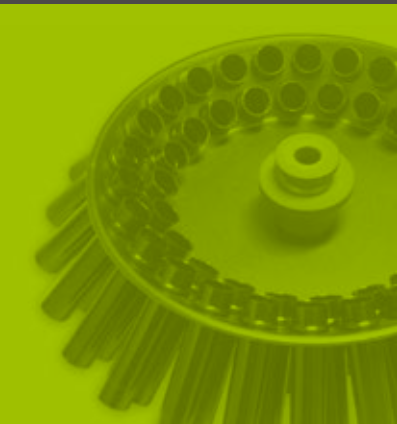


# PRODUCT CATALOG

## 2019



**Sample Separation**



**Sample Concentration**



**Sample Growing**



**Sample Storage**



[www.ihanil.com](http://www.ihanil.com)

# 60 years of Quality and Trust

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Since 1958, Hanil Scientific Inc. has been keeping its core technology of making trust worthy centrifuges for all laboratory and medical uses. Major parts of Hanil Scientific centrifuges, including induction motors, rotors, and chassis are all manufactured and fabricated in-house and go through strict quality assurance processes. The ISO9001, ISO13485, and KGMP certified factory is equipped with the latest computerized tools and large-format CNC machines to provide a continuum of support for physical production for the models that demand the highest precision in the toughest condition. Along the latest tools added with proud Korean craftsmanship, Hanil strives to produce top-quality products with intuitive controls to provide the best laboratory systems for your setting.





## Sample Separation

- Centrifuge Overview - p.6
- Rotor Selection Guide - p.10
- Catalog Numbering Rule - p.13
- Micro Centrifuges - p.14
- Ultra Centrifuge - p.17
- High Speed Centrifuges - p.20
- Multi-purpose Centrifuges - p.27
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## Sample Concentration

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- Freeze Dryers & Cooling Traps - p.70
- Gas Purging Evaporation Concentrator - p.76

## Sample Growing

- Laboratory Fermentors - p.82
- Photo Bioreactors - p.88
- CO<sub>2</sub> Incubator - p.90

## Sample Storage

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- Deep Freezers - p.98
- Accessories - p.106



# Sample Separation

**Centrifuge Overview - p.6**

**Rotor Selection Guide - p.10**

**Catalog Numbering Rule - p.13**

## **Micro Centrifuges**

Smart R17 Plus / Smart 15 Plus - p.14

Smart 13 - p.15

## **Ultra Centrifuge**

Ultra 5.0 - p.17

## **High Speed Centrifuges**

Supra R30 - p.20 / Supra R22 - p.21

Supra R17 - p.22 / Supra R12 - p.23

## **Multi-purpose Centrifuges**

Combi R515 - p.27 / Combi 508 - p.28

## **Large Capacity Centrifuges**

Component R12 / Component R6 / Component wR - p.33

## **Clinical Centrifuges**

Fleta 4 - p.38 / Fleta 5 - p.41

CellSpin - p.44 / SeroSpin II - p.46 / HematoSpin II - p.48

## **Accessories**

Tube Racks (Adaptors) - p.50

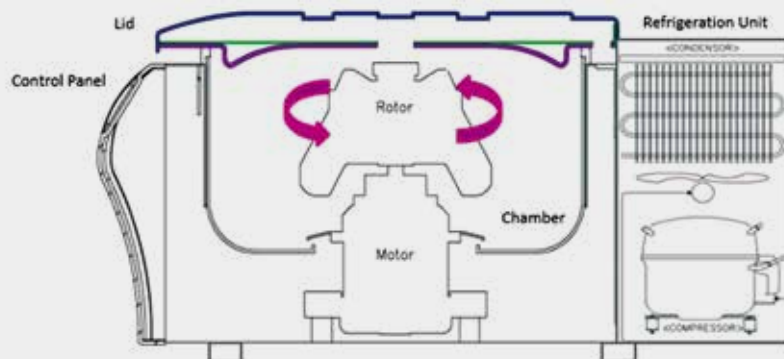
Centrifuge Tubes - p.54

## **Industrial Centrifuges**

J1250 - p.56

HA400 - p.59

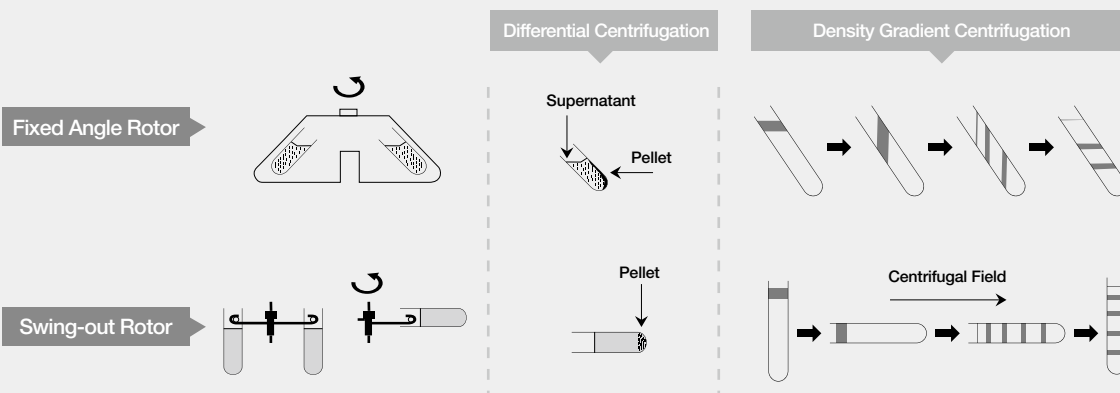
# Laboratory Centrifuge's Structure and Selection Criteria



## Purpose of Centrifugation

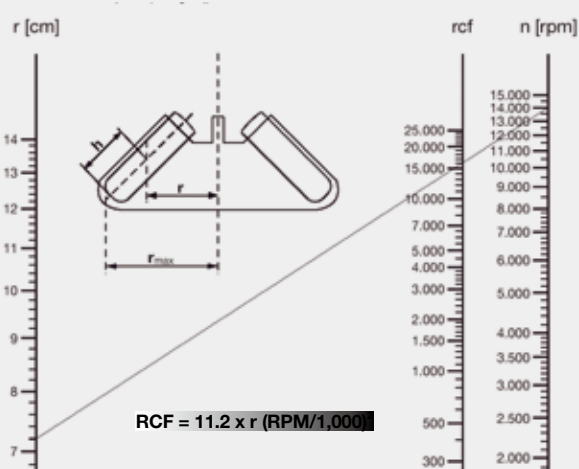
Precipitation, phase separation or density gradient

Depending on the goal of the centrifugation, proper rotor should be considered concurrently with the g-force to be applied into the sample.



## Max g-force to achieve complete separation

Not only the speed (RPM : Revolution Per Minute) of a centrifuge but also the RCF (Relative Centrifugal Force) of a rotor should be checked for the best result of centrifugation.



## Temperature Control Method

According to the characteristic of a sample to be centrifuged, compressor cooled, passive refrigeration model or air-flow controlled model can be selected. When the samples are sensitive to over-ambient or fluctuating temperature, a refrigeration model is highly recommended.

# Selection Guide of Hanil Centrifuges

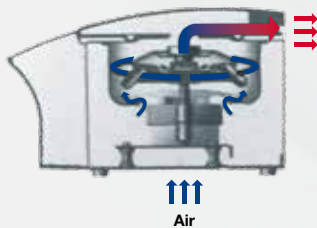
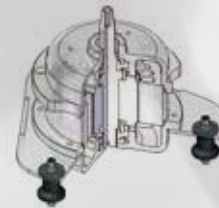
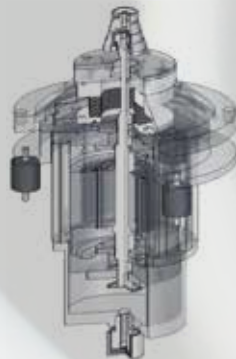
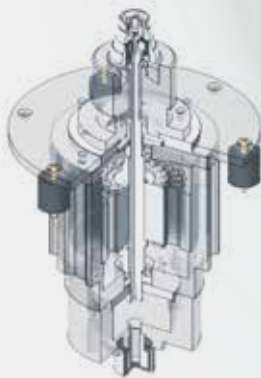
| Centrifuge Group                  |                   | Micro                                                                             |                                                                                   |                                                                                   | High Speed, Floor Standing                                                        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | Multi-purpose, Table-top                                                          |                                                                                   |                                                                                    | Clinical Application, Swing-out                                                     |                                                                                     |                                                                                     |                                                                                     |
|-----------------------------------|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Model                             |                   | p.15                                                                              | p.14                                                                              | p.14                                                                              | p.17                                                                              | p.20                                                                              | p.21                                                                              | p.22                                                                              | p.23                                                                              | p.27                                                                              | p.28                                                                              | p.38                                                                               | p.41                                                                                | p.33                                                                                | p.33                                                                                | p.33                                                                                |
|                                   |                   |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                                   |                   | Smart 13                                                                          | Smart 15 Plus                                                                     | Smart R17 Plus                                                                    | Ultra 5.0                                                                         | Supra R30                                                                         | Supra R22                                                                         | Supra R17                                                                         | Supra R12                                                                         | Combi R515                                                                        | Combi 508                                                                         | Fleta 4                                                                            | Fleta 5                                                                             | Component wR                                                                        | Component R6                                                                        | Component R12                                                                       |
| Max. RPM                          | Fixed Angle       | 13,500                                                                            | 15,000                                                                            | 17,000                                                                            | 50,000                                                                            | 30,000                                                                            | 22,000                                                                            | 17,000                                                                            | 12,000                                                                            | 15,000                                                                            | 8,000                                                                             | 4,000                                                                              | -                                                                                   | -                                                                                   | -                                                                                   | -                                                                                   |
|                                   | Swing-out         | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | 4,500                                                                             | 4,000                                                                             | 4,000                                                                              | 5,500                                                                               | 4,500                                                                               | 5,000                                                                               | 4,500                                                                               |
| Refrigeration                     |                   | -                                                                                 | -                                                                                 | ❄️                                                                                | ❄️                                                                                | ❄️                                                                                | ❄️                                                                                | ❄️                                                                                | ❄️                                                                                | ❄️                                                                                | -                                                                                 | -                                                                                  | -                                                                                   | ❄️                                                                                  | ❄️                                                                                  | ❄️                                                                                  |
| Vacuum                            |                   | -                                                                                 | -                                                                                 | -                                                                                 | ⦿                                                                                 | ⦿                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                 | -                                                                                  | -                                                                                   | -                                                                                   | -                                                                                   | -                                                                                   |
| Choices by Max. g-force (RCF, xg) |                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Fixed Angle Rotor                 | 250,000 xg        |                                                                                   |                                                                                   |                                                                                   | 254,300                                                                           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 100,000 xg        |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 106,600                                                                           |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 50,000 xg         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 57,300                                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 30,000 xg         |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 34,200                                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 25,000 xg         |                                                                                   | 21,000                                                                            | 23,000                                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 22,200                                                                            | 26,600                                                                            |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 10,000 xg         | 12,000                                                                            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 8,200                                                                             |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 5,000 xg          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 2,600                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 0                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Swing-out Rotor                   | 7,500 xg          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | 7,200                                                                               | 6,491                                                                               |
|                                   | 6,000 xg          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    | 6,200                                                                               |                                                                                     |                                                                                     |                                                                                     |
|                                   | 5,000 xg          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 4,300                                                                             |                                                                                   |                                                                                    |                                                                                     | 5,000                                                                               |                                                                                     |                                                                                     |
|                                   | 3,500 xg          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | 3,500                                                                             | 3,200                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 2,000 xg          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 0                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Choices by Sample Container       |                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Micro Plates                      |                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | S                                                                                 | S                                                                                 |                                                                                    | S                                                                                   | S                                                                                   |                                                                                     |                                                                                     |
| Micro Tubes                       | PCR Strip         | F                                                                                 | F                                                                                 | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | F                                                                                 | F                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 0.2/0.5 ml        | F                                                                                 | F                                                                                 | F                                                                                 |                                                                                   | F                                                                                 | F                                                                                 | F                                                                                 |                                                                                   | F                                                                                 | F                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 1.5/2.0 ml        | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 |                                                                                   | F                                                                                 | F                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | Micro filter tube |                                                                                   | F                                                                                 | F                                                                                 |                                                                                   | F                                                                                 | F                                                                                 | F                                                                                 |                                                                                   | F                                                                                 | F                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 5 ml              | F                                                                                 | F                                                                                 | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
| Tubes                             | 3/4/5 ml          |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | S                                                                                 | S                                                                                 |                                                                                    | S                                                                                   | S                                                                                   |                                                                                     |                                                                                     |
|                                   | 10/15 ml          |                                                                                   |                                                                                   |                                                                                   | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 |                                                                                   | F/S                                                                               | F/S                                                                               | F/S                                                                                | S                                                                                   | S                                                                                   |                                                                                     |                                                                                     |
|                                   | 15 ml conical     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | F                                                                                 | F                                                                                 | F                                                                                 |                                                                                   | F/S                                                                               | F/S                                                                               | F/S                                                                                | S                                                                                   | S                                                                                   |                                                                                     |                                                                                     |
|                                   | 25 ml             |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | S                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 38.5 ml           |                                                                                   |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 50 ml             |                                                                                   |                                                                                   |                                                                                   | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 |                                                                                   | F/S                                                                               | F/S                                                                               | S                                                                                  | S                                                                                   | S                                                                                   |                                                                                     |                                                                                     |
|                                   | 50 ml conical     |                                                                                   |                                                                                   |                                                                                   |                                                                                   | F                                                                                 | F                                                                                 | F                                                                                 |                                                                                   | F/S                                                                               | F/S                                                                               | S                                                                                  | S                                                                                   | S                                                                                   |                                                                                     |                                                                                     |
|                                   | 85 ml             |                                                                                   |                                                                                   |                                                                                   |                                                                                   | F                                                                                 | F                                                                                 | F                                                                                 |                                                                                   | F                                                                                 | F                                                                                 | S                                                                                  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 100 ml            |                                                                                   |                                                                                   |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                   |                                                                                   | S                                                                                 | S                                                                                 |                                                                                    |                                                                                     |                                                                                     |                                                                                     |                                                                                     |
|                                   | 250 ml            |                                                                                   |                                                                                   |                                                                                   | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | F                                                                                 | F/S                                                                               | S                                                                                 |                                                                                    |                                                                                     | S                                                                                   |                                                                                     |                                                                                     |
|                                   | 250 ml conical    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | S                                                                                 | S                                                                                 |                                                                                    |                                                                                     | S                                                                                   |                                                                                     |                                                                                     |
|                                   | 500 ml            |                                                                                   |                                                                                   |                                                                                   |                                                                                   | F                                                                                 | F                                                                                 |                                                                                   | F                                                                                 | S                                                                                 | S                                                                                 |                                                                                    |                                                                                     | S                                                                                   |                                                                                     |                                                                                     |
|                                   | 500 ml conical    |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | S                                                                                 | S                                                                                 |                                                                                    |                                                                                     | S                                                                                   |                                                                                     |                                                                                     |
|                                   | 750 ml            |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | S                                                                                 | S                                                                                 |                                                                                    |                                                                                     | S                                                                                   |                                                                                     |                                                                                     |
|                                   | 1,000 ml          |                                                                                   |                                                                                   |                                                                                   |                                                                                   | F                                                                                 | F                                                                                 |                                                                                   | F                                                                                 |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | S                                                                                   |                                                                                     |
| Syringe or PRP                    |                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   | S                                                                                  | S                                                                                   |                                                                                     |                                                                                     |                                                                                     |
| Blood Bags                        |                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                   |                                                                                    |                                                                                     |                                                                                     | S                                                                                   | S                                                                                   |

\* F stands for Fixed angle rotor and S for Swing-out rotor.

# Features of Hanil Scientific's Laboratory Centrifuges

## Premium Quality

- Accurate speed control less than 1.0% variance by high performance microprocessor, high torque AC induction motor, and various sensors
- Accurate temperature control by IC sensor and temperature offset function
- Unique motor drive system optimized in each rotation space
- Flexible or soft spindle drive system resulting in "self balancing" gyro moment for high speed models
- PABS (Positive Action Brake System) for stable and fast deceleration
- Dual ramp deceleration profile for keeping centrifuged samples at the best result
- Vacuum and sealing techniques to minimize air friction at super speed rotation
- Unique air flow structure for effective noise reduction and excellent cooling
- Unique anti-vibration damping structure for gentle operation
- Patented compressor damping structure to reduce vibration and maintain efficient separation
- Very finely fabricated motors, rotors, buckets, and accessories by Korean craftsmanship
- Very smooth tube insertion and removal through the precisely carved holes of rotors and buckets
- Accredited with ISO9001:2008, ISO13485, and KGMP
- Comply with CE conformity
- MFDS registered or certified as medical device

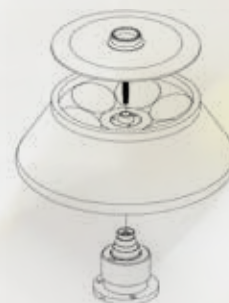


## Superior Safety

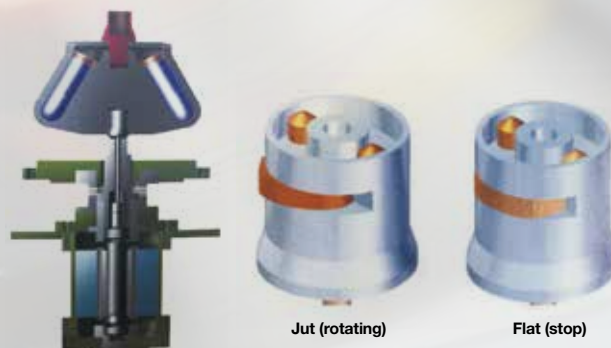
- Durable chassis with steel armored chamber and steel layered lid
- Automatic interlock system to prevent rotor's spinning when lid is open
- Lid drop protected construction and fine control of lid opening
- Detection or alarm to sense imbalance, lid open, overspeed, low speed or over-heating
- Mounted with imbalance detection and tracking devices using by Hall sensor or limit switch
- Adjustable imbalance cutoff and tracking function
- Password enabled lock and unlock function in some models
- Automated rotor recognition system for the protection of over speed and improper operation
- User friendly emergency opening when black-out happens to retrieve sample safely
- Easy to clean surface and parts, autoclavable rotors and buckets for contamination free maintenance
- Maintenance-free, less heat-generating, noiseless, AC induction motor
- Cooled with CFC free, environmental friendly refrigerants

## Greatest Convenience

- Single action of rotor coupling and decoupling only by rotor lid closure or opening (no need of any tool) for large sizes of Fixed Angle Rotors
- Self-lock rotor coupling, triggered by centrifugal force while spinning (Ultra model)
- Ergonomically arranged control and display
- Intuitive control panel and easy to read comprehensive displays with LED lights
- Automated rotor recognition scheme with automatic g-force calculation and display
- Automatic last run call and convenience to call, modify, or save data
- Stress-free lid opening and closure by smoothly motorized lid lock structure
- Effortlessly working emergency lid opening scheme to take sample out safely
- Easy to clean drainage from the chamber hole of refrigerated models
- Movable casters and adjustable feet



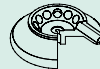
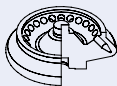
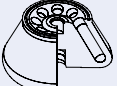
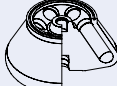
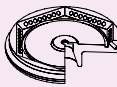
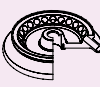
**Single action of rotor coupling**



**Self-lock-rotor coupling of Ultra 5.0**

# Selection Guide of Fixed Angle Rotor

\* Radius is the distance from the center of the rotor to the inner end of tube carrier in mm.

|                                                    |                               |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                     |
|----------------------------------------------------|-------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Micro Centrifuges                                  | Rotor Shape                   |    |    |    |     |    |    |  |
|                                                    | Cat. No.                      | A0.2-32                                                                             | A0.2M-32                                                                            | A2.0-12                                                                             | A2.0M-18                                                                             | A2.0M-24 / A2.0MP-24                                                                  | A5.0-6                                                                                | A5.0M-12                                                                            |
|                                                    | Rotor ID                      | -                                                                                   | 2                                                                                   | -                                                                                   | 3                                                                                    | 1                                                                                     | -                                                                                     | 4                                                                                   |
|                                                    | Max. Capacity                 | 32 x 0.2 mL                                                                         | 32 x 0.2 mL                                                                         | 12 x 1.5/2.0 mL                                                                     | 18 x 1.5/2.0 mL                                                                      | 24 x 1.5/2.0 mL                                                                       | 6 x 5.0 mL                                                                            | 12 x 5.0 mL                                                                         |
|                                                    | Bore Ø x L (mm)               | 6.5 x 15                                                                            | 6.5 x 17                                                                            | 11.5 x 38                                                                           | 11 x 38                                                                              | 11 x 38                                                                               | 16.5 x 28.5                                                                           | 17 x 53.8                                                                           |
|                                                    | Radius* (mm)                  | Inner line : Min. 31.13 / Max. 44.06<br>Outer line : Min. 46.13 / Max. 55.68        | 55.5                                                                                | 59                                                                                  | 71.2                                                                                 | 83.7                                                                                  | 52                                                                                    | 81                                                                                  |
|                                                    | Max. height for tube fit (mm) | -                                                                                   | -                                                                                   | 48                                                                                  | 53.5                                                                                 | 56                                                                                    | 16.5                                                                                  | 41                                                                                  |
|                                                    | Smart R17 Plus                | -                                                                                   | 12,500                                                                              | -                                                                                   | 17,000                                                                               | 15,000                                                                                | -                                                                                     | 15,000                                                                              |
| Ultra Centrifuge                                   | Smart 15 Plus                 | -                                                                                   | 9,695 xg                                                                            | -                                                                                   | 23,005 xg                                                                            | 21,055 xg                                                                             | -                                                                                     | 20,376 xg                                                                           |
|                                                    | Smart 13                      | 6,000<br>Inner line : 1,253~1,773<br>Outer line : 1,857~2,241 xg                    | -                                                                                   | 13,500                                                                              | -                                                                                    | -                                                                                     | 6,000                                                                                 | -                                                                                   |
|                                                    | Max. RPM                      |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                     |
|                                                    | Max. RCF                      |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                     |
|                                                    | Rotor Shape                   |    |    |    |    |    |                                                                                       |                                                                                     |
|                                                    | Cat. No.                      | A2.0U-24                                                                            | A10U-12                                                                             | A13.5U-8                                                                            | A13.5U-12                                                                            | A38.5U-6                                                                              |                                                                                       |                                                                                     |
|                                                    | Rotor ID                      | 3                                                                                   | 4                                                                                   | 5                                                                                   | 1                                                                                    | 9                                                                                     |                                                                                       |                                                                                     |
|                                                    | Max. Capacity                 | 24 x 1.5/2.0 mL                                                                     | 12 x 10 mL                                                                          | 8 x 13.5 mL                                                                         | 12 x 13.5 mL                                                                         | 6 x 38.5 mL                                                                           |                                                                                       |                                                                                     |
| High Speed Centrifuges / Multi-purpose Centrifuges | Bore Ø x L (mm)               | 11 x 37.5                                                                           | 17 X 70                                                                             | 16.3 X 83                                                                           | 16.3 X 83.4                                                                          | 25.6 x 92                                                                             |                                                                                       |                                                                                     |
|                                                    | Radius* (mm)                  | 82                                                                                  | 85                                                                                  | 73                                                                                  | 87                                                                                   | 91                                                                                    |                                                                                       |                                                                                     |
|                                                    | Max. height for tube fit (mm) | 47.1                                                                                | 71.5                                                                                | 84.4                                                                                | 83.4                                                                                 | 98.9                                                                                  |                                                                                       |                                                                                     |
|                                                    | Ultra 5.0                     | 40,000                                                                              | 45,000                                                                              | 50,000                                                                              | 50,000                                                                               | 50,000                                                                                |                                                                                       |                                                                                     |
|                                                    | Max. RPM                      | 146,680 xg                                                                          | 192,430 xg                                                                          | 204,030 xg                                                                          | 243,160 xg                                                                           | 254,340 xg                                                                            |                                                                                       |                                                                                     |
|                                                    | Max. RCF                      |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                     |
|                                                    | Rotor Shape                   |  |  |  |  |  |  |                                                                                     |
|                                                    | Cat. No.                      | A0.2-48                                                                             | A2.0-24                                                                             | A2.0-36                                                                             | A10-12                                                                               | A15-12                                                                                | A15c-12                                                                               |                                                                                     |
|                                                    | Rotor ID                      | 18                                                                                  | 1                                                                                   | 14                                                                                  | 2                                                                                    | 4                                                                                     | 8                                                                                     |                                                                                     |
|                                                    | Max. Capacity                 | 48 x 0.2 mL                                                                         | 24 x 1.5/2.0 mL                                                                     | 36 x 1.5/2.0 mL                                                                     | 12 x 10 mL                                                                           | 12 x 15 mL                                                                            | 12 x 15 mL conical                                                                    |                                                                                     |
|                                                    | Bore Ø x L (mm)               | 6.5 x 17                                                                            | 11.5 x 38                                                                           | 11 x 37.5                                                                           | 16.3 x 74.5                                                                          | 17 x 96                                                                               | 17 X 115                                                                              |                                                                                     |
|                                                    | Radius* (mm)                  | 88.9                                                                                | 80.8                                                                                | 115.7                                                                               | 85.1                                                                                 | 106                                                                                   | 99.4                                                                                  |                                                                                     |
|                                                    | Max. height for tube fit (mm) | -                                                                                   | 46                                                                                  | 49.5                                                                                | 87.1                                                                                 | 120.8                                                                                 | 123.2                                                                                 |                                                                                     |
|                                                    | Supra R30                     | -                                                                                   | -                                                                                   | 20,000                                                                              | 30,000                                                                               | 30,000                                                                                | 17,000                                                                                |                                                                                     |
|                                                    | Supra R22                     | -                                                                                   | -                                                                                   | 51,741 xg                                                                           | 85,628 xg                                                                            | 106,657 xg                                                                            | 32,116 xg                                                                             |                                                                                     |
|                                                    | Supra R17                     | -                                                                                   | -                                                                                   | 18,000                                                                              | 22,000                                                                               | 22,000                                                                                | 17,000                                                                                |                                                                                     |
|                                                    | Supra R12                     | -                                                                                   | -                                                                                   | 41,910 xg                                                                           | 46,049 xg                                                                            | 57,358 xg                                                                             | 32,116 xg                                                                             |                                                                                     |
| Clinical Centrifuges                               | Combi R515                    | -                                                                                   | -                                                                                   | 15,000                                                                              | 17,000                                                                               | 17,000                                                                                | 15,000                                                                                |                                                                                     |
|                                                    | Combi 508                     | -                                                                                   | -                                                                                   | 29,104 xg                                                                           | 27,496 xg                                                                            | 34,249 xg                                                                             | 25,004 xg                                                                             |                                                                                     |
|                                                    | Max. RPM                      |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                     |
|                                                    | Max. RCF                      |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                     |
|                                                    | Rotor Shape                   |  |  |  |  |  |                                                                                       |                                                                                     |
|                                                    | Cat. No.                      | A-cyto-12                                                                           | A-sero-12(A) / A-sero-12(B)                                                         | A-hemo-24                                                                           | AL15-12                                                                              | AL15-24                                                                               |                                                                                       |                                                                                     |
|                                                    | Rotor ID                      | -                                                                                   | -                                                                                   | -                                                                                   | 3                                                                                    | 4                                                                                     |                                                                                       |                                                                                     |
|                                                    | Max. Capacity                 | 12 slides x 0.5~0.6 mL                                                              | 12 x 75 mm                                                                          | 24 x 0.07 mL capillary                                                              | 12 x 15 mL                                                                           | 24 x 15 mL                                                                            |                                                                                       |                                                                                     |
|                                                    | Bore Ø x L (mm)               | -                                                                                   | -                                                                                   | -                                                                                   | 18 x 94.5                                                                            | 18 x 104.5                                                                            |                                                                                       |                                                                                     |
|                                                    | Radius* (mm)                  | 116.8                                                                               | 86.5                                                                                | 96.5                                                                                | 142.4                                                                                | 155.8                                                                                 |                                                                                       |                                                                                     |
|                                                    | Max. height for tube fit      | -                                                                                   | -                                                                                   | -                                                                                   | 134                                                                                  | 143.3                                                                                 |                                                                                       |                                                                                     |
|                                                    | Fleta 4                       | -                                                                                   | -                                                                                   | -                                                                                   | 4,000                                                                                | 4,000                                                                                 |                                                                                       |                                                                                     |
|                                                    | CellSpin                      | -                                                                                   | -                                                                                   | -                                                                                   | 2,395 xg                                                                             | 2,635 xg                                                                              |                                                                                       |                                                                                     |
|                                                    | SeroSpin II                   | 3,000                                                                               | -                                                                                   | -                                                                                   | -                                                                                    | -                                                                                     |                                                                                       |                                                                                     |
|                                                    | HematoSpin II                 | 1,175 xg                                                                            | -                                                                                   | -                                                                                   | -                                                                                    | -                                                                                     |                                                                                       |                                                                                     |
|                                                    | Max. RPM                      |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                     |
|                                                    | Max. RCF                      |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                     |



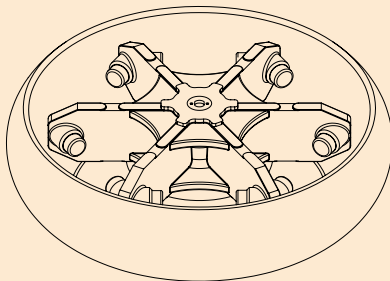
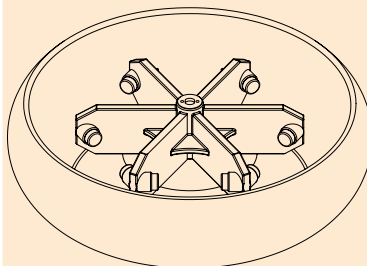
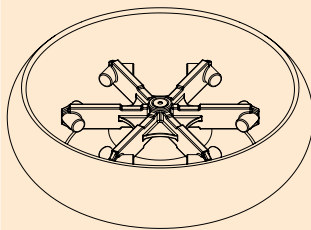
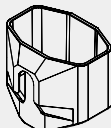
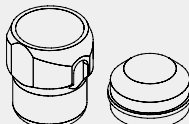
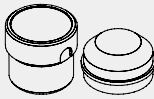
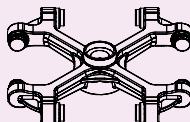
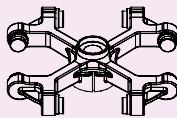
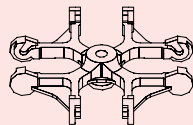
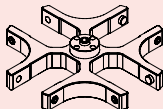
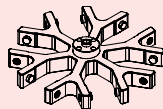
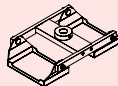
|            |
|------------|
|            |
| A50U-8     |
| 6          |
| 8 x 50 mL  |
| 29 x 100.5 |
| 98         |
| 107.3      |
| 30,000     |
| 98,784 xg  |

|            |            |
|------------|------------|
|            |            |
| A94U-6     | A250U-6    |
| 7          | 8          |
| 6 x 94 mL  | 6 x 250 mL |
| 38.5 x 105 | 60 x 101   |
| 99.4       | 129        |
| 110.7      | 105.8      |
| 35,000     | 20,000     |
| 136,377 xg | 57,792 xg  |

|           |                   |           |           |            |            |              |              |
|-----------|-------------------|-----------|-----------|------------|------------|--------------|--------------|
|           |                   |           |           |            |            |              |              |
| A50-6     | A50c-6            | A50-8     | A85-6     | A250-6     | A500-6     | A1000-4      | A1000-6      |
| 5         | 6                 | 7         | 9         | 10         | 11         | 12           | 13           |
| 6 x 50 mL | 6 x 50 mL conical | 8 x 50 mL | 6 x 85 mL | 6 x 250 mL | 6 x 500 mL | 4 x 1,000 mL | 6 x 1,000 mL |
| 29 x 100  | 30 x 108.6        | 29 x 100  | 38.3 x 95 | 62 x 103   | 70 x 141   | 98 x 144     | 98 x 144     |
| 96.1      | 91                | 98.9      | 97.6      | 138.3      | 158.7      | 169.9        | 200.1        |
| 122.7     | 118.5             | 110.7     | 115.5     | 132        | 168.5      | 184.8        | 176.5        |
| 30,000    | 17,000            | 30,000    | 25,000    | 10,000     | 8,000      | 7,000        | -            |
| 96,696 xg | 29,402 xg         | 99,513 xg | 68,198 xg | 15,462 xg  | 11,355 xg  | 9,307 xg     | -            |
| 22,000    | 17,000            | 20,000    | 20,000    | 12,000     | 9,000      | 8,000        | -            |
| 52,001 xg | 29,402 xg         | 44,228 xg | 43,647 xg | 22,265 xg  | 14,372 xg  | 12,157 xg    | -            |
| 17,000    | 15,000            | 15,000    | 15,000    | 10,000     | -          | -            | -            |
| 31,050 xg | 22,891 xg         | 24,878 xg | 24,551 xg | 15,462 xg  | -          | -            | -            |
| -         | -                 | -         | -         | 12,000     | 10,000     | 8,000        | 7,000        |
| -         | -                 | -         | -         | 22,265 xg  | 17,743 xg  | 12,157 xg    | 10,962 xg    |
| 15,000    | 15,000            | 15,000    | 15,000    | 8,000      | -          | -            | -            |
| 24,174 xg | 22,891 xg         | 24,878 xg | 24,551 xg | 9,896 xg   | -          | -            | -            |
| 8,000     | 8,000             | 8,000     | 8,000     | -          | -          | -            | -            |
| 6,876 xg  | 6,511 xg          | 7,077 xg  | 6,983 xg  | -          | -          | -            | -            |

Selection Guide of Swing-out Rotor

\* Radius is the distance from the center of the rotor to the inner end of tube carrier in mm.

|                            |                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
|----------------------------|-------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Large Capacity Centrifuges | Rotor Shape                   |    |                                                                                     |                                                                                     |   |                                                                                     |                                                                                      |    |                                                                                       |                                                                                       |
|                            | Cat. No.                      | WS2400-6                                                                            |                                                                                     |                                                                                     | WS1000-6                                                                            |                                                                                     |                                                                                      | WS750-6                                                                               |                                                                                       |                                                                                       |
|                            | Bucket Cat. No.               |    |                                                                                     |                                                                                     |   |                                                                                     |                                                                                      |    |    |                                                                                       |
|                            | Max. Capacity                 | 6 x 2 x 500 mL                                                                      |                                                                                     |                                                                                     | 6 x 1,000 mL                                                                        |                                                                                     |                                                                                      | 6 x 750 mL                                                                            |                                                                                       | 6 x 4 MTPs                                                                            |
|                            | Radius* (mm)                  | 290                                                                                 |                                                                                     |                                                                                     | 259.8                                                                               |                                                                                     |                                                                                      | 225                                                                                   |                                                                                       | 191.9                                                                                 |
|                            | Max. height for tube fit (mm) | 209.2                                                                               |                                                                                     |                                                                                     | 182.2 (w/o cap), 169.5 (w/ cap)                                                     |                                                                                     |                                                                                      | 161.5 (w/o cap), 129 (w/ cap)                                                         |                                                                                       | 88 x 128.5 x 42                                                                       |
|                            | Component R12                 | 4,500<br>6,491 xg                                                                   |                                                                                     |                                                                                     | -                                                                                   |                                                                                     |                                                                                      | -                                                                                     |                                                                                       | -                                                                                     |
|                            | Component R6                  | -                                                                                   |                                                                                     |                                                                                     | 5,000<br>7,261 xg                                                                   |                                                                                     |                                                                                      | -                                                                                     |                                                                                       | -                                                                                     |
|                            | Component wR                  | -                                                                                   |                                                                                     |                                                                                     | -                                                                                   |                                                                                     |                                                                                      | 4,500<br>5,096 xg                                                                     |                                                                                       | 4,500<br>4,345 xg                                                                     |
|                            | Max. RPM<br>Max. RCF          |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
| Multi-purpose Centrifuges  | Rotor Shape                   |   |                                                                                     |                                                                                     |   |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
|                            | Cat. No.                      | S750-4                                                                              |                                                                                     |                                                                                     | S500-4                                                                              |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
|                            | Rotor ID                      | 13                                                                                  |                                                                                     |                                                                                     | 12                                                                                  |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
|                            | Bucket Cat.No.                |  |                                                                                     |  |  |                                                                                     |   |                                                                                       |                                                                                       |                                                                                       |
|                            |                               | B750 / B750S                                                                        |                                                                                     | TM96(750-4)                                                                         | B500                                                                                |                                                                                     | TM96(500-4)                                                                          |                                                                                       |                                                                                       |                                                                                       |
|                            | Max. Capacity                 | 4 x 750 mL                                                                          |                                                                                     | 4 x 4 MTPs                                                                          | 4 x 500 mL                                                                          |                                                                                     | 4 x 4 MTPs                                                                           |                                                                                       |                                                                                       |                                                                                       |
|                            | Radius* (mm)                  | 196.5                                                                               |                                                                                     | 163.5                                                                               | 194                                                                                 |                                                                                     | 154                                                                                  |                                                                                       |                                                                                       |                                                                                       |
|                            | Max. height for tube fit (mm) | 157.5 (w/o cap), 142 (w/ cap)                                                       |                                                                                     | 88 x 128.5 x 42                                                                     | 157.2 (w/o cap), 143.5 (w/ cap)                                                     |                                                                                     | 87 x 128.5 x 53                                                                      |                                                                                       |                                                                                       |                                                                                       |
|                            | Combi R515                    | 4,000                                                                               |                                                                                     | 4,000                                                                               | 4,500<br>4,392 xg                                                                   |                                                                                     | 4,000<br>2,755 xg                                                                    |                                                                                       |                                                                                       |                                                                                       |
|                            | Combi 508                     | 3,515 xg                                                                            |                                                                                     | 2,925 xg                                                                            | 4,000<br>3,435 xg                                                                   |                                                                                     | 4,000<br>2,755 xg                                                                    |                                                                                       |                                                                                       |                                                                                       |
|                            | Max. RPM<br>Max. RCF          | 4,000<br>3,515 xg                                                                   |                                                                                     | 4,000<br>2,925 xg                                                                   |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |
| Clinical Centrifuges       | Rotor Shape                   |  |                                                                                     |                                                                                     |                                                                                     |                                                                                     |  |  |  |                                                                                       |
|                            | Cat. No.                      | HSR-4S                                                                              |                                                                                     |                                                                                     |                                                                                     |                                                                                     | S85-4                                                                                | S50-6                                                                                 | HSM-2                                                                                 |                                                                                       |
|                            | Rotor ID                      | 3                                                                                   | 2                                                                                   |                                                                                     | 1                                                                                   |                                                                                     | 1                                                                                    | 2                                                                                     | 1                                                                                     |                                                                                       |
|                            | Bucket Cat.No.                |  |  |  |  |  |   |    |  |  |
|                            |                               | HBTM                                                                                | HBT50-1                                                                             | HBT50-2                                                                             | HBT50c-1                                                                            | HBT15-8                                                                             | HBT15c-4                                                                             | B85                                                                                   | B50                                                                                   | B15c-2                                                                                |
|                            | Max. Capacity                 | 4 x 8 x 15(16) mL                                                                   | 4 x 50 mL                                                                           | 4 x 2 x 50 mL                                                                       | 4 x 50 mL conical                                                                   | 4 x 8 x 15(16) mL                                                                   | 4 x 4 x 15 mL conical                                                                | 4 x 85 mL                                                                             | 6 x 50 mL                                                                             | 6 x 2 x 15 mL conical                                                                 |
|                            | Radius* (mm)                  | 164.1                                                                               | 181.3                                                                               | 181.3                                                                               | 184.2                                                                               | 162.7                                                                               | 172.7                                                                                | 172.6                                                                                 | 181.3                                                                                 | 165.8                                                                                 |
|                            | Max. height for tube fit (mm) | 67.5                                                                                | 154.3                                                                               | 154.3                                                                               | 143.4                                                                               | 138.2                                                                               | 147.6                                                                                | 142.5                                                                                 | 145.7                                                                                 | 138.7                                                                                 |
|                            | Fleta 5                       | 3,000                                                                               | 5,500                                                                               | 4,500                                                                               | 5,500                                                                               | 4,000                                                                               | 4,000                                                                                | -                                                                                     | -                                                                                     | -                                                                                     |
|                            | Fleta 4                       | 1,651 xg                                                                            | 6,131 xg                                                                            | 4,104 xg                                                                            | 6,230 xg                                                                            | 2,910 xg                                                                            | 3,089 xg                                                                             | -                                                                                     | -                                                                                     | -                                                                                     |
|                            | Max. RPM<br>Max. RCF          | -                                                                                   | -                                                                                   | -                                                                                   | -                                                                                   | -                                                                                   | -                                                                                    | 4,000<br>3,087 xg                                                                     | 4,000<br>3,243 xg                                                                     | 4,000<br>2,966 xg                                                                     |
|                            |                               |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                     |                                                                                      |                                                                                       |                                                                                       |                                                                                       |

# Catalog Numbering Rule of Centrifuge and Accessories

Main Body

R for Refrigerated Model

Smart R17

Supra R22

Max. x 1,000 RPM

Rotor

M Smart R17 Plus / Smart 15 Plus

U Ultra Model

c Conical tube

Volume capacity of each rotor hole

|    |     |   |     |
|----|-----|---|-----|
| A  | 2.0 | M | -24 |
| A  | 10  | U | -12 |
| A  | 50  | c | -6  |
| S  | 500 |   | -4  |
| WS | 750 |   | -6  |

A Fixed Angle Rotor

S Swing-out Rotor

WS Windshield Rotor

Max. Capacity

Number of tube holes or buckets for max. load

Bucket

Bucket Capacity

|    |      |
|----|------|
| B  | 750  |
| B  | 750S |
| BL | 750  |

B Bucket

BL Bucket Lid

S Bucket with Screw for lid closure

Adaptor

c Conical tube

Volume capacity of each rotor hole

|    |     |   |       |
|----|-----|---|-------|
| TR | 15  | c | -14   |
| TR | 500 |   | (750) |

TR Tube Rack

Max. Capacity

Number of tubes for max. load

Matching bucket (or rotor hole) size

There may be exceptions to the rule. For more information, refer to the specific pages of model.

## Micro Centrifuges

Smart R17 Plus / Smart 15 Plus / Smart 13

### Micro Centrifuges

## *Smart R17 Plus / Smart 15 Plus*

- Rapid acceleration and deceleration to speed up molecular works
- Plastic, snap-fit button lid of 24 hole rotor for convenient and time saving usage
- Ideal for very quiet and speedy operation
- Easy to read graphical LCD display
- Easy to clean specially coated glossy surface
- Compact, light-weighted, and ergonomic design
- Smooth operation completed with motorized lid opening and closure
- Distinct "Fast Cool" button in a refrigerated model



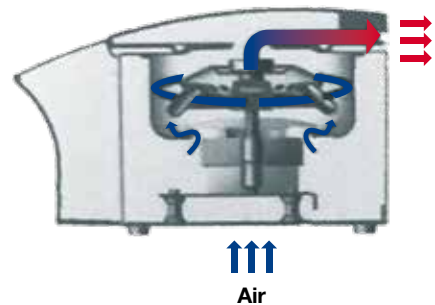
A2.0M-24



A2.0M-18



A0.2M-32



Non-refrigerative Smart 15 Plus  
with uniquely controlled air cooling structure



*Smart R17 Plus*



*Smart 15 Plus*

## Micro Centrifuge

# Smart 13

- Ideal for simple and efficient spinning at high speed
- Very quiet operation even at max speed of 13,500 rpm
- Rotating knobs enable quick setting of time and speed
- Can be terminated in 8 secs even at max speed
- Any types of micro tubes up to 2.0 mL can be loaded.
- Interchangeable optional PCR rotor for four 8-tube strips
- A sensitive hall sensor can activate a safety stop when lid is opened.
- Well-designed, non-slip silicone rubber feet
- Light weight and portable unit



A2.0-12



A0.2-32

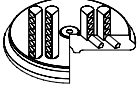
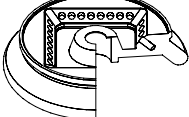
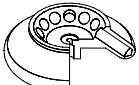
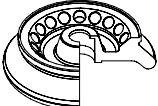
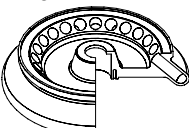
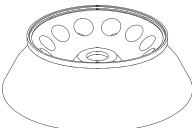
## Technical Specifications

|                             |                           | Smart R17 Plus / * Smart R17               | Smart 15 Plus / * Smart 15   | Smart 13 / * Micro 12                       |
|-----------------------------|---------------------------|--------------------------------------------|------------------------------|---------------------------------------------|
| Speed                       | Max. RPM / Fixed angle    | 17,000 rpm / 15,000 rpm                    | 15,000 rpm                   | 13,500 rpm                                  |
| RCF (xg)                    | Max. RCF / Fixed angle    | 23,005 xg                                  | 21,055 xg                    | 12,032 xg                                   |
| Max. capacity / Fixed angle |                           | 12 x 5.0 mL, 24 x 1.5/2.0 mL, 4 PCR strips |                              | 6 x 5.0 mL<br>12 x 1.5/2.0 mL, 4 PCR strips |
| ACC/DEC                     | ACC/DEC ramps             | 9/10 steps / *5/6 steps                    | 9/10 steps                   | -                                           |
|                             | Acc. time to max. speed   | ≤ 15 sec                                   |                              | ≤ 18 sec                                    |
|                             | Dec. time from max. speed | ≤ 15 sec                                   |                              | ≤ 8 sec                                     |
| Temperature                 | Temperature range         | -10°C to 40°C                              | -                            | -                                           |
|                             | Fast cool                 | Yes                                        | -                            | -                                           |
| Time control                |                           | < 100 min, pulse, continuous               | < 100 min, pulse, continuous | ≤15 min, pulse                              |
| Program memory              |                           | 10                                         | 10                           | -                                           |
| Noise level                 |                           | < 60 dB                                    |                              |                                             |
| Imbalance cutoff / tracking |                           | Yes                                        |                              | -                                           |
| Rotor identification        |                           | manual                                     |                              | -                                           |
| Dimension (W x D x H, mm)   |                           | 285.2 x 593.3 x 281                        | 293 x 380 x 242              | 189.7 x 202 x 129                           |
| Weight without rotor        |                           | 33 kg                                      | 15 kg                        | 1.5 kg                                      |
| Power consumption           |                           | 1.5 kVA                                    | 500va                        | 0.1KW                                       |
| Power input (V, Hz)         |                           | 220V, 60HZ                                 |                              |                                             |
| Cat. No.                    |                           | SM-R17PL                                   | SM-15PL                      | SM-13                                       |

\* Registered as medical device at MFDS<sup>1)</sup>

<sup>1)</sup> MFDS : Ministry of Food and Drug Safety (KOREA)

### Fixed Angle Rotors for Micro Centrifuges

| Rotor                                                                                                                      | Adaptable Centrifuge            | Tube Capacity                                                                                                    | Required Adaptor                                                                            | Bore Ø x L (mm)<br>Radius (mm)                                                                           | Max. RPM (rpm)<br>Max. RCF (xg)                                     |
|----------------------------------------------------------------------------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| <b>A0.2-32</b><br>(PCR Strip Rotor)<br>   | Smart 13                        |  0.2 mL                         | -                                                                                           | 6.5 x 15<br>Inner line :<br>31.13 (Min.)<br>44.06 (Max.)<br>Outer line :<br>46.13 (Min.)<br>55.68 (Max.) | 6,000<br>Inner line :<br>1,253~1,773<br>Outer line :<br>1,857~2,241 |
|                                                                                                                            |                                 |  0.2 mL strips                  | -                                                                                           |                                                                                                          |                                                                     |
| <b>A0.2M-32</b><br>(PCR Strip Rotor)<br>  | Smart R17 Plus                  |  0.2 mL                         | -                                                                                           | 6.5 x 17<br>55.5                                                                                         | 12,500<br>9,695                                                     |
|                                                                                                                            | Smart 15 Plus                   |  0.2 mL strips                  | -                                                                                           |                                                                                                          |                                                                     |
| <b>A2.0-12</b><br>                        | Smart 13                        |  1.5/2.0 mL                     | -                                                                                           | 11.5 x 38<br>59                                                                                          | 13,500<br>12,032                                                    |
|                                                                                                                            |                                 |  0.5 mL                         | TR0.5    | 8 x 37<br>59                                                                                             |                                                                     |
|                                                                                                                            |                                 |  0.2 mL                         | TR0.2    | 6 x 21<br>44                                                                                             | 13,500<br>8,965                                                     |
| <b>A2.0M-18</b><br>                     | Smart R17 Plus                  |  1.5/2.0 mL Micro-filter tube | -                                                                                           | 11 x 38<br>71.2                                                                                          | 17,000<br>23,005                                                    |
|                                                                                                                            |                                 |  0.5 mL                       | TR0.5  | 8 x 37<br>66                                                                                             | 17,000<br>21,325                                                    |
|                                                                                                                            |                                 |  0.2 mL                       | TR0.2  | 6 x 21<br>56                                                                                             | 17,000<br>18,094                                                    |
|                                                                                                                            | Smart 15 Plus                   |  1.5/2.0 mL Micro-filter tube | -                                                                                           | 11 x 38<br>71.2                                                                                          | 15,000<br>17,910                                                    |
|                                                                                                                            |                                 |  0.5 mL                       | TR0.5  | 8 x 37<br>66                                                                                             | 15,000<br>16,602                                                    |
|                                                                                                                            |                                 |  0.2 mL                       | TR0.2  | 6 x 21<br>56                                                                                             | 15,000<br>14,087                                                    |
| <b>A2.0M-24</b><br><b>A2.0MP-24</b><br> | Smart R17 Plus                  |  1.5/2.0 mL                   | -                                                                                           | 11 x 38<br>83.7                                                                                          | 15,000<br>21,055                                                    |
|                                                                                                                            | Smart 15 Plus                   |  0.5 mL                       | TR0.5  | 8 x 37<br>78.5                                                                                           | 15,000<br>19,747                                                    |
|                                                                                                                            |                                 |  0.2 mL                       | TR0.2  | 6 x 21<br>68.5                                                                                           | 15,000<br>17,231                                                    |
| <b>A5.0-6</b><br>                       | Smart 13                        |  5.0 mL                       | -                                                                                           | 17 x 25.5<br>65                                                                                          | 6,000<br>2,616                                                      |
| <b>A5.0M-12</b><br>                     | Smart R17 Plus<br>Smart 15 Plus |  5.0 mL                       | -                                                                                           | 16.5 x 61<br>83.5                                                                                        | 15,000<br>20,376                                                    |

\* Radius : From the center of the rotor to the inner end of tube carrier.

## Ultra Centrifuge

# *Ultra 5.0*

- Ideal for DNA, RNA, and protein separation
- 12 x 13.5 mL and 6 x 38.5 mL rotors up to 50,000 rpm (243,000 xg and 254,000 xg)
- Large capacity, 6 x 250 mL rotor up to 25,000 rpm (90,000 xg)
- High torque AC induction motor
- Self-lock rotor coupling, triggered by centrifugal force while spinning
- Vacuum and sealing constructed to minimize air friction at super speed rotation
- Automatic rotor identification by photo sensor
- Intuitive control panel with safety warning LEDs
- Robust and safe sliding lid



- Direct and flexible spindle drive system to endure ultra speed
- Unique anti-vibration damping structures embedded in both inside and outside motor



# Ultra Centrifuge

## Ultra 5.0



Jut (rotating)



Flat (stop)

Very convenient self-lock rotor coupling, triggered by centrifugal force while spinning

## Technical Specifications

|                             |                        | Ultra 5.0                            |
|-----------------------------|------------------------|--------------------------------------|
| Speed                       | Max. RPM / Fixed angle | 50,000 rpm                           |
| RCF (xg)                    | Max. RCF / Fixed angle | 254,340 xg                           |
| Max. capacity / Fixed angle |                        | 6 x 250 mL                           |
| ACC/DEC                     |                        | 10/10 steps                          |
| Temperature range           |                        | -10°C to 40°C                        |
| Time control                |                        | < 100 hr, continuous                 |
| Program memory              |                        | 100                                  |
| Noise level                 |                        | ≤ 65 dB                              |
| Vacuum system               |                        | Yes                                  |
| Rotor identification        |                        | Automatic                            |
| Dimension (W x D x H, mm)   |                        | 710 x 1,000 x 1,260                  |
| Weight without rotor        |                        | 450 kg                               |
| Power consumption           |                        | 5.0 kVA                              |
| Power input (V, Hz)         |                        | 220V+ / 60 Hz (110V, 50 Hz optional) |
| Cat. No.                    |                        | UL-5.0                               |

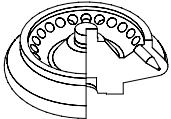
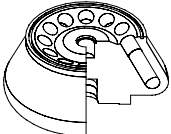
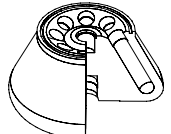
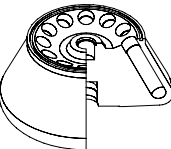
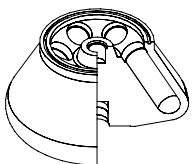
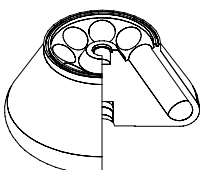
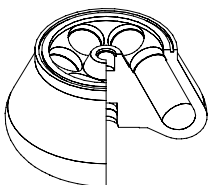
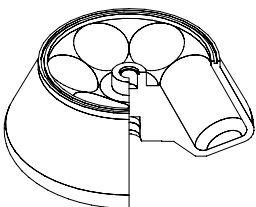


A38.5U-8



A2.0U-24

## Fixed Angle Rotors for Ultra 5.0

| Rotor                                                                                                                                                                                                                                                                                                   | Tube Capacity<br>Bottom Type                                                                         | Bore Ø x L (mm)<br>Radius (mm) | Max. RPM (rpm)<br>Max. RCF (xg) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------|
| <b>A2.0U-24</b><br> <p>Hole angle : <math>\angle 40^\circ</math><br/> Max. Capacity : 24 x 1.5/2.0 mL<br/> Size (ø x H) : ø180 x 88 mm<br/> Max. height for tube fit : 47.1 mm<br/> <b>Incl. a screw type lid</b></p>  |  1.5/2.0 mL<br>-    | 11 x 37.5<br>82                | 40,000<br>146,680               |
| <b>A10U-12</b><br> <p>Hole angle : <math>\angle 26^\circ</math><br/> Max. Capacity : 12 x 10 mL<br/> Size (ø x H) : ø180 x 90 mm<br/> Max. height for tube fit : 71.5 mm<br/> <b>Incl. a screw type lid</b></p>        |  10 mL<br>Round     | 17 X 70<br>85                  | 45,000<br>192,430               |
| <b>A13.5U-8</b><br> <p>Hole angle : <math>\angle 26^\circ</math><br/> Max. Capacity : 8 x 13.5 mL<br/> Size (ø x H) : ø165.5 x 91.3 mm<br/> Max. height for tube fit : 84.4 mm<br/> <b>Incl. a screw type lid</b></p>  |  13.5 mL<br>Round   | 16.3 X 83<br>73                | 50,000<br>204,030               |
| <b>A13.5U-12</b><br> <p>Hole angle : <math>\angle 26^\circ</math><br/> Max. Capacity : 12 x 13.5 mL<br/> Size (ø x H) : ø189 x 90.5 mm<br/> Max. height for tube fit : 83.4 mm<br/> <b>Incl. a screw type lid</b></p> |  13.5 mL<br>Round  | 16.3 X 83.4<br>87              | 50,000<br>243,160               |
| <b>A38.5U-6</b><br> <p>Hole angle : <math>\angle 29^\circ</math><br/> Max. Capacity : 6 x 38.5 mL<br/> Size (ø x H) : ø198 x 112 mm<br/> Max. height for tube fit : 98.9 mm<br/> <b>Incl. a screw type lid</b></p>   |  38.5 mL<br>Round | 25.6 x 92<br>91                | 50,000<br>254,340               |
| <b>A50U-8</b><br> <p>Hole angle : <math>\angle 30^\circ</math><br/> Max. Capacity : 8 x 50 mL<br/> Size (ø x H) : ø213 x 110 mm<br/> Max. height for tube fit : 107.3 mm<br/> <b>Incl. a screw type lid</b></p>      |  50 mL<br>Round   | 29 x 100.5<br>98               | 30,000<br>98,784                |
| <b>A94U-6</b><br> <p>Hole angle : <math>\angle 25^\circ</math><br/> Max. Capacity : 6 x 94 mL<br/> Size (ø x H) : ø219.7 x 119 mm<br/> Max. height for tube fit : 110.7 mm<br/> <b>Incl. a screw type lid</b></p>    |  94 mL<br>Round   | 38.5 x 105<br>99.4             | 35,000<br>136,377               |
| <b>A250U-6</b><br> <p>Hole angle : <math>\angle 25^\circ</math><br/> Max. Capacity : 6 x 250 mL<br/> Size (ø x H) : ø280 x 130 mm<br/> Max. height for tube fit : 126.9 mm<br/> <b>Incl. a screw type lid</b></p>    |  250 mL<br>Flat   | 60 x 101<br>129                | 20,000<br>57,792                |

\* Radius : From the center of the rotor to the inner end of tube carrier.

## High Speed Centrifuges

Supra R30 / Supra R22 / Supra R17 / Supra R12

### High Speed Centrifuge

## ***Supra R30***

- Ideal for sub-cellular organelle separation
- Exceptional usage for 8 x 50 mL up to 30,000 rpm (almost 100,000 xg)
- Convenient rotor coupling and decoupling complete with rotor lid closure and opening (no need additional tool)
- Maintenance free durable induction motor
- Soft motor shaft for stable rotation of heavy rotors
- Automatic half-atmosphere vacuum control at over 22,000 rpm
- Intuitive control panel with safety warning LEDs
- Imbalance cut-off function for safe operation
- Robust and safe sliding lid



A1000-4



A250-6



A50-8



A50c-6

### High Speed Centrifuge

## ***Supra R22***

- Affordable high speed centrifuge for usage of 4 x 1,000 mL
- Capacity for 6x50ml up to 22,000 rpm (52,000 xg) and 4 x 1000 mL at 8,000 rpm (12,000 xg)
- Convenient rotor coupling and decoupling in one single action of rotor lid closure and opening (no any tool is needed)
- Imbalance cutoff and tracking function
- Automatic rotor identification for safe operation
- Smoothly working, motorized lid opening and closure
- Excellent temperature control
- Password lock function



A1000-4



A50-6



A15-12

## High Speed Centrifuges

Supra R30 / Supra R22 / Supra R17 / Supra R12

### High Speed Centrifuge

## ***Supra R17***

- Economical choice for daily high speed centrifuge usage
- It is recommended to use conical 50 mL tubes at high speed (15,000 rpm / 22,000 xg)
- For up to 17,000 rpm (31,000 xg) with 6 x 50 mL tubes and 10,000 rpm (15,000 xg) with 6 x 250 mL tubes
- Fast cooling function to 4°C in 5 minutes for fast startup of cooled samples
- Convenient rotor coupling and decoupling with one single action of rotor lid closure and opening (no need of any tool)
- Intuitive control interface with numeric input buttons allows easy setting and editing of running conditions
- Selectable time counting control, at set speed or from starting
- Imbalance cutoff function for safe operation
- Compact, small foot print design



**A250-6**



**A50c-6**



**A15-12**



**A15c-12**

## High Speed Centrifuge

### *Supra R12*

- Recommended for large volume samples at high speed
- Capacity of 6 x 250 mL to 12,000 rpm (22,000 xg)
- Imbalance cut-off and tracking
- Intuitive and easy to control with extensive and informative display
- Smooth operation with motorized lid opening and closure
- Cooled with CFC free, environmental friendly refrigerant
- Excellent temperature control
- Password lock function



A1000-6



A500-6



A250-6



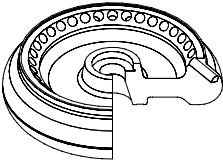
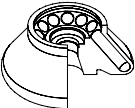
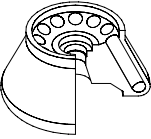
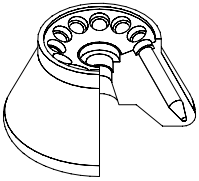
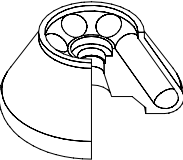
## Technical Specifications

|                             |                        | Supra R30                                | Supra R22             | Supra R17                         | Supra R12                            |
|-----------------------------|------------------------|------------------------------------------|-----------------------|-----------------------------------|--------------------------------------|
| Speed<br>RCF (xg)           | Max. RPM / Fixed angle | 30,000 rpm                               | 22,000 rpm            | 17,000 rpm                        | 12,000 rpm                           |
|                             | Max. RCF / Fixed angle | 106,657 xg                               | 57,358 xg             | 34,249 xg                         | 22,265 xg                            |
| Max. capacity               | Fixed angle            | 4 x 1,000 mL                             | 4 x 1,000 mL          | 6 x 250 mL                        | 6 x 1,000 mL                         |
| ACC/DEC ramps               |                        | 10/10 steps                              |                       | 9/10 steps                        | 10/10 steps                          |
| Temperature                 | Temperature range      | -10°C to 40°C                            | -10°C to 40°C         | -20°C to 40°C                     | -10°C to 40°C                        |
|                             | Fast cool              | -                                        | -                     | Yes                               | -                                    |
| Time control                |                        | < 100 hr, continuous                     |                       | Pulse<br>Timed < 10 hr continuous | Pulse<br>Timed < 100 hr, continuous  |
| Program memory              |                        | 100                                      |                       |                                   |                                      |
| Noise level                 |                        | ≤ 65 dB                                  |                       | ≤ 60 dB                           | ≤ 65 dB                              |
| Vacuum system               |                        | Yes                                      | -                     | -                                 | -                                    |
| Imbalance cutoff / tracking |                        | Yes / -                                  | Yes / Yes             | Yes / -                           | Yes / Yes                            |
| Rotor identification        |                        | manual                                   | Automatic             | Automatic                         | Automatic                            |
| Dimension (W x D x H, mm)   |                        | 710 x 1,000 x 1,260                      | 668.7 x 800.6 x 891.3 | 473 x 611 x 840                   | 668.7 x 800.6 x 891.3                |
| Weight without rotor        |                        | 415 kg                                   | 230 kg                | 114 kg                            | 230 kg                               |
| Power consumption           |                        | 5.2 kVA                                  | 5.1 kVA               | 2.9 kVA                           | 3.9 kVA                              |
| Power input (V, Hz)         |                        | 210~240V<br>60 Hz (110V, 50 Hz optional) |                       | 220V<br>50/60 Hz (110V optional)  | 210~240V<br>50/60 Hz (110V optional) |
| Cat. No.                    |                        | SU-R30                                   | SU-R22                | SU-R17                            | SU-R12                               |

# High Speed Centrifuges

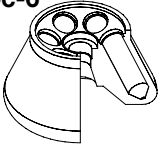
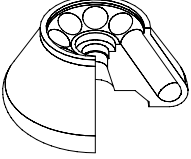
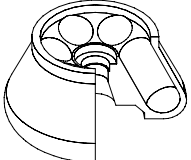
Supra R30 / Supra R22 / Supra R17 / Supra R12

## Fixed Angle Rotors for Supra Series (1)

| Rotor                                                                                                                                                                                                                                                                                                        | Adaptable Centrifuge | Tube Capacity Bottom Type                                                                                      | Required Adaptor                                                                                | Bore Ø x L (mm)<br>Radius (mm) | Max. RPM (rpm)<br>Max. RCF (xg) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------|
| <b>A2.0-36</b><br> <p>Hole angle : <math>\angle 30^\circ</math><br/> Max. Capacity : 36 x 1.5/2.0 mL<br/> Size (ø x H) : ø240 x 64<br/> Max. height for tube fit : 49.5 mm<br/> <b>Incl. a coupling bolt lid</b></p>        | Supra R30            |  1.5/2.0 mL Micro-filter tube | -                                                                                               | 11 x 37.5<br>115.7             | 20,000<br>51,741                |
|                                                                                                                                                                                                                                                                                                              |                      |  0.5 mL                       | TR0.5        | 8 x 37<br>111                  | 20,000<br>49,639                |
|                                                                                                                                                                                                                                                                                                              |                      |  0.2 mL                       | TR0.2        | 6 x 21<br>100                  | 20,000<br>44,720                |
|                                                                                                                                                                                                                                                                                                              | Supra R22            |  1.5/2.0 mL Micro-filter tube | -                                                                                               | 11 x 37.5<br>115.7             | 18,000<br>41,910                |
|                                                                                                                                                                                                                                                                                                              |                      |  0.5 mL                       | TR0.5        | 8 x 37<br>111                  | 18,000<br>40,208                |
|                                                                                                                                                                                                                                                                                                              |                      |  0.2 mL                       | TR0.2        | 6 x 21<br>100                  | 18,000<br>36,223                |
|                                                                                                                                                                                                                                                                                                              | Supra R17            |  1.5/2.0 mL Micro-filter tube | -                                                                                               | 11 x 37.5<br>115.7             | 15,000<br>29,104                |
|                                                                                                                                                                                                                                                                                                              |                      |  0.5 mL                       | TR0.5        | 8 x 37<br>111                  | 15,000<br>27,922                |
|                                                                                                                                                                                                                                                                                                              |                      |  0.2 mL                       | TR0.2        | 6 x 21<br>100                  | 15,000<br>25,155                |
| <b>A10-12</b><br> <p>Hole angle : <math>\angle 36^\circ</math><br/> Max. Capacity : 12 x 10 mL<br/> Size (ø x H) : ø179.9 x 82<br/> Max. height for tube fit : 87.1 mm<br/> <b>Incl. a coupling bolt lid</b></p>            | Supra R30            |  10 mL Round                  | -                                                                                               | 16.3 x 74.5<br>85.1            | 30,000<br>85,628                |
|                                                                                                                                                                                                                                                                                                              | Supra R22            |                                                                                                                |                                                                                                 |                                | 22,000<br>46,049                |
|                                                                                                                                                                                                                                                                                                              | Supra R17            |                                                                                                                |                                                                                                 |                                | 17,000<br>27,496                |
| <b>A15-12</b><br> <p>Hole angle : <math>\angle 30^\circ</math><br/> Max. Capacity : 12 x 15 mL<br/> Size (ø x H) : ø222.7 x 106 mm<br/> Max. height for tube fit : 121 mm<br/> <b>Incl. a coupling bolt lid</b></p>       | Supra R30            |  15 mL Round                | -                                                                                               | 17 x 96<br>106                 | 30,000<br>106,657               |
|                                                                                                                                                                                                                                                                                                              | Supra R22            |                                                                                                                |                                                                                                 |                                | 22,000<br>57,358                |
|                                                                                                                                                                                                                                                                                                              | Supra R17            |                                                                                                                |                                                                                                 |                                | 17,000<br>34,249                |
| <b>A15c-12</b><br> <p>Hole angle : <math>\angle 25^\circ</math><br/> Max. Capacity : 12 x 15 mL conical<br/> Size (ø x H) : ø215 x 121<br/> Max. height for tube fit : 123.2 mm<br/> <b>Incl. a coupling bolt lid</b></p> | Supra R30            |  15 mL Conical              | -                                                                                               | 17 X 115<br>99.4               | 17,000<br>32,116                |
|                                                                                                                                                                                                                                                                                                              | Supra R22            |                                                                                                                |                                                                                                 |                                | 17,000<br>32,116                |
|                                                                                                                                                                                                                                                                                                              | Supra R17            |                                                                                                                |                                                                                                 |                                | 15,000<br>25,004                |
| <b>A50-6</b><br> <p>Hole angle : <math>\angle 30^\circ</math><br/> Max. Capacity : 6 x 50 mL<br/> Size (ø x H) : ø200 x 109 mm<br/> Max. height for tube fit : 122.7 mm<br/> <b>Incl. a coupling bolt lid</b></p>         | Supra R30            |  50 mL Round                | -                                                                                               | 29 x 100<br>96.1               | 30,000<br>96,696                |
|                                                                                                                                                                                                                                                                                                              |                      |  15 mL Round                | TR15(50)   | 17 x 94<br>89.9                | 30,000<br>90,475                |
|                                                                                                                                                                                                                                                                                                              |                      |  15 mL Conical              | TR15c(50)  | 17 x 105<br>91                 | 30,000<br>91,564                |
|                                                                                                                                                                                                                                                                                                              | Supra R22            |  50 mL Round                | -                                                                                               | 29 x 100<br>96.1               | 22,000<br>52,001                |
|                                                                                                                                                                                                                                                                                                              |                      |  15 mL Round                | TR15(50)   | 17 x 94<br>89.9                | 22,000<br>48,646                |
|                                                                                                                                                                                                                                                                                                              |                      |  15 mL Conical              | TR15c(50)  | 17 x 105<br>91                 | 22,000<br>49,241                |
|                                                                                                                                                                                                                                                                                                              | Supra R17            |  50 mL Round                | -                                                                                               | 29 x 100<br>96.1               | 17,000<br>31,050                |
|                                                                                                                                                                                                                                                                                                              |                      |  15 mL Round                | TR15(50)   | 17 x 94<br>89.9                | 17,000<br>29,047                |
|                                                                                                                                                                                                                                                                                                              |                      |  15 mL Conical              | TR15c(50)  | 17 x 105<br>91                 | 17,000<br>29,402                |

\* Radius : From the center of the rotor to the inner end of tube carrier.

### Fixed Angle Rotors for Supra Series (2)

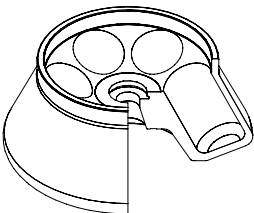
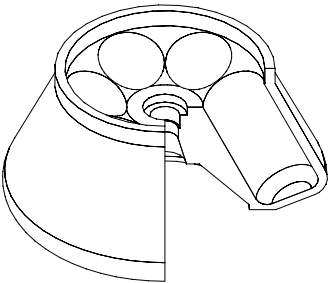
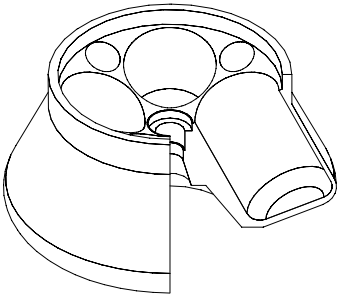
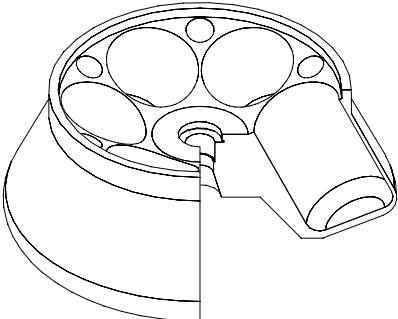
| Rotor                                                                                                                                                                                                                                                                                  | Adaptable Centrifuge | Tube Capacity Bottom Type                                                                         | Required Adaptor                                                                                | Bore Ø x L (mm)<br>Radius (mm) | Max. RPM (rpm)<br>Max. RCF (xg) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------|
| <b>A50c-6</b><br><br>Hole angle : $\angle 23^\circ$<br>Max. Capacity : 6 x 50 mL conical<br>Size (ø x H) : ø205.7 x 119 mm<br>Max. height for tube fit : 118.5 mm<br><b>Incl. a coupling bolt lid</b> | Supra R30            |  50 mL Conical   | -                                                                                               | 30 x 108.6<br>91               | 17,000<br>29,402                |
|                                                                                                                                                                                                                                                                                        | Supra R22            |                                                                                                   |                                                                                                 |                                | 17,000<br>29,402                |
|                                                                                                                                                                                                                                                                                        | Supra R17            |                                                                                                   |                                                                                                 |                                | 15,000<br>22,891                |
| <b>A50-8</b><br><br>Hole angle : $\angle 30^\circ$<br>Max. Capacity : 8 x 50 mL<br>Size (ø x H) : ø213 x 110.7 mm<br>Max. height for tube fit : 110.7 mm<br><b>Incl. a coupling bolt lid</b>          | Supra R30            |  50 mL Round     | -                                                                                               | 29 x 100<br>98.9               | 30,000<br>99,513                |
|                                                                                                                                                                                                                                                                                        |                      |  15 mL Round     | TR15(50)     | 17 x 94<br>92.8                | 30,000<br>93,375                |
|                                                                                                                                                                                                                                                                                        |                      |  15 mL Conical   | TR15c(50)    | 17 x 105<br>93.9               | 30,000<br>94,482                |
|                                                                                                                                                                                                                                                                                        | Supra R22            |  50 mL Round     | -                                                                                               | 29 x 100<br>98.9               | 20,000<br>44,228                |
|                                                                                                                                                                                                                                                                                        |                      |  15 mL Round     | TR15(50)     | 17 x 94<br>92.8                | 20,000<br>41,500                |
|                                                                                                                                                                                                                                                                                        |                      |  15 mL Conical   | TR15c(50)    | 17 x 105<br>93.9               | 20,000<br>41,992                |
|                                                                                                                                                                                                                                                                                        | Supra R17            |  50 mL Round     | -                                                                                               | 29 x 100<br>98.9               | 15,000<br>24,878                |
|                                                                                                                                                                                                                                                                                        |                      |  15 mL Round    | TR15(50)    | 17 x 94<br>92.8                | 15,000<br>23,344                |
|                                                                                                                                                                                                                                                                                        |                      |  15 mL Conical | TR15c(50)  | 17 x 105<br>93.9               | 15,000<br>23,621                |
| <b>A85-6</b><br><br>Hole angle : $\angle 25^\circ$<br>Max. Capacity : 6 x 85 mL<br>Size (ø x H) : ø209.1 x 112 mm<br>Max. height for tube fit : 115.4 mm<br><b>Incl. a coupling bolt lid</b>        | Supra R30            |  85 mL Round   | -                                                                                               | 38.3 x 95<br>97.6              | 25,000<br>68,198                |
|                                                                                                                                                                                                                                                                                        |                      |  50 mL Round   | TR50(85)   | 29 x 95<br>92.9                | 25,000<br>64,912                |
|                                                                                                                                                                                                                                                                                        |                      |  50 mL Conical | TR50c(85)  | 29.5 x 100<br>93               | 25,000<br>64,984                |
|                                                                                                                                                                                                                                                                                        |                      |  15 mL Round   | TR15(85)   | 17 x 94<br>89                  | 25,000<br>62,189                |
|                                                                                                                                                                                                                                                                                        |                      |  15 mL Conical | TR15c(85)  | 17 x 100<br>89.2               | 25,000<br>62,329                |
|                                                                                                                                                                                                                                                                                        | Supra R22            |  85 mL Round   | -                                                                                               | 38.3 x 95<br>97.6              | 20,000<br>43,647                |
|                                                                                                                                                                                                                                                                                        |                      |  50 mL Round   | TR50(85)   | 29 x 95<br>92.9                | 20,000<br>41,545                |
|                                                                                                                                                                                                                                                                                        |                      |  50 mL Conical | TR50c(85)  | 29.5 x 100<br>93               | 20,000<br>41,590                |
|                                                                                                                                                                                                                                                                                        |                      |  15 mL Round   | TR15(85)   | 17 x 94<br>89                  | 20,000<br>39,800                |
|                                                                                                                                                                                                                                                                                        |                      |  15 mL Conical | TR15c(85)  | 17 x 100<br>89.2               | 20,000<br>39,890                |
|                                                                                                                                                                                                                                                                                        | Supra R17            |  85 mL Round   | -                                                                                               | 38.3 x 95<br>97.6              | 15,000<br>24,551                |
|                                                                                                                                                                                                                                                                                        |                      |  50 mL Round   | TR50(85)   | 29 x 95<br>92.9                | 15,000<br>23,369                |
|                                                                                                                                                                                                                                                                                        |                      |  50 mL Conical | TR50c(85)  | 29.5 x 100<br>93               | 15,000<br>23,394                |
|                                                                                                                                                                                                                                                                                        |                      |  15 mL Round   | TR15(85)   | 17 x 94<br>89                  | 15,000<br>22,388                |
|                                                                                                                                                                                                                                                                                        |                      |  15 mL Conical | TR15c(85)  | 17 x 100<br>89.2               | 15,000<br>22,438                |

\* Radius : From the center of the rotor to the inner end of tube carrier.

# High Speed Centrifuges

Supra R30 / Supra R22 / Supra R17 / Supra R12

## Fixed Angle Rotors for Supra Series (3)

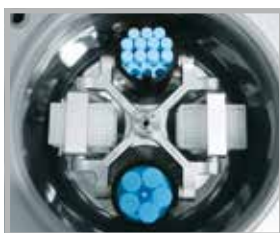
| Rotor                                                                                                                                                                                                                                                                              | Adaptable Centrifuge | Tube Capacity Bottom Type                                                                                | Bore Ø x L (mm)<br>Radius (mm) | Max. RPM (rpm)<br>Max. RCF (xg) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------------------------------------|--------------------------------|---------------------------------|
| <b>A250-6</b><br><br>Hole angle : $\angle 25^\circ$<br>Max. Capacity : 6 x 250 mL<br>Size (ø x H) : ø295.6 x 147.8 mm<br>Max. height for tube fit : 132 mm<br><b>Incl. a coupling bolt lid</b>    | Supra R30            | <br>250 mL<br>Flat      | 62 x 103<br>138.3              | 10,000<br>15,462                |
|                                                                                                                                                                                                                                                                                    | Supra R22            |                                                                                                          |                                | 12,000<br>22,265                |
|                                                                                                                                                                                                                                                                                    | Supra R17            |                                                                                                          |                                | 10,000<br>15,462                |
|                                                                                                                                                                                                                                                                                    | Supra R12            |                                                                                                          |                                | 12,000<br>22,265                |
| <b>A500-6</b><br><br>Hole angle : $\angle 25^\circ$<br>Max. Capacity : 6 x 500 mL<br>Size (ø x H) : ø336 x 179 mm<br>Max. height for tube fit : 168.5 mm<br><b>Incl. a coupling bolt lid</b>     | Supra R30            | <br>500 mL<br>Flat    | 70 x 141<br>158.7              | 8,000<br>11,355                 |
|                                                                                                                                                                                                                                                                                    | Supra R22            |                                                                                                          |                                | 9,000<br>14,372                 |
|                                                                                                                                                                                                                                                                                    | Supra R12            |                                                                                                          |                                | 10,000<br>17,743                |
| <b>A1000-4</b><br><br>Hole angle : $\angle 25^\circ$<br>Max. Capacity : 4 x 1,000 mL<br>Size (ø x H) : ø350 x 196 mm<br>Max. height for tube fit : 184.8 mm<br><b>Incl. a coupling bolt lid</b> | Supra R30            | <br>1,000 mL<br>Flat | 98 x 144<br>169.9              | 7,000<br>9,307                  |
|                                                                                                                                                                                                                                                                                    | Supra R22            |                                                                                                          |                                | 8,000<br>12,157                 |
|                                                                                                                                                                                                                                                                                    | Supra R12            |                                                                                                          |                                |                                 |
| <b>A1000-6</b><br><br>Hole angle : $\angle 25^\circ$<br>Max. Capacity : 6 x 1,000 mL<br>Size (ø x H) : ø408 x 188 mm<br>Max. height for tube fit : 176.5 mm<br><b>Incl. a coupling bolt lid</b> | Supra R12            | <br>1,000 mL<br>Flat | 98 x 144<br>200.1              | 7,000<br>10,962                 |

\* Radius : From the center of the rotor to the inner end of tube carrier.

## Multi-purpose Centrifuge

### *Combi R515*

- Real multi-purpose centrifuge for using both fixed angle and swing-out rotors
- Robust and practical benchtop design
- For up to 15,000 rpm (24,000 xg) with 6 x 85 mL
- Large capacity swing-out rotor for 4 x 500 mL up to 4,500 rpm (4,300 xg)
- A variety of tube adaptors to be fit into 750 mL and 500 mL swing buckets
- Automatic rotor identification
- Imbalance cutoff and tracking
- Intuitive and easy control and extensively informative display
- Smoothly working, motorized lid opening and closure
- Cooled using CFC free, environmental friendly refrigerant
- Excellent temperature control
- Drainage from the chamber hole of refrigerated models could be cleaned daily
- Password lock function



S750-4 / B750 & TM96



S500-4 / B500 & TM96



A50-8



A0.2-48

### Multi-purpose Centrifuge

## Combi 508

- Compact benchtop, multi-purpose centrifuge
- Ideal for routine usage of 4 x 750 mL swing-out centrifugation
- Very quiet and static operation with BLDC motor
- A variety of tube adaptors could be fitted into the 750 mL and 500 mL swing buckets
- Automatic rotor identification
- Imbalance cutoff and tracking
- Intuitive and easy control and extensive and informative display
- Smoothly working, motorized lid opening and closure



Unique air flow structure for effective noise reduction and excellent cooling



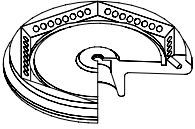
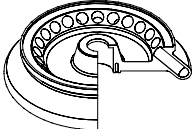
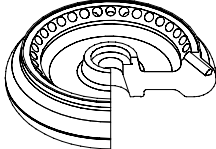
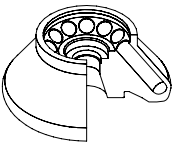
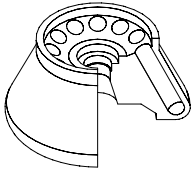
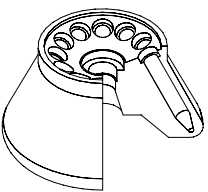
### Technical Specifications

|                             |                        | Combi R515 / *Combi 514R       | Combi 508 / *Combi 408 |
|-----------------------------|------------------------|--------------------------------|------------------------|
| Speed<br>RCF (xg)           | Max. RPM / Fixed angle | 15,000 rpm                     | 8,000 rpm              |
|                             | Max. RCF / Fixed angle | 26,664 xg                      | 8,279 xg               |
|                             | Max. RPM / Swing-out   | 4,500 rpm                      | 4,000 rpm              |
|                             | Max. RCF / Swing-out   | 4,392 xg                       | 3,515 xg               |
| Max. capacity               | Fixed angle            | 6 x 250 mL, 36 x 1.5/2.0 mL    | 6 x 85 mL              |
|                             | Swing-out              | 4 x 750 mL, 76 x 15 mL, 4 MTPs | 4 x 750 mL             |
| ACC/DEC ramps               |                        | 10/10 steps                    |                        |
| Temperature range           |                        | -10°C to 40°C                  | -                      |
| Time control                |                        | < 100 hr, pulse, continuous    | < 2 hr, continuous     |
| Program memory              |                        | 100                            |                        |
| Noise level                 |                        | ≤ 65 dB                        | ≤ 65 dB                |
| Imbalance cutoff / tracking |                        | Yes / Yes                      | Yes / Yes              |
| Rotor identification        |                        | Automatic                      | Automatic              |
| Dimension (W x D x H, mm)   |                        | 723 x 665 x 387                | 530 x 676 x 400        |
| Weight without rotor        |                        | 95 kg                          | 61 kg                  |
| Power consumption           |                        | 2.5 kw                         | 2.1 kVA                |
| Power input (V, Hz)         |                        | 220V, 60HZ                     |                        |
| Cat. No.                    |                        | CB-R515                        | CB-508                 |

\* Registered as medical device at MFDS<sup>1)</sup>

<sup>1)</sup> MFDS : Ministry of Food and Drug Safety (KOREA)

## Fixed Angle Rotors for Combi Series (1)

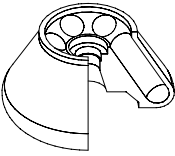
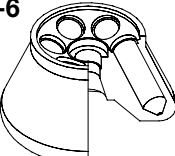
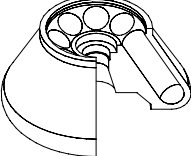
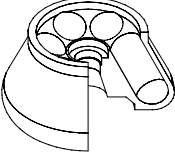
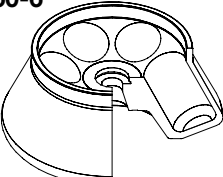
| Rotor                                                                                                                                                                                                                                                                                 | Adaptable Centrifuge | Tube Capacity Bottom Type       | Required Adaptor                                                                            | Bore Ø x L (mm)<br>Radius (mm) | Max. RPM (rpm)<br>Max. RCF (xg) |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---------------------------------|---------------------------------------------------------------------------------------------|--------------------------------|---------------------------------|
| <b>A0.2-48</b><br><br>Hole angle : $\angle 45^\circ$<br>Max. Capacity : 48 x 0.2 mL<br>Size (ø x H) : ø200 x 56 mm<br><b>Incl. a coupling bolt lid</b>                                               | Combi 514R           | 0.2 mL<br>-                     | -                                                                                           | 6.5 x 17<br>88.9               | 12,500<br>15,530                |
|                                                                                                                                                                                                                                                                                       |                      | 0.2 mL<br>PCR strip             | -                                                                                           |                                |                                 |
|                                                                                                                                                                                                                                                                                       | Combi 408            | 0.2 mL<br>-                     | -                                                                                           | 6.5 x 17<br>88.9               | 8,000<br>6,361                  |
|                                                                                                                                                                                                                                                                                       |                      | 0.2 mL<br>PCR strip             | -                                                                                           |                                |                                 |
| <b>A2.0-24</b><br><br>Hole angle : $\angle 40^\circ$<br>Max. Capacity : 24 x 1.5/2.0 mL<br>Size (ø x H) : ø202 x 79 mm<br>Max. height for tube fit : 46 mm<br><b>Incl. a coupling bolt lid</b>       | Combi 514R           | 1.5/2.0 mL<br>-                 | -                                                                                           | 11.5 x 38<br>80.8              | 15,000<br>20,325                |
|                                                                                                                                                                                                                                                                                       |                      | 0.5 mL<br>-                     | TR0.5    | 8 x 37<br>76.5                 | 15,000<br>19,244                |
|                                                                                                                                                                                                                                                                                       |                      | 0.2 mL<br>-                     | TR0.2    | 6 x 21<br>67                   | 15,000<br>16,854                |
|                                                                                                                                                                                                                                                                                       | Combi 408            | 1.5/2.0 mL<br>-                 | -                                                                                           | 11.5 x 38<br>80.8              | 8,000<br>5,781                  |
|                                                                                                                                                                                                                                                                                       |                      | 0.5 mL<br>-                     | TR0.5    | 8 x 37<br>76.5                 | 8,000<br>5,473                  |
|                                                                                                                                                                                                                                                                                       |                      | 0.2 mL<br>-                     | TR0.2    | 6 x 21<br>67                   | 8,000<br>4,795                  |
| <b>A2.0-36</b><br><br>Type : Fixed Angle Rotor $30^\circ$<br>Max. Capacity : 36 x 1.5/2.0 mL<br>Size (ø x H) : ø240 x 64 mm<br>Max. height for tube fit : 49 mm<br><b>Incl. a coupling bolt lid</b> | Combi 514R           | 1.5/2.0 mL<br>Micro-filter tube | -                                                                                           | 11.5 x 38<br>115.7             | 14,000<br>25,353                |
|                                                                                                                                                                                                                                                                                       |                      | 0.5 mL                          | TR0.5    | 8 x 37<br>111                  | 14,000<br>24,323                |
|                                                                                                                                                                                                                                                                                       |                      | 0.2 mL                          | TR0.2  | 6 x 21<br>100                  | 14,000<br>21,913                |
|                                                                                                                                                                                                                                                                                       | Combi 408            | 1.5/2.0 mL<br>Micro-filter tube | -                                                                                           | 11.5 x 38<br>115.7             | 8,000<br>8,279                  |
|                                                                                                                                                                                                                                                                                       |                      | 0.5 mL                          | TR0.5  | 8 x 37<br>111                  | 8,000<br>7,942                  |
|                                                                                                                                                                                                                                                                                       |                      | 0.2 mL                          | TR0.2  | 6 x 21<br>100                  | 8,000<br>7,155                  |
| <b>A10-12</b><br><br>Hole angle : $\angle 36^\circ$<br>Max. Capacity : 12 x 10 mL<br>Size (ø x H) : ø179.9 x 82 mm<br>Max. height for tube fit : 87.1 mm<br><b>Incl. a coupling bolt lid</b>       | Combi 514R           | 10 mL<br>Round                  | -                                                                                           | 16.3 x 74.5<br>85.1            | 15,000<br>21,407                |
|                                                                                                                                                                                                                                                                                       | Combi 408            |                                 |                                                                                             |                                | 8,000<br>6,089                  |
| <b>A15-12</b><br><br>Hole angle : $\angle 30^\circ$<br>Max. Capacity : 12 x 15 mL<br>Size (ø x H) : ø222.7 x 106 mm<br>Max. height for tube fit : 121 mm<br><b>Incl. a coupling bolt lid</b>       | Combi 514R           | 15(16) mL<br>Round              | -                                                                                           | 17 x 96<br>106                 | 15,000<br>26,664                |
|                                                                                                                                                                                                                                                                                       | Combi 408            |                                 |                                                                                             |                                | 8,000<br>7,585                  |
| <b>A15c-12</b><br><br>Hole angle : $\angle 25^\circ$<br>Max. Capacity : 12 x 15 mL conical<br>Size (ø x H) : ø215 x 121<br>Max. height for tube fit : 123.2 mm<br><b>Incl. a coupling bolt lid</b> | Combi 514R           | 15 mL<br>Conical                | -                                                                                           | 17 X 115<br>99.4               | 15,000<br>25,004                |
|                                                                                                                                                                                                                                                                                       | Combi 408            |                                 |                                                                                             |                                | 8,000<br>7,105                  |

\* Radius : From the center of the rotor to the inner end of tube carrier.

# Multi-purpose Centrifuges

Combi R515 / Combi 508

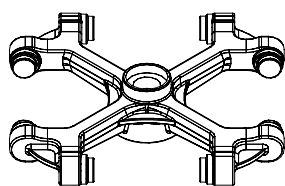
## Fixed Angle Rotors for Combi Series (2)

| Rotor                                                                                                                                                                                                                                                                                  | Adaptable Centrifuge | Tube Capacity<br>Bottom Type | Required<br>Adaptor | Bore Ø x L (mm)<br>Radius (mm) | Max. RPM (rpm)<br>Max. RCF (xg) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|------------------------------|---------------------|--------------------------------|---------------------------------|
| <b>A50-6</b><br><br>Hole angle : $\angle 30^\circ$<br>Max. Capacity : 6 x 50 mL<br>Size (ø x H) : ø200 x 109 mm<br>Max. height for tube fit : 122.7 mm<br><b>Incl. a coupling bolt lid</b>            | Combi 514R           | 50 mL Round                  | -                   | 29 x 100<br>96.1               | 15,000<br>24,174                |
|                                                                                                                                                                                                                                                                                        |                      | 15 mL Round                  | TR15(50)            | 17 x 94<br>89.9                | 15,000<br>22,614                |
|                                                                                                                                                                                                                                                                                        |                      | 15 mL Conical                | TR15c(50)           | 17 x 105<br>91                 | 15,000<br>22,891                |
|                                                                                                                                                                                                                                                                                        | Combi 408            | 50 mL Round                  | -                   | 29 x 100<br>96.1               | 8,000<br>6,876                  |
|                                                                                                                                                                                                                                                                                        |                      | 15 mL Round                  | TR15(50)            | 17 x 94<br>89.9                | 8,000<br>6,433                  |
|                                                                                                                                                                                                                                                                                        |                      | 15 mL Conical                | TR15c(50)           | 17 x 105<br>91                 | 8,000<br>6,511                  |
| <b>A50c-6</b><br><br>Hole angle : $\angle 23^\circ$<br>Max. Capacity : 6 x 50 mL conical<br>Size (ø x H) : ø205.7 x 119 mm<br>Max. height for tube fit : 118.1 mm<br><b>Incl. a coupling bolt lid</b> | Combi 514R           | 50 mL Conical                | -                   | 30 x 108.6<br>91               | 15,000<br>22,891                |
|                                                                                                                                                                                                                                                                                        | Combi 408            |                              |                     |                                | 8,000<br>6,511                  |
| <b>A50-8</b><br><br>Hole angle : $\angle 30^\circ$<br>Max. Capacity : 8 x 50 mL<br>Size (ø x H) : ø213 x 110.7 mm<br>Max. height for tube fit : 110.7 mm<br><b>Incl. a coupling bolt lid</b>         | Combi 514R           | 50 mL Round                  | -                   | 29 x 100<br>98.9               | 15,000<br>24,878                |
|                                                                                                                                                                                                                                                                                        |                      | 15 mL Round                  | TR15(50)            | 17 x 94<br>92.8                | 15,000<br>23,344                |
|                                                                                                                                                                                                                                                                                        |                      | 15 mL Conical                | TR15c(50)           | 17 x 105<br>93.9               | 15,000<br>23,621                |
|                                                                                                                                                                                                                                                                                        | Combi 408            | 50 mL Round                  | -                   | 29 x 100<br>98.9               | 8,000<br>7,077                  |
|                                                                                                                                                                                                                                                                                        |                      | 15 mL Round                  | TR15(50)            | 17 x 94<br>92.8                | 8,000<br>6,640                  |
|                                                                                                                                                                                                                                                                                        |                      | 15 mL Conical                | TR15c(50)           | 17 x 105<br>93.9               | 8,000<br>6,719                  |
| <b>A85-6</b><br><br>Hole angle : $\angle 25^\circ$<br>Max. Capacity : 6 x 85 mL<br>Size (ø x H) : ø209.1 x 112 mm<br>Max. height for tube fit : 115.4 mm<br><b>Incl. a coupling bolt lid</b>        | Combi 514R           | 85 mL Round                  | -                   | 38.3 x 95<br>97.6              | 15,000<br>24,551                |
|                                                                                                                                                                                                                                                                                        |                      | 50 mL Round                  | TR50(85)            | 29 x 95<br>92.9                | 15,000<br>23,369                |
|                                                                                                                                                                                                                                                                                        |                      | 50 mL Conical                | TR50c(85)           | 29.5 x 100<br>93               | 15,000<br>23,394                |
|                                                                                                                                                                                                                                                                                        |                      | 15 mL Round                  | TR15(85)            | 17 x 94<br>89                  | 15,000<br>22,388                |
|                                                                                                                                                                                                                                                                                        |                      | 15 mL Conical                | TR15c(85)           | 17 x 100<br>89.2               | 15,000<br>22,438                |
|                                                                                                                                                                                                                                                                                        | Combi 408            | 85 mL Round                  | -                   | 38.3 x 95<br>97.6              | 8,000<br>6,983                  |
|                                                                                                                                                                                                                                                                                        |                      | 50 mL Round                  | TR50(85)            | 29 x 95<br>92.9                | 8,000<br>6,647                  |
|                                                                                                                                                                                                                                                                                        |                      | 50 mL Conical                | TR50c(85)           | 29.5 x 100<br>93               | 8,000<br>6,654                  |
|                                                                                                                                                                                                                                                                                        |                      | 15 mL Round                  | TR15(85)            | 17 x 94<br>89                  | 8,000<br>6,368                  |
|                                                                                                                                                                                                                                                                                        |                      | 15 mL Conical                | TR15c(85)           | 17 x 100<br>89.2               | 8,000<br>6,382                  |
| <b>A250-6</b><br><br>Hole angle : $\angle 25^\circ$<br>Max. Capacity : 6 x 250 mL<br>Size (ø x H) : ø295.6 x 147.8 mm<br>Max. height for tube fit : 132 mm<br><b>Incl. a coupling bolt lid</b>      | Combi 514R           | 250 mL Round                 | -                   | 62 x 103<br>138.3              | 8,000<br>9,896                  |

\* Radius : From the center of the rotor to the inner end of tube carrier.

## Swing-out Rotors for Combi Series

## S750-4



∠90°

Max. RPM : 4,000 rpm

Size (W x D x H)

: 277 x 277 x 55 mm

## Bucket/Adaptor for S750-4



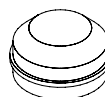
Round Bucket  
**B750S**

Capacity : 750 mL  
\* Cap Available (optional)

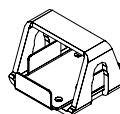


Round Bucket  
**B750**

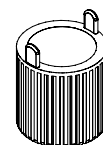
Capacity : 750 mL



Cap  
**BL750**



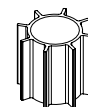
MicroTiter Plate Rack  
**TM96  
(750-4)**



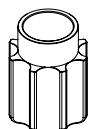
Adaptor  
**TR500  
(750)**



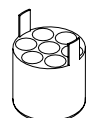
Adaptor  
**TR500c  
(750)**



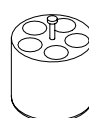
Adaptor  
**TR250  
(750)**



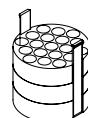
Adaptor  
**TR250c  
(750)**



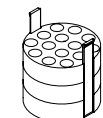
Adaptor  
**TR50-7**



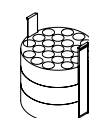
Adaptor  
**TR50c-5**



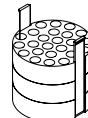
Adaptor  
**TR15-19**



Adaptor  
**TR15c-14**

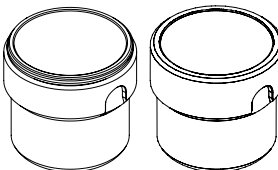
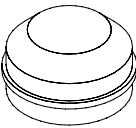
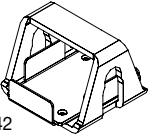


Adaptor  
**TR10-21**



Adaptor  
**TR5-24**

## Buckets and Tube Racks of S750-4

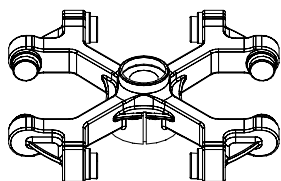
| Bucket                                                                                                                                                                                                                                                                                                                                                            | Required Adaptor                                                                                                                                                               | Tube Capacity<br>Bottom Type                                                                                  | Tube per<br>Adaptor / Rotor | Bore<br>(Ø x L, mm)                  | Max. height for<br>tube fit (mm) |         | Max. RPM (rpm)<br>Max. RCF (xg) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------|----------------------------------|---------|---------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                |                                                                                                               |                             |                                      | w/ cap                           | w/o cap |                                 |
| <b>B750S / B750</b><br><br><br><br><b>BL750</b><br><br><br><br>Radius : 196.5 mm<br>Bucket bore (ø x L, mm) : 99 x 103<br>Max. height for tube fit :<br>142 mm (w/ cap), 157.5 mm (w/o cap) | -                                                                                                                                                                              |  750 mL<br>Flat            | 1 / 4                       | 99 x 103                             | 142                              | 158.5   | 4,000<br>3,515                  |
|                                                                                                                                                                                                                                                                                                                                                                   | <b>TR500(750)</b>                                                                           |  500 mL<br>Flat            | 1 / 4                       | 75.5 x 98.7                          | 138.2                            | 150.6   | 4,000<br>3,458                  |
|                                                                                                                                                                                                                                                                                                                                                                   | <b>TR500c(750)</b>                                                                          |  500 mL conical<br>Conical | 1 / 4                       | 99 x 58                              | 140.2                            | 152.5   | 4,000<br>3,515                  |
|                                                                                                                                                                                                                                                                                                                                                                   | <b>TR250(750)</b>                                                                           |  250 mL<br>Flat            | 1 / 4                       | 62.3 x 87                            | 137.5                            | 146.7   | 4,000<br>3,443                  |
|                                                                                                                                                                                                                                                                                                                                                                   | <b>TR250c(750)</b>                                                                          |  250 mL conical<br>Conical | 1 / 4                       | 60.5 x 124.4                         | 138                              | 148.1   | 4,000<br>3,452                  |
|                                                                                                                                                                                                                                                                                                                                                                   | <b>TR50-7</b>                                                                               |  50 mL<br>Round            | 7 / 28                      | 29.2 x 97                            | 129.1                            | 135.3   | 4,000<br>3,443                  |
|                                                                                                                                                                                                                                                                                                                                                                   | <b>TR50c-5</b>                                                                              |  50 mL conical<br>Conical  | 5 / 20                      | 29 x 91                              | 125.1                            | 131.2   | 4,000<br>3,515                  |
|                                                                                                                                                                                                                                                                                                                                                                   | <b>TR15-19</b>                                                                              |  15 mL<br>Round            | 19 / 76                     | 17.2 x 87                            | 123.7                            | 129.8   | 4,000<br>3,443                  |
|                                                                                                                                                                                                                                                                                                                                                                   | <b>TR15c-14</b>                                                                             |  15 mL conical<br>Conical  | 14 / 56                     | 17 x 89                              | 125.5                            | 131.6   | 4,000<br>3,479                  |
|                                                                                                                                                                                                                                                                                                                                                                   | <b>TR10-21</b>                                                                              |  10 mL<br>Round            | 21 / 84                     | 16 x 87                              | 123.9                            | 130     | 4,000<br>3,443                  |
|                                                                                                                                                                                                                                                                                                                                                                   | <b>TR5-24</b>                                                                               |  3 mL / 5 mL<br>Round      | 24 / 96                     | 13.2 x 60 (3 mL)<br>13.2 x 87 (5 mL) | 123.2                            | 129.3   | 4,000<br>3,443                  |
| <b>TM96(750-4)</b><br><br>Radius : 163.5 mm<br>MTP holder size (w x d x L, mm) : 88 x 128.5 x 42<br>Max. height for tube fit : 88 x 128.5 x 42 mm                                                                                                                                                                                                                 | <br> MTP |                                                                                                               | 1 / 4                       | 88 x 128.5 x 42                      |                                  |         | 129.3                           |

\* Radius : From the center of the rotor to the inner end of tube carrier.

# Multi-purpose Centrifuges

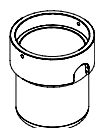
Combi R515 / Combi 508

## S500-4



∠ 90°  
Max. RPM : 4,500  
Size (W x D x H)  
: 262 x 262 x 55 mm

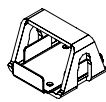
### Bucket/Adaptor for S500-4



Round Bucket  
**B500**  
Capacity : 500 mL  
\* Cap included



Cap  
**BL500**



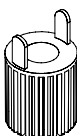
MicroTiter Plate Rack  
**TM96**  
(500-4)



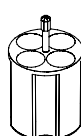
Adaptor  
**TR500**  
(500)



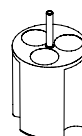
Adaptor  
**TR250**  
(500)



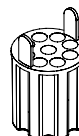
Adaptor  
**TR100**  
(500)



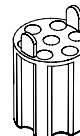
Adaptor  
**TR50-4**



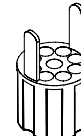
Adaptor  
**TR50c-3**



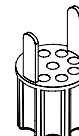
Adaptor  
**TR15-9**



Adaptor  
**TR15c-7**

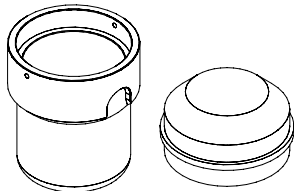
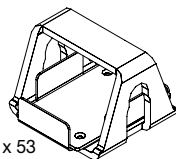


Adaptor  
**TR10-9**



Adaptor  
**TR5-9**

### Buckets and Tube Racks of S500-4

| Bucket                                                                                                                                                                                                                                                                                                                                                                                    | Required Adaptor                                                                                         | Tube Capacity<br>Bottom Type                                                                                   | Tube per<br>Adaptor / Rotor | Bore<br>(Ø x L, mm) | Max. height for<br>tube fit (mm) |         | Max. RPM (rpm)<br>Max. RCF (xg) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------|----------------------------------|---------|---------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                          |                                                                                                                |                             |                     | w/ cap                           | w/o cap |                                 |
| <b>B500</b><br><br><br>Radius : 194 mm<br>Bucket bore (ø x L, mm) : 80 x 111<br>Max. height for tube fit :<br>143.5 mm (w/ cap), 157.2 mm (w/o cap)<br><b>Incl. a cap</b><br><br><b>Combi R515</b><br>Max. RPM : 4,500 Max. RCF : 4,392 xg<br><b>Combi 508</b><br>Max. RPM : 4,000 Max. RCF : 3,435 xg | <b>TR500(500)</b><br> |  500 mL<br>Flat             | 1 / 4                       | 73 x 125            | 141.5                            | 143.6   | 4,500<br>4,347                  |
|                                                                                                                                                                                                                                                                                                                                                                                           | <b>TR250(500)</b><br> |  250 mL<br>Flat             | 1 / 4                       | 62 x 100            | 135                              | 146.6   | 4,500<br>4,290                  |
|                                                                                                                                                                                                                                                                                                                                                                                           | <b>TR100(500)</b><br> |  100 mL<br>(85 mL)<br>Round | 1 / 4                       | 38.5 x 84.5         | 139                              | 150.9   | 4,500<br>4,290                  |
|                                                                                                                                                                                                                                                                                                                                                                                           | <b>TR50-4</b><br>     |  50 mL<br>Round             | 4 / 16                      | 29.5 x 85.5         | 129                              | 140.6   | 4,500<br>4,290                  |
|                                                                                                                                                                                                                                                                                                                                                                                           | <b>TR50c-3</b><br>    |  50 mL<br>Conical           | 3 / 12                      | 30 x 90             | 128.3                            | 140     | 4,500<br>4,302                  |
|                                                                                                                                                                                                                                                                                                                                                                                           | <b>TR15-9</b><br>     |  15 mL<br>Round             | 9 / 36                      | 16.5 x 85           | 132.1                            | 146.8   | 4,500<br>4,290                  |
|                                                                                                                                                                                                                                                                                                                                                                                           | <b>TR15c-7</b><br>    |  15 mL<br>Conical           | 7 / 28                      | 17 x 95.5           | 128.4                            | 140.1   | 4,500<br>4,313                  |
|                                                                                                                                                                                                                                                                                                                                                                                           | <b>TR10-9</b><br>     |  10 mL<br>Round             | 9 / 36                      | 17 x 64             | 132.9                            | 144.6   | 4,500<br>4,279                  |
|                                                                                                                                                                                                                                                                                                                                                                                           | <b>TR5-9</b><br>      |  5 mL<br>Round              | 9 / 36                      | 13 x 64             | 133.8                            | 145.5   | 4,500<br>4,256                  |
| <b>TM96(500-4)</b><br><br>Radius : 154 mm<br>MTP holder size (w x d x L, mm) : 87 x 128.5 x 53<br>Max. height for tube fit : 87 x 128.5 x 53 mm                                                                                                                                                                                                                                           |                       |  MTP                        | 1 / 4                       | -                   | 87 x 128.5 x 53                  |         | 145.5                           |

\* Radius : From the center of the rotor to the inner end of tube carrier.

### Large Capacity Centrifuges

## *Component R12 / R6 / wR*

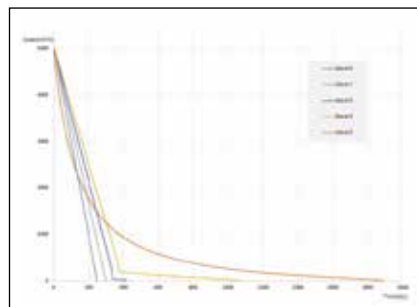
- Well recognized model in blood banks and large sample handling laboratories
- Optimized for consistent separation of plasma, buffy coat, RBC, etc.
- Any types of blood bags applicable from 250 mL to 500 mL
- 12 blood bags per run (Component R12), 6 blood bags per run (Component R6)
- Ideal for large number of sample handling (180 vacutainers at a time)
- Windshield rotor to reduce the air resistance and enable to spin over 4,000 rpm
- Dual ramp acceleration and deceleration profile for gentle and quick running
- Ergonomically arranged control and large display with comprehensive information
- Imbalance cutoff and tracking
- Excellent temperature control
- Easy to clean specially coated glossy surface



WS1000-6 / B1000



WS750-6 / B750 & TM96



Two-step DEC control at DEC 1~5 and natural slow break at DEC 0



*Component R6*



*Component R12*

# Large Capacity Centrifuges

Component R12 / Component R6 / Component wR



**Component wR**

## Technical Specifications

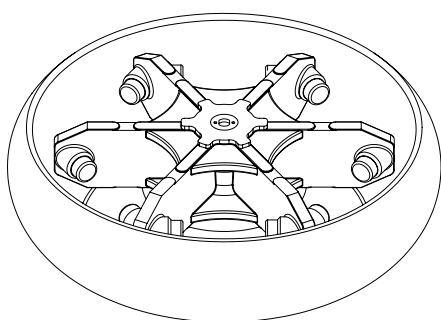
|                             |                       | Component R12 / *Component 12R         | Component R6 / *Component R | Component wR / *Continent 512R      |
|-----------------------------|-----------------------|----------------------------------------|-----------------------------|-------------------------------------|
| Speed                       | Max. RPM / Swing-out  | 4,500 rpm                              | 5,000 rpm                   | 4,500 rpm                           |
| RCF (xg)                    | Max. RCF / Swing-out  | 6,491 xg                               | 7,261 xg                    | 5,096 xg                            |
| Max. capacity / Swing-out   |                       | 6 x 2,400 mL                           | 6 x 1,000 mL                | 6 x 750 mL                          |
| ACC/DEC                     | ACC/DEC ramps         | 10/10 steps                            |                             |                                     |
|                             | Two step Deceleration | Yes                                    |                             |                                     |
| Temperature                 | Temperature range     | -10°C to 40°C                          | -20°C to 40°C               | -20°C to 40°C                       |
|                             | Temperature offset    | Yes                                    |                             |                                     |
| Time control                |                       | < 100 hr, continuous                   | < 100 hr, continuous        | < 100 hr, pulse, continuous         |
| Program memory              |                       | 100                                    |                             |                                     |
| Noise level                 |                       | ≤ 65 dB                                | ≤ 65 dB                     | ≤ 65 dB                             |
| Imbalance cutoff / tracking |                       | Yes / Yes                              | Yes / Yes                   | Yes / Yes                           |
| Rotor identification        |                       | Automatic                              | Automatic                   | Automatic                           |
| Dimension (W x D x H, mm)   |                       | 840 x 980 x 970                        | 816 x 906 x 965             | 668.7 x 800.6 x 891.3               |
| Weight without rotor        |                       | 480 kg                                 | 380 kg                      | 250 kg                              |
| Power consumption           |                       | 3.0 kVA                                | 6.3 kVA                     | 5.0 kVA                             |
| Power input (V, Hz)         |                       | 210~240V, 60 Hz (110V, 50 Hz optional) |                             | 210~240 V, 50/60 Hz (110V optional) |
| Cat. No.                    |                       | CP-R12                                 | CP-R6                       | CP-wR                               |

\* Registered as medical device at MFDS<sup>1)</sup>

<sup>1)</sup> MFDS : Ministry of Food and Drug Safety (KOREA)

## Swing-out Rotor for Component R12

### WS2400-6



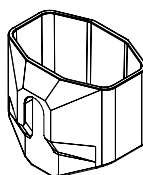
∠90°

Max. RPM : 4,800 rpm

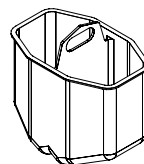
Dim. W x D x H : 494 x 435.6 x 125 mm (w/o windshield)

Incl. a windshield and a lid

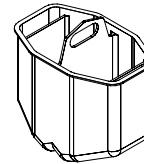
#### Bucket/Adaptor for WS2400-6



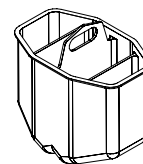
Blood Bag Bucket  
**B2400**



Adaptor  
**TRB500-2**

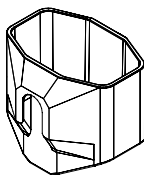
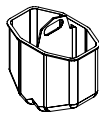
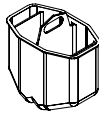
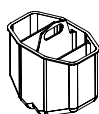


Adaptor  
**TRB450-2**



Adaptor  
**TRB250-2**

#### Bucket and Tube Racks of WS2400-6

| Bucket                                                                                                  | Required Adaptor                                                                                       | Tube Capacity                                                                              | Tube per Adaptor / Rotor | Max. height for tube fit (mm) | Max. RPM (rpm)<br>Max. RCF (xg) |
|---------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------|-------------------------------|---------------------------------|
| <b>B2400</b><br><br> | <b>TRB500-2</b><br> |  500 mL | 2 / 12                   | 209.2                         | 4,500<br>6,491                  |
|                                                                                                         | <b>TRB450-2</b><br> |  450 mL | 2 / 12                   |                               |                                 |
|                                                                                                         | <b>TRB250-2</b><br> |  250 mL | 2 / 12                   |                               |                                 |

Radius : 286.7 mm  
Bucket bore (ø x L, mm) : 176.9 x 150.8  
Max. height for tube fit: 209.2 mm

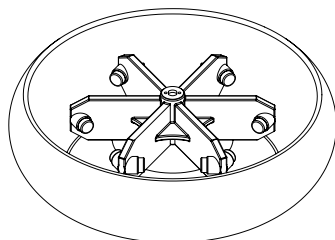
\* Radius : From the center of the rotor to the inner end of tube carrier.

# Large Capacity Centrifuges

Component R12 / Component R6 / Component wR

## Swing-out Rotor for Component R6

### WS1000-6



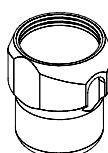
∠90°

Max. RPM : 5,000 rpm

Dim. W x D x H : 384 x 340 x 99 mm (w/o windshield)

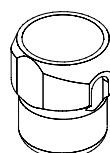
Incl. a windshield and a lid

### Bucket/Adaptor for WS1000-6



Bucket  
**B1000S**

Capacity : 1,000 mL  
\* Cap Available (optional)

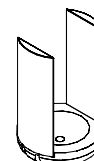


Bucket  
**B1000**

Capacity : 1,000 mL

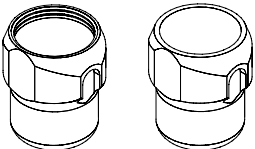
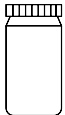
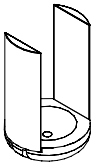


Cap  
**BL1000**



Adaptor  
**TRB450**

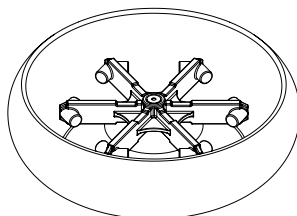
### Bucket and Tube Racks of WS1000-6

| Bucket                                                                                                                                                                                                                                   | Required Adaptor                                                                                     | Tube Capacity<br>Bottom Type                                                                         | Tube per<br>Adaptor / Rotor | Bore<br>(Ø x L, mm) | Max. height for<br>tube fit (mm) |         | Max. RPM (rpm)<br>Max. RCF (xg) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------------|---------------------|----------------------------------|---------|---------------------------------|
|                                                                                                                                                                                                                                          |                                                                                                      |                                                                                                      |                             |                     | w/ cap                           | w/o cap |                                 |
| <b>B1000S / B1000</b><br>                                                                                                                             | -                                                                                                    | <br>1,000<br>Flat | 1 / 6                       | 98.5 X 143          | 169.5                            | 182.2   | 5,000<br>7,261                  |
| <b>BL1000</b><br><br>Radius : 259.8 mm<br>Bucket bore (Ø x L, mm) : 98.5 x 143<br>Max. height for tube fit :<br>169.5 mm (w/ cap), 182.2 mm (w/o cap) | <b>TRB450</b><br> | <br>450 mL<br>-   | 1 / 6                       | 65.5 x 135          | 178.7                            |         | 5,000<br>6,842                  |

\* Radius : From the center of the rotor to the inner end of tube carrier.

### Swing-out Rotor for Component wR

#### WS750-6



∠90°

Max. RPM : 4,500 rpm

Size (ø x H) : Ø262 x 262 mm  
(w/o windshield)

Incl. a windshield and a lid

#### Bucket/Adaptor for WS750-6



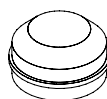
Round Bucket  
**B750S**

Capacity : 750 mL  
\* Cap Available (optional)

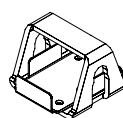


Round Bucket  
**B750**

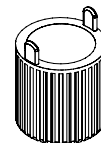
Capacity : 750 mL



Cap  
**BL750**



MicroTiter Plate Rack  
**TM96**  
**(750-4)**



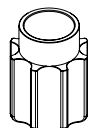
Adaptor  
**TR500**  
**(750)**



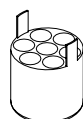
Adaptor  
**TR500c**  
**(750)**



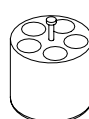
Adaptor  
**TR250**  
**(750)**



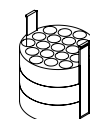
Adaptor  
**TR250c**  
**(750)**



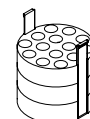
Adaptor  
**TR50-7**



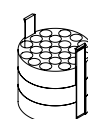
Adaptor  
**TR50c-5**



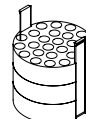
Adaptor  
**TR15-19**



Adaptor  
**TR15c-14**

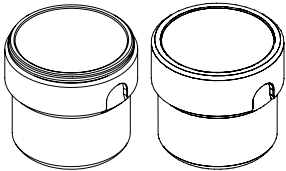
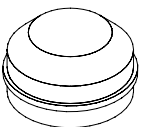
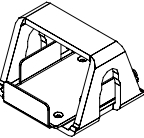


Adaptor  
**TR10-21**



Adaptor  
**TR5-24**

#### Bucket and Tube Racks of WS750-6

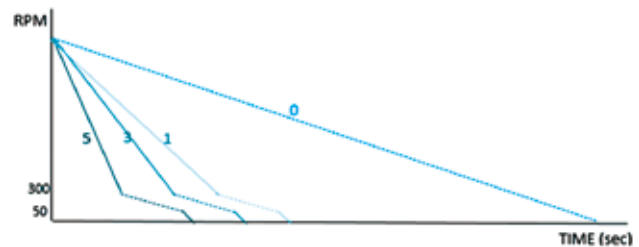
| Bucket                                                                                                                                                                                                                        | Required Adaptor                                                                                       | Tube Capacity<br>Bottom Type                                                                                  | Tube per<br>Adaptor / Rotor | Bore<br>(Ø x L, mm) | Max. height for<br>tube fit (mm) |         | Max. RPM (rpm)<br>Max. RCF (xg) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|-----------------------------|---------------------|----------------------------------|---------|---------------------------------|
|                                                                                                                                                                                                                               |                                                                                                        |                                                                                                               |                             |                     | w/ cap                           | w/o cap |                                 |
| <b>B750S / B750</b><br><br><br><br><b>BL750</b><br><br> | -                                                                                                      |  750 mL<br>Flat            | 1 / 6                       | 99 x 103            | 129                              | 161.5   | 4,500<br>5,096                  |
|                                                                                                                                                                                                                               |  <b>TR500(750)</b>  |  500 mL<br>Flat            | 1 / 6                       | 75.5 x 98.7         | 125.2                            | 129     | 4,500<br>5,042                  |
|                                                                                                                                                                                                                               |  <b>TR500c(750)</b> |  500 mL conical<br>Conical | 1 / 6                       | 99 x 58             | 126.7                            | 154.3   | 4,500<br>5,096                  |
|                                                                                                                                                                                                                               |  <b>TR250(750)</b>  |  250 mL<br>Flat            | 1 / 6                       | 62.3 x 87           | 124.5                            | 149     | 4,500<br>5,003                  |
|                                                                                                                                                                                                                               |  <b>TR250c(750)</b> |  250 mL conical<br>Conical | 1 / 6                       | 60.5 x 124.4        | 125                              | 150     | 4,500<br>5,015                  |
|                                                                                                                                                                                                                               |  <b>TR50-7</b>      |  50 mL<br>Round            | 7 / 42                      | 29.2 x 97           | 124                              | 131.8   | 4,500<br>5,003                  |
|                                                                                                                                                                                                                               |  <b>TR50c-5</b>     |  50 mL conical<br>Conical  | 5 / 30                      | 29 x 91             | 116.2                            | 125.5   | 4,500<br>5,096                  |
|                                                                                                                                                                                                                               |  <b>TR15-19</b>     |  15 mL<br>Round            | 19 / 114                    | 17.2 x 87           | 114.6                            | 122.4   | 4,500<br>5,003                  |
|                                                                                                                                                                                                                               |  <b>TR15c-14</b>    |  15 mL conical<br>Conical  | 14 / 84                     | 17 x 89             | 117                              | 124.8   | 4,500<br>5,049                  |
|                                                                                                                                                                                                                               |  <b>TR10-21</b>     |  10 mL<br>Round            | 21 / 126                    | 16 x 87             | 113.9                            | 121.7   | 4,500<br>5,003                  |
| <b>TM96(750-6)</b><br><br>Radius : 191.9 mm<br>MTP holder size (w x d x L, mm) : 88 x 128.5 x 42<br>Max. height for tube fit : 88 x 128.5 x 42 mm                                                                             |                     |  MTP                       | 1 / 6                       | 88 x 128.5 x 42     |                                  |         | 4,500<br>4,345                  |

\* Radius : From the center of the rotor to the inner end of tube carrier.

### Clinical Centrifuge

## *Fleta 4*

- Multi-purpose, small benchtop centrifuge generally for routine clinical work
- Fixed angle rotor (up to 24 tubes per run) for chemical analysis of urine, blood and biological samples
- Well noted for stable separation of blood with swing-out buckets for syringe type
- Two-steps deceleration to maintain finely separated sample
- Rapid acceleration and deceleration (20/20 sec)
- Easy to read graphic LCD display
- Surface anodized aluminum chamber
- Compact and light-weighted design
- Easy to clean specially coated glossy surface



Deceleration profile



S85-4



S50-6

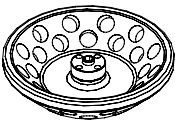
## Technical Specifications

|                           |                             | Fleta 4 / *Fleta 40P                     |
|---------------------------|-----------------------------|------------------------------------------|
| Speed<br>RCF (xg)         | Max. RPM / Fixed angle      | 4,000 rpm                                |
|                           | Max. RCF / Fixed angle      | 2,635 xg                                 |
|                           | Max. RPM / Swing-out        | 4,000 rpm                                |
|                           | Max. RCF / Swing-out        | 3,243 xg                                 |
| Capacity                  | Max. capacity / Fixed angle | 24 x 15 mL                               |
|                           | Max. capacity / Swing-out   | 6 x 50 mL, 12 x 15 mL conical, 4 x 85 mL |
| ACC/DEC                   | ACC/DEC ramps               | 5/6 steps                                |
|                           | Two step Deceleration       | Yes                                      |
|                           | Acc. time to max. speed     | 35/110 sec                               |
|                           | Dec. time from max. speed   | 38/110 sec                               |
| Time control              |                             | < 100 min, pulse, continuous             |
| Program memory            |                             | 10                                       |
| Noise level               |                             | < 60 dB                                  |
| Imbalance cutoff          |                             | Yes                                      |
| Rotor identification      |                             | manual                                   |
| Dimension (W x D x H, mm) |                             | 448.5 x 531 x 286                        |
| Weight without rotor      |                             | 25 kg                                    |
| Power consumption         |                             | 620 VA                                   |
| Power input (V, Hz)       |                             | 210~240 V, 50/60 Hz (110V optional)      |
| Cat. No.                  |                             | FL-4                                     |

\* Registered as medical device at MFDS<sup>1)</sup>

<sup>1)</sup> MFDS : Ministry of Food and Drug Safety (KOREA)

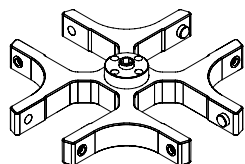
## Fixed Angle Rotors for Fleta 4

| Rotor                                                                                                 |                                                                                                                                   | Tube Capacity<br>Bottom Type                     | Required<br>Sleeve (Bore)                                                                                                  | Required<br>Adaptor for<br>Blood tube                                                         | Bore Ø x L (mm)<br>Radius (mm) | Max. RPM (rpm)<br>Max. RCF (xg) |
|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------|---------------------------------|
| <b>AL15-24</b><br> | Hole angle : $\angle 45^\circ$<br>Max. Capacity : 24 x 15 mL<br>Size (ø x H) : 197 x<br>Max. height for tube fit : 143.3 mm       | 15 mL<br>Round/Conical<br>ø13, ø16<br>Blood tube | <br><b>TR15(15)</b><br><b>18 x 94.5</b> |  TR3(15) | 13.5 x 61<br>147.3             | 4,000<br>2,635                  |
|                                                                                                       |                                                                                                                                   |                                                  |                                                                                                                            |  TR5(15) | 13.5 x 85<br>147.3             |                                 |
| <b>AL15-12</b><br> | Hole angle : $\angle 45^\circ$<br>Max. Capacity : 12 x 15 mL<br>Dim. ø x H : 164.6 x 42.8 mm<br>Max. height for tube fit : 134 mm | 15 mL<br>Round/Conical<br>ø13, ø16<br>Blood tube | <br><b>TR15(15)</b><br><b>18 x 94.5</b> |  TR3(15) | 13.5 x 61<br>133.9             | 4,000<br>2,395                  |
|                                                                                                       |                                                                                                                                   |                                                  |                                                                                                                            |  TR5(15) | 13.5 x 85<br>133.9             |                                 |

\* Radius : From the center of the rotor to the inner end of tube carrier.

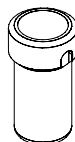
### Swing-out Rotors for Fleta 4

#### S85-4



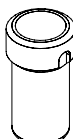
∠90°  
Max. RPM : 4,000 rpm  
Size (ø x H) : Ø230 x 36 mm

#### Bucket for S85-4



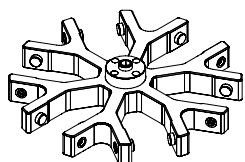
Bucket  
**B85**

#### Buckets and Adaptors of S85-4

| Bucket                                                                                                                                                                                                         | Required Adaptor                                                                              | Tube Capacity<br>Bottom Type                                                                         | Tube per<br>Adaptor / Rotor | Bore<br>(Ø x L, mm) | Max. height<br>for tube fit (mm) | Max. RPM (rpm)<br>Max. RCF (xg) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|-----------------------------|---------------------|----------------------------------|---------------------------------|
| <b>B85</b><br><br><br><br>Radius(mm): 172.6<br>Bucket bore (ø x L, mm) : 38.5 x 88.5<br>Max. height for tube fit (mm) : 142.5 | -                                                                                             |  85 mL<br>Round     | 1 / 4                       | 38.5 x 88.5         | 142.5                            | 4,000<br>3,087                  |
|                                                                                                                                                                                                                | TR50(85)     |  50 mL<br>Round     | 1 / 4                       | 29 x 95             | 142.8                            | 4,000<br>3,001                  |
|                                                                                                                                                                                                                | TR50c(85)    |  50 mL<br>Conical   | 1 / 4                       | 29.5 x 100          | 142.7                            | 4,000<br>3,087                  |
|                                                                                                                                                                                                                | TR15(85)    |  15 mL<br>Round     | 1 / 4                       | 17 x 94             | 142.8                            | 4,000<br>2,984                  |
|                                                                                                                                                                                                                | TR15c(85)  |  15 mL<br>Conical | 1 / 4                       | 17 x 100            | 146.8                            | 4,000<br>3,087                  |

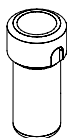
\* Radius : From the center of the rotor to the inner end of tube carrier.

#### S50-6

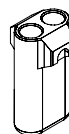


∠90°  
Max. RPM : 4,000 rpm

#### Bucket for S50-6

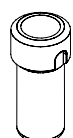
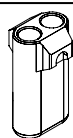


Bucket  
**B50**



Bucket  
**B15c-2**

#### Buckets and Adaptors of S50-6

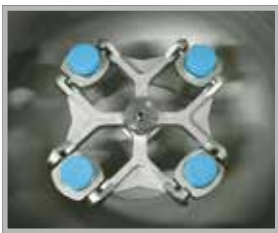
| Bucket                                                                                                                                                                                                           | Required Adaptor                                                                              | Tube Capacity<br>Bottom Type                                                                           | Tube per<br>Adaptor / Rotor | Bore<br>(Ø x L, mm) | Max. height<br>for tube fit (mm) | Max. RPM (rpm)<br>Max. RCF (xg) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------|---------------------|----------------------------------|---------------------------------|
| <b>B50</b><br><br><br><br>Radius : 181.3 mm<br>Bucket bore (ø x L, mm) : 30.3 x 93.5<br>Max. height for tube fit (mm) : 145.7 | -                                                                                             |  50 mL<br>Round     | 1 / 6                       | 30 x 93.5           | 145.7                            | 4,000<br>3,243                  |
|                                                                                                                                                                                                                  | TR50c(50)  |  50 mL<br>Conical   | 1 / 6                       |                     | 126.5                            |                                 |
|                                                                                                                                                                                                                  | TR25(50)   |  25 mL<br>Round     | 1 / 6                       | 20 x 87             | 137.2                            |                                 |
|                                                                                                                                                                                                                  | TR15(50)   |  15(16) mL<br>Round | 1 / 6                       | 18 x 87             | 141.5                            |                                 |
| <b>B15c-2</b><br><br><br><br>Radius : 165.8 mm                                                                                |                                                                                               |  15 mL<br>Conical   | 2 / 12                      | 17 x 86.5           | 138.7                            | 4,000<br>2,966                  |

\* Radius : From the center of the rotor to the inner end of tube carrier.

## Clinical Centrifuge

# Fleta 5

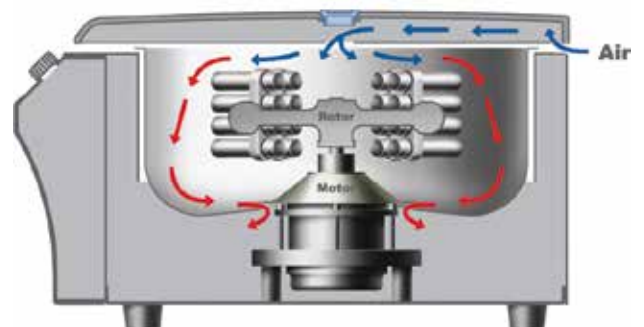
- Benchtop centrifuge for performing daily routine tasks in hospital, university, and laboratory
- Optimized swing-out separation up to 5,500 rpm (6,200 xg)
- Maximized flexibility with large assorted accessories for using tubes from micro to 50 mL
- Simple knob control for speed and time
- Rapid acceleration and deceleration (20/20 sec)
- Very quiet and static operation with BLDC motor
- Lid drop protected construction and fine control of lid opening
- Surface anodized aluminum chamber
- Robust design for daily use



HSR-4S / HTB50c-4



HSM-2



Unique air flow structure for effective noise reduction and excellent cooling

### Technical Specifications

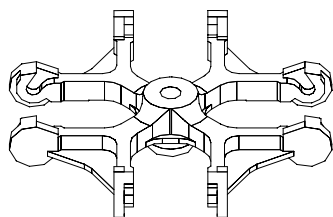
|                           |                             | Fleta 5 / *Fleta50P                 |
|---------------------------|-----------------------------|-------------------------------------|
| Speed<br>RCF (xg)         | Max. RPM / Fixed angle      | -                                   |
|                           | Max. RCF / Fixed angle      | -                                   |
|                           | Max. RPM / Swing-out        | 5,500 rpm                           |
|                           | Max. RCF / Swing-out        | 6,230 xg                            |
| Capacity                  | Max. capacity / Fixed angle | -                                   |
|                           | Max. capacity / Swing-out   | 32 x 15 mL                          |
| ACC/DEC                   | ACC/DEC ramps               | 9/10 steps                          |
|                           | Two step Deceleration       | -                                   |
|                           | Acc. time to max. speed     | 20/80 sec                           |
|                           | Dec. time from max. speed   | 26/82 sec                           |
| Time control              |                             | < 100 hr, continuous                |
| Program memory            |                             | 100                                 |
| Noise level               |                             | ≤ 65 dB                             |
| Imbalance cutoff          |                             | Yes                                 |
| Rotor identification      |                             | manual                              |
| Dimension (W x D x H, mm) |                             | 570 x 475 x 325                     |
| Weight without rotor      |                             | 37 kg                               |
| Power consumption         |                             | 1.0 kVA                             |
| Power input (V, Hz)       |                             | 210~240 V, 50/60 Hz (110V optional) |
| Cat. No.                  |                             | FL-5                                |

\* Registered as medical device at MFDS<sup>1)</sup>

<sup>1)</sup> MFDS : Ministry of Food and Drug Safety (KOREA)

### Swing-out Rotors for Fleta 5

#### HSR-4S

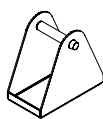


∠90°

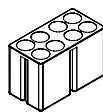
Max. RPM : 5,500 rpm

Size (ø x H) : Ø235.8 x 42 mm

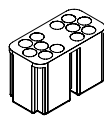
#### Bucket/Adaptor for HSR-4S



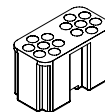
Rack Holder  
**HBTM**



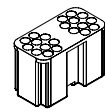
Adaptor  
**TR15-8**



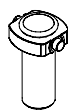
Adaptor  
**TR10-12**



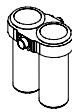
Adaptor  
**TR5-14**



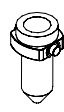
Adaptor  
**TR3-20**



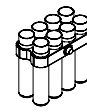
Bucket  
**HBT50-1**



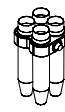
Bucket  
**HBT50-2**



Bucket  
**HBT50c-1**



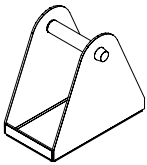
Bucket  
**HBT15-8**



Bucket  
**HBT15c-4**

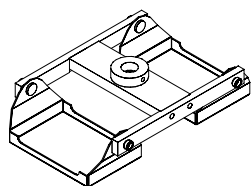
\* TR series adaptors described above are used in HBTM bucket.

## Buckets and Adaptors of HSR-4S

| Bucket                                                                                                                                                                                                                 | Required Adaptor                                                                                    | Tube Capacity<br>Bottom Type                                                                           | Tube per<br>Adaptor / Rotor | Bore<br>(Ø x L, mm) | Max. height<br>for tube fit (mm) | Max. RPM (rpm)<br>Max. RCF (xg) |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-----------------------------|---------------------|----------------------------------|---------------------------------|
| <b>HBTM</b><br><br>Radius : 164.1 mm<br>MTP holder size (w x d x L, mm) :<br>90.3 x 47.2 x 57.2<br>Max. height for tube fit : 67.5 mm | <b>TR15-8</b><br>  |  15(16) mL<br>Round   | 8 / 32                      | 18 x 55             | 132.9                            | 3,000<br>1,651                  |
|                                                                                                                                                                                                                        | <b>TR10-12</b><br> |  10 mL<br>Round       | 12 / 48                     | 13 x 55             | 132.9                            | 3,000<br>1,651                  |
|                                                                                                                                                                                                                        | <b>TR5-14</b><br>  |  5 mL<br>Round        | 14 / 56                     | 11 x 55             | 132.9                            | 3,000<br>1,651                  |
|                                                                                                                                                                                                                        | <b>TR3-20</b><br>  |  3 mL<br>Round        | 20 / 80                     | 10 x 55             | 131.2                            | 3,000<br>1,651                  |
| <b>HBT50-1</b><br>Radius : 181.3 mm<br>Bucket bore (ø/H, mm) : 30 x 99<br>Max. height for tube fit : 153.2 mm                                                                                                          |                    |  50 mL<br>Round       | 1 / 4                       | 30 x 99             | 154.3                            | 5,500<br>6,131                  |
| <b>HBT50-2</b><br>Radius : 181.3 mm<br>Bucket bore (ø/H, mm) : 30 x 99<br>Max. height for tube fit : 153.2 mm                                                                                                          |                   |  50 mL<br>Round      | 2 / 8                       | 30 x 99             | 154.3                            | 4,500<br>4,104                  |
| <b>HBT50c-1</b><br>Radius : 184.2 mm<br>Bucket bore (ø/H, mm) : 31.5 x 116<br>Max. height for tube fit : 144 mm                                                                                                        |                  |  50 mL<br>Conical   | 1 / 4                       | 31.5 x 115.9        | 143.4                            | 5,500<br>6,230                  |
| <b>HBT15-8</b><br>Radius : 162.7 mm<br>Bucket bore (ø/H, mm) : 18 x 89.5<br>Max. height for tube fit : 125.3 mm                                                                                                        |                  |  15(16) mL<br>Round | 8 / 32                      | 18 x 89.5           | 138.2                            | 4,000<br>2,910                  |
| <b>HBT15c-4</b><br>Radius : 172.7 mm<br>Bucket bore (ø/H, mm) : 18 x 99.5<br>Max. height for tube fit : 143 mm                                                                                                         |                  |  15 mL<br>Conical   | 4 / 16                      | 18 x 99.5           | 147.6                            | 4,000<br>3,089                  |

\* Radius : From the center of the rotor to the inner end of tube carrier.

## HSM-2



∠90°

Max. RPM : 2,000 rpm

MTP holder size (W x D x H) : 174 x 212 x 20 mm

Radius : 139 mm

Max. height for tube fit : 127.3 x 88 x 110 mm

| Tube Capacity | Tube per<br>Adaptor / Rotor | Max. RPM (rpm)<br>Max. RCF (xg) |
|---------------|-----------------------------|---------------------------------|
| MTP           | 1 / 2                       | 2,000<br>622                    |
| Cell Culture  |                             |                                 |
| DWP           |                             |                                 |

### Clinical Centrifuge

## *CellSpin*

- Ideal for cytology experiment
- For the concentration of small number of cells on a specific region of a slide
- Polycarbonate lid to see the cyto-rotor inside
- Gentle start and 3 steps of deceleration (slow, normal, fast)
- Manual lid open and closure by handy knob



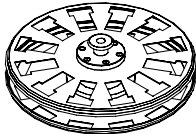
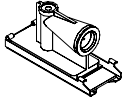
## Technical Specifications

|                             |                           | CellSpin*                          |
|-----------------------------|---------------------------|------------------------------------|
| Speed                       | Max. RPM / Fixed angle    | 3,000 rpm                          |
| RCF (xg)                    | Max. RCF / Fixed angle    | 1,175 xg                           |
| Max. capacity / Fixed angle |                           | 12 slides x 0.5~0.6 mL             |
| ACC/DEC                     | ACC/DEC ramps             | DEC 3 steps                        |
|                             | Acc. time to max. speed   | 69 / 69 sec                        |
|                             | Dec. time from max. speed | 44 / 52 sec                        |
| Time control                |                           | < 100 min, continuous              |
| Program memory              |                           | 10                                 |
| Noise level                 |                           | ≤ 60 dB                            |
| Imbalance cutoff            |                           | Yes                                |
| Dimension (W x D x H, mm)   |                           | 360 x 410 x 280                    |
| Weight without rotor        |                           | 24 kg                              |
| Power consumption           |                           | 200 VA                             |
| Power input (V, Hz)         |                           | 210~240V, 50/60 Hz (110V optional) |
| Cat. No.                    |                           | CE-1                               |

\* Registered as medical device at MFDS<sup>1)</sup>

<sup>1)</sup> MFDS : Ministry of Food and Drug Safety (KOREA)

## Fixed Angle Rotor for CellSpin

| Rotor                                                                                                                                                                                                                                                          |  | Tube Capacity                                                                                                                             | Max. RPM (rpm)<br>Max. RCF (xg) |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| <b>A-cyto-12</b><br> <p>Type : Angle Rotor<br/>Max. Capacity : 12 x 6 mL<br/>Size (ø x H) : ø233.5 x 65 mm<br/>Radius : 116.8 mm<br/><b>Incl. 12 ea of cytocell set</b></p> |  |  <p>Cytocell Accessory<br/>12 slides x 0.5~0.6 mL</p> | 3,000<br>1,175                  |

\* Radius : From the center of the rotor to the inner end of tube carrier.



## Clinical Centrifuge

# *SeroSpin II*

- Recommended for cross matching test in blood banks
- Specifically designed, light polycarbonate rotor
- Optional rotor with tube tightening spring
- Easy to read graphic LCD display
- Smooth operation motorized lid opening and closure
- Compact, light-weighted, and ergonomic design
- Unique air cooling structure, perfect for heavily routine works
- Easy to clean specially coated glossy surface



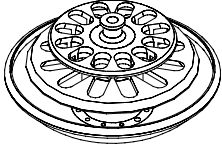
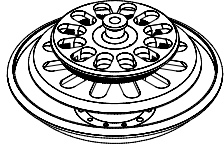
## Technical Specifications

|                             |                           | SeroSpin II*                       |
|-----------------------------|---------------------------|------------------------------------|
| Speed                       | Max. RPM / Fixed angle    | 3,400 rpm                          |
| RCF (xg)                    | Max. RCF / Fixed angle    | 1,118 xg                           |
| Max. capacity / Fixed angle |                           | 12 x 75 mm tube                    |
| ACC/DEC                     | ACC/DEC ramps             | 5 / 6 steps                        |
|                             | Acc. time to max. speed   | 14 / 38 sec                        |
|                             | Dec. time from max. speed | 13 / 37 sec                        |
| Time control                |                           | < 100 min, pulse, continuous       |
| Program memory              |                           | 10                                 |
| Noise level                 |                           | < 60 dB                            |
| Imbalance cutoff            |                           | Yes                                |
| Dimension (W x D x H, mm)   |                           | 293 x 380 x 242 mm                 |
| Weight without rotor        |                           | 15 kg                              |
| Power consumption           |                           | 200 VA                             |
| Power input (V, Hz)         |                           | 210~240V, 50/60 Hz (110V optional) |
| Cat. No.                    |                           | SE-II                              |

\* Registered as medical device at MFDS<sup>1)</sup>

<sup>1)</sup> MFDS : Ministry of Food and Drug Safety (KOREA)

## Fixed Angle Rotor for SeroSpin II

| Rotor               |                                              |                                                                                                                                                                                                                                                                                        | Tube Capacity   | Max. RPM (rpm)<br>Max. RCF (xg) |
|---------------------|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------|
| <b>A-sero-12(A)</b> | <b>A-sero-12(B)</b><br>Incl. a spring holder |   <p>Type : Angle Rotor<br/>Max. Capacity : 12 x 5 mL<br/>Size (ø x H) : ø173 x 87.5 mm<br/>Radius : 86.5 mm</p> | 12 x 75 mm tube | 3,400<br>1,118                  |
|                     |                                              |                                                                                                                                                                                                                                                                                        |                 |                                 |

\* Radius : From the center of the rotor to the inner end of tube carrier.

## Clinical Centrifuge

# ***HematoSpin II***

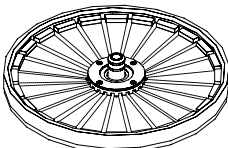
- Micro hematocrit centrifuge
- Perfect for hematology and buffy coat analysis
- Easy reading and calculation through the graduated bottom rotor
- Easy to use snap-fit lid lock of hematocrit rotor
- Easy to read graphical LCD display
- Smoothly working, motorized lid opening and closure
- Compact, light-weighted, and ergonomic design
- Unique air-flow structure
- Easy to clean specially coated glossy surface



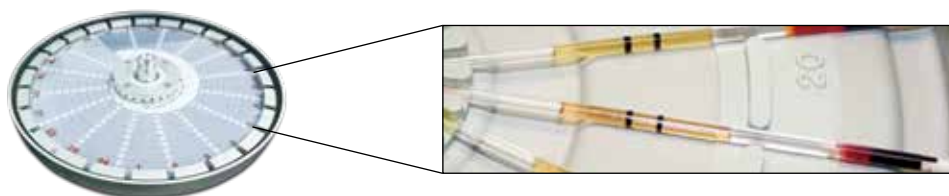
## Technical Specifications

|                             |                           | HematoSpin II                      |
|-----------------------------|---------------------------|------------------------------------|
| Speed<br>RCF (xg)           | Max. RPM / Fixed angle    | 12,000 rpm                         |
|                             | Max. RCF / Fixed angle    | 15,536 xg                          |
| Max. capacity / Fixed angle |                           | 24 x 0.07 mL capillary             |
| ACC/DEC                     | ACC/DEC ramps             | 5 / 6 steps                        |
|                             | Acc. time to max. speed   | 35 / 59 sec                        |
|                             | Dec. time from max. speed | 60 / 85 sec                        |
| Time control                |                           | < 100 min, pulse, continuous       |
| Program memory              |                           | 10                                 |
| Noise level                 |                           | < 60 dB                            |
| Imbalance cutoff            |                           | Yes                                |
| Dimension (W x D x H, mm)   |                           | 293 x 380 x 242                    |
| Weight without rotor        |                           | 15 kg                              |
| Power consumption           |                           | 714 VA                             |
| Power input (V, Hz)         |                           | 210~240V, 50/60 Hz (110V optional) |
| Cat. No.                    |                           | HE-II                              |

## Hematocrit Rotor for HematoSpin II

| Rotor                                                                                                                                                                                                       | Tube Capacity             | Radius (mm) | Max. RPM (rpm)<br>Max. RCF (xg) |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-------------|---------------------------------|
| <b>A-hemo-24</b><br><br> <p>Consists of lid, scale plate,<br/>and tube insert plate<br/>A capillary is not included.</p> | 24 x 0.07 mL<br>capillary | 96.5        | 12,000<br>15,536                |

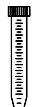
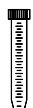
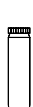
\* Radius : From the center of the rotor to the inner end of tube carrier.



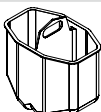
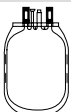
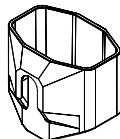
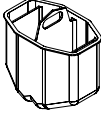
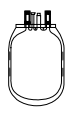
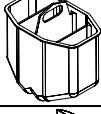
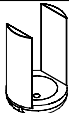
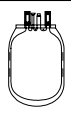
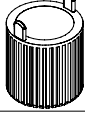
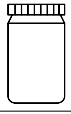
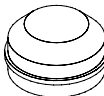
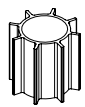
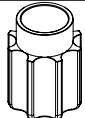
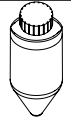
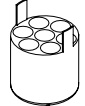
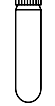
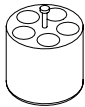
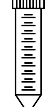
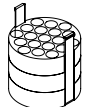
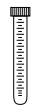
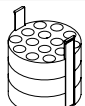
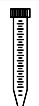
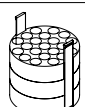
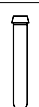
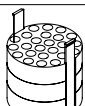
## Accessories

### Tube Racks (Adaptors)

#### Adaptors of Fixed Angle Rotor

| Adaptor                                                                                                                                          | Bottom Type | Bore Ø x L (mm) | Compatible Tubes and Capacity                                                                     | Compatible Rotors                                                                            | Compatible Centrifuges                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-----------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <b>TR 0.2</b><br>0.2 mL tube adaptor                           | Flat        | 6 x 21          |  0.2 mL          | <b>A2.0-36</b><br><b>A2.0-24</b><br><b>A2.0M(MP)-24</b><br><b>A2.0M-18</b><br><b>A2.0-12</b> | <b>Smart R17 plus</b><br><b>Smart 15 Plus</b><br><b>Smart 13</b><br><b>Supra R30</b><br><b>Supra R22</b><br><b>Supra R17</b><br><b>Combi 508</b><br><b>Combi R515</b> |
|  <b>TR 0.5</b><br>0.5 mL tube adaptor                           | Flat        | 8 x 37          |  0.5 mL          |                                                                                              |                                                                                                                                                                       |
|  <b>TR15(50)</b><br>15 mL tube adaptor to 50 mL hole            | Round       | 17 x 94         |  15 mL           | <b>A50-8</b><br><b>A50-6</b>                                                                 | <b>Supra R30</b><br><b>Supra R22</b><br><b>Supra R17</b><br><b>Combi R515</b><br><b>Combi 508</b>                                                                     |
|  <b>TR15c(50)</b><br>15 mL conical tube adaptor to 50 mL hole   | Conical     | 17 x 105        |  15 mL conical   |                                                                                              |                                                                                                                                                                       |
|  <b>TR15(85)</b><br>15 mL tube adaptor to 85 mL hole          | Round       | 29 x 95         |  15 mL         | <b>A85-6</b>                                                                                 |                                                                                                                                                                       |
|  <b>TR15c(85)</b><br>15 mL conical tube adaptor to 85 mL hole | Conical     | 29.5 x 100      |  15 mL conical |                                                                                              |                                                                                                                                                                       |
|  <b>TR50(85)</b><br>50 mL tube adaptor to 85 mL hole          | Round       | 17 x 94         |  50 mL         |                                                                                              |                                                                                                                                                                       |
|  <b>TR50c(85)</b><br>50 mL conical tube adaptor to 85 mL hole | Conical     | 17 x 100        |  50 mL conical |                                                                                              |                                                                                                                                                                       |

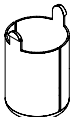
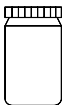
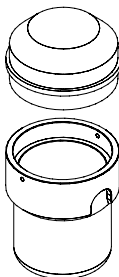
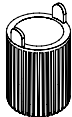
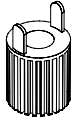
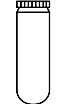
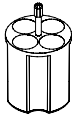
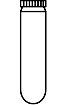
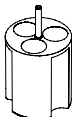
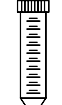
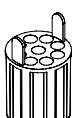
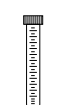
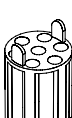
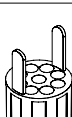
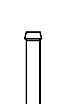
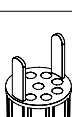
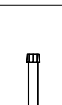
## Adaptors of Swing-out Rotor

| Adaptor                                                                                                                                                | Bore Ø x L (mm)                      | Compatible Tubes and Capacity                                                                              | Compatible Buckets                                                                                                                                                                                                                                                                                                                                   | Compatible Rotors               | Compatible Centrifuges                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|--------------------------------------------------------------|
|  <b>TRB500-2</b><br>Adaptor for 500 mL blood bag                      | -                                    |  2 x 500 mL blood bags    |  <b>B2400</b><br>Blood Bag Bucket                                                                                                                                                                                                                                  | <b>WS2400-6</b>                 | <b>Component R12</b>                                         |
|  <b>TRB450-2</b><br>Adaptor for 450 mL blood bag                      | -                                    |  2 x 450 mL blood bags    |                                                                                                                                                                                                                                                                                                                                                      |                                 |                                                              |
|  <b>TRB250-2</b><br>Adaptor for 250 mL blood bag                      | -                                    |  2 x 250 mL blood bags    |                                                                                                                                                                                                                                                                                                                                                      |                                 |                                                              |
|  <b>Blood Bag</b><br>Adaptor for 480 mL blood bag                     | 65.5 x 135                           |  450 mL blood bags        | <b>B1000</b><br><b>B1000S</b>                                                                                                                                                                                                                                                                                                                        | <b>WS1000-6</b>                 | <b>Component R6</b>                                          |
|  <b>TR500(750)</b><br>500 mL tube adaptor to 750 mL bucket            | 74 x 80                              |  500 mL                   |  <br><b>B750S</b><br>*cap available<br>750 mL Bucket<br><b>B750</b><br>750 mL Bucket<br> | <b>WS750-6</b><br><b>S750-4</b> | <b>Combi R515</b><br><b>Combi 508</b><br><b>Component wR</b> |
|  <b>TR500c(750)</b><br>500 mL conical tube adaptor to 750 mL bucket  | 99 x 58                              |  500 mL                  |                                                                                                                                                                                                                                                                                                                                                      |                                 |                                                              |
|  <b>TR250(750)</b><br>250 mL tube adaptor to 750 mL bucket          | 62.3 x 87                            |  250 mL                 |                                                                                                                                                                                                                                                                                                                                                      |                                 |                                                              |
|  <b>TR250c(750)</b><br>250 mL conical tube adaptor to 750 mL bucket | 60.5 x 124.4                         |  250 mL conical         |                                                                                                                                                                                                                                                                                                                                                      |                                 |                                                              |
|  <b>TR50-7</b><br>50 mL tube adaptor to 750 mL bucket               | 29.2 x 97                            |  7 x 50 mL              |                                                                                                                                                                                                                                                                                                                                                      |                                 |                                                              |
|  <b>TR50c-5</b><br>50 mL conical tube adaptor to 750 mL bucket      | 29 x 91                              |  5 x 50 mL conical      |                                                                                                                                                                                                                                                                                                                                                      |                                 |                                                              |
|  <b>TR15-19</b><br>15 mL tube adaptor to 750 mL bucket              | 17.2 x 87                            |  19 x 15 mL             |                                                                                                                                                                                                                                                                                                                                                      |                                 |                                                              |
|  <b>TR15c-14</b><br>15 mL conical tube adaptor to 750 mL bucket     | 17 x 89                              |  14 x 15 mL conical     |                                                                                                                                                                                                                                                                                                                                                      |                                 |                                                              |
|  <b>TR10-21</b><br>10 mL tube adaptor to 750 mL bucket              | 16 x 87                              |  21 x 10 mL             |                                                                                                                                                                                                                                                                                                                                                      |                                 |                                                              |
|  <b>TR5-24</b><br>3 or 5 mL tube adaptor to 750 mL bucket           | 5 mL : 13.2 x 87<br>3 mL : 13.2 x 60 |  24 x 3 mL<br>24 x 5 mL |                                                                                                                                                                                                                                                                                                                                                      |                                 |                                                              |

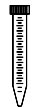
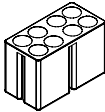
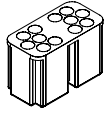
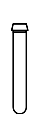
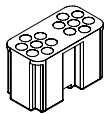
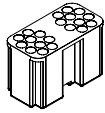
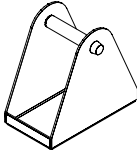
## Accessories

### Tube Racks (Adaptors)

#### Adaptors of Swing-out Rotor

| Adaptor                                                                                                                                           | Bore Ø x L (mm)                      | Compatible Tubes and Capacity                                                                     | Compatible Buckets                                                                                                                    | Compatible Rotors | Compatible Centrifuges                |
|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|-------------------|---------------------------------------|
|  <b>TR500(500)</b><br>500 mL tube adaptor to 500 mL bucket       | 74 x 80                              |  500 mL          | <br><b>B500</b><br>(Cap included)<br>500 mL Bucket | <b>S500-4</b>     | <b>Combi R515</b><br><b>Combi 508</b> |
|  <b>TR250(500)</b><br>250 mL tube adaptor 500 mL bucket          | 75.5 x 98.7                          |  250 mL          |                                                                                                                                       |                   |                                       |
|  <b>TR100(500)</b><br>100 mL tube adaptor to 500 mL bucket       | 99 x 58                              |  100 mL          |                                                                                                                                       |                   |                                       |
|  <b>TR50-4</b><br>50 mL tube adaptor to 500 mL bucket           | 62.3 x 87                            |  50 mL          |                                                                                                                                       |                   |                                       |
|  <b>TR50c-3</b><br>50 mL conical tube adaptor to 500 mL bucket | 60.5 x 124.4                         |  50 mL conical |                                                                                                                                       |                   |                                       |
|  <b>TR15-9</b><br>15 mL tube adaptor to 500 mL bucket          | 29.2 x 97                            |  15 mL         |                                                                                                                                       |                   |                                       |
|  <b>TR15c-7</b><br>15 mL conical tube adaptor 500 mL bucket    | 29 x 91                              |  15 mL conical |                                                                                                                                       |                   |                                       |
|  <b>TR10-9</b><br>10 mL tube adaptor to 500 mL bucket          | 16 x 87                              |  10 mL         |                                                                                                                                       |                   |                                       |
|  <b>TR5-9</b><br>5 mL tube adaptor to 500 mL bucket            | 5 mL : 13.2 x 87<br>3 mL : 13.2 x 60 |  5 mL          |                                                                                                                                       |                   |                                       |

## Adaptors of Swing-out Rotor

| Adaptor                                                                                                                                            | Bore Ø x L (mm) | Compatible Tubes and Capacity                                                                    | Compatible Bucket                                                                                                | Compatible Rotor | Compatible Centrifuges |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------|------------------------|
|  <b>TR50(85)</b><br>50 mL tube adaptor to 85 mL bucket            | 29 x 95         |  50 mL          |                                                                                                                  |                  |                        |
|  <b>TR50c(85)</b><br>50 mL conical tube adaptor to 85 mL bucket   | 29.5 x 100      |  50 mL conical  |                                                                                                                  |                  |                        |
|  <b>TR15(85)</b><br>15 mL tube adaptor to 85 mL bucket            | 17 x 94         |  15 mL          |                                                                                                                  |                  |                        |
|  <b>TR15c(85)</b><br>15 mL conical tube adaptor to 85 mL bucket   | 17 x 100        |  15 mL conical  |                                                                                                                  |                  |                        |
|  <b>TR50c(50)</b><br>50 mL conical tube adaptor to 50 mL bucket | 20 x 87         |  50 mL conical |                                                                                                                  |                  |                        |
|  <b>TR25(50)</b><br>25 mL tube adaptor to 50 mL bucket          | 20 x 87         |  25 mL        |                                                                                                                  |                  |                        |
|  <b>TR15(50)</b><br>15 mL tube adaptor to 50 mL bucket          | 18 x 87         |  15 mL        |                                                                                                                  |                  |                        |
|  <b>HTR15-8</b><br>15(16) mL tube adaptor to HBTM               | 18 x 55         |  8 x 15 mL    |                                                                                                                  |                  |                        |
|  <b>HTR10-12</b><br>10 mL tube adaptor to HBTM                  | 13 x 55         |  12 x 10 mL   |                                                                                                                  |                  |                        |
|  <b>HTR5-14</b><br>5 mL tube adaptor to HBTM                    | 11 x 55         |  14 x 5 mL    |                                                                                                                  |                  |                        |
|  <b>HTR3-20</b><br>Adaptor for 3 mL tube loads HBTM             | 10 x 55         |  20 x 3 mL    |                                                                                                                  |                  |                        |
|                                                                                                                                                    |                 |                                                                                                  |  <b>B85</b><br>85 mL Bucket   | <b>S85-4</b>     |                        |
|                                                                                                                                                    |                 |                                                                                                  |  <b>B50</b><br>50 mL Bucket | <b>S50-6</b>     |                        |
|                                                                                                                                                    |                 |                                                                                                  |  <b>HBTM</b><br>Rack Holder  | <b>HSR-4S</b>    | <b>Fleta 4</b>         |
|                                                                                                                                                    |                 |                                                                                                  |                                                                                                                  |                  | <b>Fleta 5</b>         |

## Accessories

### Centrifuge Tubes

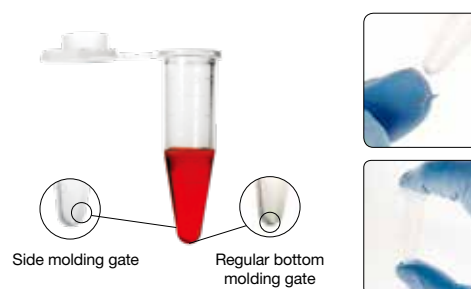
#### Micro Centrifuge Tube (1.5 mL)

- RCF rating : 25,000 xg
- Easy to handle cap
- Outstanding protection against unintentional opening during incubation and storage



#### ClickSeal Micro Centrifuge Tubes (1.7/2.0 mL)

- RCF rating : 27,000 xg
- Temperature range : -80 °C ~ 121 °C
- DNase, RNase and Pyrogen Free
- Flat lid and surface on the side for easy labeling
- Unique side molding prevents damage of lab gloves



#### Ordering Information

| Cat. No.        | Description                   | Material      | Max. RCF     | Packing      |
|-----------------|-------------------------------|---------------|--------------|--------------|
| LP-11500CP-00   | Micro Centrifuge Tube, 1.5 mL | Polypropylene | 25,000 xg    | 500 ea/10 pk |
| LP-11500CP-00-1 |                               |               |              | 500 ea       |
| NSCN1700-BP     | 27,000 xg                     |               | 500 ea/10 pk |              |
| NSCN1700-BP-1   |                               |               | 500 ea       |              |
| NSCN2000-BP     |                               |               | 400 ea/10 pk |              |
| NSCN2000-BP-1   |                               |               | 400 ea       |              |

#### ARA Conical Centrifuge Tubes (15/50 mL)

- Non-pyrogenic / Non-cytotoxic / DNase, RNase-free / Human DNA-free
- Tight sealing screw cap
- External graduations with marking area
- Packed in zipper bags
- Cap : High-density Polyethylene  
Body : Polypropylen



#### Ordering Information

| Cat. No.  | Description            | Material                                               | Max. RCF  | D x H, mm | Packing            |
|-----------|------------------------|--------------------------------------------------------|-----------|-----------|--------------------|
| ARA-0050C | ARA Conical tube 50 mL | Cap : High-density Polyethylene<br>Body : Polypropylen | 14,000 xg | 30 x 115  | 25 ea/bag, 500/box |
| ARA-0015C | ARA Conical tube 15 mL |                                                        | 13,000 xg | 17 x 120  | 50 ea/bag, 500/box |

## Hanil Centrifuge Tubes (500 mL)

- RCF rating : 14,300 xg (TB4001) / 4,300 xg (TB4002)
- Polypropylene for excellent chemical resistance
- Autoclavable



## Autofil Centrifuge Tubes

- High centrifugation stability
- Polypropylene for excellent chemical resistance and polycarbonate for repeatedly autoclavable
- Screw cap for easy access and sealing cap for leakproof assurance



## Ordering Information

| Cat. No.     | Description                                                        | Material      | Dimension (Ø x H, mm) | Max. RCF  | Packing |
|--------------|--------------------------------------------------------------------|---------------|-----------------------|-----------|---------|
| HI_TB4001    | Hanil 500 mL PP Tube (S-500) for Fixed Angle Rotor                 | Polypropylene | 68.5 x 163            | 14,300 xg | 1 ea    |
| HI_TB4002    | Hanil 500 mL PP Tube (U-500) for Swing Rotor                       |               | 74 x 140              | 4,300 xg  | 1 ea    |
| RS1801-RLS-1 | Autofil™ Centrifuge Bottles (250 mL PP with ScREW cap, nonsterile) | Polypropylene | 59 x 129              | 8,250 xg  | 4 ea/pk |
| RS1802-RLS-1 | Autofil™ Centrifuge Bottles (250 mL PC with ScREW cap, nonsterile) | Polycarbonate |                       | 27,500 xg |         |
| RS1803-RLS-1 | Autofil™ Centrifuge Bottles (250 mL PP with Seal cap, nonsterile)  | Polypropylene |                       | 31,700 xg |         |
| RS1804-RLS-1 | Autofil™ Centrifuge Bottles (250 mL PC with Seal cap, nonsterile)  | Polycarbonate |                       | 8,250 xg  |         |
| RS1805-RLS-1 | Autofil™ Centrifuge Bottles (500 mL PP with ScREW cap, nonsterile) | Polypropylene | 68 x 168              | 13,500 xg |         |
| RS1806-RLS-1 | Autofil™ Centrifuge Bottles (500 mL PC with ScREW cap, nonsterile) | Polycarbonate |                       | 13,850 xg |         |
| RS1807-RLS-1 | Autofil™ Centrifuge Bottles (500 mL PP with Seal cap, nonsterile)  | Polypropylene |                       |           |         |
| RS1808-RLS-1 | Autofil™ Centrifuge Bottles (500 mL PC with Seal cap, nonsterile)  | Polycarbonate |                       |           |         |

### Continuous Tubular Centrifuge

## ***J1250***

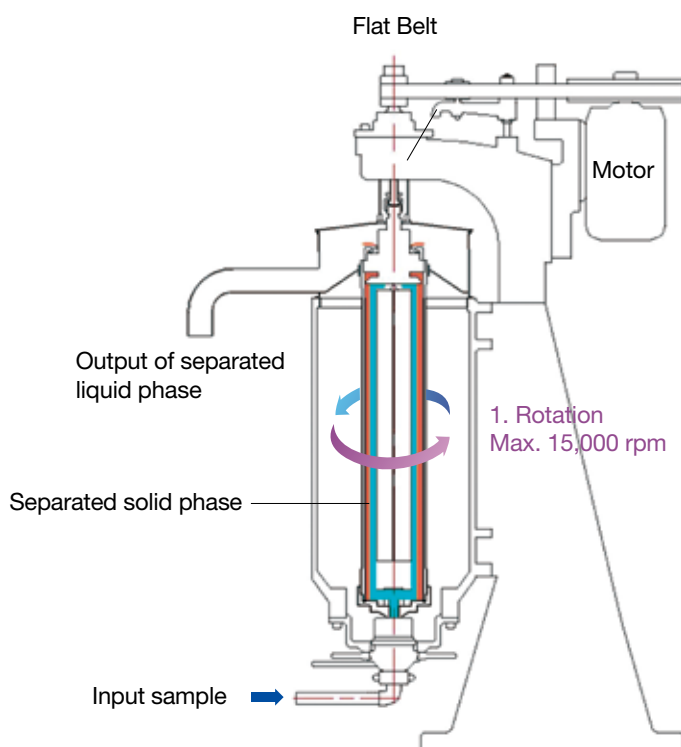
- Tubular type industrial centrifuge for continuous treatment
- Two phase (liquid/solid) separation
- High recovery of sludge (cake type)
- Water jacketed cooling system (optional)
- Up to two pumps
- Easy loading and unloading with safety 4 door-racks
- Intuitive touch-screen control panel
- Robust design and shock proof operation
- SUS (stainless steel use steel) type (Optional)



### Harvesting Process



## Mechanical Structure



Bowl



Door



Injection Pump

Peristaltic Injection Pump  
or Diaphragm Pump



Controller

## Applications

### Pharmaceutical areas

Collection of pharmaceutical intermediates, herb extracts, plant fibers and chlorella

### Food processing areas

Soy bean, fat, vegetable oil, starches, grains, gelatin, amino acids, soy sauce, reducing fat in milk

### Chemistry industry areas

Cleaning and collection of ink, paints, ammonia, barium, aluminum, zinc, activated charcoal and stainings

### Waste water treatment

Cleaning on straining waste water, leather waste water, petroleum tank sludge, waste oil

### The other fields

Milk fat processing, cosmetics, cod-liver oil, yeast processing, and many other separation of solution and collection of solids

### Technical Specifications

|                        | Tubular Continuous Centrifuge, J1250                                                                               |
|------------------------|--------------------------------------------------------------------------------------------------------------------|
| Speed                  | 15,000 RPM / 15,800 xg                                                                                             |
| Max. Capacity          | 2,200 L/ hr when the density is 1 g/ml                                                                             |
| Bowl Capacity          | 9 L                                                                                                                |
| Bowl Dimension (inner) | 125 (Ø) x 735 (L) mm                                                                                               |
| Bowl Material / Weight | SUS / 27 kg                                                                                                        |
| Display & Control      | 10" Touch Screen LCD, Stand-alone                                                                                  |
| Parameters Displayed   | Speed in RPM and RCF, Time, Program, Pump and Operational Status                                                   |
| Time Control           | 99 hr 59 min 59 sec or Continuous                                                                                  |
| Motor                  | 3.7 kW, 50/60 Hz                                                                                                   |
| Cooling Unit           | Optional (Factory Installation)                                                                                    |
| Door Opening           | Front                                                                                                              |
| Case Material          | Cast Iron (Optional SUS)                                                                                           |
| Power consumption      | 4.7 kW                                                                                                             |
| Power Input            | 220V or 380V 3 Phase                                                                                               |
| Dimension of Main Body | 840(W) x 450(D) x 1600(H) mm                                                                                       |
| Weight                 | Complete System : approx. 713 kg<br>(Main body 564 kg, Bowl 27kg, Controller 52kg, Accessories incl. a Pump 70 kg) |

### Ordering Information

| Cat. No. | Description                                                                                          |
|----------|------------------------------------------------------------------------------------------------------|
| CC1102   | J1250 Tubular Continuous Centrifuge, Main Body incl. A H-beam Base, In/Out Tubes and Operating Tools |
| CC2001   | Bowl (SUS) with a Trolley and One Set of Harvesting Teflon Sheets (3 ea/set)                         |
| CC3001   | Controller with 10" LCD and Inverter for 220V, Stand-alone                                           |
| CC3002   | Controller with 10" LCD and Inverter for 380V, Stand-alone                                           |
| CC4001   | Peristaltic Tube Pump incl. a Pump Stand (WT600-2J)                                                  |
| CC4002   | Diaphragm Pump for Highly Viscous Sample (KD73L) incl. a Pump Stand                                  |
| CC6001   | Harvesting Sheet of Teflon (395 x 735 mm), 3 ea/set                                                  |

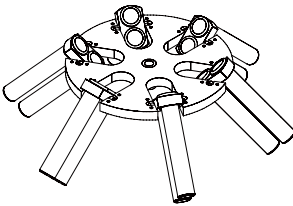
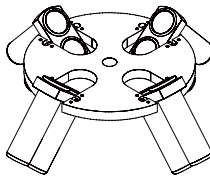
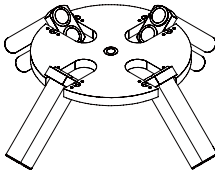
## Milk-fat Centrifuge

# HA400

- Specialized centrifuge for milk-fat separation
- Diverse rotors and buckets for Gerber and Babcock type tubes
- Easy to use knob control for speed and time
- Transparaent lid for easy monitoring
- Any customizations available



## Swing-out Rotors for HA400

| Rotor                                                                                                               |                                                                                                                    |                                                                                                                                                                                             | Tube Capacity   | Bore Ø x L (mm)<br>Radius (mm) | Max. RPM (rpm)<br>Max. RCF (xg) |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------------------------|---------------------------------|
| <b>SL100-6<br/>(Gerber)</b><br>  | <b>SL100-4<br/>(Gerber)</b><br> | ∠90°<br>Max. RPM : 1,700 rpm<br>Max. RCF : 830 xg<br>Max. Capacity :<br>SL100-6 (12 x 100 mL)<br>SL100-4 (8 x 100 mL)<br>Size (ø x H) : ø260 x 16 mm<br>Max. height for tube fit : 215.5 mm | 100 mL<br>Round | ø25 x 163<br>256.9             | 1,700<br>830                    |
| <b>SL100-4<br/>(Babcock)</b><br> |                                                                                                                    | ∠90°<br>Max. RPM : 1,700 rpm<br>Max. RCF : 726 xg<br>Max. Capacity : 8 x 100 mL<br>Size (ø x H) : ø260 x 16 mm<br>Max. height for tube fit : 179 mm                                         | 100 ml<br>Round | ø37 x 133.3<br>224.8           | 1,700<br>726                    |

## Technical Specifications

|                       | HA400                                                      |
|-----------------------|------------------------------------------------------------|
| Speed                 | 1,700 rpm / 830 xg                                         |
| Max. Capacity         | Gerber : 12 (4, 6, 8) x 100 mL<br>Bobcock : 8 (4) x 100 mL |
| Timer                 | 0~30 minutes, Free                                         |
| Power consumption     | 1 kW                                                       |
| Power consumption     | 220 V, 60 Hz                                               |
| Dimension (Ø x L, mm) | 670 x 420                                                  |
| Weight                | 33 kg                                                      |
| Cat. No.              | HA-4                                                       |



# Sample Concentration

## **Centrifugal Vacuum Concentrators**

HyperVAC-LITE / HyperVAC-MAX - p.62

## **Freeze Dryer & Cooling Trap**

HyperCOOL 3055 / HyperCOOL 3110 / HyperCOOL 8080 - p.70

## **Gas Purging Evaporation Concentrator**

HyperVAP HV300 - p.76

## Centrifugal Vacuum Concentrators

HyperVAC-LITE / HyperVAC-MAX

### Centrifugal Vacuum Concentrators

# HyperVAC™-LITE

# HyperVAC™-MAX

- Tabletop centrifugal concentrators with high space efficiency
- Equipped with a diaphragm pump (7 mbar) optimal for volatile chemical solvents
- Accommodates a wide range of sample containers: 0.5, 2.0, 15, 50 mL tubes and microplates
- Automatic control and digital reading of TIME, TEMP and VAC
- Efficient cold trapping by employing drip catcher kit with ice cold trap
- Effective concentration of nucleic acids or small volume of organic solvents

### Applications

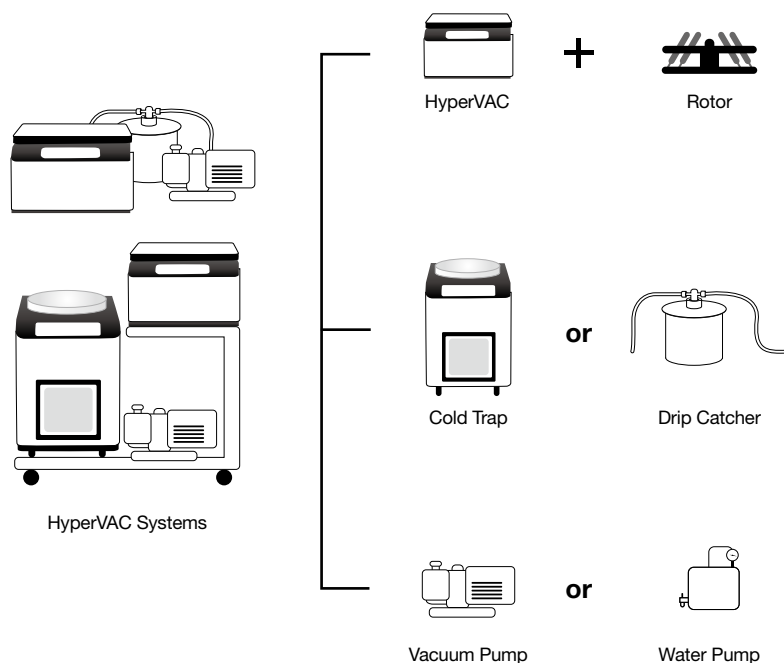
- Concentration for nucleic acids (DNA/RNA)
- Concentration for small and large volume of solvents



### Technical Specifications of HyperVAC-LITE/MAX Centrifuges

|                                      |             | HyperVAC-LITE Centrifuge                                                                 | HyperVAC-MAX Centrifuge                                                              |
|--------------------------------------|-------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Max. RPM                             |             | 2,000                                                                                    |                                                                                      |
| Max. capacity                        | Fixed angle | 120 x 1.5/2.0 mL microtubes or<br>48 x 1.5/2.0 mL + 76 x 0.5 mL microtubes<br>32 x 10 mL | 200 x 1.5/2.0 mL microtubes<br>24 x 30 mL                                            |
|                                      | Swing-out   | 2 loadings of MTP                                                                        | 4 loadings of MTP or DWP                                                             |
| Auto start / Stop of vacuum          |             | Yes                                                                                      |                                                                                      |
| Chamber heating temperature Range    |             | R.T ~ 80 °C                                                                              |                                                                                      |
| Vacuum pressure (mbar)               |             | 1 ~ 1,013                                                                                |                                                                                      |
| Operating time                       |             | < 23 hr 59 min or continuous                                                             |                                                                                      |
| Power consumption (Centrifuge)       |             | 350 VA                                                                                   | 700 VA                                                                               |
| Power supply (V/Hz)                  |             | 220v~230v, 50/60Hz (110v optional)                                                       |                                                                                      |
| Centrifuge dimension (W x D x H, mm) |             | 375 x 445 x 252                                                                          | 475 x 560 x 350                                                                      |
| Weight (kg)                          |             | 22.5 (without Rotor)                                                                     | 37 (without Rotor)                                                                   |
| Cat. No.                             |             | HVC-2124 (HVC-2124-110)                                                                  | HVC-2200 (HVC-2200-110)                                                              |
|                                      |             |        |  |

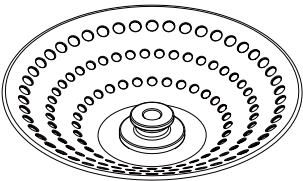
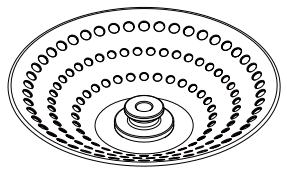
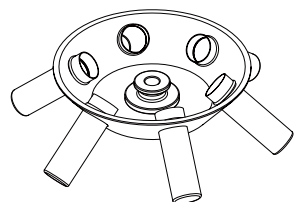
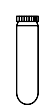
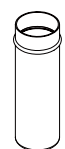
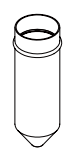
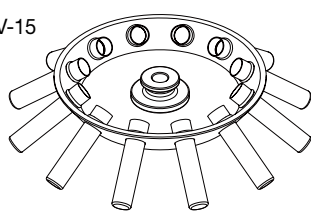
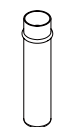
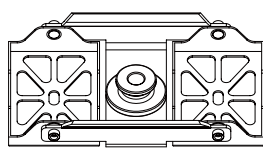
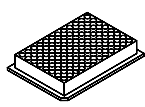
### System Diagram



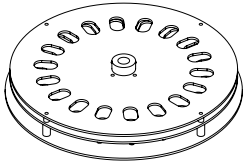
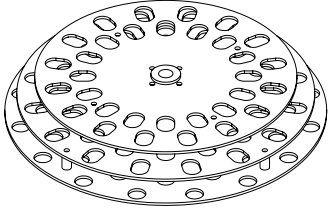
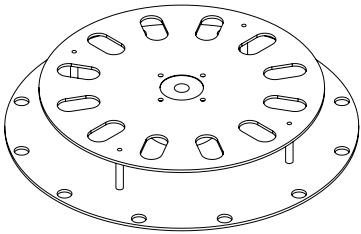
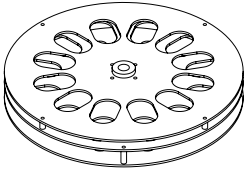
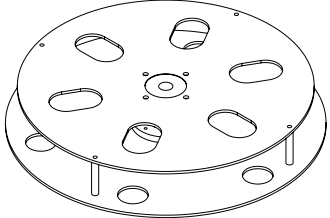
# Centrifugal Vacuum Concentrators

HyperVAC-LITE / HyperVAC-MAX

## Rotors For HyperVAC-LITE (1)

| Rotor                                                                                                                           | Tube/Plate Type                                                                                        | Sleeve                                                                                                | Max. Tube Capacity               | Hole Diameter (mm)              |
|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------|
| <b>HRV-m0.5/2.0-124</b><br>                    |  1.5/2.0 mL<br>0.5 mL | -                                                                                                     | 48 x 1.5/2.0 mL +<br>76 x 0.5 mL | 11.1 (1.5/2.0 mL)<br>8 (0.5 mL) |
| <b>HRV-m2.0-120</b><br>                        |  1.5/2.0 mL           | -                                                                                                     | 120 x 1.5/2.0 mL                 | 11.1 mm                         |
| <b>HRV-50-6</b><br>Incl. 6 ea x HLV-50<br>    |  50 mL               | <b>HLV-50</b><br>   | 6 x 50 mL                        | 30.4 x 101 mm                   |
|                                                                                                                                 |  50 mL<br>conical   | <b>HLV-50c</b><br> | 6 x 50 mL conical                | 30.4 x 101 mm                   |
| <b>HRV-15-12</b><br>Incl. 12 ea x HLV-15<br> |  15 mL              | <b>HLV-15</b><br>  | 12 x 15 mL                       | 18 x 93 mm                      |
| <b>HRV-mw-2</b><br>                          | <br>Microplate      | -                                                                                                     | 2 loadings of microplate         | 130.3 x 88.5                    |

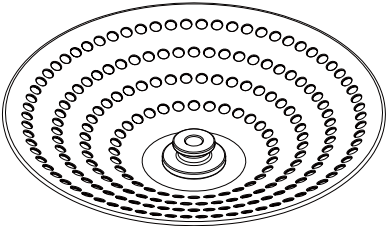
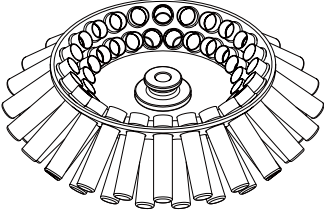
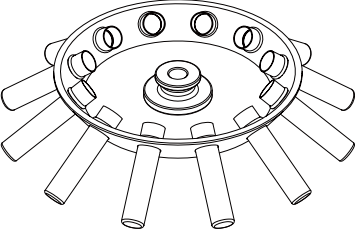
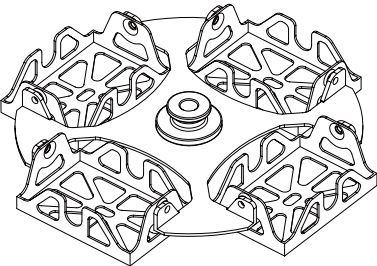
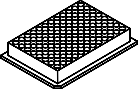
### Rotors For HyperVAC-LITE (2)

| Rotor                                                                                                   | Tube/Plate Type                                                                                      | Max. Tube Capacity   |
|---------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|----------------------|
| <b>HRV-10-18</b><br>   | <br>10 mL           | 18 x 10 mL vial tube |
| <b>HRV-10-32</b><br>   | <br>10 mL           | 32 x 10 mL           |
| <b>HRV-15c-12</b><br> | <br>15 mL conical | 12 x 15 mL conical   |
| <b>HRV-20-12</b><br> | <br>20 mL         | 12 x 20 mL vial tube |
| <b>HRV-50c-6</b><br> | <br>50mL conical  | 6 x 50 mL conical    |

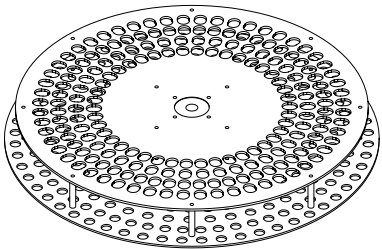
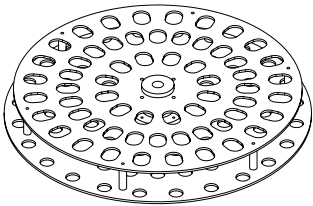
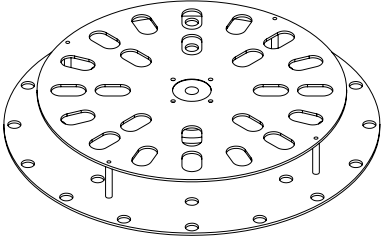
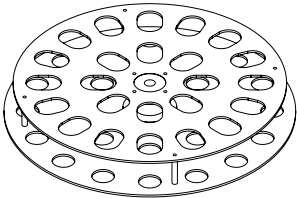
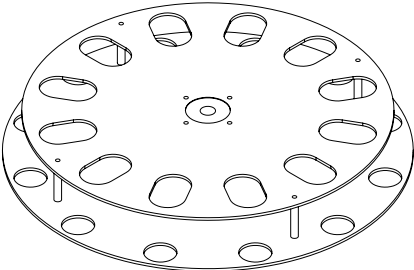
# Centrifugal Vacuum Concentrators

HyperVAC-LITE / HyperVAC-MAX

## Rotors For HyperVAC-MAX (1)

| Rotor                                                                                                                           | Tube/Plate Type                                                                                                   | Sleeve                                                                                                | Max. Tube Capacity               | Hole Diameter (mm)              |
|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------|---------------------------------|
| <b>HRV-m2.0-200</b><br>                        |  1.5/2.0 mL<br>0.5 mL            | -                                                                                                     | 48 x 1.5/2.0 mL +<br>76 x 0.5 mL | 11.1 (1.5/2.0 mL)<br>8 (0.5 mL) |
| <b>HRV-15-48</b><br>Incl. 48 ea x HLV-15<br>  |  15 mL                          | <b>HLV-15</b><br>   | 48 x 15 mL                       | 18 x 93 mm                      |
| <b>HRV-50-12</b><br>Incl. 12 ea x HLV-50<br> |  50 mL                         | <b>HLV-50</b><br>  | 12 x 50 mL                       | 30.4 x 101 mm                   |
|                                                                                                                                 |  50 mL<br>conical              | <b>HLV-50c</b><br> | 12 x 50 mL conical               | 30.4 x 101 mm                   |
| <b>HRV-mw-4</b><br>                          |  Microplate<br>Deep-well plate | -                                                                                                     | 4 loadings of<br>MTP or DWP      | 86.3 x 128.3                    |

### Rotors For HyperVAC-MAX (2)

| Rotor                                                                                                    | Tube/Plate Type                                                                                   | Max. Tube Capacity   |
|----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------|
| <b>HRV-5-192</b><br>    |  5 mL            | 192 x 5 mL           |
| <b>HRV-8-60</b><br>     |  8 mL            | 60 x 8 mL vial tube  |
| <b>HRV-15c-24</b><br> |  15 mL conical | 24 x 15 mL conical   |
| <b>HRV-30-24</b><br>  |  30 mL         | 24 x 30 mL vial tube |
| <b>HRV-50c-12</b><br> |  50mL conical  | 12 x 50 mL conical   |

# Centrifugal Vacuum Concentrators

HyperVAC-LITE / HyperVAC-MAX

## HyperVAC Package Information

| Cat. No.                                                                                                   | Description                                                                                                                                                                                                                                              | Vacuum Range |
|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>HHVL-AWP</b><br><br>   | <b>HyperVAC-LITE System Incl. a Drip Cather Kit a and a Water Pump</b><br>HVC-2124 + HRV-m0.5/2.0-124 + HV-DC20a + HVP-VE11                                                                                                                              | 998 mbar     |
| <b>HHVL-BDP</b><br><br>   | <b>HyperVAC-LITE System Incl. a Drip Cather Kit b and a Diaphragm Pump</b><br>HVC-2124 + HRV-m0.5/2.0-124 + HV-DC20b + HVP-MP001                                                                                                                         | 7 mbar       |
| <b>HHVM-BDP</b><br><br> | <b>HyperVAC-MAX System Incl. a Drip Cather Kit b and a Diaphragm Pump</b><br>HVC-2200 + HRV-m2.0-200 + HV-DC20b + HVP-MP001                                                                                                                              | 7 mbar       |
| <b>HHVM-HCA</b><br><br> | <b>HyperVAC-MAX System Incl. a HyperCOOL -55°C/4L, a HC Trap Plate, a Vacuum Hose, Rotary Vane Pump, Oil Mist Trap, All Connections &amp; a Table A</b><br>HVC-2200 + HRV-m2.0-200 + HHC-3055 + HHC-CPP + two HHC-VH + HVP-W2V20 + HVP-WOF150 + HVCT-MA  | 0.0013 mbar  |
| <b>HHVM-HCB</b><br><br> | <b>HyperVAC-MAX System Incl. a HyperCOOL -110°C/4L, a HC Trap Plate, a Vacuum Hose, Rotary Vane Pump, Oil Mist Trap, All Connections &amp; a Table B</b><br>HVC-2200 + HRV-m2.0-200 + HHC-3110 + HHC-CPP + two HHC-VH + HVP-W2V20 + HVP-WOF150 + HVCT-MB | 0.0013 mbar  |

### Ordering Information

| Cat. No.                          | Description                                                                         |                                                                                                                                                                                                                                                       |
|-----------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HyperVAC Concentrator Main System |                                                                                     |                                                                                                                                                                                                                                                       |
| HVC-2124                          |    | HyperVAC-LITE Centrifuge, Teflon coated, with Heat and Time Control<br>incl. an Fixed Angle Rotor, HRV-m0.5/2.0-124 (220V, 50/60 Hz)                                                                                                                  |
| HVC-2124-110                      |                                                                                     | HyperVAC-LITE Centrifuge, Teflon coated, with Heat and Time Control<br>incl. an Fixed Angle Rotor, HRV-m0.5/2.0-124 (110V, 50/60 Hz)                                                                                                                  |
| HVC-2200                          |    | HyperVAC-MAX Centrifuge, Teflon coated, with Heat and Time Control<br>incl. an Fixed Angle Rotor, HRV-m2.0-200 (220V, 50/60 Hz)                                                                                                                       |
| HVC-2200-110                      |                                                                                     | HyperVAC-MAX Centrifuge, Teflon coated, with Heat and Time Control<br>incl. an Fixed Angle Rotor, HRV-m2.0-200 (110V, 50/60 Hz)                                                                                                                       |
| Pump                              |                                                                                     |                                                                                                                                                                                                                                                       |
| HVP-VE11                          |    | Water Pump, 18 L/min X 2, 0.0998Mpa (998 mbar)                                                                                                                                                                                                        |
| HVP-MP001                         |    | Chemistry Diaphragm Pump MZ 2C NT (ref. VB732300) (2.3 m³/n, 7 mbar)                                                                                                                                                                                  |
| HVP-W2V20                         |   | High Vacuum Rotary Vane Pump, 0.4 kW (0.5 HP), 200 L/min, 1 x 10 <sup>-3</sup> torr (12 m³/n, 0,0013 mbar)                                                                                                                                            |
| HVP-WOF150                        |  | Oil Mist Trap                                                                                                                                                                                                                                         |
| Drip Catcher                      |                                                                                     |                                                                                                                                                                                                                                                       |
| HV-DC20a                          |  | Drip Catcher Kit a, Acrylic, ø20 cm, Height 16 cm incl. 500 mL Glass Bottle and Connections to Water Pump<br>(a 50 cm Soft Hose /10 cm Vac Hose (ø12/25 mm) with 2 clamps to connect to HyperVAC centrifuge and<br>a Y-Shape Soft Hose to Water Pump) |
| HV-DC20b                          |  | Drip Catcher Kit b, Acrylic, ø20 cm, Height 16 cm incl. 500 mL Glass Bottle and Connections to Diaphragm<br>Pump (two 50 cm Soft Hose /10 cm Vac Hose (ø12/25 mm) with 2 clamps each to connect to HyperVAC<br>centrifuge and Diaphragm Pump)         |
| Cooling Trap                      |                                                                                     |                                                                                                                                                                                                                                                       |
| HHC3055                           |  | HyperCOOL -55°C Cooling Trap, 4 L, Teflon Coated, w/ Digital Display and Time Control<br>incl. a Vacuum Hose and Clamps (220V, 50/60 Hz)                                                                                                              |
| HHC3055-110                       |                                                                                     | HyperCOOL -55°C Cooling Trap, 4 L, Teflon Coated, w/ Digital Display and Time Control<br>incl. a Vacuum Hose and Clamps (110V, 50/60 Hz)                                                                                                              |
| HHC3110                           |                                                                                     | HyperCOOL -110°C Cooling Trap, 4 L, Teflon Coated, w/ Digital Display and Time Control<br>incl. a Vacuum Hose and Clamps (220V, 50/60 Hz)                                                                                                             |
| HHC3110-110                       |                                                                                     | HyperCOOL -110°C Cooling Trap, 4 L, Teflon Coated, w/ Digital Display and Time Control<br>incl. a Vacuum Hose and Clamps (110V, 50/60 Hz)                                                                                                             |
| Table                             |                                                                                     |                                                                                                                                                                                                                                                       |
| HVCT-MA                           |  | Table A Type for HyperVAC-MAX with HyperCOOL Underneath and a Pump Back-sided                                                                                                                                                                         |
| HVCT-MB                           |  | Table B Type for HyperVAC-MAX with a Pump Underneath                                                                                                                                                                                                  |

## Freeze Dryer & Cooling Trap

HyperCOOL 3055 / HyperCOOL 3110 / HyperCOOL 8080

### Freeze Dryers & Cooling Traps

# HyperCOOL™

## 3055 / 3110 / 8080

- Effective for fast freeze drying of any samples
- HyperVAC-MAX empowered by HyperCOOL guarantees capacity and performance at higher level.
- HyperCOOL by itself, when equipped with manifolds or chambers, becomes a versatile freeze dryer.
- Extended applications for concentrating wider range or larger volume of solvents.
- The compatible vacuum rotary vane pump generates vacuum down inside the chamber.
- Up to 8 external bottles can be accommodated by the manifolds of HyperCOOL.
- Automatic De-Vac and De-Ice functions installed

### Applications

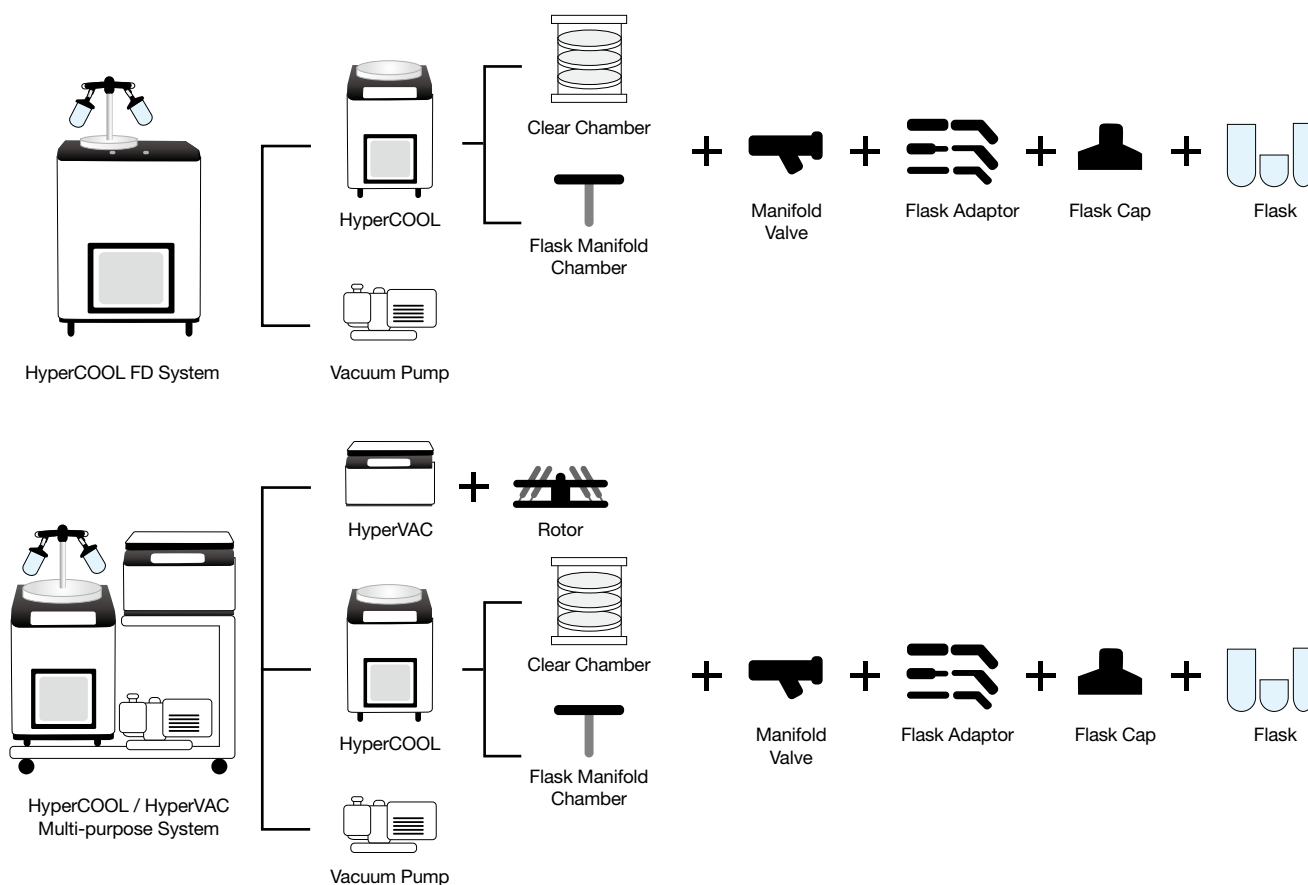
- Study and QC of dried foods like dried fruits, meats, etc.
- Stock of bacteria, virus, fungi, etc.
- Seed preservation of plants or mushrooms
- Improved preservation of flowers and dry display study
- Pharmaceutical study and production
- Research and production of vaccine and antidote
- Tissue or cell preparation for EM analysis
- Medical research
- Archaeological finds like books, textiles, leather
- Restoration of wet documents



### Technical Specifications of HyperCOOL Cooling Traps

|                                     | HC3055                                                                             | HC3110                                                                             | HC8080                                                                               |
|-------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Ultimate Chamber Temp (at RT) (°C)  | -55                                                                                | -110                                                                               | -80                                                                                  |
| Chamber Volume (L)                  | 4                                                                                  |                                                                                    | 8                                                                                    |
| Trap (Chamber) Size (Ø x L)         | 165 x 202                                                                          |                                                                                    | 310 x 250                                                                            |
| ICE Condensing Capacity (kg)        | 3                                                                                  |                                                                                    | 8                                                                                    |
| ICE Condensing Performance (kg/day) | 2.5                                                                                |                                                                                    | -                                                                                    |
| Compressor                          | 1/2 HP                                                                             | 1/3 HP x 2                                                                         | 1 HP x 2                                                                             |
| Refrigerant                         | R507                                                                               | R507/R1150                                                                         | R23/R507                                                                             |
| Digital Readout                     | Time, Temperature                                                                  |                                                                                    | Time, Program, Temperature, Vacuum Pressure                                          |
| Function                            | KEYLOCK, DEFROST, VACUUM, TIME                                                     |                                                                                    | COOLING, VACUUM                                                                      |
| Power consumption (Resting, VA)     | 642                                                                                | 819                                                                                | 1500                                                                                 |
| Power supply(V/Hz)                  | 220 V/50-60 Hz (110 V optional)                                                    |                                                                                    |                                                                                      |
| Dimension (W x D x H, mm)           | 400 x 660 x 570                                                                    |                                                                                    | 710 x 610 x 960                                                                      |
| Weight (kg)                         | 58                                                                                 | 72                                                                                 | 195                                                                                  |
| Cat. No.                            | HHC-3055 (HHC-3055-110)                                                            | HHC-3110 (HHC-3110-110)                                                            | HHC-8080 (HHC-8080-110)                                                              |
|                                     |  |  |  |

### System Diagram of HyperCOOL Freeze Drying System



# Freeze Dryer & Cooling Trap

HyperCOOL 3055 / HyperCOOL 3110 / HyperCOOL 8080

## HyperCOOL Package Information (1)

| Cat. No.                   |                                                                                     | Description                                                                                                                                                                                                                                                                                           |
|----------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| HHC3055-M4B<br>HHC3110-M4B |    | <b>Manifold Type Freeze Drying System</b><br>-55°C / -110°C with 4 Valves Basic incl. a Rotary Vane Pump,<br>Oil Mist Trap & Connections<br>HHC-3055/HHC-3110 + HHC-CPB + HHC-MFB-4V + HHC-VH + HVP-W2V20 + HVP-WOF150                                                                                |
| HHC3110-CHR                |    | <b>Chamber Type Freeze Drying System</b><br>-110°C with 3 Shelves Rack incl. a Rotary Vane Pump, Oil Mist Trap & Connections<br>HHC-3110 + HHC-CPB + HHC-CH30P + HHC-CR25 + HHC-VH + HVP-W2V20 + HVP-WOF150                                                                                           |
| HHC3110-CH4VR              |   | <b>Multi-Type Freeze Drying System</b><br>-110°C with 3 Shelves Rack & 4 Valves Chamber incl. a Rotary Vane Pump,<br>Oil Mist Trap & Connections<br>HHC-3110 + HHC-CPB + HHC-CH30-4V + HHC-CR25 + HHC-VH + HVP-W2V20 + HVP-WOF150                                                                     |
| HHC3110-CH8VR              |  | <b>Multi-Type Freeze Drying System</b><br>-110°C with 3 Shelves Rack & 8 Valves Chamber incl. a Rotary Vane Pump,<br>Oil Mist Trap & Connections<br>HHC-3110 + HHC-CPB + HHC-CH30-8V + HHC-CR25 + HHC-VH + HVP-W2V20 + HVP-WOF150                                                                     |
| HMHC3110-M4EC              |  | <b>Multi-Purpose, Vacuum Concentration and Freeze Drying System</b><br>-110°C with 8 Valves Manifold incl. a Rotary Vane Pump, Oil Mist Trap,<br>Connections & a Table B<br>HVC-2200 + HVCT-MB + HHC-3110 + HHC-CPB + HHC-MFB-4V + HHC-MFE-4V<br>+ two HHC-VH + HVP-W2V20 + HVP-WOF150                |
| HMHC3110-CH8VRC            |  | <b>Multi-Purpose, Vacuum Concentration and Freeze Drying System</b><br>-110°C with 3 Shelves Rack & 8 Valves Chamber incl. a Rotary Vane Pump, Oil Mist Trap,<br>Connections & a Table B<br>HVC-2200 + HVCT-MB + HHC-3110 + HHC-CPB + HHC-CH30-8V + HHC-CR25<br>+ two HHC-VH + HVP-W2V20 + HVP-WOF150 |

## HyperCOOL Package Information (2)

| Cat. No.      |                                                                                     | Description                                                                                                                                    |
|---------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| HHC8080-M4B   |    | <b>Manifold Type Freeze Drying System -80°C with 4 Valves Basic incl.</b><br>HHC8080 + HHC-CPB(8) + HHC-MFB-4V                                 |
| HHC8080-M6B   |    | <b>Manifold Type Freeze Drying System -80°C with 6 Valves Basic incl.</b><br>HHC8080 + HHC-CPB(8) + HHC-MFB-6V                                 |
| HHC8080-M8B   |   | <b>Manifold Type Freeze Drying System -80°C with 8 Valves Basic incl.</b><br>HHC8080 + HHC-CPM(8) + HHC-MFB-8V                                 |
| HHC8080-CHR   |  | <b>Chamber Type Freeze Drying System -80°C with 3 Shelves Rack incl.</b><br>HHC8080 + HHC-CPB(8) + HHC-CH30P + HHC-CR25                        |
| HHC8080-CH4VR |  | <b>Multi-Type Freeze Drying System -80°C with 3 Shelves Rack &amp; 4Valves Chamber incl.</b><br>HHC8080 + HHC-CPB(8) + HHC-CH30-4V + HHC-CR25  |
| HHC8080-CH8VR |  | <b>Multi-Type Freeze Drying System -80°C with 3 Shelves Rack &amp; 8 Valves Chamber incl.</b><br>HHC8080 + HHC-CPB(8) + HHC-CH30-8V + HHC-CR25 |

## Freeze Dryer & Cooling Trap

HyperCOOL 3055 / HyperCOOL 3110 / HyperCOOL 8080

### Ordering Information of HyperCOOL Accessories (1)

| Cat. No.              | Description                                                                         |                                                                                                              |
|-----------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| HyperCOOL Cover Plate |                                                                                     |                                                                                                              |
| HHC-CPP               |    | HyperCOOL HC3055, HC3110 Trap Plate for Connection Vacuum Hose to Vacuum Concentrator                        |
| HHC-CPP-A             |    | HyperCOOL HC3055, HC3110 Trap Plate for Connection Vacuum Hose to Vacuum Concentrator with Table A (GVCT-MA) |
| HHC-CPB               |    | HyperCOOL HC3055, HC3110 Acrylic Base for Manifold or Chamber                                                |
| HHC-CPM               |    | HyperCOOL HC3055, HC3110 Acrylic Base for HC-MFB-8V                                                          |
| HHC-CPP(8)            |    | HyperCOOL HC8080 Trap Plate for Connection Vacuum Hose to Vacuum Concentrator                                |
| HHC-CPB(8)            |    | HyperCOOL HC8080 Acrylic Base for Manifold or Chamber                                                        |
| HHC-CPM(8)            |   | HyperCOOL HC8080 Acrylic Base for HHC-MFB-8V                                                                 |
| Manifold              |                                                                                     |                                                                                                              |
| HHC-MFB-4V            |  | 4-Valve Manifold Basic with four rubber valves on a stainless steel bar, 30 cm                               |
| HHC-MFB-6V            |  | 6-Valve Manifold Basic with six rubber valves on a stainless steel bar, 30 cm                                |
| HHC-MFE-4V            |  | 4-Valve Manifold Extension with four rubber valves on a stainless steel bar, 20 cm                           |
| HHC-MFE-6V            |  | 6-Valve Manifold Extension with six rubber valves on a stainless steel bar, 20 cm                            |
| HHC-MFB-8V            |  | 8-Valve Manifold Basic with 8 rubber valves on a stainless steel bar, 30 cm                                  |

## Ordering Information of HyperCOOL Accessories (2)

| Cat. No.                  | Description                                                                        |                                                                                              |
|---------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| Chamber and Rack          |                                                                                    |                                                                                              |
| HHC-CH30P                 |   | Acrylic Chamber Trunk and Plain Top, ø30 cm, height 40 cm                                    |
| HHC-CH30-4V               |   | Acrylic Chamber Trunk and Top with 4 Rubber Valves, ø30 cm, height 40 cm                     |
| HHC-CR25                  |   | Stainless Steel Rack with 3 Sets of Shelves and Trays, ø25cm (Trays can be inserted up to 5) |
| HHC-CR-TS                 |   | A Set of a Tray and a Shelf                                                                  |
| HHC-CH30-8V               |  | Acrylic Chamber Trunk and Top with 8 Rubber Valves, ø30 cm, height 40 cm                     |
| Freeze Drying Glass Flask |                                                                                    |                                                                                              |
| FD2009                    | Freeze Drying Glass Flask 40 mL (Ø45 mm)                                           |                                                                                              |
| FD2010                    | Freeze Drying Glass Flask 80 mL (Ø 45 mm)                                          |                                                                                              |
| FD2011                    | Freeze Drying Glass Flask 120 mL (Ø 45 mm)                                         |                                                                                              |
| FD2012                    | Freeze Drying Glass Flask 150 mL (Ø 45 mm)                                         |                                                                                              |
| FD2013                    | Freeze Drying Glass Flask 300 mL (Ø 45 mm)                                         |                                                                                              |
| FD2013-1                  | Freeze Drying Glass Flask 300 mL (Ø 70 mm)                                         |                                                                                              |
| FD2014                    | Freeze Drying Glass Flask 600 mL (Ø 70 mm)                                         |                                                                                              |
| FD2015                    | Freeze Drying Glass Flask 900 mL (Ø 70 mm)                                         |                                                                                              |
| FD2016                    | Freeze Drying Glass Flask 1,200 mL (Ø 70 mm)                                       |                                                                                              |
| FD2017                    | Freeze Drying Glass Flask 2,000 mL (Ø 70 mm)                                       |                                                                                              |
| Others                    |                                                                                    |                                                                                              |
| FD2006                    | Stainless steel connector                                                          |                                                                                              |
| FD2007                    | Rubber lid for 45 mm diameter Flask                                                |                                                                                              |
| FD2008                    | Rubber lid for 70 mm diameter Flask                                                |                                                                                              |
| FD1001                    | Vacuum Pump W2V20                                                                  |                                                                                              |
| FD1002                    | Oil Mist Trap                                                                      |                                                                                              |
| HHC-AA                    | Acetal Adaptor for the connection Vacuum Hose to Rubber Valve                      |                                                                                              |
| HHC-VH                    | Vacuum Hose with 2 clamps, 100 cm                                                  |                                                                                              |



## Gas Purging Evaporation Concentrator

HyperVAP HV300

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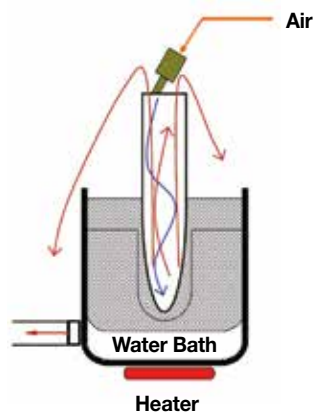
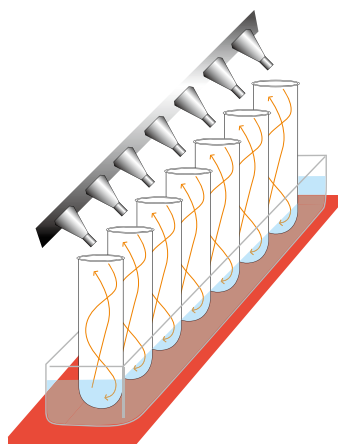
### Gas Purging Evaporation Concentrator

# HyperVAP™

- Accelerated evaporation performance by gas purging mechanism
- Automated, programmable and reproducible
- Proprietary semi-helical gas flow mechanism to achieve the highest evaporation rate
- Diverse dimensions of nozzles and tube racks can be tailored upon customer needs.
- Four independent timer settings for different solvents
- Dual-step control of gas pressure and time to prevent “bumping” of the sample on startup
- Differentiated monitoring functions: 3-side transparent glass panels, blue backlight (on/off switchable) and traffic lights
- Optimized for evaporating organic solvents including sample preparations for chromatography
- Safety features: tempered glass panels, automatic gas shutoff function, traffic lights (fan, door, heater)



## Maximized Evaporation by Semi-helical Air Flow (Patented)



## Reference Data

| Solvent \ Pressure | 40 psi | 30 psi | 20 psi |
|--------------------|--------|--------|--------|
| Hexane             | 1:50   | 2:10   | 3:20   |
| Methanol           | 5:10   | 6:30   | 9:50   |
| Acetonitrile       | 5:45   | 7:10   | 11:40  |
| Ethanol            | 6:10   | 8:30   | 15:30  |

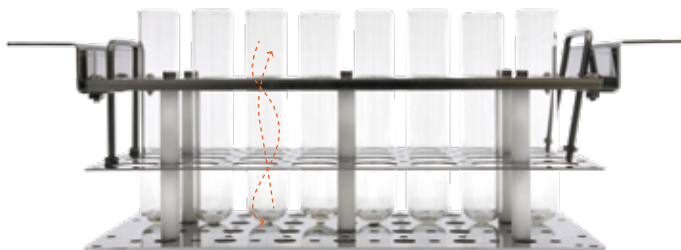
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### Experimental Conditions

- Sample volume : 5 mL in 20 mL tube
- Temperature : 40 °C
- Gas : nitrogen gas

## Applications

- Pharmaceutical biotech compounds
- Clinical samples
- Environmental samples
- Forensic and crime samples
- Agrochemical samples
- Food and beverage analysis

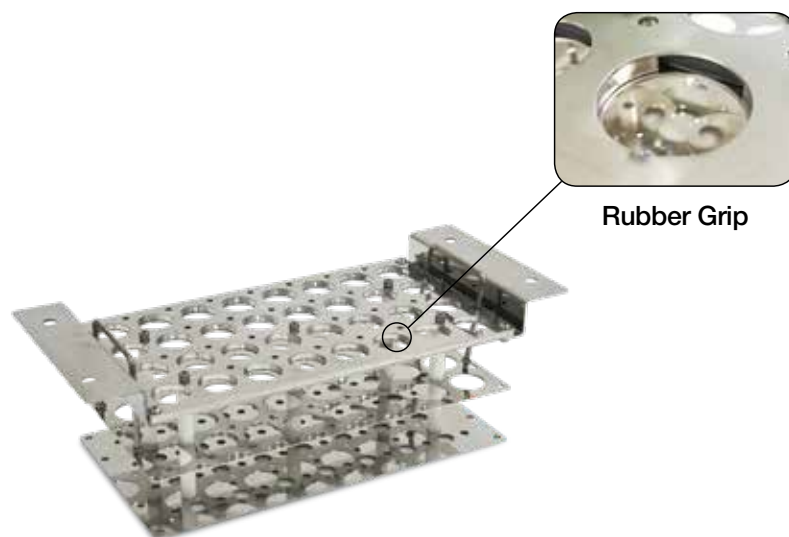


# Gas Purging Evaporation Concentrator

HyperVAP HV300

## Standard Nozzles & Racks

- 4 x 8 nozzle & a tube rack for 24 x 120 mm tubes
- 3 x 6 nozzle & a tube rack for 30 x 120 mm tubes
- 3 x 5 nozzle & a tube rack for 38 x 140 mm tubes
- 2 x 3 nozzle & a tube rack for 72 x 140 mm tubes
- Customized nozzle assembly and tube rack and optionally available



### Technical Specifications

|                                      |                              | HyperVAP                                                   |
|--------------------------------------|------------------------------|------------------------------------------------------------|
| Sample Capacity                      | Number of Samples            | 6~32                                                       |
|                                      | Sample Volume (mL)           | 5~300                                                      |
| Gas                                  |                              | Compressed air, N <sub>2</sub> , etc.                      |
| Pressure                             | Operation Gas Pressure (psi) | 15~50                                                      |
|                                      | Pressure Control             | Automated dual-step control (initial & operating pressure) |
| Max. Time for Initial Pressure (min) |                              | ~ 99                                                       |
| Max. Time Control (min)              |                              | ~ 999 (4 independent channels)                             |
| Water Bath Temperature (°C)          |                              | ~ 99                                                       |
| Forced Vapor Evacuation              |                              | Yes (by fan)                                               |
| Power consumption                    |                              | 800 VA                                                     |
| Dimension (W x D x H, mm)            |                              | 590 x 340 x 320                                            |
| Weight (kg)                          |                              | 26.5                                                       |

### Ordering Information

| Cat. No.                                                                                                                      | Description                                                   |
|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| <b>HV-300 concentrator consists of a complete system installed with a nozzle assembly and a tube rack, incl. nozzle caps.</b> |                                                               |
| HGP-300-48                                                                                                                    | HV300 with 4 x 8 nozzles assembly and a choice of a tube rack |
| HGP-300-36                                                                                                                    | HV300 with 3 x 6 nozzles assembly and a choice of a tube rack |
| HGP-300-35                                                                                                                    | HV300 with 3 x 5 nozzles assembly and a choice of a tube rack |
| HGP-300-23                                                                                                                    | HV300 with 2 x 3 nozzles assembly and a choice of a tube rack |
| <b>Nozzle</b>                                                                                                                 |                                                               |
| HGP-N48                                                                                                                       | Nozzle assembly, 4 x 8 (32 positions)                         |
| HGP-N36                                                                                                                       | Nozzle assembly, 3 x 6 (18 positions)                         |
| HGP-N35                                                                                                                       | Nozzle assembly, 3 x 5 (15 position)                          |
| HGP-N23                                                                                                                       | Nozzle assembly, 2 x 3 (6 position)                           |
| HGP-NC                                                                                                                        | Nozzle caps, 8/pk                                             |
| <b>Tube Rack</b>                                                                                                              |                                                               |
| HGP-R48-24                                                                                                                    | Tube rack for 24 mm x 120 mm (Ø x L) tubes (4 x 8 positions)  |
| HGP-R48-16                                                                                                                    | Tube rack for 16 mm x 100 mm (Ø x L) tubes (4 x 8 positions)  |
| HGP-R48-15                                                                                                                    | Tube rack for 15 mm x 70 mm (Ø x L) tubes (4 x 8 positions)   |
| HGP-R36-30                                                                                                                    | Tube rack for 30 mm x 120 mm (Ø x L) tubes (3 x 6 positions)  |
| HGP-R35-38                                                                                                                    | Tube rack for 38 mm x 140 mm (Ø x L) tubes (3 x 5 positions)  |
| HGP-R23-72                                                                                                                    | Tube rack for 72 mm x 140 mm (Ø x L) tubes (2 x 3 positions)  |



# Sample Growing

## Laboratory Fermentors

LiFlus GX / GM - p.82

## Photo Bioreactors

PBR - p.88

## CO<sub>2</sub> Incubator

ARA P150 - p.90

## Laboratory Fermentors

LiFlus GX / GM

### Laboratory Fermentors

# LiFlus GX

- Optimized for high density microbial growth
- Wide ranges of vessels of single, double or bowl types from 1.5 L to 14 L
- Individually controlled four peristaltic pumps for pH, DO, anti-foam and feeding
- Intuitive control with 7" touch screen display
- Accurate PID temperature control



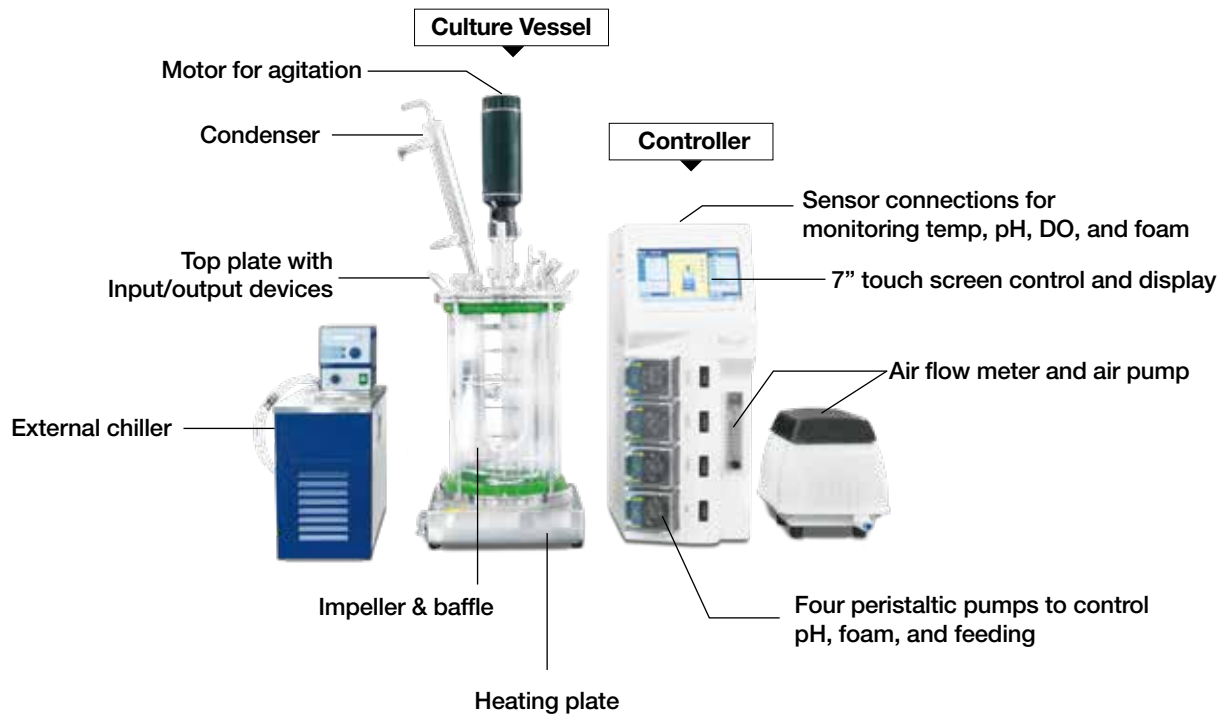
### Applications

- Microbial fermentation
- Cell cultivation
- Production of biomass
- Extracellular metabolites
- Intracellular components

### Main Control Screen



## Structure of Laboratory Fermentor, LiFlus GX



## Availability of Vessel Types and Sizes

| Vessel Type  | 1.5L | 2L | 3L | 5L | 7L | 10L | 14L |
|--------------|------|----|----|----|----|-----|-----|
| Single       | ●    |    | ●  | ●  | ●  | ●   |     |
| Single round |      | ●  | ●  | ●  | ●  |     |     |
| Double       |      |    | ●  | ●  | ●  | ●   | ●   |
| Bowl type    |      |    |    |    |    | ●   | ●   |



Single



Single Round

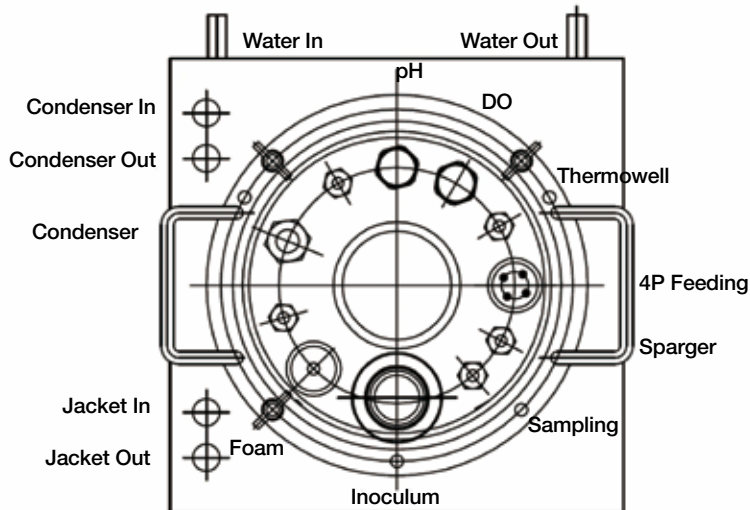


Double

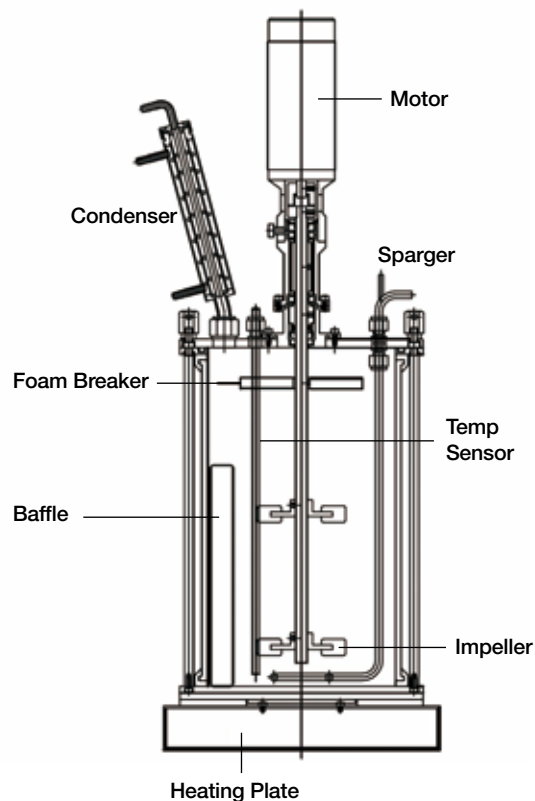


Bowl

## Basic Diagram of Culture Vessel and Variations



- Ports on the top plate can be composed by the necessities of controls and inputs /outputs.



- A motor power and condenser size need to be selected by the vessel size.
- Sparger type and the size of foam breaker should be selected by growing sample's requirements.
- Heating method can be selected between direct heating plate, heating blanket, or double vessel.

### Technical Specifications

|                     |                           | LiFlus GX                                                                                                                  | LiFlus GM    |
|---------------------|---------------------------|----------------------------------------------------------------------------------------------------------------------------|--------------|
| Type                |                           | Single system                                                                                                              | Multi system |
| Controller          | Control & Display         | 7" wide touch screen                                                                                                       |              |
|                     | Feeding Pumps             | Up to 4 peristaltic pumps per one controller                                                                               |              |
|                     | Dimension (W x D x H, mm) | 190 x 350 x 480 mm                                                                                                         |              |
|                     | Net Weight                | 12 kg                                                                                                                      |              |
|                     | Power consumption         | 500 W                                                                                                                      |              |
| Vessels             | Type                      | Single flat bottom, Single round, Double, Bowl types                                                                       |              |
|                     | Capacity                  | 1.5L, 3L, 5L, 7L, 10L or 14L                                                                                               |              |
| Agitation           | Range                     | 100 ~ 1,200 rpm                                                                                                            |              |
|                     | Motor                     | DC motor, 60 or 150W                                                                                                       |              |
|                     | Impeller Type             | Rushton, Pitched-paddle, Marine-blade, or Varied type                                                                      |              |
| Temperature Control | Control range             | 8 ~ 70 °C                                                                                                                  |              |
|                     | Thermostat system         | 8 ~ 70 °C (±0.1 °C) / Pt-100 probe heating & cooling PID control / built-in heat exchanger / automatic cooling water valve |              |
|                     | Heating                   | Heating plate or blanket pad                                                                                               |              |
|                     | Cooling                   | By internal cold finger and/or external chiller                                                                            |              |
| Aeration            |                           | By air sparger and air pump with air flow meter                                                                            |              |
| pH Range            |                           | pH 2.0~12.0                                                                                                                |              |
| DO Range            |                           | 0 ~200%, DO cascade to agitation                                                                                           |              |
| Anti-foam Sensing   |                           | Conductivity type                                                                                                          |              |

- Impeller type should be chosen by the characteristics of growing sample from Rushton turbine, pitched blade, or marine-blade, or varied impeller.



**Rushton  
Turbine Impeller**



**Pitched  
Paddle Impeller**



**Marine Impeller**



**Varied Impeller**

### Ordering Information (1)

| Cat. No.                                                                                                                                                                                                                         | Description                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Controller and Accessories</b>                                                                                                                                                                                                |                                                                                              |
| FE1002                                                                                                                                                                                                                           | LiFlus GX controller, without pumps and air flow meter                                       |
| FE3081                                                                                                                                                                                                                           | Peristaltic pump (upto 4 pumps can be installed on one controller), 14 rpm                   |
| FE3051                                                                                                                                                                                                                           | Air flow meter (rotameter), 200~2,500 cc/min for 1.5L (w.v.1L)                               |
| FE3052                                                                                                                                                                                                                           | Air flow meter (rotameter), 200~2,500 cc/min for 3L (w.v.2.1L)                               |
| FE3053                                                                                                                                                                                                                           | Air flow meter (rotameter), 0.5~ 5L/min for 5L (w.v.3L)                                      |
| FE3054                                                                                                                                                                                                                           | Air flow meter (rotameter), 1~ 10L/min for 7L (w.v.5L) or 10L (w.v.7L)                       |
| FE3055                                                                                                                                                                                                                           | Air flow meter (rotameter), 1~25L/min for 14L (w.v.10L)                                      |
| FE2106                                                                                                                                                                                                                           | Air compressor (air flow 20 L/min, pressure 0.1kgf/cm <sup>2</sup> , input 18 W for 1.5~14L) |
| <b>Single Vessel, borosilicate glass vessel with top SUS plate</b><br>pH, DO, antifoam, thermo, inoculation, sampling, and 4 feeding ports, silicone connecting tubes and cold finger (over 3L)                                  |                                                                                              |
| FE1102                                                                                                                                                                                                                           | Single vessel 1.5L, vessel (I.D 115 mm, V.H 135 mm, 1:1.2), top plate (180 D/mm, SUS)        |
| FE1103                                                                                                                                                                                                                           | Single vessel 3L, vessel (I.D 133 mm, V.H 220 mm, 1:1.7), top plate (220 D/mm, SUS)          |
| FE1104                                                                                                                                                                                                                           | Single vessel 5L, vessel (I.D 170 mm, V.H 220 mm, 1:1.3), top plate (220 D/mm, SUS)          |
| FE1105                                                                                                                                                                                                                           | Single vessel 7L, vessel (I.D 170 mm, V.H 310 mm, 1:1.8), top plate (220 D/mm, SUS)          |
| FE1106                                                                                                                                                                                                                           | Single vessel 10L, vessel (I.D 190 mm, V.H 355 mm, 1:1.8), top plate (220 D/mm, SUS)         |
| FE1107                                                                                                                                                                                                                           | Single vessel 14L, vessel (I.D 190 mm, V.H 355 mm, 1:1.8), top plate (220 D/mm, SUS)         |
| <b>Single Round Vessel, borosilicate glass vessel with SUS vessel supporter and top plate</b><br>pH, DO, antifoam, thermo, inoculation, sampling, and 4 feeding ports, silicone connecting tubes and cold finger (over 3L)       |                                                                                              |
| FE1131                                                                                                                                                                                                                           | Single round vessel 2L, vessel (I.D 115 mm, V.H 135 mm, 1:1.2), top plate (180 D/mm, SUS)    |
| FE1132                                                                                                                                                                                                                           | Single round vessel 3L, vessel (I.D 133 mm, V.H 220 mm, 1:1.7), top plate (220 D/mm, SUS)    |
| FE1133                                                                                                                                                                                                                           | Single round vessel 5L, vessel (I.D 170 mm, V.H 220 mm, 1:1.3), top plate (220 D/mm, SUS)    |
| FE1134                                                                                                                                                                                                                           | Single round vessel 7L, vessel (I.D 170 mm, V.H 310 mm, 1:1.8), top plate (220 D/mm, SUS)    |
| <b>Double Vessel, borosilicate glass double vessel with SUS vessel supporter and top plate</b><br>pH, DO, antifoam, thermo, inoculation, sampling, and 4 feeding ports, silicone connecting tubes and cold finger (over 3L)      |                                                                                              |
| FE1112                                                                                                                                                                                                                           | Double vessel 3L, vessel (I.D 130 mm, V.H 220 mm, 1:1.7), top plate (220 D/mm, SUS)          |
| FE1113                                                                                                                                                                                                                           | Double vessel 5L, vessel (I.D 145 mm, V.H 300 mm, 1:1.2), top plate (220 D/mm, SUS)          |
| FE1114                                                                                                                                                                                                                           | Double vessel 7L, vessel (I.D 160 mm, V.H 330 mm, 1:1.7), top plate (220 D/mm, SUS)          |
| FE1115                                                                                                                                                                                                                           | Double vessel 10L, vessel (I.D 230 mm, V.H 350 mm, 1:1.7), top plate (220 D/mm, SUS)         |
| FE1116                                                                                                                                                                                                                           | Double vessel 14L, vessel (I.D 270 mm, V.H 375 mm, 1:1.7), top plate (220 D/mm, SUS)         |
| <b>Bowl Type Vessel, borosilicate glass double vessel with bowl type SUS base and top SUS plate</b><br>pH, DO, antifoam, thermo, inoculation, sampling, and 4 feeding ports, silicone connecting tubes and cold finger (over 3L) |                                                                                              |
| FE1121                                                                                                                                                                                                                           | Bowl vessel 10L, vessel (I.D 190mm, V.H 355mm, 1:1.8), top plate (220 D/mm, SUS)             |
| FE1122                                                                                                                                                                                                                           | Bowl vessel 14L, vessel (I.D 190mm, V.H 500mm, 1:2.6), top plate (220 D/mm, SUS)             |
| <b>Heating and Cooling Apparatus</b>                                                                                                                                                                                             |                                                                                              |
| FE1151                                                                                                                                                                                                                           | Heating plate with water in/out port for single vessel, 1.5L (210 x 210 x 40 mm)             |
| FE1152                                                                                                                                                                                                                           | Heating plate with water in/out port for single vessel, 3L (220 x 220 x 40 mm)               |
| FE1153                                                                                                                                                                                                                           | Heating plate with water in/out port for single vessel, 5L, 7L (250 x 250 x 40 mm)           |
| FE1154                                                                                                                                                                                                                           | Heating plate with water in/out port for single vessel, 10L (280 x 280 x 40 mm)              |
| FE1161                                                                                                                                                                                                                           | Heating blanket for single round vessel, 2L                                                  |
| FE1162                                                                                                                                                                                                                           | Heating blanket for single and single round vessels, 5L                                      |
| FE1163                                                                                                                                                                                                                           | Heating blanket for single and single round vessels, 7L                                      |
| FE1164                                                                                                                                                                                                                           | Heating blanket for single vessel, 10L                                                       |
| FE2001                                                                                                                                                                                                                           | 6L chiller for single vessel, 3L, 5L                                                         |
| FE2002                                                                                                                                                                                                                           | 8L chiller for single vessel, 7L                                                             |
| FE2003                                                                                                                                                                                                                           | 12L chiller for single vessel, 10L                                                           |

## Ordering Information (2)

| Cat. No.                                                           | Description                                                                             |
|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| <b>Motor for Agitation</b>                                         |                                                                                         |
| FE1201                                                             | DC motor for 1.5~7L vessel (60 W, DC 24V 3A, 100~850 rpm)                               |
| FE1202                                                             | DC motor for 10~14L vessel (150 W, DC 24V 8A, 100~850 rpm)                              |
| <b>Impeller for Agitation, SUS</b>                                 |                                                                                         |
| FE1402                                                             | Rushton turbine impeller (O.D. 60 mm) for double 5L vessel                              |
| FE1403                                                             | Rushton turbine impeller (O.D. 80 mm) for single 5L, 7L, double 7L vessels              |
| FE1407                                                             | Rushton turbine impeller (O.D. 100 mm) for single 10L, bowl 10L, 14L vessels            |
| FE1411                                                             | Pitched-paddle impeller (O.D. 65 mm) for single 1.5L, 3L, double 3L vessels             |
| FE1412                                                             | Pitched-paddle impeller (O.D. 80 mm) for single 5L, 7L, double 5L vessels               |
| FE1413                                                             | Pitched-paddle impeller (O.D. 100 mm) for 10L, 14L vessels                              |
| FE1421                                                             | Marine-blade impeller (O.D. 65 mm) for single 1.5L, 3L, double 3L vessels               |
| FE1422                                                             | Marine-blade impeller (O.D. 80 mm) for double 5L Vessels                                |
| FE1423                                                             | Marine-blade impeller (O.D. 100 mm) for single 5L, 7L, double 7L, bowl 10L, 14L vessels |
| FE1431                                                             | Varied impeller (O.D. 65 mm) for single 1.5L, 3L, double 3L vessels                     |
| FE1432                                                             | Varied impeller (O.D. 80 mm) for single 5L, 7L, double 5L vessels                       |
| FE1433                                                             | Varied impeller (O.D. 100 mm) for 10L, 14L vessels                                      |
| <b>Foam Breaker, SUS</b>                                           |                                                                                         |
| FE1501                                                             | Foam breaker (O.D. 75 mm) for single 1.5L, 3L, double 3L vessels                        |
| FE1502                                                             | Foam breaker (O.D. 90 mm) for single 5L, 7L, double 5L vessels                          |
| FE1503                                                             | Foam breaker (O.D. 110 mm) for 10L, 14L vessels                                         |
| <b>Sparger, SUS</b>                                                |                                                                                         |
| FE4011                                                             | Ring type sparger, removable                                                            |
| FE4012                                                             | Linear type sparger, removable                                                          |
| FE4013                                                             | Micro sparger with 20 µm holes                                                          |
| <b>Condenser, SUS</b>                                              |                                                                                         |
| FE1701                                                             | Standard condenser                                                                      |
| FE1703                                                             | Big size condenser for 10L, 14L vessels                                                 |
| <b>Sensors</b>                                                     |                                                                                         |
| FE153X                                                             | pH electrode, length 120, 225, 325, or 425 mm                                           |
| FE154X                                                             | Cable for pH Electrode, 1 m or 3 m                                                      |
| FE157X                                                             | DO (dissolved oxygen) electrode, length 120, 220, 320, or 420 mm                        |
| FE158X                                                             | Cable for DO electrode, 1 m or 3 m                                                      |
| FE163X                                                             | Temperature sensor, Length 160, 220, 260, 320, 360, 510 mm                              |
| FE1601                                                             | Anti foam electrode, L100 DIA7 PORT 12 for 1.5L Vessel                                  |
| FE1602                                                             | Anti foam electrode, L150 DIA7 PORT 12 for 3, 5, 7, 10, 14L Vessels                     |
| FE161X                                                             | Cable for anti foam electrode, length 1 m or 1.5 m                                      |
| <b>Reagent Bottle, Pyrex, 0.2 µm PTFE Filter (Ø 25mm) included</b> |                                                                                         |
| FE1801                                                             | 250 mL reagent bottle, 4 ea/set                                                         |
| FE1802                                                             | 500 mL reagent bottle, 4 ea/set                                                         |
| FE1803                                                             | 1,000 mL reagent bottle, 4 ea/set                                                       |

## Photo Bioreactors

PBR - Lab Scale / Pilot Scale

---

### Photo Bioreactors

# PBR

## Lab Scale / Pilot Scale

- Photosynthetic microorganism cultivation
- Various types of photo bioreactor (flat,  $\alpha$ -type, pipe and etc.)
- LED illumination with full spectrum imitates natural sunlight by emitting light at 430 nm, 630 nm, white LED
- Easy to scale up
- No standard models
- Easy and costly customization according to individual application



Vessel Type Photo Bioreactor,  
Illuminated with Inner LED Bars



Pilot Scale, Plate Type Photo Bioreactor,  
Illuminated by Internal LED Plate

### Applications

- Phototrophic microorganism cultivation
- Production of phototrophic microalgae biomass

### Technical Specifications

|                   |                                                       | PBR Lab Scale                                                                                                 |
|-------------------|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Agitation         | Drive                                                 | Top drive motor (mechanical drive)                                                                            |
|                   | Range                                                 | 100~1,200 rpm                                                                                                 |
|                   | Impeller                                              | 2-Rushton turbine impeller                                                                                    |
| Temperature       | Range & Sensor                                        | Ambient + 3~80°C RTP (Pt-100), PID control                                                                    |
| Aeration          | Sparger & Gas mode                                    | Ring sparger (round type), Air-flow meter (standard) or 2 gas and 4 gas mixer (option)                        |
| Exhaust system    | Filter & Condenser                                    | 0.2 µm air filter cartridge, SUS 316                                                                          |
| pH                | Range                                                 | 2.0~12.0 pH of set point, PID control                                                                         |
|                   | Electrode                                             | Gel type                                                                                                      |
| DO                | Range                                                 | 0~200%, PID control                                                                                           |
|                   | Electrode                                             | Polarographic type                                                                                            |
| Anti-foam         | Electrode                                             | Conductivity type                                                                                             |
| Peristaltic Pumps | Control                                               | 4 constant speed pumps each assignable to a wide variety of function for control of acid, base, foam and feed |
| Recording         | pH, DO, Temp, Foam, Agitation, Peristaltic pump, etc. |                                                                                                               |

|                          | PBR Pilot Scale       |
|--------------------------|-----------------------|
| Total volume illuminated | 20~100 L              |
| Sterilization autoclave  | Possible              |
| Photosynthetic module    | Plate                 |
| Illumination unit        | White LED             |
| Illumination             | On / Off control      |
| Air flow rate            | 5~20 L/min            |
| pH-control               | CO <sub>2</sub> Gas   |
| Temperature              | Measurement & control |
| Optical density          | Turbidity sensor      |



Vessel Type Photo Bioreactor,  
Illuminated by External Octagon LED Panels



Pilot Scale, Plate Type Photo Bioreactor,  
Illuminated by External LED Plates

### CO<sub>2</sub> Incubator

# ARA P150 / P170

- Direct heating CO<sub>2</sub> incubator
- Internal max. capacity 150 L/170 L
- Maximized inner space by no fan structure
- No fan, no vibration, no maintenance of HEPA filter, no spread-out of contamination
- Easy to clean interior and water pan
- Dual Beam NDIR Carbon Dioxide Sensor
- Intuitive 7" control touch screen and informative display
- USB port for data tracking



## Applications

- Mammalian cell and tissue cultivation



USB port for data transfer

# CO<sub>2</sub> Incubator

ARA P150

## Technical Specifications

|                         | P150               | P170               |
|-------------------------|--------------------|--------------------|
| Inner capacity          | 150 L              | 170 L              |
| Door left/right         | Factory Installed  | On site            |
| Fan                     | No                 | No                 |
| Decontamination         | -                  | 120°C Dry          |
| External dimension (mm) | 657W x 741D x 877H | 720W x 639D x 908H |
| Internal dimension (mm) | 470W x 520D x 610H | 547W x 479D x 647H |
| Net weight              | 62 kg              | 91 kg              |

Display  
7" LCD touch screen

Date Tracking  
240 hours continuous

Temperature  
- Microprocessor PID  
Control system  
- Range : Amb. +5 ~ 50°C  
- Accuracy :  $\pm 0.2^{\circ}\text{C}$   
- Uniformity :  $\pm 0.3^{\circ}\text{C}$   
- Recovery time  
: less than 10 min

rH system  
- Humidity method  
: Water pan  
- Humidity range, %RH  
: over 90%

CO<sub>2</sub> control  
- Microprocessor PID  
Control system  
- Sensor : NDIR  
- Control range : 0 ~ 20%  
- Control accuracy :  $\pm 0.1$   
- Recovery rate : less than 7 min



Touchscreen with graphic display



3 shelves divided door

## Ordering Information

| Cat. No. | Product                                                               |
|----------|-----------------------------------------------------------------------|
| APL150   | ARA P150 CO <sub>2</sub> Incubator with Single Glass Door, Left-Open  |
| APR150   | ARA P150 CO <sub>2</sub> Incubator with Single Glass Door, Right-Open |
| APL170   | ARA P170 Incubator with Single Glass Door, Left-Open                  |
| APR170   | ARA P170 Incubator with Single Glass Door, Right-Open                 |
| APA-SPS  | Shelf with 2 Supports, perforated, SS                                 |
| APA-CGS  | CO <sub>2</sub> gas pressure regulator                                |





# Sample Storage

**Deep Freezer Overview - p.96**

## **Deep Freezers**

Upright Type, ARA M/MD Series - p.98

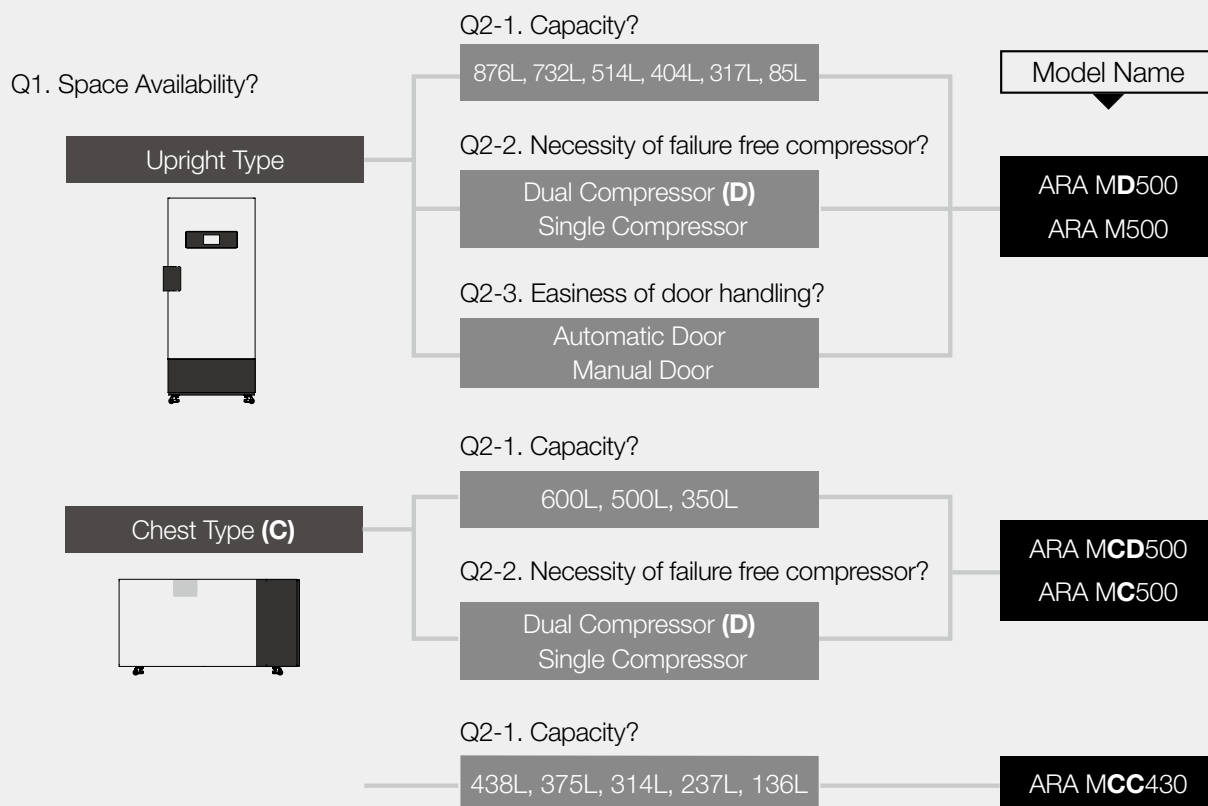
Chest Type, ARA MC/MCD Series - p.102

Classic Chest Type, ARA MCC Series - p.104

**Accessories - p.106**

# How to Select the Right Deep Freezer

## Main Body



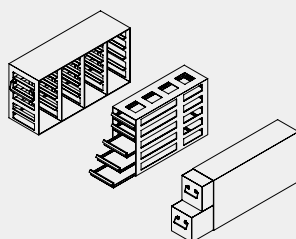
## Accessories

Q3-1. Sample type & size ;  
micro-tube, bottles, or tissues

Storage boxes  
Rack dimensions

Q3-2. Easiness of In & Out

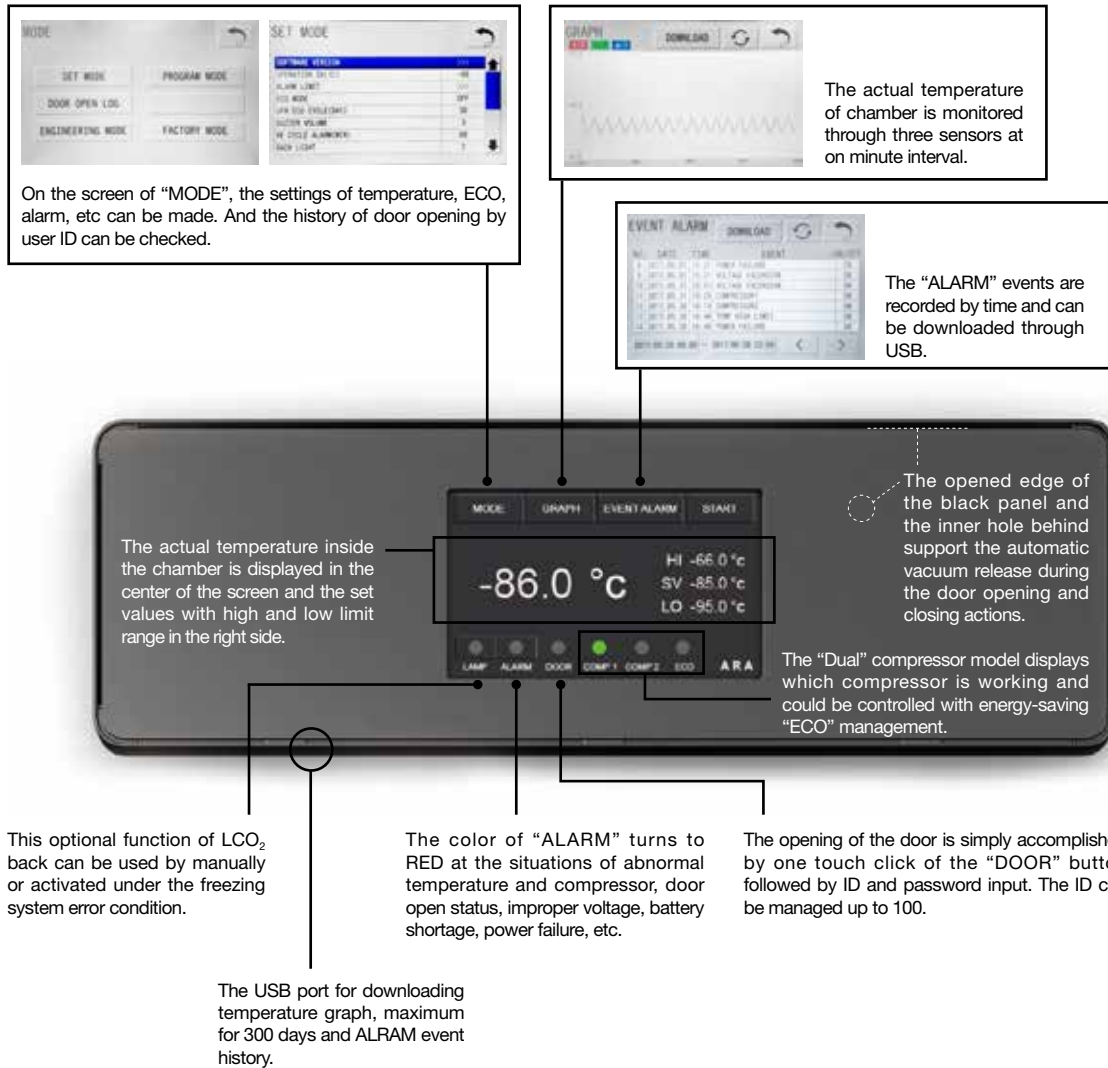
Open rack  
Tray drawer  
Box drawer



Q3-3. Auxiliary & Back-up system

LCO<sub>2</sub> back-up  
LN<sub>2</sub> back-up  
Chart recorder  
External alarm

## ARA M Deep freezers advanced functionality with intuitive display and control panel



## ARA M Deep Freezers scheme shortens the pull-down time of ultra-low temperature.

| Model          | ARA MD300 | ARA MD500 | ARA MD700 |
|----------------|-----------|-----------|-----------|
| Time to -80 °C | 120 min   | 180 min   | 210 min   |
| Time to -90 °C | 180 min   | 280 min   | 380 min   |
| Time to -95 °C | 220 min   | 330 min   | -         |

## Deep Freezers

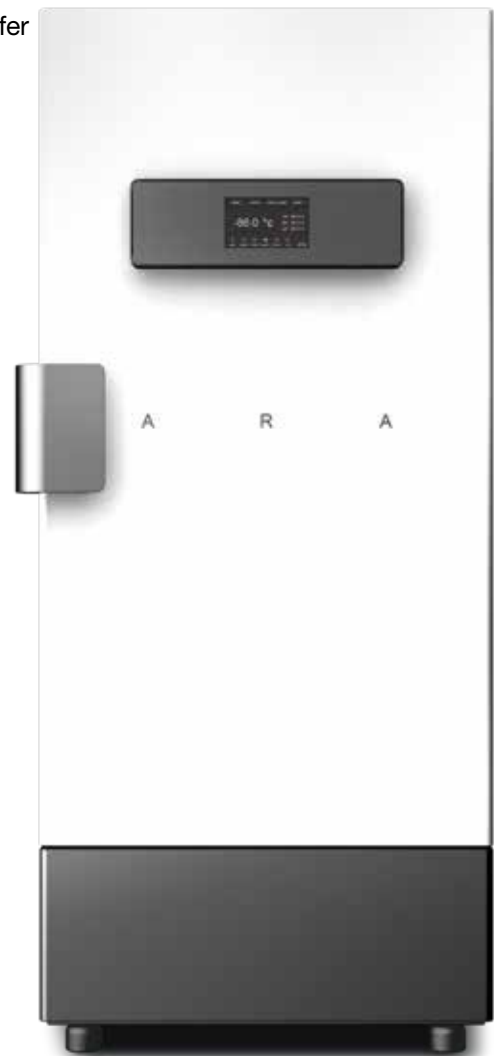
Upright Type - ARA M/MD Series

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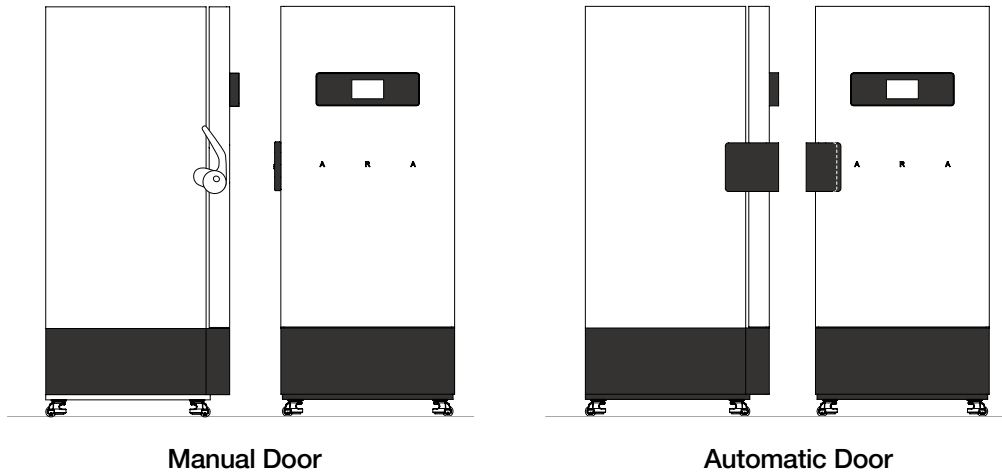
### Upright Type Deep Freezers

# ARA M/MD Series

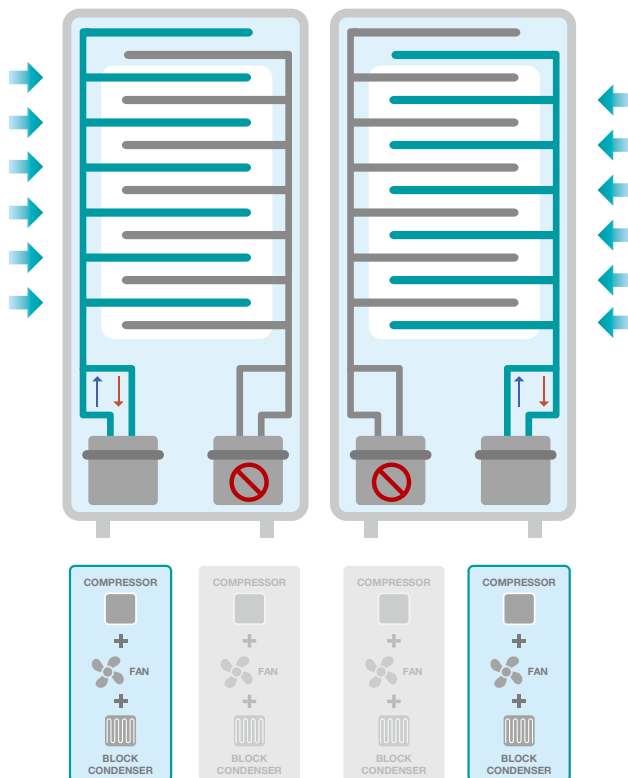
- Fast pull-down and recovery to optimal storage temperature (500L Dual / -95°C, 700L Dual / -90°C)
- Unique pin-less Block Condenser and Independent Compressor (single or dual selectable) structures
- Failure free Dual Brain PCB and dual Independent Compressor systems
- Effortless Auto-Door with safe lock& unlock function (optional manual door is available)
- Controllable ECO mode of dual compressor model for energy saving operation
- Informative 7" display and touch screen control
- Data tracking and storage to chart recorder or through USB transfer
- Alarm warning of text message transfer to max. 5 users
- No need of dust cleaning by very simple compressor and condenser structure
- LCO<sub>2</sub> or LN<sub>2</sub> backup system is available



### Robust and Flexible Design of Door Handle



### Independent Dual Compressor System



### SMART Freezing System with Block Condenser

## Deep Freezers

### Upright Type - ARA M/MD Series

## Technical Specifications

|                      | Upright Type Deep Freezer                                                                           |
|----------------------|-----------------------------------------------------------------------------------------------------|
| Capacity             | 85, 317, 404, 514, 732, 876 Lit.                                                                    |
| Temperature range    | -86°C / -80°C ~ -65°C or -95°C / 90°C ~ -65°C                                                       |
| Compressor           | Hermetic Type, Single or Independent Dual Compressor (Eco mode of Dual type for economic operation) |
| Condenser Type       | Block Condenser, No pin, Filter Free Mechanism                                                      |
| Refrigerant          | Natural (CFC Free Refrigerant System)                                                               |
| Controller & Display | Failure free Dual Controller and 7" Touch Screen TFT LCD                                            |
| Door                 | Door opening and closing by pressing a touch button on control screen (Manual Door is Optional)     |
| Material             | Internal Stainless Steel / External Powder Coated Steel Plate                                       |
| Power supply         | Single Phase, AC 230V, 50/60Hz (Optional AC 120V, 60Hz)                                             |



### Ordering Information

|                                   |             | ARA M80                    | ARA M300                   | ARA MD300         | ARA M400                   | ARA MD400         | ARA M500            | ARA MD500         |
|-----------------------------------|-------------|----------------------------|----------------------------|-------------------|----------------------------|-------------------|---------------------|-------------------|
| Capacity                          |             | 85 Lit.                    | 317 Lit.                   |                   | 404 Lit.                   |                   | 514 Lit.            |                   |
| Temperature Range                 |             | -86°C ~ -65°C              | -86°C ~ -65°C              | -95°C ~ -65°C     | -86°C ~ -65°C              | -95°C ~ -65°C     | -86°C ~ -65°C       | -95°C ~ -65°C     |
| Compressor                        |             | Single                     | Single                     | Dual, Independent | Single                     | Dual, Independent | Single              | Dual, Independent |
| Rack Capacity                     |             | 2 x 2 tray for freezer box | 3 x 4 tray for freezer box |                   | 4 x 4 tray for freezer box |                   |                     |                   |
| Chamber Dimension (W x D x H, mm) | Internal    | 340 x 485 x 520            | 470 x 515 x 1,310          |                   | 600 x 515 x 1,310          |                   | 600 x 655 x 1,310   |                   |
|                                   | External    | 572 x 830 x 1,147          | 800 x 892 x 1,990          |                   | 930 x 892 x 1,990          |                   | 930 x 1,032 x 1,990 |                   |
| Net Weight                        |             | 102 kg                     | 190 kg                     | 220 kg            | 220 kg                     | 260 kg            | 245 kg              | 284 kg            |
| Power consumption                 | Dual Mode   | 321 W/h                    | 364 W/h                    | 364 W/h           | 386 W/h                    | 386 W/h           | 469 W/h             | 469 W/h           |
|                                   | Eco Mode    |                            |                            | 415 W/h           |                            | 461 W/h           |                     | 526 W/h           |
| Cat. No.                          | Auto Door   | -                          | AMUS300                    | AMUD300           | AMUS400                    | AMUD400           | AMUS500             | AMUD500           |
|                                   | Manual Door | AMUS080-M                  | AMUS300-M                  | AMUD300-M         | AMUS400-M                  | AMUD400-M         | AMUS500-M           | AMUD500-M         |

|                                   |             | ARA M700                   | ARA MD700         | ARA M870              | ARA MD870         |
|-----------------------------------|-------------|----------------------------|-------------------|-----------------------|-------------------|
| Capacity                          |             | 732 Lit.                   |                   | 876 Lit.              |                   |
| Temperature Range                 |             | -80°C ~ -65°C              | -90°C ~ -65°C     | -80°C ~ -65°C         | -90°C ~ -65°C     |
| Compressor                        |             | Single                     | Dual, Independent | Single                | Dual, Independent |
| Rack Capacity                     |             | 6 x 4 tray for freezer box |                   |                       |                   |
| Chamber Dimension (W x D x H, mm) | Internal    | 880 x 635 x 1,310          |                   | 880 x 760 x 1,310     |                   |
|                                   | External    | 1,210 x 1,012 x 1,990      |                   | 1,210 x 1,137 x 1,990 |                   |
| Net Weight                        |             | 285 kg                     | 327 kg            | 335 kg                | 385 kg            |
| Power consumption                 | Dual Mode   | 508 W/h                    | 508 W/h           | 547 W/h               | 547 W/h           |
|                                   | Eco Mode    |                            | 576 W/h           |                       | 613 W/h           |
| Cat. No.                          | Auto Door   | AMUS700                    | AMUD700           | AMUS870               | AMUD870           |
|                                   | Manual Door | AMUS700-M                  | AMUD700-M         | AMUS870-M             | AMUD870-M         |



## Deep Freezers

Chest Type - ARA MC/MCD Series

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### Chest Type Deep Freezers

# ARA MC/MCD Series

- Much safer and energy-saving deep freezer for not losing cooled status by door opening
- All features are the same with upright type deep freezer except the automatic door
- Installed with easy to move and heavy duty casters (4~6 casters)



## Technical Specifications

|                      | Chest Type Deep Freezer                                                                             |
|----------------------|-----------------------------------------------------------------------------------------------------|
| Capacity             | 350, 500 or 600 Lit.                                                                                |
| Temperature range    | -86 °C ~ -65 °C or -95 °C ~ -65 °C                                                                  |
| Compressor           | Hermetic Type, Single or Independent Dual Compressor (Eco mode of Dual type for economic operation) |
| Condenser Type       | Block Condenser, No pin, Filter Free Mechanism                                                      |
| Refrigerant          | Natural (CFC Free Refrigerant System)                                                               |
| Controller & Display | Failure free Dual Controller and 7" Touch Screen TFT LCD                                            |
| Door                 | Manual type                                                                                         |
| Material             | Internal Stainless Steel / External Powder Coated Steel Plate                                       |
| Power supply         | Single Phase, AC 230V, 50/60Hz (Optional AC 120V, 60Hz)                                             |

## Ordering Information

|                                      |           | ARA MC350                  | ARA MCD350        | ARA MC500                   | ARA MCD500        | ARA MC600                   | ARA MCD600        |
|--------------------------------------|-----------|----------------------------|-------------------|-----------------------------|-------------------|-----------------------------|-------------------|
| Capacity                             |           | 350 Lit.                   |                   | 500 Lit.                    |                   | 600 Lit.                    |                   |
| Temperature Range                    |           | -86 °C ~ -65 °C            | -95 °C ~ -65 °C   | -86 °C ~ -65 °C             | -95 °C ~ -65 °C   | -86 °C ~ -65 °C             | -95 °C ~ -65 °C   |
| Compressor                           |           | Single                     | Dual, Independent | Single                      | Dual, Independent | Single                      | Dual, Independent |
| Rack Capacity                        |           | 7 x 3 tray for freezer box |                   | 10 x 3 tray for freezer box |                   | 12 x 3 tray for freezer box |                   |
| Chamber Dimension<br>(W x D x H, mm) | Internal  | 1,050 x 470 x 670          |                   | 1,500 x 470 x 670           |                   | 1,800 x 470 x 670           |                   |
|                                      | External  | 1,690 x 776 x 1,150        |                   | 2,140 x 776 x 1,150         |                   | 2,440 x 776 x 1,150         |                   |
| Net Weight                           |           | 190 kg                     | 230 kg            | 220 kg                      | 270 kg            | 250 kg                      | 310 kg            |
| Power consumption                    | Dual Mode | 364 W/h                    | 364 W/h           | 386 W/h                     | 386 W/h           | 469 W/h                     | 469 W/h           |
|                                      | Eco Mode  |                            | 415 W/h           |                             | 461 W/h           |                             | 526 W/h           |
| Cat. No.                             |           | AMCS350                    | AMCD350           | AMCS500                     | AMCD500           | AMCS600                     | AMCD600           |

## Deep Freezers

Classic Chest Type - ARA MCC Series

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### Classic Chest Type Deep Freezers

# ARA MCC Series

- Much safer and energy-saving deep freezer for not losing cooled status by door opening
- Simple display of temperature monitoring
- Minimalized efficient inner structure with aluminum plate
- No casters equipped for economic installation



### Technical Specifications

|                      | Classic Chest Type Deep Freezer                                                |
|----------------------|--------------------------------------------------------------------------------|
| Capacity             | 136, 237, 314, 375, or 438 Lit.                                                |
| Temperature range    | -86°C ~ -65°C                                                                  |
| Compressor           | Hermetic Type , Single Compressor                                              |
| Condenser Type       | Block Condenser, No pin, Filter Free Mechanism                                 |
| Refrigerant          | Natural (CFC Free Refrigerant System)                                          |
| Controller & Display | Digital Feedback Controller                                                    |
| Material             | Internal Aluminum Plate / External Steel plate with Acrylic Acid Resin Coating |
| Power supply         | Single Phase, AC 230V, 50/60Hz (Optional AC 120V, 60Hz)                        |

### Ordering Information

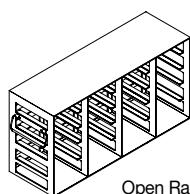
|                                      |          | ARA MCC130                                                   | ARA MCC230                                                    | ARA MCC310                                                    | ARA MCC370                                                    | ARA MCC430                                                    |
|--------------------------------------|----------|--------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|---------------------------------------------------------------|
| Capacity                             |          | 136 Lit.                                                     | 237 Lit.                                                      | 314 Lit.                                                      | 375 Lit.                                                      | 438 Lit.                                                      |
| Temperature Range                    |          | -86°C ~ -65°C                                                |                                                               |                                                               |                                                               |                                                               |
| Compressor                           |          | Single                                                       |                                                               |                                                               |                                                               |                                                               |
| Rack Capacity                        |          | 6 pcs of 11 (1 x 11)<br>& 3 pcs of 7 (1 x 7)<br>-placed Rack | 12 pcs of 11 (1 x 11)<br>& 3 pcs of 7 (1 x 7)<br>-placed Rack | 18 pcs of 11 (1 x 11)<br>& 3 pcs of 7 (1 x 7)<br>-placed Rack | 21 pcs of 11 (1 x 11)<br>& 3 pcs of 7 (1 x 7)<br>-placed Rack | 27 pcs of 11 (1 x 11)<br>& 3 pcs of 7 (1 x 7)<br>-placed Rack |
| Chamber Dimension<br>(W x D x H, mm) | Internal | 520 x 450 x 680                                              | 850 x 450 x 680                                               | 1,100 x 450 x 680                                             | 1,300 x 450 x 680                                             | 1,500 x 450 x 680                                             |
|                                      | External | 720 x 730 x 860                                              | 1,050 x 730 x 860                                             | 1,300 x 730 x 860                                             | 1,500 x 730 x 860                                             | 1,700 x 730 x 860                                             |
| Net Weight                           |          | 45 kg                                                        | 55 kg                                                         | 67 kg                                                         | 73 kg                                                         | 82 kg                                                         |
| Power consumption                    |          | 300W                                                         | 400W                                                          | 450W                                                          | 500W                                                          | 550W                                                          |
| Cat. No.                             |          | AMCS130                                                      | AMCS230                                                       | AMCS310                                                       | AMCS370                                                       | AMCS430                                                       |

## Accessories

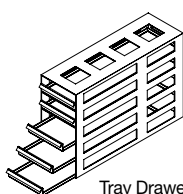
### Rack System for Freezer

#### Stainless Steel Rack for Upright Type Freezer

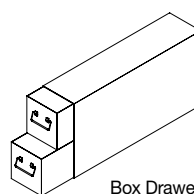
|                             | Small Size Rack |             |                 | Medium Size Rack |             |                 | Large Size Rack |             |               | X-Large Size Rack |             |            |
|-----------------------------|-----------------|-------------|-----------------|------------------|-------------|-----------------|-----------------|-------------|---------------|-------------------|-------------|------------|
| Rack Type                   | Open Rack       | Tray Drawer | Box rrawer      | Open Rack        | Tray Drawer | Box Drawer      | Open Rack       | Tray Drawer | Box Drawer    | Open Rack         | Tray Drawer | Box Drawer |
| Dimension (W x D x H, mm)   | 140 x 430 x 220 |             | 140 x 410 x 220 | 140 x 430 x 290  |             | 140 x 425 x 290 | 140 x 570 x 290 |             |               | 140 x 710 x 290   |             |            |
| Applicable Freezer          | ARA M80         |             |                 | ARA M(D)300/400  |             |                 | ARA M(D)500/700 |             |               | ARA M(D)870       |             |            |
| Quantity of Available Boxes | 12 ea (3 x 4)   |             |                 | 15 ea (3 x 5)    |             | 12 ea (3 x 4)   | 20 ea (4 x 5)   |             | 16 ea (4 x 4) | 25 ea (5 x 5)     |             |            |
| Material                    | Stainless Steel |             |                 |                  |             |                 |                 |             |               |                   |             |            |
| Cat. No.                    | AMA-ORS         | AMA-TDS     | AMA-BDS         | AMA-ORM          | AMA-TDM     | AMA-BDM         | AMA-ORL         | AMA-TDL     | AMA-BDL       | AMA-ORX           | AMA-TDX     | AMA-BDX    |



Open Rack



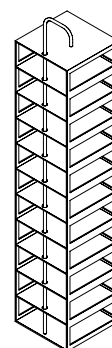
Tray Drawer



Box Drawer

#### Stainless Steel Rack for Chest Type Freezer

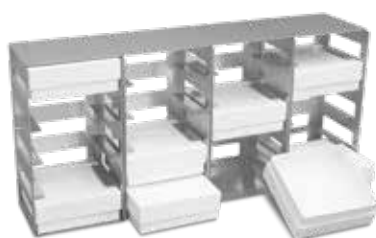
| Rack Type                   | Open Rack                                                                                            |                 |
|-----------------------------|------------------------------------------------------------------------------------------------------|-----------------|
| Dimension (W x D x H, mm)   | 140 x 140 x 385                                                                                      | 140 x 140 x 655 |
| Applicable Freezer          | ARA MC(D)350 / MC(D)500 / MC(D)600<br>ARA MCC130 / ARA MCC230 / ARA MCC310 / ARA MCC370 / ARA MCC430 |                 |
| Quantity of Available Boxes | 7 ea (1 x 7)                                                                                         | 11 ea (1 x 11)  |
| Material                    | Stainless Steel                                                                                      |                 |
| Cat. No.                    | AMA-SAS                                                                                              | AMA-SAM         |



Open Rack  
for (Classic) Chest Type

#### Freezer Box

| Cat. No. | Description                                                                     |
|----------|---------------------------------------------------------------------------------|
| AMA-B001 | Freezer box, Paper with dividers for 9 x 9 holes, 127 (W) x 127 (D) x 52 (H) mm |
| AMA-B002 | Freezer box, PP with dividers for 9 x 9 holes, 127 (W) x 127 (D) x 52 (H) mm    |



## Optional Common Accessories

### Temperature Chart Recorder

- Continuously monitor and record freezer temperature  
- Easy to check the operation of the equipment
- 1 chart records 7days (included 60 charts)
- Recorder records temperatures from -100°C to 0°C
- Min/Max Temperature can be checked on digital display



### Remote Alarm System

- Remote warnings for overtemperature (above -65°C)
- Alarm system is connected to the regulator and activates when the temperature rises
- Alarm is sent via phone or text
- Multiple phone numbers can be registered to receive alarm at the same time



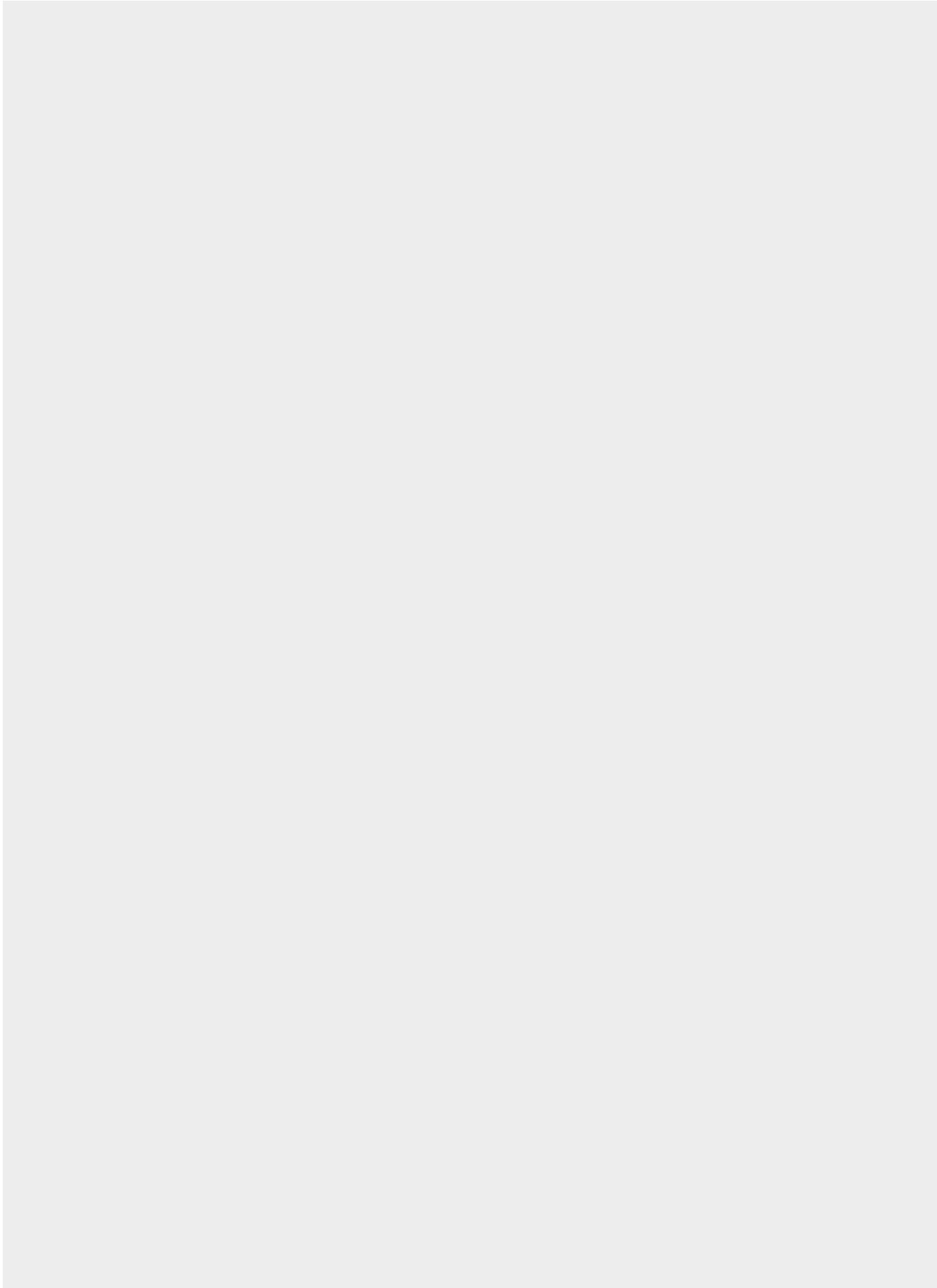
### LCO<sub>2</sub> Backup System (LCO<sub>2</sub> Gas Tank is optional)

- Protect samples of the freezer in case of power failure
- Liquid Carbon Dioxide(freezing point is -78°C) is injected into the chamber to keep the internal temperature below -65°C
- The operating time depends on the gas tank capacity.



## Ordering Information

| Cat. No.  | Description                                                            |
|-----------|------------------------------------------------------------------------|
| AMA-TR622 | Temperature Chart Recorder                                             |
| AMA-CP657 | Chart Paper, 60 Charts per one box for 420 days recording in AMA-TR622 |
| AMA-P222  | Chart Recorder Replacement Pens, 6ea Red color, for AMA-TR622          |
| AMA-RAS   | Remote Wire/Wireless Alarm System                                      |
| AMA-LCO   | LCO <sub>2</sub> Backup System                                         |





Distribution



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