Centrifuges and laboratory products

orto alresa

About centrifugation

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THE COMPANY

THE COMPANY

Ortoalresa was born in Madrid, Spain, in 1949 as local manufacturer of laboratory equipment. Almost 70 years later, after a lot of hard work, confidence and passion for what we do, we have become a dynamic and innovative company with global presence, which has led us to become a benchmark for European manufacturers.

Our DNA leads us to search for solutions based on innovation and sustainability, and we are chosen as the best option for laboratories due to the quality of our products and services.

This company philosophy conditions how we understand our productive processes, from design to recycling, specialised assistance and environmental commitment, compliant with ISO 9001 and 13485 standards.

With this vision, we have established alliances with universities, official centres and representative companies in the laboratory sector, to develop equipment adapted to different productive and sample-preparation processes. Innovative, functional and technologically at the cutting edge of the industry, managing to make the distance between the project and its development shorter. This enables us to be present in the most demanding biotechnological, research, environmental and industrial laboratories.

We collaborate with our clients to let them carry out their processes in a simple, safe and efficient manner. Placing functional equipment at their disposal to facilitate everyday work and providing them with a rapid answer and monitoring of their complaints, questions and queries.

We are the present and the future in centrifugation for laboratories, where the integration of quality, reliability and simplicity are top priorities.

Directives and standards

Ortoalresa meets the following standards, directives and regulations in accordance wiht the quality commitment of their products:

COMPANY:

Standards	
ISO 9001	Certified quality managment system.
ISO 13485	Certified quality managment system for medical devices.
ISO 14971	Application of risk management to medical devices.

PRODUCTS:

Directives	
2011/65/EU	(ROSH) Restriction of the use of certain hazardous substances in electrical and electronic equipment.
2012/19/EU	(RAEE) On waste electrical and electronic equipment.
2014/30/EU	(CEM) On the harmonisation of the laws of the Member States relating to electromagnetic compatibility.
2014/35/EU	(LVD) On the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.
98/79/EC	(IVD) On in vitro diagnostic medical devices.
93/42/EC	Concerning medical devices.
Regulation nº	
(EC) 1005/2009	On substances that deplete the ozone layer.
(EU) 517/2014	On fluorinated greenhouse gases and repealing regulation.
Standards	
EN-61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use. Part 1: General requirements.
EN-61010-2-020	Part 2-020: Particular requirements for laboratory centrifuges.
EN-61010-2-010	Part 2-010: Particular requirements for laboratory equipment for the heating of materials.
EN-61010-2-040	Part 2-040: Particular requirements for sterilizers and washer-disinfectors used to treat medical materials.
EN-61010-2-051	Part 2-051: Particular requirements for laboratory equipment for mixing and stirring.
EN-61326-1	Electrical equipment for measurement, control and laboratory use - EMC requirements. Part 1: General requirements.
EN-61326-2-6	Part 2-6: Particular requirements - In vitro diagnostic (IVD) medical equipment.
EN-13060	Small steam sterilizers.

PACKAGING:

ISPM 15	International standards for phytosanitary measures.
Directives	
94/62/EC & 2004/12/EC	Packaging and packaging waste.

GOODS TRANSPORT:

Regulation nº	
(EC) 300/2008	Common rules in the field of civil aviation security.

Specialised assistance

In Ortoalresa, we understand assistance as a wide-ranging process that encompasses from technical or commercial queries to the development of tools for our users and collaborators, including training and communication. To achieve this specialised attention, we have developed two areas of action: one around our products and another around our services.

On the one hand: the manufacture of made to measure equipment (OEM) for applications, which due to their characteristics, are not found in standard equipment. Subjecting our products to risk analysis for protecting the sample, the user and the environment, maintaining a traceability that allow us to control the product from its origin until it reaches the user.

We also offer specialised services, such as the installation and commissioning of our equipment, guided by our technical department at all times, training courses for greater knowledge about our products, and telephone technical assistance to solve queries about installation and operation of the equipment.

Placing procedures and certificates for calibration and certification of the installation, operation, product, etc. at the disposal of our clients and offering a comprehensive 2-year “no surprises” guarantee on our products, something which reinforces the image of excellence we aim for in all our manufacturing processes.

We have a team of specialists in foreign trade, who control processes from the beginning, to facilitate deliveries, documentation and adaptation to regulations in the destination country, including any post sales actions the client may require. Within this framework, we have created a process to remain on the KC (Known Consignor) records, thus facilitating and reducing the cost of exporting our equipment.

With all these actions together, we achieve global, specialised and resolute product-service assistance, something that ever more highly valued by our staff and clients.

Environmental responsibility

Our commitment to the environment implies a responsibility that can be seen at all levels: from production processes to management.

We use materials that are coherent with this concept, enabling our teams to include more than 95% recyclable components, thus prolonging the life of raw materials and avoiding the exhaustion of natural resources.

We avoid the use of dangerous substances in the manufacturing processes, complying with the RoHS Directive, on the restriction of hazardous substances.

We have developed equipment such as the Gas Release System, which reduces the emission of aerosols into the atmosphere, and accessories that minimise impact on the health of the user, such as hermetic lids on rotors and vessels, with easily identifiable autoclavable materials.

We comply with WEEE Directives, for management of waste electrical and electronic equipment, belonging to the Foundation ECOASIMELEC, which as an integrated system for managing WEEE, offers our company, distribution chain and final user the necessary coverage for correct collection and recycling of equipment at the end of its useful life.

In our sustainable manufacturing line, in refrigeration systems we only use fluorinated gases of low impact on the ozone layer in the centrifuges, i.e., those that produce the least greenhouse effect compared with commonly used products. In this sense, we have anticipated the coming into force of regulations on new gases, incorporating them into our equipment before they become mandatory. Thus, we ensure that equipment manufactured before these regulations come into force can be easily maintained.

We select quality packaging that protects the equipment delivered while at the same time occupies the least space possible and is certified as compliant with international regulations on phytosanitary measures, as well as being 100% recyclable.

Regarding energy consumption, our equipment has an automatic disconnection system that is time adjustable, thus reducing its carbon footprint.

And this same philosophy is applied to all our activities, such as the catalogue you are reading, made with responsibly sourced paper using technology compatible with sustainable development.

This attitude is not taken as an extra effort, but rather as a way of positioning ourselves in view of future challenges.

What makes us different?

Our eagerness to develop innovative equipment that increases safety, functionality and usability, adapting to the needs of each laboratory, establishing a series of differences that make us stand out from the rest of the alternatives on the market.

What makes us different as a company?

Our corporate philosophy not only leads us to manufacture a line of products with their own characteristics, it also spurs us to offer services that are outstanding for being based on fluid communication with our clients:

- Personalised response and advice within 48h, both for commercial service and technical assistance.
- Commissioning, solution of incidents, repairs and online technical training.
- Specialists in foreign trade, we offer support to our clients during the entire procedure, as we are certified as KC (Known Consignor), which facilitates and reduces the cost of exporting our equipment.

What makes our products different?

Our equipment can be used intuitively by any user, controlling the process according to the sample and obtaining the maximum perShapence.
This perShapence is achieved thanks to exclusive innovations such as:

- TFT colour touchscreens, which in addition to standard functions, also enable alternative functions with a high degree of technical specialisation.
- Such as the progressive controllable braking system (PCBS), precise control of the sample temperature, the possibility of modifying work parameters while in operation, linked programs, detection of imbalance, indicating the position where it occurred (ULS), etc.
- Gas Release System, an accessory developed to provide greater security in processes, both for the user and for the lab environment.
- A wide range of rotors and adaptors, offering the possibility to develop accessories for specific techniques and needs.
- “Multiple” adaptors that allow the use of different types of tubes, either flat or round-bottom.

In Ortoalresa, we also believe that is it not enough to be differentiated by our products, we must also defend the philosophy that has led us to grow day by day and which is based on transparency, respect for the environment, teamwork and good internal and external communication.

Guide for selecting equipment | General applications | Special applications

Centrifuges

CENTRIFUGES

Guide for selecting equipment

The process for choosing a centrifuge can be complex, as there are many basic variables to consider if you want to make a good choice.

In Ortoalresa, we consider that it is essential to simplify this task, so the user can identify the equipment needed based on not just some variables, but also considering their preferences. To facilitate this work, we have defined this guide for choosing centrifuges, taking into consideration some of the characteristics of the equipment to serve as guides to refine the search based on man ners of working.

The basic information needed to start is the following:

1. Characteristics and properties of the tubes to be processed: length, diameter and RCF tolerance.

The support for the sample must be able to bear the centrifugal force it will be subject to. In general, there are materials that due to their properties are more resistant, such as some plastics (polypropylene, polyethylene, Teflon) and other materials that are less resistant, such as glass, which generally does not support RCF values above 4.000 xg.

The size of the tubes is totally decisive for choosing the centrifuge, as it will determine the choice of the equipment you need. The chart on page 13 gives more information about our tube references.

The versatility of a centrifuge comes from the configuration of its accessories. Each series of equipment has a chart of rotors containing information about the adaptors available for them. In addition, we can enlarge this feature even more by designing multiple adaptors to process tubes with different bottoms with a single set of adaptors.

2. Maximum required speed and max. RCF

A centrifuge operates by applying a force to the sample that will produce separation of elements according to density. The different kinds of samples processed and their properties, as well as the different types of results needed by the users makes it indispensable to know this value in order to obtain the desired results.

When choosing equipment, it is necessary to consider the maximum RCF values, or lacking this, the RPM needed for the work.

To compare maximum RCF and RPM values of our equipment, please refer to the information on page 15.

3. Number of tubes to be processed per cycle.

One of the requirements to make the right choice is to know the number of samples to be processed per cycle. This value, combined with the volume of the tube required, will define the size of equipment needed.

As a guide, please refer to the chart on page 14, where you will find the maximum number of tubes that can be placed in each of our machines according to their volume.

4. Type of centrifuge according to temperature control.

Temperature is one of the most relevant physical properties in centrifuges, even though not so much attention is given to it generally. Nevertheless, due to its importance, it is mentioned specifically in the section on page 12 titled Temperature control: cooling and heating.

5. Type of rotor required.

The type of rotor chosen as well as its maximum speed will affect the type of sample separation. In this type of centrifuges, the most commonly used rotors are angle fixed and swing out.

In an angle fixed rotor, the tube remains in the same position during the entire centrifugation process. In general, for the same tube volume, they can spin faster than swing out rotors. These rotors produce an oblique separation in the sample with regard to the mouth of the tube. Therefore, they are recommended for processes that require greater RCF or in cycles that require partial extraction of the supernatant.

Swing out rotors move the sample from vertical position up to 90º with regard to the rotation axis. They normally have a greater number of positions per rotor. They are chosen to provide separations that can be directly read from the tube, obtaining pellets and complete extraction of some of the bands.

After this first stage, you can refine the search based on:

6. Other technical characteristics.

What will really define the equipment you need is the combination of all of them. To facilitate the choice, on pages 18 and 19 you can compare equipment based on the features considered more important for your processes.

7. Type of equipment control.

The type of screen the centrifuge has will define the user's interaction with the equipment.

Our centrifuges have three types of controls: LED, LCD and TFT, all of them display messages on routine operation as well as warnings regarding the operation and status of the equipment. These screens can also be used to customise certain actions such as the opening of the lid at the end of the process, time to start, etc.

For more information on this, see pages 16 and 17.

Temperature control: cooling and heating

Centrifugation is an exothermic process in which heat is produced by friction with the air in the centrifuge chamber and the different parts of the rotor. This heat depends on multiple factors such as the type of rotor or its speed. Therefore, centrifugation cycles can be affected by temperature changes.

Centrifuges made by Ortoalresa are designed to minimize temperature increase inside the chamber by means of three different systems:

In the case of non-refrigerated centrifuges by using a **forced ventilation** system to remove the heat from the centrifuge chamber and suck in ambient temperature air.

In **refrigerated centrifuges:** Using a powerful refrigeration system that reduces the increase of temperature to the value defined by the user.

Our refrigerated centrifuges are designed to maintain the desired temperature at all times. For this purpose, the first system they have is a pre-cooling programme, by which the user can cool the chamber and accessories before adding the samples. In addition, there is a refrigeration system which will ensure that the equipment at maximum speed will maintain at least 4°C.

Temperature stability is the most important parameter. Therefore, temperature control of the equipment will minimise deviations, acting on the cooling system to maintain a stable temperature. At the end of the process, it is indispensable to maintain the working temperature, therefore our refrigerated equipment will maintain this temperature up to 8 hours after the end of the cycle.

Increased temperature in the chamber is indispensable in some industrial processes in which to facilitate sample separation, in these cases **heating** is required, such as the case of oil products in order to determine sediments and dairy products to determine fat. For these cases, we have heated equipment that can reach up to 80°C. The temperature control is also highly precise, ensuring it is maintained constant throughout the whole process.

Tubes references

We also offer the supports for our **general applications** centrifuges:

Code	Capacity ml	Shape	Material	Dimensions mm	Cap	Scale
TU 048	750	flat bottom	plastic	96x130	yes	no
TU 041	500	round bottom	glassware	90x120	no	no
TU 045	500	flat bottom	plastic	80x131	yes	no
TU 040	400	round bottom	glassware	80x118	no	no
TU 046	400	flat bottom	plastic	74x124	yes	no
TU 039	350	round bottom	glassware	75x118	no	no
TU 036	250	round bottom	plastic	60x130	no	no
TU 037	250	round bottom	glassware	60x130	no	yes
TU 038	250	round bottom	glassware	60x130	no	no
TU 007	250	round bottom	plastic	62x120	yes	no
TU 047	250	flat bottom	plastic	62x120	yes	no
TU 035	200	round bottom	glassware	60x120	no	no
TU 034	150	round bottom	plastic	60x130	yes	no
TU 049	125	flat bottom	plastic	48x108	yes	no
TU 043	125	round bottom	plastic	48x100	no	no
TU 044	120	round bottom	plastic	40x115	no	no
TU 029	100	round bottom	glassware	48x105	yes	no
TU 031	100	round bottom	glassware	44x130	yes	no
TU 032	100	round bottom	glassware	48x100	no	no
TU 027	80	round bottom	glassware	44x100	no	no
TU 028	80	round bottom	plastic	38x112	yes	no
TU 024	50	conical	plastic	29x117	yes	yes
TU 020	50	round bottom	plastic	34x96	no	no
TU 022	50	round bottom	glassware	34x110	yes	no
TU 023	50	round bottom	glassware	34x100	no	no
TU 025	50	round bottom	plastic	34x100	no	no
TU 026	50	round bottom	plastic	29x108	yes	no
TU 021	30	round bottom	plastic	25x98	yes	no
TU 019	25	round bottom	glassware	24x100	no	no

(*) Check the max. RCF allowed for your tubes. Max. RCF supported for glassware tubes 4.000 xg, under standard DIN 58.970/2

Code	Capacity ml	Shape	Material	Dimensions mm	Cap	Scale
TU 016	15	conical	glassware	17x115	no	yes
TU 018	15	conical	plastic	17x122	yes	yes
TU 014	15	round bottom	plastic	16x100	yes	no
TU 017	15	round bottom	plastic	16x100	no	no
TU 010	10	conical	glassware	16x105	no	yes
TU 011	10	round bottom	plastic	13x100	no	no
TU 015	10	round bottom	glassware	16x110	no	no
TU 055	10	round bottom	glassware	16x110	yes	no
TU 013	10	round bottom	plastic	16x80	yes	no
TU 059	10	round bottom	plastic	16x95	no	yes
TU 006	5	round bottom	plastic	13x82	yes	no
TU 008	5	round bottom	glassware	12x100	no	no
TU 009	5	round bottom	plastic	13x75	no	no
TU 005	4	round bottom	glassware	10x100	no	no
TU 003	1,5-2	conical	plastic	11x42	yes	yes
TU 002	0,5-0,6	conical	plastic	8x30	yes	yes
TU 001	0,2	conical	plastic	6x21	yes	yes

And for our centrifuges of **special applications:**

Code	Capacity ml	Aplication	Material	Dimensions mm	Cap	Scale
TU 054	-	Capillaries	glassware	1,5 x 75 mm	no	no
PV 114	2.2	Cytocontainer	plastic	-	yes	yes
TU 006	5	Platelet concen.	plastic	13 x 82	yes	no
-	25	Butyrometers	glassware	25 x 212	no	yes
TU 010	12,5	Api-Finger	glassware	16 x 105	no	yes
TU 050 (1)	100	ASTM-Conical 6”	glassware	44-46 x 162-167	no	yes
TU 030 (1)	100	ASTM-Conical 8”	glassware	36-38 x 195-203	no	yes
TU 033	100	ASTM-Pear 6”	glassware	58-59 x 157-160	no	yes
TU 056 (1)	100	ASTM-Trace 8”	glassware	36-38 x 195-203	no	yes

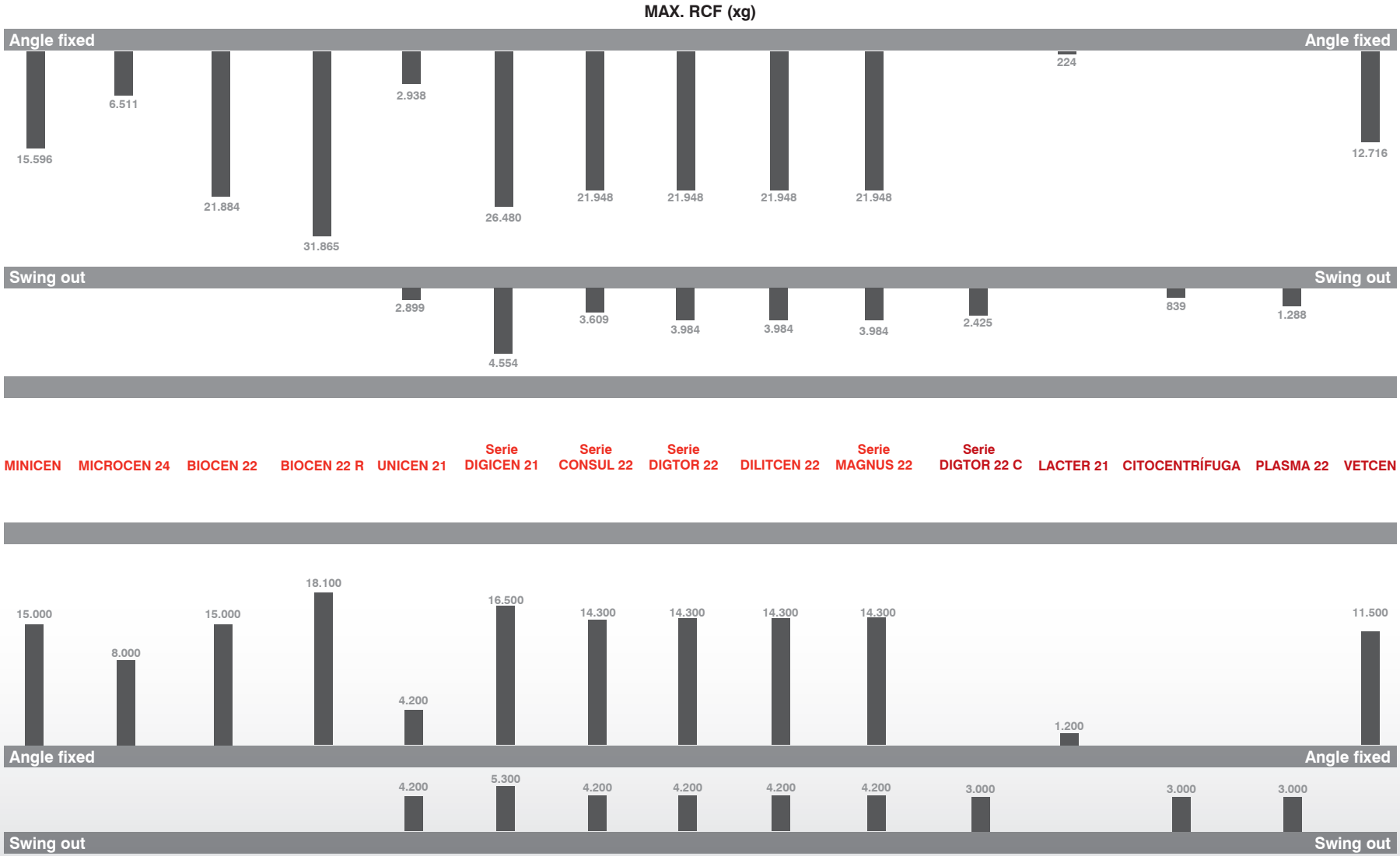
(1) Available caps for this tubes: Ref. PV 156.

Tubes dimensions / max. capacities

		Centrifuges for general applications										Centrifuges for special applications				
Sample Volume	Dim (mm) approx.	Minicen	Microcen 24	Biocen 22	Biocen 22 R	Unicen 21	Digicen 21/21 R	Consul 22/22 R	Digtor 22/22 R	Dilitcen 22	Magnus 22/22R	Serie Digtor 22 C	Lacter 21	Plasma 22	Citocentrífuga	Vetcen
Microtiter plates	128x86x15/21/45	-	-	-	-	-	6/4/2 (2)	12/8/4 (2)	12/8/4 (2)	12/8/4 (2)	12/8/4 (2)	-	-	-	-	-
Microtiter plates (h:80mm)	128x86x15/21/45/80	-	-	-	-	-	-	10/6/2/2 (2)	10/6/2/2 (2)	-	10/6/2/2 (2)	-	-	-	-	-
Capillaries	ø1,5x75	-	-	24	-	-	24	-	-	-	-	-	-	-	-	12
PCR strips 0,2 ml.	ø6x21	2	-	4	4	-	4	-	-	-	-	-	-	-	-	-
0,2-0,4 ml. / 0,5-0,6 ml.	ø6x45/ø8x30	16/12	8	32/24	32/24	20	32/24	48	72	132	72	-	-	-	-	-
1,5-2 ml.	ø11x42	12	8	24	24	20	72	144	144	144	144	-	-	-	-	6
5 ml.	ø13x75	-	12	-	8	32	32	72	104	168	104	-	-	-	-	-
5 ml. conical/ Screw cap	ø17x60/68	-	-	12/6	12/6	-	12/6	-	-	-	-	-	-	-	-	-
5 ml. blood sample	ø13x82	-	12	-	8	32	32	48	104	104	104			8		
7/10 ml. blood sample	ø13x107	-	10	-	-	32	32	48	104	104	104	-	-	-	-	-
10 ml.	ø13x100	-	10	-	8	32	32	72	104	168	104	-	-	-	-	-
10 ml. blood sample	ø16x107	-	10	-	-	32	32	48	72	104	72	-	-	-	-	-
10 ml. (hs) (1)	ø16x80	-	-	-	-	32	32	48	72	104	72	-	-	-	-	-
15 ml.	ø16x100	-	10	-	8	32	32	48	72	112	72	-	-	-	-	-
15 ml. conical	ø17x122	-	8	-	8	32	32	28	52	76	52	-	-	-	-	-
30 ml. / 30 ml. (hs) (1)	ø25x98	-	-	-	-	6	8	20	24	40	24	-	-	-	-	-
50 ml.	ø34x100	-	-	-	-	6	6	8	16	24	16	-	-	-	-	-
50 ml. conical	ø29x117	-	-	-	-	6	6	12	20	32	20	-	-	-	-	-
50 ml. (hs) (1)	ø29x108	-	-	-	-	6	6	12	20	32	20	-	-	-	-	-
80 ml.	ø44x100	-	-	-	-	4	4	6	8	12	8	-	-	-	-	-
80 ml. (hs)/ 85 ml. (hs) (1)	ø38x112	-	-	-	-	4	4	6	12	12	12	-	-	-	-	-
100 ml.	ø48x100	-	-	-	-	4	4	4	6	12	6	-	-	-	-	-
200 ml.	ø60x120	-	-	-	-	-	-	4	6	6	6	-	-	-	-	-
250 ml.	ø62x120	-	-	-	-	-	-	4	6	6	6	-	-	-	-	-
400 ml.	ø80x118	-	-	-	-	-	-	4	4	4	4	-	-	-	-	-
500 ml.	ø90x120	-	-	-	-	-	-	-	4	4	4	-	-	-	-	-
750 ml.	ø96x130	-	-	-	-	-	-	-	4	4	4	-	-	-	-	-
1.000 ml.	ø110x122	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-
Blood bags	(3)	-	-	-	-	-	-	-	4	-	4	-	-	-	-	-
Cytocontainers	-	-	-	-	-	-	4	-	-	-	-	-	-	-	4	-
9/15 ml.	ø16x107	-	-	-	-	-	-	-	-	-	-	-	-	8	-	-
Butyrometers	ø25x212	-	-	-	-	-	-	-	-	-	-	-	12	-	-	-
12,5 ml. finger	ø16x105	-	-	-	-	-	-	-	-	-	-	28	-	-	-	-
100 ml. 6" conical	ø44-46x162-167	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-
100 ml. 8" conical	ø36-38x195-203	-	-	-	-	-	-	-	-	-	-	8	-	-	-	-
100 ml. pear	ø58-59x157-160	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-

(1) High speed tubes. (2) Allows different configurations depending of the microplates height. (3) Check the bags features.

Maximum speed



Types of screens

LED LED

- Displays RPM / RCF in 50 RPM /10 xg steps.
- Acceleration control in 2 steps and deceleration in 3 steps.
- Timer: 1 - 99 minutes and indefinite time, programmable in 1 min intervals.
- Programmed values maintained in the memory.
- Possibility to block /change RPM /RCF during the cycle.
- Timer from 0 or “at set RPM”, count up or countdown.
- Acoustic and optical warnings on status of equipment.

LCD LCD

- Displays RPM /RCF in 50 RPM /50 xg steps.
- Timer: 1 - 99 minutes and indefinite time, programmable in 1 min intervals.
- Possibility to lock /change RPM /RCF during the cycle.
- Timer from 0 or “at set RPM”, count up or countdown.
- 16 memories.
- Acoustic and optical warnings on status of equipment.
- **PCBS:** Progressively controllable acceleration and deceleration system with up to 175 ramps, control by software regardless of the rotor load.
- Temperature control: range -20°C - 40°C (only refrigerated models) and up to 80°C (only in heated models).

TFT color touch screen

- Displays RPM /RCF in 10 RPM /10 xg steps.
- Timer: 1 - 99 minutes and indefinite time, programmable in 1 min intervals.
- Possibility to lock /change RPM /RCF during the cycle.
- Timer from 0 or “at set RPM”, count up or countdown.
- 40 memories.
- **PCBS:** Progressively controllable acceleration and deceleration system with up to 175 ramps, control by software regardless of rotor load.
- Acoustic and optical warnings on status of equipment.
- **ULS:** System for locating imbalance, indicating the area of the imbalance on screen.
- Easy to read, intuitive selection and programming of values.
- **Start delay:** To program the moment the cycle should begin.
- **Linked program:** Permits the linking of up to 8 consecutive programmes without the need for user intervention.
- Temperature control: Range -20°C to 40°C (only refrigerated models) and 5°C - 80°C (only in heated models)

Comparative chart of equipment

Centrifuges for GENERAL APPLICATIONS

	Minicen	Microcen 24	Biocen 22	Biocen 22 R	Unicen 21	Digicen 21	Digicen 21 R	Consul 22	Consul 22 R	Digtor 22	Digtor 22 R
Max. capacity	12 x 1,5-2 ml.	10 x 15 ml.	24 x 1,5-2 ml.	8 x 15 ml.	4 x 100 ml.	4 x 100 ml.	4 x 100 ml.	4 x 400 ml.	4 x 400 ml.	4 x 750 ml.	4 x 750 ml.
Refrigerated/Heated	Air cooling	Air cooling	Air cooling	❄	Air cooling	Air cooling	❄	Air cooling	❄	Air cooling	❄
Pre-cooling program	-	-	-	✓	-	-	✓	-	✓	-	✓
Pre-heating program	-	-	-	-	-	-	-	-	-	-	-
Type of screen	LCD	LED	LED	LCD	LED	LCD	LCD	TFT	TFT	TFT	TFT
Automatic rotor recognition	-	-	-	✓	-	✓	✓	✓	✓	✓	✓
Acceleration/braking programmable	-	3 steps	3 steps	175 steps	3 steps	175 steps	175 steps	175 steps	175 steps	175 steps	175 steps
PCBS (1)	-	-	-	✓	-	✓	✓	✓	✓	✓	✓
Programmable memories	10	1	1	16	1	16	16	40	40	40	40
Acoustic and visual messages	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
ULS (2)	-	-	-	-	-	-	-	✓	✓	✓	✓
Induction motor, brushless	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Microprocessor controlled	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
PC connection	✓	-	-	-	-	-	-	✓	✓	✓	✓
Rotors list on memory	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Automatic open lid programmable	✓	✓	✓	-	✓	✓	-	✓	-	✓	-
Unbalance detection and switch off	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Port in the lid for calibration	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Automatic lid lock system motorized	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Chamber of centrifugation in stainless steel	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GRS (3)	-	-	-	-	-	-	-	-	-	-	-

(1) **PCBS:** Progressively controllable acceleration and deceleration system. (2) **ULS:** Unbalancing location system. (3) **GRS:** Gas release system

Centrifuges for SPECIAL APPLICATIONS

Dilitcen 22	Magnus 22	Magnus 22 R	Digtor 22 C	Digtor 22 C-U	Digtor 22 C-8	Lacter 21	Citocentrífuga	Plasma 22	Vetcen	
4 x 1000 ml.	4 x 750 ml.	4 x 750 ml.	4 x 100 ml. (8/6")	4 x 100 ml. (8/6")	8 x 100 ml. (8/6")	12 butyromet.	4 cytocont.	8 x 9/15 ml.	6+6	Max. capacity
Air cooling	Air cooling	❄	☀	Air cooling	☀	☀	Air cooling	Air cooling	Air cooling	Refrigerated/Heated
-	-	✓	-	-	-	-	-	-	-	Pre-cooling program
-	-	-	✓	-	✓	✓	-	-	-	Pre-heating program
TFT	TFT	TFT	TFT	TFT	TFT	LCD	LCD	LCD	LED	Type of screen
✓	✓	✓	✓	✓	✓	✓	✓	✓	-	Automatic rotor recognition
175 steps	175 steps	175 steps	175 steps	175 steps	175 steps	175 steps	175 steps	175 steps	3 steps	Acceleration/braking programmable
✓	✓	✓	✓	✓	✓	✓	✓	✓	-	PCBS (1)
40	40	40	40	40	40	16	16	16	1	Programmable memories
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Acoustic and visual messages
✓	✓	✓	✓	✓	✓	-	-	-	-	ULS (2)
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Induction motor, brushless
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Microprocessor controlled
✓	✓	✓	✓	✓	✓	-	-	-	-	PC connection
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Rotors list on memory
✓	✓	-	-	✓	-	-	✓	✓	✓	Automatic open lid programmable
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Unbalance detection and switch off
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Port in the lid for calibration
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Automatic lid lock system motorized
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	Chamber of centrifugation in stainless steel
-	-	-	✓	✓	✓	-	-	-	-	GRS (3)

General applications

Ortoalresa has a wide range of centrifuges for all applications. Our users are from a very wide range of laboratories, from the most elementary, for hospital applications and clinical analysis labs, to microbiology departments, research centres, quality control labs for drinks, food and different production processes, etc.

This wide range of users has led us to segment our line of centrifuges starting with an essential criterion: The tubes. Thus, we define the section of centrifuges for “general applications” such as those that use standard and commonly used tubes. For any query about tubes considered frequently used, please refer to the chart on page 13.

For this type of application, the differentiating elements are parameters such as RPM, RCF, volume or number of tubes and the need for temperature control. These parameters are decisive when choosing equipment, in the “guide for choosing equipment” section on page 10, you will find more information on this issue.

Below you can find our centrifuges for “general applications” organized according to equipment size, as well as the two versions (force ventilated and refrigerated) if available. After their datasheet, you will find a chart with the accessories available in each series.

All centrifuges in this section have these characteristics in common:

- Microprocessor control.
- Maintenance-free induction motor (brushless).
- List of rotors in memory.
- Noise produced: less than 60 dB.
- Buttons for controlling on/off, lid opening and short cycle with adjustable speed.
- Possibility to lock /modify RPM /RCF while in operation.
- Programmable automatic opening of lid (non-refrigerated models)
- Last used parameters maintained in memory.
- Protection against excess speed.
- Lid with security system:
  - Automatic lid lock system, motorized, and emergency lid-lock release.
  - Locked and protected against opening while in operation.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Stainless steel centrifugation chamber (easy to clean).
- Rotors removable with the lid closed.
- Autoclavable rotors and reducers, easy to install by the user.

MINI

MINICEN

SMALL

MICROCEN 24

MICRO

BIOCEN 22

BIOCEN 22R

UNIVERSALS

UNICEN 21

DIGICEN 21

DIGICEN 21R

HIGH CAPACITY

CONSUL 22

CONSUL 22R

DIGTOR 22

DIGTOR 22R

DILITCEN 22

FLOOR STANDING

MAGNUS 22

MAGNUS 22R

General applications

Centrifuges mini: Minicen

MINICEN

LCD

IVD CE

Max. capacity: 12 x 1,5-2 ml. **Max. speed:** 15.596 xg/15.000 RPM

Your personal centrifuge for the most demanding laboratory. Compact, quick, reliable and with precise control of operating parameters. Indispensable in separation processes for microvolumes, in which the relative centrifugal force must be high. The Minicen centrifuge includes a rotor for twelve 1.5-2 ml. tubes, able to reach 15,000 RPM and up to 15.596 xg. Also supplied with reducers for 0.5-0.6 ml. and 0.2-0.4 ml. tubes, thus covering needs as regards equipment for all types of microtubes.

The smallest in the family, offering the perShapence of biggest ones.

Features

- Small footprint: 4 kg. of weight.

LCD screen:

- Shows RPM/ RCF, time, rotor spinning and lid status.
- Speed programming in 100 RPM/100 xg steps.
- Timer from 30 sec. to 999 min. programmable in 1 sec. steps or hold position.
- Timer with countdown at time set.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled.
- PC connection by USB.
- Induction motor maintenance free (brushless).
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option RPM/ RCF adjustment along the run
- Automatic open lid.
- Last values remain in memory.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Rotors can be removed with the lid closed.
- Rotors and adapters autoclavable, easy to install by the user.
- Forced ventilation to reduce temperature increasing.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 182	260	230	130	4	230-110	50-60	180

This code includes the next configuration:

Centrifuge Minicen + **angle fixed rotor RT 255** with capacity for **12 x 1,5-2 ml.** and adapters for **12 x 0,5-0,6 ml. (RE 509) and 12 x 0,2-0,4 ml. (RE 510).**

In the next chart you can find a range of accessories (rotors and adapters) that will increase the versatility of this configuration.

Accessories	INCLUDED		OPTIONAL	
	RT 255 		RT 263 	
ROTOR	ANGLE FIXED 30 °		ANGLE FIXED 30 °	
Max. capacity	12 x 1,5-2 ml.		16 x 0,2 ml.	
RPM Max.	15.000		15.000	
Radius (mm)	62		52	
RCF Max. (xg)	15.596		13.080	
SAMPLE VOLUME	ADAPTERS Tubes	Ref.	ADAPTERS Tubes	Ref.
Microtubes 1,5-2 ml.	12	-	-	-
Microtubes 0,5-0,6 ml.	12	RE 509	-	-
Microtubes 0,2-0,4 ml.	12	RE 510	16	-

Centrifuges small: Microcen 24

MICROCEN 24

LED

IVD CE

Max. capacity: 10 x 15 ml. Max. speed: 6.368 xg / 8.000 RPM

The new Microcen 24 bursts as the solution for all those laboratories which are looking for high performance and versatility in a small centrifuge. Allows work with up to 8 conical tubes of 15 ml. as well as other configurations, as its available rotors can be exchanged easily.
This equipment **includes a rotor** with capacity for 8 tubes of 15 ml. round bottom and has an optional range of rotors and adapters.

Features

LED screen:
- Shows RPM/ RCF and time.
- Speed programming in 50 RPM/ 10 xg steps.
- Timer countdown/up from "0" or at "set RPM/ RCF" for reproducible tests.
- Timer from 1 to 99 min. programmable in 1 min. steps and hold position.
- Acceleration and deceleration control in 3 steps: fast, soft and free.
- Acoustic and visual messages on screen warning the user the equipment status.

Easy to use

- Microprocessor controlled.
- Induction motor maintenance free (brushless).
- Rotors list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Automatic open lid, programmable.
- Last values remain in memory.
- Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized. Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors and adapters autoclavable, easy to install by the user.
- Forced ventilation to reduce temperature increasing
- Automatic disconnection for energy saving, with deactivation option.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 202	276	390	272	16	220-230	50-60	280

This code includes the next configuration:

Centrifuge Microcen 24 + **angle fixed rotor RT 246** with capacity for **8x15 ml.**

In the next chart you can find a range of accessories (rotors and adapters) that will increase the versatility of this configuration.

Accessories	INCLUDED		OPTIONAL			
	RT 246		RT 247		RT 248	
						
ROTOR	ANGLE FIXED 30 °		ANGLE FIXED 30 °		ANGLE FIXED 30 °	
Max. capacity	8x15 ml.		12x5 ml.		10x15 ml.	
RPM Max.	8.000		8.000		8.000	
Radius (mm)	91		72		89	
RCF Max. (xg)	6.511		5.152		6.368	
SAMPLE VOLUME	ADAPTERS Tubes	Ref.	ADAPTERS Tubes	Ref.	ADAPTERS Tubes	Ref.
15 ml. /10 ml. blood sample	8	-	-	-	10	-
15 ml conical	8	RE 459	-	-	-	-
10 ml. / 7/10 ml. blood sample	8	RE 371	-	-	10	RE 470
5 ml. / 5 ml. blood sample	8	RE 377	12	-	10	RE 471
Microtubes 1,5-2 ml.	8	RE 513	-	-	-	-
Microtubes 0,5-0,6 ml.	8	RE 514	-	-	-	-
Microtubes 0,2-0,4 ml.	8	RE 515	-	-	-	-

Centrifuges micro: Biocen 22

BIOCEN 22

LED

IVD CE

Max. capacity: 24 x 2 ml./ 12 x 5 ml. **Max. speed:** 21.885 xg / 15.000 RPM

The Biocen 22 centrifuge is our offer for users requiring a microcentrifuge with possible applications for microhematocrit and microtubes. Its small size, good perShapence and great versatility make it an essential tool. It gives the user complete control from the beginning of the process and many values can be customised according to the processes. Built to ensure the minimum increase of temperature inside the chamber due to the high-speed centrifugation process.

We know how important a sample is as a part of a process and therefore we try to interfere as little as possible to avoid interference and ensure a precise, exact, reliable and rapid result.

Features

LED screen:
- Shows RPM/ RCF and time.
- Speed programming in 50 RPM/ 10 xg steps.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 to 99 min. programmable in 1 min. steps and hold position.
- Acceleration and deceleration control in 3 steps: fast, soft and free.
- Acoustic and visual messages on screen warning the user the equipment status.

Easy to use

- Microprocessor controlled.
- Induction motor maintenance free (brushless).
- Rotors list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Automatic open lid, programmable.
- Last values remain in memory.
- Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors can be removed with the lid closed.
- Rotors and adapters autoclavable, easy to install by the user.
- Forced ventilation to reduce temperature increasing
- Automatic disconnection for energy saving, with deactivation option.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 146	276	390	272	17	220-230	50-60	360
CE 147	276	390	272	17	110-120	50-60	360

Accessories

	RT 227	RT 228	RT 229	RT 254
		 (1)		 (2)
ROTOR	ANGLE FIXED 45 °	HORIZONTAL	ANGLE FIXED 45 °	ANGLE FIXED 45 °
Max. capacity	24x1,5-2 ml	24x1,5x75 mm	32x0,2 ml	12 x 5 ml
RPM Max.	15.000	15.000	15.000	15.000
Radius (mm)	82	87	55	87
RCF Max. (xg)	20.627	21.885	13.835	21.884

SAMPLE VOLUME	ADAPTERS Tubes	Ref.	ADAPTERS Tubes	Ref.	ADAPTERS Tubes	Ref.	ADAPTERS Tubes	Ref.
5 ml. conical / screw cap	-	-	-	-	-	-	12/6	-
1,5x75 mm. Capillaries	-	-	24	-	-	-	-	-
Microtubes 1,5-2 ml.	24	-	-	-	-	-	12	RE 506
Microtubes 0,5-0,6 ml.	24	RE 305	-	-	-	-	12	RE 507
Microtubes 0,2-0,4 ml.	24	RE 304	-	-	32x0,2	-	12	RE 508

(1)Includes microhaematocrit reader card.
(2) Available adapters for cryotubes.

Centrifuges micro: Biocen 22 R

BIOCEN 22 R

LCD PCBS

IVD CE

Max. capacity: 8 x 15 ml. Max. speed: 31.865 xg / 18.100 RPM

One of the best options when high speed and different tube Shapets are required. This refrigerated microcentrifuge, which has a wide range of rotors for a cooled centrifuge, it can work with conical type tubes from 0,2 ml. to 15 ml. Dynamic cooling equipment kept the desired temperature, reaching it in a short period of time and maintaining it stable throughout the whole cycle, regardless of the operation speed. Customisation of equipment options through the software enables you to adapt the work cycles to the process as well as the user preferences, thus optimising perShapence in your laboratory.

For Ortoalresa, the Biocen 22 R centrifuge is the culmination of its know-how in centrifugation, materialised for the user in a robust, versatile and efficient piece of equipment that integrates perfectly into any lab, highlighting its application in research and biotechnology.

Features

LCD screen:

- Shows RPM and RCF, time, temperature and acceleration/deceleration (PCBS).
- Speed programming in 50 RPM/ 50 xg steps.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 to 99 min. programmable in 5 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- 16 programmable memories.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled.
- Induction motor maintenance free (brushless).
- Rotors list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors can be removed with the lid closed.
- Rotors and adapters autoclavable, easy to install by the user.
- Automatic disconnection for energy saving up to 8 h.

Refrigeration

- Remains the refrigeration after centrifugation process.
- Precooling program with rotor spinning and temperature selectable.
- Guarantee 4 °C at maximum RPM.
- Temperature range from -20°C (-4°F) to 40°C (104°F) in 1°C steps.
- Temperature sensor inside the chamber.
- Gas R 449A HFO (CFC free

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Regulation n°: (EC) 1005/2009, (EU) 517/2014.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 148	276	640	272	34	220-230	50-60	540
CE 149	276	640	272	34	110-120	50-60	700


ortoalresa


R.P.M Max. 18.100
RT 222 Nº 1615052/08
ortoalresa

Centrifuges Biocen 22 R

		MICROTUBES							
		RT 224		RT 222		RT 252		RT 223	
									
ROTOR		**ANGLE FIXED 45 °**		**ANGLE FIXED 45 °**		**ANGLE FIXED 45 °**		**ANGLE FIXED 45 °**	
Max. capacity		32 x 0,2 ml		24x1,5-2 ml		12 x 5 ml		8x15 ml	
RPM Max.		18.100		18.100		18.100		8.000	
Radius (mm)		55		82		87		91	
RCF Max. (xg)		20.145		30.034		31.865		6.511	
Min. temp. at max. speed (°C)		-1		0		4		-3	
SAMPLE VOLUME	**Dim (mm) approx.**	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.
15 ml.	ø16 x 100	-	-	-	-	-	-	8	-
15 ml. conical	ø17 x 122	-	-	-	-	-	-	8	-
10 ml.	ø13 x 100	-	-	-	-	-	-	8	RE 371
10 ml. blood sample	ø16 x 107	-	-	-	-	-	-	8	-
10 ml. (hs)	ø16 x 80	-	-	-	-	-	-	8	RE 398
7/10 ml. blood sample	ø13 x 107	-	-	-	-	-	-	8	RE 371
5 ml.	ø13 x 75	-	-	-	-	-	-	8	RE 377
5 ml. conical	ø17 x 60	-	-	-	-	12	-	-	-
5 ml. conical screw cap	ø17 x 68	-	-	-	-	6	-	-	-
5 ml. blood sample	ø13 x 82	-	-	-	-	-	-	8	RE 377
Microtubes 1,5 - 2 ml.	ø11 x 42	-	-	24	-	12	RE 506	8	RE 513
Microtubes 0,5 - 0,6 ml.	ø8 x 30	-	-	24	RE 305	12	RE 507	8	RE 514
Microtubes 0,2 - 0,4 ml.	ø6 x 45	32 x 0,2	-	24	RE 304	12	RE 508	8	RE 515
Cryotubes	ø12,5 x 52	-	-	-	-	12	RE 537	-	-

Centrifuges universal: Unicen 21

UNICEN 21

LED

IVD CE

Max. capacity: 4 x 100 ml. Max. speed: 2.938 xg / 4.200 RPM

The word that best defines and determines its characteristics is, without doubt, universal. It has multiple rotors with a wide range of reducers, which enables it to work with volumes from 0.2 ml. to 100 ml., with angle fixed and swing out options. This equipment covers all types of needs of the users and offers a range of medium speeds for routine processes. To optimise the perShapence of the equipment in this range, we have increased its capacity with a swing out rotor for up to 28 x 15 ml. tubes and an angle fixed rotor for 32 to 15 ml./15 ml. conical tubes.

It has a control to define the functions beyond the operation values, thus becoming a piece of equipment perfectly integrated into your processes. Versatile, functional, simple, indispensable in your lab.

Features

LED screen:
- Shows RPM/ RCF and time.
- Speed programming in 50 RPM/ 10 xg steps.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 to 99 min. programmable in 1 min. steps and hold position.
- Acceleration and deceleration control in 3 steps: fast, soft and free.
- Acoustic and visual messages on screen warning the user the equipment status.

Easy to use

- Microprocessor controlled.
- Induction motor maintenance free (brushless).
- Rotors list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Automatic open lid, programmable.
- Last values remain in memory.
- Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors and adapters autoclavable, easy to install by the user.
- Forced ventilation to reduce temperature increasing
- Automatic disconnection for energy saving, with deactivation option.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm)(w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 126	410	530	320	36	220-230	50-60	280
CE 127	410	530	320	36	110-120	50-60	280

Centrifuges Unicen 21

		RT 177		RT 260		RT 175		RT 173		RT 226		RT 163	
								 (1)					
ROTOR		**SWING OUT**		**SWING OUT**		**SWING OUT**		**SWING OUT**		**ANGLE FIXED 30 °**		**ANGLE FIXED 35 °**	
Max. capacity		8 x 15 ml.		28 x 15 ml.		4 x 50 ml.		4 x 100 ml.		8 x 15 ml.		24 x 15 ml.	
RPM Max.		4.200		4.200		4.200		4.200		4.200		4.200	
Radius (mm)		145		147		145		147		91		132/114	
RCF Max. (xg)		2.860		2.899		2.860		2.899		1.795		2.603/2.248	
SAMPLE VOLUME	**Dim (mm) approx.**	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.
100 ml.	ø48 x 100	-	-	-	-	-	-	4	RE 446	-	-	-	-
80 ml.	ø44 x 100	-	-	-	-	-	-	4	RE 338	-	-	-	-
50 ml.	ø34 x 100	-	-	-	-	4	RE 445	4	RE 335	-	-	-	-
50 ml. conical	ø29 x 117	-	-	-	-	4	RE 342	4	RE 341	-	-	-	-
30 ml.	ø25 x 98	-	-	-	-	4	RE 333	4	RE 332	-	-	-	-
15 ml.	ø16 x 100	8	-	28	-	4	RE 329	16	RE 316	8	-	24	-
15 ml. conical	ø17 x 122	8	-	-	-	4	RE 329	4	RE 339	8	-	12	-
10 ml.	ø13 x 100	8	RE 371	28	RE 516	12	RE 313	20	RE 320	8	RE 371	24	RE 385
10 ml. blood sample	ø16 x 107	8	-	28	-	4	RE 329	16	RE 316	8	-	24	-
7/10 ml. blood sample	ø13 x 107	8	RE 371	28	RE 516	4	RE 337	20	RE 320	8	RE 371	24	RE 385
5 ml.	ø13 x 75	8	RE 377	28	RE 512	12	RE 313	20	RE 320	8	RE 377	24	RE 306
5 ml. blood sample	ø13 x 82	8	RE 377	28	RE 512	4	RE 337	20	RE 320	8	RE 377	24	RE 306
Microtubes 1,5-2 ml.	ø11 x 42	8	RE 513	-	-	12	RE 463	20	RE 408	8	RE 513	-	-
Microtubes 0,5-0,6 ml.	ø8 x 30	8	RE 514	-	-	12	RE 531	20	RE 519	8	RE 514	-	-
Microtubes 0,2-0,4 ml.	ø6 x 45	8	RE 515	-	-	12	RE 532	20	RE 473	8	RE 515	-	-

(1) This rotor can be supplied with hermetic lids (RE 355)

		RT 256 		RT 167 	
ROTOR		**ANGLE FIXED 35 °**		**ANGLE FIXED 35 °**	
Max. capacity		32 x 15 ml.		6 x 50 ml.	
RPM Max.		4.200		4.200	
Radius (mm)		149/130		132	
RCF Max. (xg)		2.938/2.563		2.603	
SAMPLE VOLUME	**Dim (mm) approx.**	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.
100 ml.	ø48 x 100	-	-	-	-
80 ml.	ø44 x 100	-	-	-	-
50 ml.	ø34 x 100	-	-	6	RE 447
50 ml. conical	ø29 x 117	-	-	6	RE 365
30 ml.	ø25 x 98	-	-	6	RE 387
15 ml.	ø16 x 100	32	-	6	RE 361
15 ml. conical	ø17 x 122	32	-	6	RE 361
10 ml.	ø13 x 100	32	RE 518	18	RE 360
10 ml. blood sample	ø16 x 107	32	-	6	RE 361
7/10 ml. blood sample	ø13 x 107	32	RE 518	6	RE 364
5 ml.	ø13 x 75	32	RE 517	18	RE 360
5 ml. blood sample	ø13 x 82	32	RE 517	6	RE 364
Microtubes 1,5-2 ml.	ø11 x 42	-	-	18	RE 464
Microtubes 0,5-0,6 ml.	ø8 x 30	-	-	18	RE 533
Microtubes 0,2-0,4 ml.	ø6 x 45	-	-	18	RE 534

Centrifuges universal: Series Digicen 21

DIGICEN 21

LCD

IVD CE

Max. capacity: 4 x 100 ml. Max. speed: 26.480 xg / 16.500 RPM

Universal by design. With a wide range of rotors for microplates, cryotubes, microtubes, tubes from 100 ml., with options as versatile as con 28 x 15 ml. tubes in a swing out rotor and 32 x 15 ml. conical tubes in an angle fixed rotor, and rotors for high speed 85 ml., 80 ml., 50 ml., 30 ml. and 10 ml. tubes. The accessories and components are designed to facilitate cleaning and quick rotor exchange. This equipment can process highly diverse samples, offering the most exhaustive control of the process in its range. Programming by stages allows the user to control each of them, ensuring traceability and repeatability of the process at all times.

The safety devices incorporated, for the sample as well as the user, impede the cycle from beginning if the operation is not carried out in the right way and according to the values entered.

Features

LCD screen:

- Shows RPM and RCF, time and acceleration/deceleration (PCBS).
- Speed programming in 50 RPM/ 50 xg steps.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 to 99 min. programmable in 5 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- 16 programmable memories.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled.
- Induction motor maintenance free (brushless).
- Rotors list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Automatic open lid, programable.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors can be removed with the lid closed.
- Rotors and adapters autoclavable, easy to install by the user.
- Forced ventilation to reduce temperature increasing.
- Automatic disconnection for energy saving up to 8 h., with deactivation option.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm)(w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 110	410	530	320	36	220-230	50-60	440
CE 116	410	530	320	36	110-120	50-60	420

Centrifuges universal: Series Digicen 21

DIGICEN 21R

LCD PCBS

IVD CE

Max. capacity: 4 x 100 ml. Max. speed: 26.480 xg / 16.500 RPM

Versatility fused with effectiveness. The centrifuge Digicen 21 R has a wide range of angle fixed rotors, both for low revolutions, with capacity up to 32 tubes of 15 ml./15 ml. conical, and for microtubes, cryotubes and high speed tubes. For the swing out versions, it has rotors for 4 tubes of 100 ml. and up to 28 positions for 15 ml. tubes. The wide range of reducers that accompany each of these rotors give the great versatility that defines the universal centrifuges. Its powerful refrigeration system enables it to maintain the minimum temperature of the chamber below 4°C regardless of the type of rotor and the speed selected.

This particularity, joined to the control of the process of each of the stages and the parameters that control them, gives the user confidence in traceability during the centrifugation cycle.

Features

LCD screen:

- Shows RPM and RCF, time, temperature and acceleration/deceleration (PCBS).
- Speed programming in 50 RPM/ 50 xg steps.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 to 99 min. programmable in 5 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- 16 programmable memories.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled.
- Induction motor maintenance free (brushless).
- Rotors list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors can be removed with the lid closed.
- Rotors and adapters autoclavable, easy to install by the user.
- Automatic disconnection for energy saving up to 8 h.

Refrigeration

- Remains the refrigeration after centrifugation process.
- Precooling program with rotor spinning and temperature selectable.
- Guarantee 4°C at maximum RPM.
- Temperature range from -20°C (-4°F) to 40°C (104°F) in 1°C steps.
- Temperature sensor inside the chamber.
- Gas R 449A HFO (CFC free).

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Regulation n°: (EC) 1005/2009, (EU) 517/2014.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm)(w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)	Z max advisable (Hz)
CE 113	590	680	320	67	220-230	50-60	700	< 0.446
CE 119	590	680	320	67	110-120	50-60	800	< 0.446

Accessories

Centrifuges series Digicen 21

		RT 267		RT 143		RT 138		RT 150		MICROTUBES RT 183		MICROTUBES RT 151		RT 253	
						 (1)		 (2)						 (4)	
ROTOR		**SWING OUT**		**SWING OUT**		**SWING OUT**		**SWING OUT**		**ANGLE FIXED 45 °**		**ANGLE FIXED 45 °**		**ANGLE FIXED 45 °**	
Max. capacity		28 x 15 ml.		4 x 50 ml.		4 x 100 ml.		6/4/2 microtiter		32 x 0,2 ml.		24 x 1,5-2 ml.		12 x 5 ml	
RPM Max.		4.200		5.300		5.000		4.000		16.500		16.500		16.500	
Radius (mm)		147		145		147		122 (3)		55 (3)		82		87	
RCF Max. (xg)		2.899		4.554		4.109		2.182		16.741		24.959		26.480	
Min. temp. at max. speed (°C)		-6		-7		-7		-9		-6		-4		-2	
SAMPLE VOLUME	**Dim (mm) approx.**	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.
100 ml.	ø48 x 95	-	-	-	-	4	RE 446	-	-	-	-	-	-	-	-
85 ml. (hs) / 80 ml. (hs)	ø38 x 112	-	-	-	-	4	RE 380	-	-	-	-	-	-	-	-
80 ml.	ø44 x 100	-	-	-	-	4	RE 338	-	-	-	-	-	-	-	-
50 ml. (hs)	ø29 x 108	-	-	4	RE 342	4	RE 341	-	-	-	-	-	-	-	-
50 ml.	ø34 x 100	-	-	4	RE 445	4	RE 335	-	-	-	-	-	-	-	-
50 ml. conical	ø29 x 117	-	-	4	RE 342	4	RE 341	-	-	-	-	-	-	-	-
30 ml. / 30 ml. (hs)	ø25 x 96	-	-	4	RE 333	4	RE 332	-	-	-	-	-	-	-	-
15 ml.	ø16 x 100	28	-	4	RE 329	16	RE 316	-	-	-	-	-	-	-	-
15 ml. conical	ø17 x 122	-	-	4	RE 329	4	RE 339	-	-	-	-	-	-	-	-
10 ml. (hs)	ø16 x 80	28	-	4	RE 329	16	RE 316	-	-	-	-	-	-	-	-
10 ml.	ø13 x 100	28	RE 516	12	RE 313	20	RE 320	-	-	-	-	-	-	-	-
10 ml. blood sample	ø16 x 107	28	-	4	RE 329	16	RE 316	-	-	-	-	-	-	-	-
7/10 ml. blood sample	ø13 x 107	28	RE 516	4	RE 337	20	RE 320	-	-	-	-	-	-	-	-
5 ml.	ø13 x 75	28	RE 512	12	RE 313	20	RE 320	-	-	-	-	-	-	-	-
5 ml. conical / screw cap	ø17 x 60/ 68	-	-	-	-	-	-	-	-	-	-	-	-	12/6	-
5 ml. blood sample	ø13 x 82	28	RE 512	4	RE 337	20	RE 320	-	-	-	-	-	-	-	-
Microtubes 1,5-2 ml.	ø11 x 42	-	-	12	RE 463	20	RE 408	72	RE 401	-	-	24	-	12	RE 506
Microtubes 0,5-0,6 ml.	ø8 x 30	-	-	12	RE 531	20	RE 519	-	-	-	-	24	RE 305	12	RE 507
Microtubes 0,2-0,4 ml.	ø6 x 45	-	-	12	RE 532	20	RE 473	-	-	32 x 0,2	-	24	RE 304	12	RE 508
Microtiter plates	128x86x15/21/45	-	-	-	-	-	-	6/4/2	-	-	-	-	-	-	-
Cell culture	128x86x22	-	-	-	-	-	-	4	-	-	-	-	-	-	-

(1) This rotor includes hermetic lids.
(2) Allows different configurations depending of the microplates height.
(3) Medium radius.

(4) Available adapters for cryotubes.
(5) Please check tubes features.
(6) Fitting this tubes the rotor can not be closed with the lid.

										HIGH SPEED					
		RT 110		RT 108		RT 266		RT 121		RT 152		RT 153		RT 154	
								 (5)		 (5)		 (5)		 (5)	
ROTOR		**ANGLE FIXED 35 °**		**ANGLE FIXED 35 °**		**ANGLE FIXED 35 °**		**ANGLE FIXED 45 °**		**ANGLE FIXED 30 °**		**ANGLE FIXED 30 °**		**ANGLE FIXED 28 °**	
Max. capacity		24 x 5 ml.		24 x 15 ml.		32 x 15 ml.		6 x 50 ml.		12 x 10ml. Hermet		8 x 30 ml. Hermet		6 x 50 ml. Hermet	
RPM Max.		6.500		5.000		4.200		6.000		15.000		13.500		9.000	
Radius (mm)		113		132/114		149/130		132		78		92		101	
RCF Max. (xg)		5.338		3.689/3.186		2.938/2.563		5.313		19.621		18.746		9.146	
Min. temp. at max. speed (°C)		-4		-6		-5		-4		-5		-1		-4	
SAMPLE VOLUME	**Dim (mm) approx.**	**ADAPTERS**		**ADAPTERS**		**ADAPTERS**		**ADAPTERS**		**ADAPTERS**		**ADAPTERS**		**ADAPTERS**	
		Tubes	Ref.	Tubes	Ref.	Tubes	Ref.	Tubes	Ref.	Tubes	Ref.	Tubes	Ref.	Tubes	Ref.
100 ml.	ø48 x 95	-	-	-	-	-	-	-	-	-	-	-	-	-	-
85 ml. (hs) / 80 ml. (hs)	ø38 x 112	-	-	-	-	-	-	-	-	-	-	-	-	-	-
80 ml.	ø44 x 100	-	-	-	-	-	-	-	-	-	-	-	-	-	-
50 ml. (hs)	ø29 x 108	-	-	-	-	-	-	6	RE 365	-	-	-	-	6	RE 536
50 ml.	ø34 x 100	-	-	-	-	-	-	6	RE 447	-	-	-	-	-	-
50 ml. conical	ø29 x 117	-	-	-	-	-	-	6	RE 365	-	-	-	-	6	RE 536
30 ml. / 30 ml. (hs)	ø25 x 96	-	-	-	-	-	-	6	RE 387	-	-	8	-	6	RE 392
15 ml.	ø16 x 100	-	-	24	-	32	-	6	RE 361	-	-	8	RE 406	6	RE 394
15 ml. conical	ø17 x 122	-	-	12	-	32	-	6	RE 361	-	-	-	-	6	RE 394 (6)
10 ml. (hs)	ø16 x 80	-	-	24	RE 384	32	RE 529	6	RE 361	12	-	8	RE 391	6	RE 395
10 ml.	ø13 x 100	-	-	24	RE 385	32	RE 518	18	RE 360	-	-	8	RE 407	6	RE 396
10 ml. blood sample	ø16 x 107	-	-	24	-	32	-	6	RE 361	-	-	-	-	6	RE 394
7/10 ml. blood sample	ø13 x 107	-	-	24	RE 385	32	RE 518	6	RE 364	-	-	-	-	6	RE 396
5 ml.	ø13 x 75	24	-	24	RE 306	32	RE 517	18	RE 360	12	RE 389	8	RE 390	6	RE 397
5 ml. conical / screw cap	ø17 x 60/68	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5 ml. blood sample	ø13 x 82	24	-	24	RE 306	32	RE 517	6	RE 364	12	RE 389	8	RE 390	6	RE 397
Microtubes 1,5-2 ml.	ø11 x 42	-	-	-	-	-	-	18	RE 464	-	-	-	-	18	RE 433
Microtubes 0,5-0,6 ml.	ø8 x 30	-	-	-	-	-	-	18	RE 533	-	-	-	-	-	-
Microtubes 0,2-0,4 ml.	ø6 x 45	-	-	-	-	-	-	18	RE 534	-	-	-	-	-	-
Microtiter plates	128x86x15/21/45	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cell culture	128x86x22	-	-	-	-	-	-	-	-	-	-	-	-	-	-

RT 128: Available rotor for capillaries (includes microhaematocrit reader card).

Centrifuges high capacity: Series Consul 22

CONSUL 22

TFT

IVD CE

Max. capacity: 4 x 400 ml. Max. speed: 21.948 xg / 14.300 RPM

A great centrifuge, compact, high capacity and with the advantages of equipment in superior segments. The type of control provided, through its TFT colour touch screen, provides the user with features that enable, in addition to the control of the equipment by operating parameters, the possibility to export the data for subsequent analysis and programming for operation in the future. The autonomy provided by this equipment enables the user to optimise working time in the lab, by automation of cycles and modes of operation. These features also ensure process traceability and the assurance that no parameter is uncontrolled.

The same as the rest of Ortoalresa centrifuges, it is designed to be versatile, therefore it has swing out rotors with volumes of 400 ml. per bucket, rotors for microplates 80 mm height, angle fixed rotors for high speed and microtubes as well as a wide range of adaptors for all of them.

Features

TFT color touch screen, visible from more than 3 m.:

- Shows RPM and RCF, time, acceleration/deceleration values (PCBS) and unbalancing location system (ULS).
- Speed programming in 10 RPM/10 xg steps.
- Real RCF values on screen based in accessories configuration.
- Count up/down from “0” or at “set RPM/RCF” for test reproducibility.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 min to 99 hours programmable in 1 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- ULS: Unbalancing location system indicating on the screen the number of the bucket which produces the unbalance switch off.
- 40 programmable memories, with protection under password.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled. PC connection.
- Induction motor maintenance free (brushless).
- Rotors and adapters list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Automatic open lid, programmable.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors can be removed with the lid closed.
- Rotors and adapters autoclavable, easy to install by the user.
- Forced ventilation to reduce temperature increasing.
- Automatic disconnection for energy saving up to 8 h., with deactivation option.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm)(w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 195	490	620	390	47	220-230	50-60	620
CE 184	490	620	390	47	110-120	50-60	620

Centrifuges high capacity: Seriess Consul 22

CONSUL 22 R

TFT

IVD CE

Max. capacity: 4 x 400 ml. Max. speed: 21.948 xg / 14.300 RPM

A great refrigerated centrifuge, compact, high capacity and with the advantages of equipment in superior segments. Its TFT colour touch screen, provides the user with features that enable, in addition to the control of the equipment by operating parameters, the possibility to export the data for subsequent analysis and programming for operation in the future. As the rest of Ortoalresa centrifuges, it's designed to be versatile, therefore it has swing out rotors with volumes of 400 ml. per bucket, rotors for microplates of 80 mm height, angle fixed rotors for high speed and microtubes as well as a wide range of adaptors for all of them.

The autonomy that this equipment gives to the user optimises the laboratory routine by the personalization of the work cycles. These particularities also ensure process traceability and the assurance that no parameter is uncontrolled. Its refrigeration system allows it to maintain the minimum temperature of the chamber below 4°C regardless of the type of rotor and the speed selected.

Features

TFT color touch screen, visible from more than 3 m.:

- Shows RPM and RCF, time, temperature, acceleration/deceleration values (PCBS) and unbalancing location system (ULS).
- Speed programming in 10 RPM/10 xg steps.
- Real RCF values on screen based in accessories configuration.
- Count up/down from "0" or at "set RPM/RCF" for test reproducibility.
- Timer countdown/up from "0" or at "set RPM/ RCF" for reproducible tests.
- Timer from 1 min to 99 hours programmable in 1 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- ULS: Unbalancing location system indicating on the screen the number of the bucket which produces the unbalance switch off.
- 40 programmable memories, with protection under password.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled. PC connection.
- Induction motor maintenance free (brushless).
- Rotors and adapters list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors can be removed with the lid closed.
- Rotors and adapters autoclavable, easy to install by the user.
- Automatic disconnection for energy saving up to 8 h.

Refrigeration

- Remains the refrigeration after centrifugation process.
- Precooling program with rotor spinning and temperature selectable.
- Guarantee 4 °C at maximum RPM.
- Temperature range from -20°C (-4°F) to 40°C (104°F) in 1°C/1°F steps. Programmable in °C o °F.
- Temperature sensor inside the chamber.
- Gas R 449A HFO (CFC free).

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Regulation n°: (EC) 1005/2009, (EU) 517/2014.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)	Z max. advisable (Hz)
CE 185	670	770	390	72	220-230	50-60	930	<|0,446|
CE 186	670	770	390	72	110-120	50-60	950	<|0,446|

Accessories

Centrifuges series Consul 22

		RT 197		RT 198		RT 199		HIGH SPEED RT 238		RT 206		RT 203	
													
ROTOR		**ANGLE FIXED 45 °**		**ANGLE FIXED 45 °**		**ANGLE FIXED 30 °**		**ANGLE FIXED 30 °**		**ANGLE FIXED 45 °**		**SWING OUT**	
Max. capacity		8 x 50 ml.		4 x 100 ml.		4 x 250 ml.		6 x 85 ml		30 x 1,5-2 ml.		4 x 250 ml.	
RPM Max.		6.000		5.600		4.700		9.000		14.300		4.200	
Radius (mm)		149		138		153		112		96		183	
RCF Max. (xg)		5.997		4.838		3.779		10.142		21.948		3.609	
Min. temp. at max. speed (°C)		-2		-1		-3		0		-3		-1	
SAMPLE VOLUME	**Dim (mm) approx.**	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.
400 ml.	ø 80 x 118	-	-	-	-	-	-	-	-	-	-	-	-
250 ml.	ø 62 x 120	-	-	-	-	4	RE 449	-	-	-	-	4	RE 449
200 ml.	ø 60 x 120	-	-	-	-	4	RE 449	-	-	-	-	4	RE 449
100 ml.	ø 48 x 100	-	-	4	RE 446	4	RE 327	-	-	-	-	4	RE 327
85 ml. (hs) / 80 ml. (hs)	ø 38 x 112	-	-	4	RE 502	4	RE 498	6	-	-	-	4	RE 498
80 ml.	ø 44 x 100	-	-	4	RE 338	4	RE 422	-	-	-	-	4	RE 422
50 ml.	ø 34 x 100	8	RE 448	4	RE 335	4	RE 334	6	RE 490	-	-	4	RE 334
50 ml. conical	ø 29 x 117	8	RE 375	4	RE 341	4	RE 340	6	RE 483	-	-	4	RE 340
30 ml. / 30 ml. (hs)	ø 25 x 98	8	RE 370	4	RE 332	12	RE 312	6	RE 493	-	-	12	RE 312
15 ml.	ø 16 x 100	8	RE 369	16	RE 316	28	RE 376	18	RE 485	-	-	28	RE 376
15 ml. conical	ø 17 x 122	8	RE 369	4	RE 339	20	RE 321	6	RE 484	-	-	20	RE 321
15 ml. blood sample	ø 16 x 132	8	RE 369	-	-	28	RE 376	-	-	-	-	-	-
10 ml.	ø 13 x 100	24	RE 366	20	RE 320	40	RE 343	30	RE 497	-	-	40	RE 343
10 ml. blood sample	ø 16 x 107	8	RE 369	16	RE 316	28	RE 376	18	RE 485	-	-	28	RE 376
7/10 ml. blood sample	ø 13 x 107	8	RE 373	20	RE 320	28	RE 324	18	RE 503	-	-	28	RE 324
5 ml.	ø 13 x 75	24	RE 366	20	RE 320	40	RE 343	30	RE 501	-	-	40	RE 343
5 ml. blood sample	ø 13 x 82	8	RE 373	20	RE 320	28	RE 324	18	RE 492	-	-	28	RE 324
10 x 100 mm.	ø 10 x 100	24	RE 367	36	RE 326	52	RE 346	-	-	-	-	52	RE 346
Microtubes 1,5-2 ml.	ø 11 x 42	24	RE 465	20	RE 408	24	RE 440	24	RE 494	30	-	24	RE 440
Microtubes 0,5-0,6 ml.	ø 8 x 30	24	RE 535	20	RE 519	24	RE 523	24	RE 495	30	RE 428	24	RE 523
Microtubes 0,2-0,4 ml.	ø 6 x 45	24	RE 526	20	RE 473	24	RE 458	24	RE 496	30	RE 427	24	RE 458
Microtiter plates	128x86x15/21/45	-	-	-	-	-	-	-	-	-	-	-	-
Microtiter plates (h: 80mm)	128x86x80	-	-	-	-	-	-	-	-	-	-	-	-
Cell culture	128x86x22	-	-	-	-	-	-	-	-	-	-	-	-

(1) This rotor can be supplied with hermetic lids (RE 405). (2)Allows different configurations depending of the microplates height. (3) Only available for refrigerated models.

				MICROTITER PLATES			
		RT 205		RT 219		RT 245	
		 (1)		 (2)		 (2)(3)	
ROTOR		**SWING OUT**		**SWING OUT**		**SWING OUT**	
Max. capacity		4 x 400 ml.		12/8/4 microtiter		10/6/2/2 microtiter	
RPM Max.		4.000		3.500		4.500	
Radius (mm)		180		149		166	
RCF Max. (xg)		3.220		2.041		3.758	
Min. temp. at max. speed (°C)		-2		-4		4	
SAMPLE VOLUME	**Dim (mm) approx.**	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.
400 ml.	ø 80 x 118	4	RE 450	-	-	-	-
250 ml.	ø 62 x 120	4	RE 457	-	-	-	-
200 ml.	ø 60 x 120	4	RE 430	-	-	-	-
100 ml.	ø 48 x 100	4	RE 412	-	-	-	-
85 ml. (hs) / 80 ml. (hs)	ø 38 x 112	4	RE 499	-	-	-	-
80 ml.	ø 44 x 100	4	RE 421	-	-	-	-
50 ml.	ø 34 x 100	8	RE 414	-	-	-	-
50 ml. conical	ø 29 x 117	12	RE 413	-	-	-	-
30 ml. / 30 ml. (hs)	ø 25 x 98	20	RE 415	-	-	-	-
15 ml.	ø 16 x 100	48	RE 417	-	-	-	-
15 ml. conical	ø 17 x 122	28	RE 416	-	-	-	-
15 ml. blood sample	ø 16 x 132	-	-	-	-	-	-
10 ml.	ø 13 x 100	72	RE 418	-	-	-	-
10 ml. blood sample	ø 16 x 107	48	RE 417	-	-	-	-
7/10 ml. blood sample	ø 13 x 107	48	RE 419	-	-	-	-
5 ml.	ø 13 x 75	72	RE 418	-	-	-	-
5 ml. blood sample	ø 13 x 82	48	RE 419	-	-	-	-
10 x 100 mm.	ø 10 x 100	76	RE 420	-	-	-	-
Microtubes 1,5-2 ml.	ø 11 x 42	48	RE 431	144	RE 460	72	RE 401
Microtubes 0,5-0,6 ml.	ø 8 x 30	48	RE 489	-	-	-	-
Microtubes 0,2-0,4 ml.	ø 6 x 45	48	RE 525	-	-	-	-
Microtiter plates	128x86x15/21/45	-	-	12/8/4	-	10/6/2	-
Microtiter plates (h: 80mm)	128x86x80	-	-	-	-	2	-
Cell culture	128x86x22	-	-	8	-	6	-

Centrifuges high capacity: Series Digtor 22

DIGTOR 22

TFT

IVD CE

Max. capacity: 4 x 750 ml. Max. speed: 21.948 xg / 14.300 RPM

Benchtop centrifuge with large capacity and high perShapence. With a wide range of accessories to process tubes from 750 ml. to 0,2 ml. in more than 12 rotors, both angle fixed and swing out. It has more than 50 different sets of adaptors, giving it great versatility. This equipment is the culmination of the merger of high capacity and high speed equipment, resulting in a routine use centrifuge with some specifications characteristic of superior level models. Its colour TFT touch screen offers perShapence that permits, in addition to controlling the equipment by operational parameters, the possibility of exporting data for analysis and timer programmed operation.

The autonomy provided by this equipment enables the user to optimise working time in the lab, by automation of cycles and modes of operation. These features also ensure process traceability and the assurance that no parameter is uncontrolled.

Features

TFT color touch screen, visible from more than 3 m.:

- Shows RPM and RCF, time, acceleration/deceleration values (PCBS) and unbalancing location system (ULS).
- Speed programming in 10 RPM/10 xg steps.
- Real RCF values on screen based in accessories configuration.
- Count up/down from “0” or at “set RPM/RCF” for test reproducibility.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 min to 99 hours programmable in 1 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- ULS: Unbalancing location system indicating on the screen the number of the bucket which produces the unbalance switch off.
- 40 programmable memories, with protection under password.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled. PC connection.
- Induction motor maintenance free (brushless).
- Rotors and adapters list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Automatic open lid, programmable.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors can be removed with the lid closed.
- Rotors and adapters autoclavable, easy to install by the user.
- Forced ventilation to reduce temperature increasing.
- Automatic disconnection for energy saving up to 8 h., with deactivation option.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 187	540	650	390	50	220-230	50-60	1020
CE 188	540	650	390	50	110-120	50-60	1020

Centrifuges high capacity: Series Digtor 22

DIGTOR 22 R

TFT

IVD CE

Max. capacity: 4 x 750 ml. Max. speed: 21.948 xg / 14.300 RPM

The largest of our refrigerated benchtop centrifuges that offers the maximum perShapence. With an ergonomic design that enables easy loading of the rotor, as well as traceability of the position of the samples for easy identification of the charge balance. It has a wide range of accessories that offer capacity for tubes of 750 ml., microplates, microtubes and a great number of positions for the more common use tubes of 15 ml. conical, 50 ml. conical, 15 ml., 10 ml., and 5 ml.

Its colour TFT touch screen offers perShapence that enables, in addition to controlling the equipment by operational parameters, the possibility of exporting data for analysis and timer programmed operation. The autonomy that this equipment gives to the user reduces the work time, by the automatization of the cycles and work modes, ensuring the process traceability. It has a refrigeration system that enables it to maintain the minimum temperature of the chamber below 4°C regardless of the type of rotor and the speed selected.

Features

TFT color touch screen, visible from more than 3 m.:

- Shows RPM and RCF, time, temperature, acceleration/deceleration values (PCBS) and unbalancing location system (ULS).
- Speed programming in 10 RPM/10 xg steps.
- Real RCF values on screen based in accessories configuration.
- Count up/down from “0” or at “set RPM/RCF” for test reproducibility.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 min to 99 hours programmable in 1 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- ULS: Unbalancing location system indicating on the screen the number of the bucket which produces the unbalance switch off.
- 40 programmable memories, with protection under password.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled. PC connection.
- Induction motor maintenance free (brushless).
- Rotors and adapters list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors can be removed with the lid closed.
- Rotors and adapters autoclavable, easy to install by the user.
- Automatic disconnection for energy saving up to 8 h.

Refrigeration

- Remains the refrigeration after centrifugation process.
- Precooling program with rotor spinning and temperature selectable.
- Guarantee 4 °C at maximum RPM.
- Temperature range from -20°C (-4°F) to 40°C (104°F) in 1°C/1°F steps. Programmable in °C o °F.
- Temperature sensor inside the chamber.
- Gas R 449A HFO (CFC free).

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Regulation n°: (EC) 1005/2009, (EU) 517/2014.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)	Z max advisable (Hz)
CE 189	720	805	390	95	220-230	50-60	1050	<|0.446|
CE 190	720	805	390	95	110-120	50-60	1050	<|0.446|

Centrifuges series Digtor 22





(1)(4)

(4)

(4)(5)

(1)(2) (4)(5)

ROTOR		RT 195 SWING OUT		RT 192 SWING OUT		RT 264 SWING OUT		RT 191 SWING OUT		MICROTITER PLATES RT 202 SWING OUT		MICROTITER PLATES RT 245 SWING OUT		RT 201 SWING OUT	
Max. capacity		104 x 5 ml.		4 x 250 ml.		6 x 250 ml.		4 x 750 ml.		12/8/4 microtiter		10/6/2/2 microtiter		4 blood bags	
RPM Max.		3.800		4.200		2.500		3.700		3.700		4.500		3.700	
Radius (mm)		185		202		212		204		182 (3)		166		204	
RCF Max. (xg)		2.987		3.984		1.481		3.122		2.786		3.758		3.122	
Min. temp. at max. speed (°C)		0		1		-5		0		-4		4		0	
SAMPLE VOLUME	**Dim (mm) orientativas**	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.
750 ml.	ø96 x 130	-	-	-	-	-	-	4	RE 434	-	-	-	-	4	RE 434
500 ml.	ø90 x 120	-	-	-	-	-	-	4	RE 310	-	-	-	-	4	RE 310
250 ml.	ø62 x 120	-	-	4	RE 449	6	RE 530	4	RE 330	-	-	-	-	4	RE 330
100 ml.	ø48 x 100	-	-	4	RE 327	6	RE 558	4	RE 409	-	-	-	-	4	RE 409
85 ml. (hs) / 80 ml. (hs)	ø38 x 112	-	-	4	RE 498	6	RE 559	12	RE 500	-	-	-	-	12	RE 500
80 ml.	ø44 x 100	-	-	4	RE 422	6	RE 560	-	-	-	-	-	-	-	-
50 ml.	ø34 x 100	-	-	4	RE 334	6	RE 561	16	RE 317	-	-	-	-	16	RE 317
50 ml. conical	ø29 x 117	-	-	4	RE 340	6	RE562	20	RE 472	-	-	-	-	20	RE 472
30 ml. / 30 ml. (hs)	ø25 x 98	-	-	12	RE 312	18	RE 563	24	RE 322	-	-	-	-	24	RE 322
15 ml.	ø16 x 100	-	-	28	RE 376	42	RE 564	72	RE 348	-	-	-	-	72	RE 348
15 ml. conical	ø17 x 122	-	-	20	RE 321	30	RE 565	52	RE 347	-	-	-	-	52	RE 347
15 ml. blood sample	ø16 x 132	-	-	28	RE 376	-	-	32	RE 441	-	-	-	-	32	RE 441
10 ml.	ø13 x 100	104	RE 309	40	RE 343	60	RE 566	84	RE 354	-	-	-	-	84	RE 354
10 ml. blood sample	ø16 x 107	-	-	28	RE 376	42	RE 564	72	RE 348	-	-	-	-	72	RE 348
7/10 ml. blood sample	ø13 x 107	104	RE 309	28	RE 324	42	RE 567	72	RE 349	-	-	-	-	72	RE 349
5 ml.	ø13 x 75	104	RE 388	40	RE 343	60	RE 566	84	RE 354	-	-	-	-	84	RE 354
5 ml. blood sample	ø13 x 82	104	RE 388	28	RE 324	42	RE 567	72	RE 349	-	-	-	-	72	RE 349
10 x 100 mm	ø10 x 100	-	-	52	RE 346	78	RE 568	144	RE 315	-	-	-	-	144	RE 315
Microtubes 1,5-2 ml.	ø11x42	-	-	24	RE 440	36	RE 569	72	RE 426	144	RE 460	72	RE 401	72	RE 426
Microtubes 0,5-0,6 ml.	ø8x30	-	-	24	RE 523	36	RE 570	72	RE 466	-	-	-	-	72	RE 466
Microtubes 0,2-0,4 ml.	ø6x45	-	-	24	RE 458	36	RE 571	72	RE 524	-	-	-	-	72	RE 524
Microtiter plates	128x86x15/21/45	-	-	-	-	-	-	12/8/4	RE 307	12/8/4	-	10/6/2	-	12/8/4	RE 307
Microtiter plates (h:80 mm)	128x86x80	-	-	-	-	-	-	-	-	-	-	2	-	-	-

(1) This rotor can be supplied with four lids (RE 356). (2) This rotor can fit adapters for blood bags (RE 308). (3) Medium radius on bucket. (4) Allows different configurations depending of the microplates height. (5) Only available for refrigerated models.

								HIGH SPEED			
		RT 197		RT 198		RT 199		RT 206		RT 238	
											
ROTOR		**ANGLE FIXED 45 °**		**ANGLE FIXED 45 °**		**ANGLE FIXED 30 °**		**ANGLE FIXED 45 °**		**ANGLE FIXED 30 °**	
Max. capacity		8 x 50 ml.		4 x 100 ml.		4 x 250 ml.		30 x 1,5-2 ml.		6 x 85 ml	
RPM Max.		6.000		5.600		4.700		14.300		9.000	
Radius (mm)		149		138		153		96		112	
RCF Max. (xg)		5.997		4.838		3.779		21.948		10.142	
Min. temp. at max. speed (°C)		0		-1		-4		-1		1	
SAMPLE VOLUME	**Dim (mm) approx.**	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.
750 ml.	ø96 x 130	-	-	-	-	-	-	-	-	-	-
500 ml.	ø90 x 120	-	-	-	-	-	-	-	-	-	-
250 ml.	ø62 x 120	-	-	-	-	4	RE 449	-	-	-	-
100 ml.	ø48 x 100	-	-	4	RE 446	4	RE 327	-	-	-	-
85 ml. (hs) / 80 ml. (hs)	ø38 x 112	-	-	4	RE 502	4	RE 498	-	-	6	-
80 ml.	ø44 x 100	-	-	4	RE 338	4	RE 422	-	-	-	-
50 ml.	ø34 x 100	8	RE 448	4	RE 335	4	RE 334	-	-	6	RE 490
50 ml. conical	ø29 x 117	8	RE 375	4	RE 341	4	RE 340	-	-	6	RE 483
30 ml. / 30 ml. (hs)	ø25 x 98	8	RE 370	4	RE 332	12	RE 312	-	-	6	RE 493
15 ml.	ø16 x 100	8	RE 369	16	RE 316	28	RE 376	-	-	18	RE 485
15 ml. conical	ø17 x 122	8	RE 369	4	RE 339	20	RE 321	-	-	6	RE 484
15 ml. blood sample	ø16 x 132	8	RE 369	-	-	28	RE 376	-	-	-	-
10 ml.	ø13 x 100	24	RE 366	20	RE 320	40	RE 343	-	-	30	RE 497
10 ml. blood sample	ø16 x 107	8	RE 369	16	RE 316	28	RE 376	-	-	18	RE 485
7/10 ml. blood sample	ø13 x 107	8	RE 373	20	RE 320	28	RE 324	-	-	18	RE 503
5 ml.	ø13 x 75	24	RE 366	20	RE 320	40	RE 343	-	-	30	RE 501
5 ml. blood sample	ø13 x 82	8	RE 373	20	RE 320	28	RE 324	-	-	18	RE 492
10 x 100 mm	ø10 x 100	24	RE 367	36	RE 326	52	RE 346	-	-	-	-
Microtubes 1,5-2 ml.	ø11x42	24	RE 465	20	RE 408	24	RE 440	30	-	24	RE 494
Microtubes 0,5-0,6 ml.	ø8x30	24	RE 535	20	RE 519	24	RE 523	30	RE 428	24	RE 495
Microtubes 0,2-0,4 ml.	ø6x45	24	RE 526	20	RE 473	24	RE 458	30	RE 427	24	RE 496
Microtiter plates	128x86x15/21/45	-	-	-	-	-	-	-	-	-	-
Microtiter plates (h:80 mm)	128x86x80	-	-	-	-	-	-	-	-	-	-

Centrifuges high capacity: Dilitcen 22

DILITCEN 22

TFT

IVD CE

Max. capacity: 4 x 1000 ml. Max. speed: 21.948 xg / 14.300 RPM

The largest of our benchtop machines, with a capacity of up to 4 litres and an ergonomic design that enables easy loading of the rotor, as well as traceability of the positioning of the samples so as to balance the load and for easy identification. It has a wide range of accessories with capacity for four 1.000 ml. bottles, microplates, microtubes and a large number of positions for the most commonly used 15 ml. conical, 50 ml. conical, 15 ml., 10 ml. and 5 ml. tubes for clinical as well as biotechnology applications.

Its colour TFT touch screen offers perShapence that enables, in addition to controlling the equipment by operational parameters, the possibility of exporting data for analysis and timer programmed operation. The autonomy provided by this equipment facilitates automation of work cycles and modes. This also ensures traceability of the process, not leaving any parameter uncontrolled and maintaining the process at all times.

Features

TFT color touch screen, visible from more than 3 m.:

- Shows RPM and RCF, time, acceleration/deceleration values (PCBS) and unbalancing location system (ULS).
- Speed programming in 10 RPM/10 xg steps.
- Real RCF values on screen based in accessories configuration.
- Count up/down from “0” or at “set RPM/RCF” for test reproducibility.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 min to 99 hours programmable in 1 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- ULS: Unbalancing location system indicating on the screen the number of the bucket which produces the unbalance switch off.
- 40 programmable memories, with protection under password.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled. PC connection.
- Induction motor maintenance free (brushless).
- Rotors and adapters list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Automatic open lid, programmable.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors can be removed with the lid closed.
- Rotors and adapters autoclavable, easy to install by the user.
- Forced ventilation to reduce temperature increasing.
- Automatic disconnection for energy saving up to 8 h., with deactivation option.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 206	540	650	390	50	220-230	50-60	1020
CE 207	540	650	390	50	110-120	50-60	1020

Centrífuges Dilitcen 22

		RT 195		RT 192		RT 264		RT 191		RT 265		RT 202	
								 (1)(3)				 (3)	
ROTOR		**SWING OUT**		**SWING OUT**		**SWING OUT**		**SWING OUT**		**SWING OUT**		**SWING OUT**	
Max. capacity		104 x 5 ml.		4 x 250 ml.		6 x 250 ml.		4 x 750 ml.		4 x 1.000 ml.		12/8/4 microtiter	
RPM Max.		3.800		4.200		2.500		3.700		4.000		3.700	
Radius (mm)		185		202		212		204		205		182 (2)	
RCF Max. (xg)		2.987		3.984		1.481		3.122		3.667		2.786	
SAMPLE VOLUME	**Dim (mm) orientativas**	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.
1.000 ml.	ø110 x 122	-	-	-	-	-	-	-	-	4	-	-	-
750 ml.	ø96 x 130	-	-	-	-	-	-	4	RE 434	4	RE 522	-	-
500 ml.	ø90 x 120	-	-	-	-	-	-	4	RE 310	4	RE 541	-	-
250 ml.	ø62 x 120	-	-	4	RE 449	6	RE 530	4	RE 330	4	RE 543	-	-
100 ml.	ø48 x 100	-	-	4	RE 327	6	RE 558	4	RE 409	12	RE 544	-	-
85 ml. (hs) / 80 ml. (hs)	ø38 x 112	-	-	4	RE 498	6	RE 559	12	RE 500	-	-	-	-
80 ml.	ø44 x 100	-	-	4	RE 422	6	RE 560	8	RE 352	12	RE 557	-	-
50 ml.	ø34 x 100	-	-	4	RE 334	6	RE 561	16	RE 317	24	RE 545	-	-
50 ml. conical	ø29 x 117	-	-	4	RE 340	6	RE562	20	RE 472	32	RE 546	-	-
30 ml. / 30 ml. (hs)	ø25 x 98	-	-	12	RE 312	18	RE 563	24	RE 322	40	RE 547	-	-
15 ml.	ø16 x 100	-	-	28	RE 376	42	RE 564	72	RE 348	112	RE 551	-	-
15 ml. conical	ø17 x 122	-	-	20	RE 321	30	RE 565	52	RE 347	76	RE 548	-	-
15 ml. blood sample	ø16 x 132	-	-	28	RE 376	-	-	32	RE 441	-	-	-	-
10 ml.	ø13 x 100	104	RE 309	40	RE 343	60	RE 566	84	RE 354	168	RE 552	-	-
10 ml. blood sample	ø16 x 107	-	-	28	RE 376	42	RE 564	72	RE 348	104	RE 549	-	-
7/10 ml. blood sample	ø13 x 107	104	RE 309	28	RE 324	42	RE 567	72	RE 349	104	RE 550	-	-
5 ml.	ø13 x 75	104	RE 388	40	RE 343	60	RE 566	84	RE 354	168	RE 552	-	-
5 ml. blood sample	ø13 x 82	104	RE 388	28	RE 324	42	RE 567	72	RE 349	104	RE 550	-	-
10 x 100 mm	ø10 x 100	-	-	52	RE 346	78	RE 568	144	RE 315	168	RE 553	-	-
Microtubes 1,5-2 ml.	ø11x42	-	-	24	RE 440	36	RE 569	72	RE 426	132	RE 554	144	RE 460
Microtubes 0,5-0,6 ml.	ø8x30	-	-	24	RE 523	36	RE 570	72	RE 466	132	RE 555	-	-
Microtubes 0,2-0,4 ml.	ø6x45	-	-	24	RE 458	36	RE 571	72	RE 524	132	RE 556	-	-
Microtiter plates	128x86x15/21/45	-	-	-	-	-	-	12/8/4	RE 307	-	-	12/8/4	-

(1) This rotor can be supplied with four lids (RE 356). (2) Medium radius on bucket. (3) Allows different configurations depending of the microplates height.

								HIGH SPEED			
		RT 197		RT 198		RT 199		RT 206		RT 238	
											
ROTOR		ANGLE FIXED 45 °		ANGLE FIXED 45 °		ANGLE FIXED 30 °		ANGLE FIXED 45 °		ANGLE FIXED 30 °	
Max. capacity		8 x 50 ml.		4 x 100 ml.		4 x 250 ml.		30 x 1,5-2 ml.		6 x 85 ml	
RPM Max.		6.000		5.600		4.700		14.300		9.000	
Radius (mm)		149		138		153		96		112	
RCF Max. (xg)		5.997		4.838		3.779		21.948		10.142	
SAMPLE VOLUME	**Dim (mm) approx.**	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.
1.000 ml.	ø110 x 122	-	-	-	-	-	-	-	-	-	-
750 ml.	ø96 x 130	-	-	-	-	-	-	-	-	-	-
500 ml.	ø90 x 120	-	-	-	-	-	-	-	-	-	-
250 ml.	ø62 x 120	-	-	-	-	4	RE 449	-	-	-	-
100 ml.	ø48 x 100	-	-	4	RE 446	4	RE 327	-	-	-	-
85 ml. (hs) / 80 ml. (hs)	ø38 x 112	-	-	4	RE 502	4	RE 498	-	-	6	-
80 ml.	ø44 x 100	-	-	4	RE 338	4	RE 422	-	-	-	-
50 ml.	ø34 x 100	8	RE 448	4	RE 335	4	RE 334	-	-	6	RE 490
50 ml. conical	ø29 x 117	8	RE 375	4	RE 341	4	RE 340	-	-	6	RE 483
30 ml. / 30 ml. (hs)	ø25 x 98	8	RE 370	4	RE 332	12	RE 312	-	-	6	RE 493
15 ml.	ø16 x 100	8	RE 369	16	RE 316	28	RE 376	-	-	18	RE 485
15 ml. conical	ø17 x 122	8	RE 369	4	RE 339	20	RE 321	-	-	6	RE 484
15 ml. blood sample	ø16 x 132	8	RE 369	-	-	28	RE 376	-	-	-	-
10 ml.	ø13 x 100	24	RE 366	20	RE 320	40	RE 343	-	-	30	RE 497
10 ml. blood sample	ø16 x 107	8	RE 369	16	RE 316	28	RE 376	-	-	18	RE 485
7/10 ml. blood sample	ø13 x 107	8	RE 373	20	RE 320	28	RE 324	-	-	18	RE 503
5 ml.	ø13 x 75	24	RE 366	20	RE 320	40	RE 343	-	-	30	RE 501
5 ml. blood sample	ø13 x 82	8	RE 373	20	RE 320	28	RE 324	-	-	18	RE 492
10 x 100 mm	ø10 x 100	24	RE 367	36	RE 326	52	RE 346	-	-	-	-
Microtubes 1,5-2 ml.	ø11x42	24	RE 465	20	RE 408	24	RE 440	30	-	24	RE 494
Microtubes 0,5-0,6 ml.	ø8x30	24	RE 535	20	RE 519	24	RE 523	30	RE 428	24	RE 495
Microtubes 0,2-0,4 ml.	ø6x45	24	RE 526	20	RE 473	24	RE 458	30	RE 427	24	RE 496
Microtiter plates	128x86x15/21/45	-	-	-	-	-	-	-	-	-	-

Centrifuges floor standing: Series Magnus 22

MAGNUS 22

TFT

IVD CE

Max. capacity: 4 x 750 ml. Max. speed: 21.948 xg / 14.300 RPM

Regarding floor standing equipment, Magnus 22 offers the maximum perShapence for your processes. Its design enables it to be installed in any space in the lab, avoiding the occupation of useful space. Its ergonomic design allows easy access to the rotor as well as traceability of the positioning to balance the load and ease of identification. Its colour TFT touch screen offers perShapence that enables, in addition to controlling the equipment by operational parameters, the possibility of exporting data for analysis and timer programmed operation. The autonomy provided by this equipment facilitates automation of work cycles and modes. This also ensures traceability of the process, not leaving any parameter uncontrolled.

It has a wide range of accessories for 750 ml. tubes, microplates, microtubes and a large number of positions for the most commonly used 15 ml. conical, 50 ml. conical, 15 ml., 10 ml. and 5 ml. tubes for clinical applications.

Features

TFT color touch screen, visible from more than 3 m.:

- Shows RPM and RCF, time, acceleration/deceleration values (PCBS) and unbalancing location system (ULS).
- Speed programming in 10 RPM/10 xg steps.
- Real RCF values on screen based in accessories configuration.
- Count up/down from “0” or at “set RPM/RCF” for test reproducibility.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 min to 99 hours programmable in 1 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- ULS: Unbalancing location system indicating on the screen the number of the bucket which produces the unbalance switch off.
- 40 programmable memories, with protection under password.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled. PC connection.
- Induction motor maintenance free (brushless).
- Rotors and adapters list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Automatic open lid, programmable.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors can be removed with the lid closed.
- Rotors and adapters autoclavable, easy to install by the user.
- Forced ventilation to reduce temperature increasing.
- Automatic disconnection for energy saving up to 8 h., with deactivation option.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 191	540	650	930	113	220-230	50-60	1020
CE 192	540	650	930	113	110-120	50-60	1020

Centrifuges floor standing: Series Magnus 22

MAGNUS 22 R

TFT

IVD CE

Max. capacity: 4 x 750 ml. Max. speed: 21.948 xg / 14.300 RPM

The refrigerated version of our floor standing equipment offers the maximum perShapence for your processes. Its design enables it to be installed in any space in the lab, avoiding the occupation of useful space. Its ergonomic design allows easy access to the rotor as well as traceability of the positioning to balance the load and easy identification.

With a wide range of accessories that offers capacities for tubes of 750 ml., microplates, microtubes and a great number of positions for the more common use tubes of 15 ml. conical, 50 ml. conical, 15 ml., 10 ml., and 5 ml. for clinical applications. It also has a specific rotor for blood bags and tubes extraction. Its powerful refrigeration system enables it to maintain the minimum temperature of the chamber below 4°C regardless of the type of rotor and the speed selected. This characteristic gives the user confidence in traceability during the centrifugation cycle.

Features

TFT color touch screen, visible from more than 3 m.:

- Shows RPM and RCF, time, temperature, acceleration/deceleration values (PCBS) and unbalancing location system (ULS).
- Speed programming in 10 RPM/10 xg steps.
- Real RCF values on screen based in accessories configuration.
- Count up/down from “0” or at “set RPM/RCF” for test reproducibility.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 min to 99 hours programmable in 1 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- ULS: Unbalancing location system indicating on the screen the number of the bucket which produces the unbalance switch off.
- 40 programmable memories, with protection under password.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled. PC connection.
- Induction motor maintenance free (brushless).
- Rotors and adapters list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors can be removed with the lid closed.
- Rotors and adapters autoclavable, easy to install by the user.
- Automatic disconnection for energy saving up to 8 h.

Refrigeration

- Remains the refrigeration after centrifugation process.
- Precooling program with rotor spinning and temperature selectable.
- Guarantee 4 °C at maximum RPM.
- Temperature range from -20°C (-4°F) to 40°C (104°F) in 1°C/1°F steps. Programmable in °C o °F.
- Temperature sensor inside the chamber.
- Gas R 449A HFO (CFC free).

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Regulation n°: (EC) 1005/2009, (EU) 517/2014.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions

	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)	Z max advisable (Hz)
CE 193	540	650	930	145	220-230	50-60	1050	<|0.446|
CE 194	540	650	930	145	110-120	50-60	1050	<|0.446|

Centrifuges series Magnus 22

		RT 195		RT 192		RT 264		RT 191		MICROTITER PLATES RT 202		RT 245		RT 201	
								 (1)(4)		 (4)		 (4)(5)		 (1)(2) (4)(5)	
ROTOR		**SWING OUT**		**SWING OUT**		**SWING OUT**		**SWING OUT**		**SWING OUT**		**SWING OUT**		**SWING OUT**	
Max. capacity		104 x 5 ml.		4 x 250 ml.		6 x 250 ml.		4 x 750 ml.		12/8/4 microtiter		10/6/2/2 microtiter		4 blood bags	
RPM Max.		3.800		4.200		2.500		3.700		3.700		4.500		3.700	
Radius (mm)		185		202		212		204		182 (3)		166		204	
RCF Max. (xg)		2.987		3.984		1.481		3.122		2.786		3.758		3.122	
Min. temp. at max. speed (°C)		0		1		-5		0		-4		4		0	
SAMPLE VOLUME	**Dim (mm) orientativas**	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.
750 ml.	ø96 x 130	-	-	-	-	-	-	4	RE 434	-	-	-	-	4	RE 434
500 ml.	ø90 x 120	-	-	-	-	-	-	4	RE 310	-	-	-	-	4	RE 310
250 ml.	ø62 x 120	-	-	4	RE 449	6	RE 530	4	RE 330	-	-	-	-	4	RE 330
100 ml.	ø48 x 100	-	-	4	RE 327	6	RE 558	4	RE 409	-	-	-	-	4	RE 409
85 ml. (hs) / 80 ml. (hs)	ø38 x 112	-	-	4	RE 498	6	RE 559	12	RE 500	-	-	-	-	12	RE 500
80 ml.	ø44 x 100	-	-	4	RE 422	6	RE 560	-	-	-	-	-	-	-	-
50 ml.	ø34 x 100	-	-	4	RE 334	6	RE 561	16	RE 317	-	-	-	-	16	RE 317
50 ml. conical	ø29 x 117	-	-	4	RE 340	6	RE562	20	RE 472	-	-	-	-	20	RE 472
30 ml. / 30 ml. (hs)	ø25 x 98	-	-	12	RE 312	18	RE 563	24	RE 322	-	-	-	-	24	RE 322
15 ml.	ø16 x 100	-	-	28	RE 376	42	RE 564	72	RE 348	-	-	-	-	72	RE 348
15 ml. conical	ø17 x 122	-	-	20	RE 321	30	RE 565	52	RE 347	-	-	-	-	52	RE 347
15 ml. blood sample	ø16 x 132	-	-	28	RE 376	-	-	32	RE 441	-	-	-	-	32	RE 441
10 ml.	ø13 x 100	104	RE 309	40	RE 343	60	RE 566	84	RE 354	-	-	-	-	84	RE 354
10 ml. blood sample	ø16 x 107	-	-	28	RE 376	42	RE 564	72	RE 348	-	-	-	-	72	RE 348
7/10 ml. blood sample	ø13 x 107	104	RE 309	28	RE 324	42	RE 567	72	RE 349	-	-	-	-	72	RE 349
5 ml.	ø13 x 75	104	RE 388	40	RE 343	60	RE 566	84	RE 354	-	-	-	-	84	RE 354
5 ml. blood sample	ø13 x 82	104	RE 388	28	RE 324	42	RE 567	72	RE 349	-	-	-	-	72	RE 349
10 x 100 mm	ø10 x 100	-	-	52	RE 346	78	RE 568	144	RE 315	-	-	-	-	144	RE 315
Microtubes 1,5-2 ml.	ø11x42	-	-	24	RE 440	36	RE 569	72	RE 426	144	RE 460	72	RE 401	72	RE 426
Microtubes 0,5-0,6 ml.	ø8x30	-	-	24	RE 523	36	RE 570	72	RE 466	-	-	-	-	72	RE 466
Microtubes 0,2-0,4 ml.	ø6x45	-	-	24	RE 458	36	RE 571	72	RE 524	-	-	-	-	72	RE 524
Microtiter plates	128x86x15/21/45	-	-	-	-	-	-	12/8/4	RE 307	12/8/4	-	10/6/2	-	12/8/4	RE 307
Microtiter plates (h:80 mm)	128x86x80	-	-	-	-	-	-	-	-	-	-	2	-	-	-

(1) This rotor can be supplied with four lids (RE 356). (2) This rotor can fit adapters for blood bags (RE 308). (3) Medium radius on bucket. (4) Allows different configurations depending of the microplates height. (5) Only available for refrigerated models.

								HIGH SPEED			
		RT 197		RT 198		RT 199		RT 206		RT 238	
											
ROTOR		ANGLE FIXED 45 °		ANGLE FIXED 45 °		ANGLE FIXED 30 °		ANGLE FIXED 45 °		ANGLE FIXED 30 °	
Max. capacity		8 x 50 ml.		4 x 100 ml.		4 x 250 ml.		30 x 1,5-2 ml.		6 x 85 ml	
RPM Max.		6.000		5.600		4.700		14.300		9.000	
Radius (mm)		149		138		153		96		112	
RCF Max. (xg)		5.997		4.838		3.779		21.948		10.142	
Min. temp. at max. speed (°C)		0		-1		-4		-1		1	
SAMPLE VOLUME	**Dim (mm) orientativas**	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.	**ADAPTERS** Tubes	Ref.
750 ml.	ø96 x 130	-	-	-	-	-	-	-	-	-	-
500 ml.	ø90 x 120	-	-	-	-	-	-	-	-	-	-
250 ml.	ø62 x 120	-	-	-	-	4	RE 449	-	-	-	-
100 ml.	ø48 x 100	-	-	4	RE 446	4	RE 327	-	-	-	-
85 ml. (hs) / 80 ml. (hs)	ø38 x 112	-	-	4	RE 502	4	RE 498	-	-	6	-
80 ml.	ø44 x 100	-	-	4	RE 338	4	RE 422	-	-	-	-
50 ml.	ø34 x 100	8	RE 448	4	RE 335	4	RE 334	-	-	6	RE 490
50 ml. conical	ø29 x 117	8	RE 375	4	RE 341	4	RE 340	-	-	6	RE 483
30 ml. / 30 ml. (hs)	ø25 x 98	8	RE 370	4	RE 332	12	RE 312	-	-	6	RE 493
15 ml.	ø16 x 100	8	RE 369	16	RE 316	28	RE 376	-	-	18	RE 485
15 ml. conical	ø17 x 122	8	RE 369	4	RE 339	20	RE 321	-	-	6	RE 484
15 ml. blood sample	ø16 x 132	8	RE 369	-	-	28	RE 376	-	-	-	-
10 ml.	ø13 x 100	24	RE 366	20	RE 320	40	RE 343	-	-	30	RE 497
10 ml. blood sample	ø16 x 107	8	RE 369	16	RE 316	28	RE 376	-	-	18	RE 485
7/10 ml. blood sample	ø13 x 107	8	RE 373	20	RE 320	28	RE 324	-	-	18	RE 503
5 ml.	ø13 x 75	24	RE 366	20	RE 320	40	RE 343	-	-	30	RE 501
5 ml. blood sample	ø13 x 82	8	RE 373	20	RE 320	28	RE 324	-	-	18	RE 492
10 x 100 mm	ø10 x 100	24	RE 367	36	RE 326	52	RE 346	-	-	-	-
Microtubes 1,5-2 ml.	ø11x42	24	RE 465	20	RE 408	24	RE 440	30	-	24	RE 494
Microtubes 0,5-0,6 ml.	ø8x30	24	RE 535	20	RE 519	24	RE 523	30	RE 428	24	RE 495
Microtubes 0,2-0,4 ml.	ø6x45	24	RE 526	20	RE 473	24	RE 458	30	RE 427	24	RE 496
Microtiter plates	128x86x15/21/45	-	-	-	-	-	-	-	-	-	-
Microtiter plates (h:80 mm)	128x86x80	-	-	-	-	-	-	-	-	-	-

Special applications

Centrifuges have come out of laboratories and now begin to be a part of production processes. This has resulted in them being present in highly different environments such as kitchens, operating theatres, power plants or centres for the recuperation of protected species.

In this section, you will find equipment for these types of applications that have a common characteristic: They follow specific standardised processes and the type of sample support is defined in the regulations given below. For any question about the tubes considered frequent, please refer to our chart on page 13.

Thus, we find applications that require butyrometers, such as for determination of fat in dairy products, others that require capillary tubes, such as for the determination of the microhematocrit values, others that require tubes compliant with ASTM regulations for cylindrical-conical tubes measuring 6”, 8”, etc.

Nevertheless, this diversity of applications still allows us to make a second division in our line of “special applications”: centrifuges for industrial applications and centrifuges for life sciences applications.

Centrifuges for industry applications:

- **Digtor 22 C, Digtor 22 C-U** (unheated) and **Digtor 22 C-8**: designed for determining water and sediments in oil.
- **Lacter 21:** determination of fat in dairy products by the Gerber method.

Centrifuges for life sciences applications:

- **Cytocentrifuge:** fine layered centrifugation.
- **Plasma 22:** platelet concentrates for tissue regeneration.
- **Digtor 22 Col:** adipose tissue concentrates for aesthetic applications.
- **Vetcen:** analysis in small veterinary clinics.

INDUSTRY

LACTER 21

DIGTOR 22 C-U

DIGTOR 22 C-8

DIGTOR 22 C

LIFE SCIENCES

VETCEN

PLASMA 22

CYTOCENTRIFUGE

DIGTOR 22 COL

Special applications

Centrifuges industry: Series Digtor 22 C

DIGTOR 22 C

TFT

CE

Max. capacity: 4 x 100 ml. (8/6") **Max. speed:** 2.425 xg / 3.000 RPM

With capacity for 4 tubes of 8", 6", trace and 28 "finger" tubes. Versatile and effective is the better option of all the centrifuges for oil applications.

Features

- Designed for oil/petrol applications according the standards: ASTM D 91, D96, D 893, D 1796, D2273, D2709, D 2711, D 4007, D 5546, API 2542, API 2548, BS 4385, ISO 3734, ISO 9030, IP75, IP 359, NF M07-020, DIN 51793.
- Tubes upright on rest.
- GRS: Gas release system (optional); pre-installation included.

TFT color touch screen, visible from more than 3 m.:

- Shows RPM and RCF, time, temperature, acceleration/deceleration values (PCBS) and unbalancing location system (ULS).
- Speed programming in 10 RPM/10 xg steps.
- Real RCF values on screen based in accessories configuration.
- Count up/down from "0" or at "set RPM/RCF" for test reproducibility.
- Timer countdown/up from "0" or at "set RPM/ RCF" for reproducible tests.
- Timer from 1 min to 99 hours programmable in 1 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- ULS: Unbalancing location system indicating on the screen the number of the bucket which produces the unbalance switch off.
- 40 programmable memories, with protection under password.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled. PC connection.
- Induction motor maintenance free (brushless).
- Rotors and adapters list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors and adapters autoclavable, easy to install by the user.
- Automatic disconnection for energy saving up to 8 h.

Heating

- Preheating program with rotor spinning and temperature selectable. Allows keep the chamber at working temperature before starting the process.
- Regulation of the room temperature +5°C (41°F) to 80°C (176°F) in 1°C/1°F steps. Programmable in °C o °F.
- Temperature sensor inside the chamber. Overheating protection.
- Internal isolated avoiding heat lost.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1, EN 61010-2-010.

Versions	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 196	540	650	400	77	220-230	50-60	1.260
CE 197	540	650	400	77	110-120	50-60	1.220

Accessories

ROTOR		RT 239 SWING OUT		RT 220 SWING OUT	
Max. capacity		4x100 ml. (8/6")		4x100 ml. (8")	
RPM Max.		3.000		3.000	
Radius (mm)		241		241	
RCF Max. (xg)		2.425		2.425	
SAMPLE VOLUME	Dim (mm) approx.	ADAPTERS Tubes	Ref.	ADAPTERS Tubes	Ref.
ASTM cone shape 6"	Ø 44-46x162-167	4	RE 475	-	-
ASTM pear shape	Ø 58-59x157-160	4	RE 477	-	-
ASTM trace/cone 8"	Ø 36-38x195-203	4	RE 476	4	-
API finger 12,5 ml	Ø 16x105	28	RE 456	4	RE 455
API finger 12,5 ml	Ø 16x105	-	-	16	RE 454

Check tubes features in pag. 13.

Centrifuges industry: Series Digtor 22 C

DIGTOR 22 C-U

TFT

CE

Max. capacity: 4 x 100 ml. (8/6”) **Max. speed:** 2.425 xg / 3.000 RPM

The most affordable option in the range of centrifuges for oil laboratories that, due to regulations, do not need heating. It has the same accessories as the heated models, all of them are especially designed for working with oily substances as well as the reagents used in regulations applicable with oil.

Effective, quick, versatile, allowing you to work with 6” and 8” conical profile tubes, pear type tubes and “finger” type tubes for small volumes. It has a pre-installation for incorporating a gas release system at any time during the life of the equipment.

Features

- Designed for oil/petrol applications according the standards: ASTM D 91, D 893, D 2273, D 2709, D 5546, API 2542, API 2548, BS 4385, DIN 51793.
- Tubes upright on rest.
- GRS: Gas release system (optional); pre-installation included.

TFT color touch screen, visible from more than 3 m.:

- Shows RPM and RCF, time, acceleration/deceleration values (PCBS) and unbalancing location system (ULS).
- Speed programming in 10 RPM/10 xg steps.
- Real RCF values on screen based in accessories configuration.
- Count up/down from “0” or at “set RPM/RCF” for test reproducibility.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 min to 99 hours programmable in 1 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- ULS: Unbalancing location system indicating on the screen the number of the bucket which produces the unbalance switch off.
- 40 programmable memories, with protection under password.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled. PC connection.
- Induction motor maintenance free (brushless).
- Rotors and adapters list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Automatic open lid, programmable
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors and adapters autoclavable, easy to install by the user.
- Forced ventilation to reduce temperature increasing.
- Automatic disconnection for energy saving up to 8 h., with deactivation option.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 200	540	650	400	77	220-230	50-60	440
CE 201	540	650	400	77	110-120	50-60	460

Accessories

ROTOR		RT 239 SWING OUT		RT 220 SWING OUT	
Max. capacity		4x100 ml. (8/6”)		4x100 ml. (8”)	
RPM Max.		3.000		3.000	
Radius (mm)		241		241	
RCF Max. (xg)		2.425		2.425	
SAMPLE VOLUME	Dim (mm) approx.	ADAPTERS Tubes	Ref.	ADAPTERS Tubes	Ref.
ASTM cone shape 6”	Ø 44-46x162-167	4	RE 475	-	-
ASTM pear shape	Ø 58-59x157-160	4	RE 477	-	-
ASTM trace/cone 8”	Ø 36-38x195-203	4	RE 476	4	-
API finger 12,5 ml	Ø 16x105	28	RE 456	4	RE 455
API finger 12,5 ml	Ø 16x105	-	-	16	RE 454

Check tubes features in pag. 13.

Centrifuges industry: Series Digtor 22 C

DIGTOR 22 C-8

TFT

CE

Max. capacity: 8 x 100 ml. (8/6”) **Max. speed:** 2.425 xg / 3.000 RPM

The largest of our centrifuges for oil, with capacity for 8 tubes of 8”, the best option for centres that carry out a large number of tests every day.

Features

- Designed for oil/petrol applications according the standards: ASTM D 91, D96, D 893, D 1796, D2273, D2709, D 2711, D 4007, D 5546, API 2542, API 2548, BS 4385, ISO 3734, ISO 9030, IP75, IP 359, NF M07-020, DIN 51793.
- Tubes upright on rest.
- GRS: Gas release system (optional); pre-installation included.

TFT color touch screen, visible from more than 3 m.:

- Shows RPM and RCF, time, temperature, acceleration/deceleration values (PCBS) and unbalancing location system (ULS).
- Speed programming in 10 RPM/10 xg steps.
- Real RCF values on screen based in accessories configuration.
- Count up/down from “0” or at “set RPM/RCF” for test reproducibility.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 min to 99 hours programmable in 1 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- ULS: Unbalancing location system indicating on the screen the number of the bucket which produces the unbalance switch off.
- 40 programmable memories, with protection under password.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled. PC connection.
- Induction motor maintenance free (brushless).
- Rotors and adapters list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors and adapters autoclavable, easy to install by the user.
- Automatic disconnection for energy saving up to 8 h.

Heating

- Preheating program with rotor spinning and temperature selectable. Allows keep the chamber at working temperature before starting the process.
- Regulation of the room temperature +5°C (41°F) to 80°C (176°F) in 1°C/1° F steps. Programmable in °C o °F.
- Temperature sensor inside the chamber. Overheating protection.
- Internal isolated avoiding heat lost.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1, EN 61010-2-010.

Versions	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 198	540	650	400	77	220-230	50-60	1.260
CE 199	540	650	400	77	110-120	50-60	1.220

Accessories



ROTOR		RT 239 SWING OUT		RT 220 SWING OUT		RT 242 SWING OUT	
Max. capacity		4x100 ml. (8/6”)		4x100 ml. (8”)		8x100 ml. (8/6”)	
RPM Max.		3.000		3.000		2.000	
Radius (mm)		241		241		239	
RCF Max. (xg)		2.425		2.425		1.069	
SAMPLE VOLUME	Dim (mm) approx.	ADAPTERS Tubes	Ref.	ADAPTERS Tubes	Ref.	ADAPTERS Tubes	Ref.
ASTM cone shape 6”	Ø 44-46x162-167	4	RE 475	-	-	8	-
ASTM pear shape	Ø 58-59x157-160	4	RE 477	-	-	-	-
ASTM trace/cone 8”	Ø 36-38x195-203	4	RE 476	4	-	8	RE 478
API finger 12,5 ml	Ø 16x105	28	RE 456	4	RE 455	-	-
API finger 12,5 ml	Ø 16x105	-	-	16	RE 454	16	RE 454

Check tubes features in pag. 13.

GAS RELEASE SYSTEM

The petroleum testing laboratories environment presents a number of risks inherent to the type of sample. The devices for the analysis of samples should ensure minimal risk conditions at work, critical premise in the development of devices for this application in Ortoalresa.

Centrifugation processes for the determination of water and sediment in petroleum, require an organic solvent which, reacting with the sample and caloric intake of the equipment, generates aerosols. In order to remove this gas from the centrifuge and take it to a safe area, Ortoalresa has designed GRS (Gas Release System) as an accessory for all of the Digtor 22 C series centrifuges. This accessory creates inside the centrifuge chamber, on its top when it is locked, low pressure intake or vacuum suction, allowing suction from atmosphere high in aerosols. This atmosphere is piped through the GRS up to its exit, where it can be treated in isolation. The whole circuit is continuously monitored by the equipment, which will lead the right moment to operate the system. Moreover, it is only required the presence of a compressed air supply of 2 bar pressure, in order to create a 10l/min suction, sufficient to perform the suction of the centrifuge inside chamber volume every 5 min.

GRS main functions are:

- Decreasing gas concentration during operation, and therefore the risk of explosion.
- Eliminating the user's health risk by inhalation of produced vapors
- Avoiding gas dispersion into laboratory environment.

Easy to use

- It only requires a compressed air supply.
- It has 4 connections: A compressed air inlet, an air inlet for air removed from the equipment, an atmosphere outlet to a safe area, and the control input from the equipment.
- Operation pilot light.
- Air inlet pressure regulator.
- Inlet pressure gauge.
- Operation controlled by core equipment.

Features

- Setting up at a 2 bar pressure, creates a 10 l/min suction.
- 0.2 bar gauge accuracy.
- Max 8 bar inlet pressure.
- Fast inlet and outlet connections.
- Suction capacity: minimum twice total chamber volume in 10 min.

Safety

- Hazardous gases input is not required.
- Low noise level <40 dB.
- Powered only by rotor in motion and lid blocked.
- Low power.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1,EN 61010-2-010, EN 61326-2-6.

Versions	Dimensions (mm)(w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CP 001	139	214	125	3	220-240	50-60	20
CP 004	139	214	125	3	110-120	50-60	20

LACTER 21

Max. capacity: 12 Butyrometers **Max. speed:** 224 xg / 1.200 RPM

Centrifuge designed to determinate fat in dairy products (cheese, milk, cream, yogurt, butter...) following the procedure of Gerber method.

Features

Heated: working temperature up to 80 °C (176 °F).
LCD screen:

- Shows RPM and RCF, time, temperature and acceleration/deceleration (PCBS).
- Speed programming in 50 RPM/ 50 xg steps.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 to 99 min. programmable in 5 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- 16 programmable memories.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled.
- Induction motor maintenance free (brushless).
- Rotors list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.

LCD PCBS

CE

- Option of free/locked adjustment of RPM/ RCF along the run.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors and adapters autoclavable, easy to install by the user.
- Automatic disconnection for energy saving up to 8 h.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1, EN 61010-2-010.

Versions	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 158	365	300	450	23	220-230	50-60	500
CE 159	365	300	450	23	110-120	50-60	480

Accessories

ROTOR		RT 240 ANGLE FIXED 20 °	RT 241 ANGLE FIXED 20 °
Max. capacity		8 tests	12 tests
RPM Max.		1200	1200
Radius (mm)		139	139
RCF Max. (xg)		224	224
Butyrometers	Butyrometers max. dimensions (mm) are 25 x 212	8	12

Centrifuges life sciences: Cytocentrifuge

CYTOCENTRIFUGE

LCD PCBS

IVD CE

Max. capacity: 4 x 2,2 ml. **Max. speed:** 839 xg / 2.500 RPM

The cytocentrifuge Ortoalresa is designed for concentration of biological samples on a visible surface for the microscope and its subsequent identification and characterisation.

Easy to handle, reduces the handling time, indispensable features in oncology, cytology and microbiology services. It has a swing out rotor for 4 supports, with two positions for recovery of the filtrate for a second processing in the case of low concentration samples. It can adapt rotors for tubes or plates of the Digicen 21 centrifuge.

Features

- Sealed holders which prevent the leak of the sample, easy to use.
- Fast identification of microorganism.
- Allows cells detection even in low concentrated liquids.
- Processing time <15 min.
- Alarm to prevent the drying of the samples every 20 seconds.
- Available rotors for tubes (check Digicen 21 accessories, pag. 40)

LCD screen:

- Shows RPM and RCF, time and acceleration/deceleration (PCBS).
- Speed programming in 50 RPM/ 50 xg steps.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 to 99 min. programmable in 5 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- 16 programmable memories.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled.
- Induction motor maintenance free (brushless).
- Rotors list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Automatic open lid, programable.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors and adapters autoclavable, easy to install by the user.
- Forced ventilation to reduce temperature increasing.
- Automatic disconnection for energy saving up to 8 h., with deactivation option.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions	Dimensions (mm)(w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 110	410	530	320	36	220-230	50-60	440
CE 116	410	530	320	36	110-120	50-60	420

Accessories

RT 207

ROTOR	SWING OUT
Max. capacity	4x2.2 ml
RPM Max.	2.500
Radius (mm)	120
RCF Max. (xg)	839
Cytocontainers	4

Surface on slide: 6,2 mm or 8,7 mm diameter

Centrifuges life sciences: Plasma 22

PLASMA 22

LCD

CE

Max. capacity: 8 x 9/15 ml. Max. speed: 1.288 xg / 3.000 RPM

Plasma concentration processes to obtain both from the fibrin network as well as that of platelets by means of PRP (platelet-rich plasma) techniques, PRF (platelet-rich fibrin) and derivatives, make the Plasma 22 centrifuge indispensable. The simplicity of these processes erroneously gives the impression that the perShapence of the technique is not affected by the centrifugation process. Nothing could be more mistaken; maximum perShapence will only be obtained with equipment that has been validated, and in which the operational parameters, beyond RPM, RCF and time, have been calculated for these processes. The Plasma 22 centrifuge has been developed together with experts in the development of these techniques and has approval for its development.

It maintains the cell structure of the phases for the application of each of the alternatives, ensuring its efficacy in the destination environment and avoiding interference of particles that impede adhesion.

Features

LCD screen:

- Shows RPM and RCF, time and acceleration/deceleration (PCBS).
- Speed programming in 50 RPM/ 50 xg steps.
- Timer countdown/up from "0" or at "set RPM/ RCF" for reproducible tests.
- Timer from 1 to 99 min. programmable in 5 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- 16 programmable memories.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled.
- Induction motor maintenance free (brushless).
- Rotors list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Automatic open lid, programable.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors and adapters autoclavable, easy to install by the user.
- Automatic disconnection for energy saving up to 8 h., with deactivation option.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 156	280	275	410	17	220-240	50-60	120
CE 165	280	275	410	17	110-120	50-60	120

Accessories

RT 237

ROTOR		SWING OUT	
Max. capacity		8 x 9/15 ml.	
RPM Max.		3.000	
Radius (mm)		128	
RCF Max. (xg)		1.288	
SAMPLE VOLUME	Dim (mm) approx.	ADAPTERS Tubes	Ref.
9/15 ml	16x107	8	-
5 ml blood sample	13x82	8	RE 474

VETCEN

Max. capacity: 6 x 1,5-2 ml.+6 x 1,5x75 mm. **Max. speed:** 12.716 xg /11.500 RPM

Small, compact and ideal for applications in veterinary laboratories where the number of samples is small and different types of tubes need to be processed simultaneously. It has a rotor for microtubes and capillary tubes in the same cycle.

Features

- Multitubes rotor that allows spin capillary tubes and microtubes in the same run.

LED screen:

- Shows RPM/ RCF and time.
- Speed programming in 50 RPM/ 10 xg steps.
- Timer countdown/up from "0" or at "set RPM/ RCF" for reproducible tests.
- Timer from 1 to 99 min. programmable in 1 min. steps and hold position.
- Acceleration and deceleration control in 3 steps: fast, soft and free.
- Acoustic and visual messages on screen warning the user the equipment status.

Easy to use

- Microprocessor controlled.
- Induction motor maintenance free (brushless).

- Rotors list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.
- Option of free/locked adjustment of RPM/ RCF along the run.
- Automatic open lid, programmable.
- Last values remain in memory.
- Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized. Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors and adapters autoclavable, easy to install by the user.
- Forced ventilation to reduce temperature increasing
- Automatic disconnection for energy saving, with deactivation option.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions	Dimensions (mm)(w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 160	276	390	272	16	220-230	50-60	320
CE 177	276	390	272	16	110-120	50-60	340

Accessories

ROTOR		ANGLE FIXED 30 °		MIX	
Max. capacity		12x1,5x75 mm.		6x1,5x75+6x1,5-2 ml.	
RPM Max.		11.500		11.500	
Radius (mm)		86		86	
RCF Max. (xg)		12.716		12.716	
SAMPLE VOLUME	Dim (mm) approx.	ADAPTERS Tubes	Ref.	ADAPTERS Tubes	Ref.
1,5-2 ml.	Ø 11x39	-	-	6	-
Capillaries	1,5 x 75 mm.	12	-	6	-

DIGTOR 22 COL

Max. capacity: 4 x 60 ml. Max. speed: 1.801 xg / 3.000 RPM

Essential tool for fat processing, where we can find the highest concentration of stem cells, for liposculpture techniques and reparative surgery.

Features

- Available rotors for tubes (check Digtor 22 accessories, pag. 52)

TFT color touch screen, visible from more than 3 m.:

- Shows RPM and RCF, time, acceleration/deceleration values (PCBS) and unbalancing location system (ULS).
- Speed programming in 10 RPM/ 10 xg steps
- Real RCF values on screen based in accessories configuration.
- Count up/down from “0” or at “set RPM/RCF” for test reproducibility.
- Timer countdown/up from “0” or at “set RPM/ RCF” for reproducible tests.
- Timer from 1 min to 99 hours programmable in 1 sec. steps and hold position.
- PCBS: Progressive controlled acceleration and braking system up to 175 selectable ramps that prevents sample homogenization after separation.
- ULS: Unbalancing location system indicating on the screen the number of the bucket which produces the unbalance switch off.
- 40 programmable memories, with protection under password.
- Several acoustic and visual messages warning the user the device situation.

Easy to use

- Microprocessor controlled. PC connection.
- Induction motor maintenance free (brushless).
- Rotors and adapters list on memory.
- Noise level: below 60 dB.
- Start, stop, open lid and short spin with adjustable speed buttons.

TFT PCBS ULS

IVD CE

- Option of free/locked adjustment of RPM/ RCF along the run.
- Automatic open lid, programmable.
- Last values remain in memory.
- Automatic rotor recognition. Over-speed protection.

Safety

- Lid provided with security systems:
  - Automatic lid lock system, motorized with double lock.
  - Emergency lid-lock release.
  - Locking and protection against opening along the run.
  - Lid dropping protection.
  - Port in the lid for calibration and operation checking.
- Unbalance detection and switch off.
- Protection safety ring between the centrifugation chamber and the housing.
- Chamber of centrifugation in stainless steel (easy cleaning).
- Rotors and adapters autoclavable, easy to install by the user.
- Forced ventilation to reduce temperature increasing.
- Automatic disconnection for energy saving up to 8 h., with deactivation option.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 98/79/EC.
Standards: EN 61010-1, EN 61010-2-020, EN 61326-2-6, EN 61326-1.

Versions	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Consumption (W)
CE 204	540	650	400	50	220-230	50-60	460
CE 205	540	650	400	50	110-120	50-60	460

Accessories

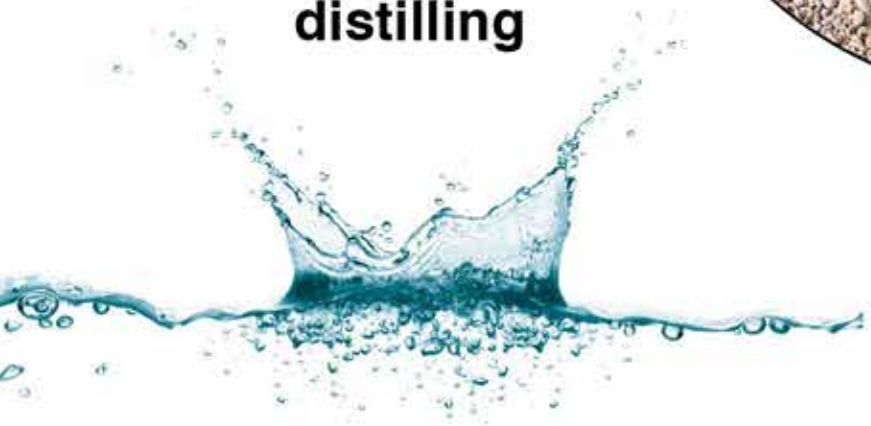
RT 210

ROTOR		SWING OUT	
Max. capacity		4x60 ml	
RPM Max.		3.000	
Radius (mm)		179	
RCF Max. (xg)		1.801	
SAMPLE VOLUME	Dim (mm) approx.	ADAPTERS Tubes	Ref.
Syringes 60 ml. / 10 ml.	31x165 / 16x118	4 / 16	- / RE 438

milling

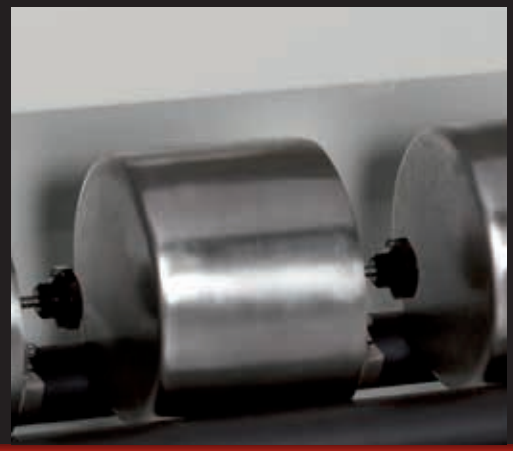
sieving

distilling



sterilizing

Ecoclaves | Distillers | Ball mill | Sieve shaker



Other laboratory products

ECOCLAVES S Y B

CE

The Ortoalresa **ecoclaves class S y B** are versatile devices easy to use. They have 12 programs set on memory for a smooth processing. Accessories included: trays holder, 4 trays, door key/clamp, 2 hoses, sponge and funnel. Include standard printer.

Features

- Volume 18 and 23 litres.
- Continuos control over the cycle phases.
- Instantaneous vaporizer inside the chamber.
- Adaptable with connection to still water.
- Humidity <2%.

Easy to use

- Ecoclave S: 2 Test Cycles: Bowie & Dick, Vacuum Test. Vacuum pre and post sterilization.
- Ecoclave B: 3 Test Cycles: Bowie & Dick, Hellix test, Vacuum Test. Vacuum pre and post sterilization. Split vacuum. New patented electrovalves system for reduce cycle time.
- Cycles with clean water full tank: Class S: 10 for 18 l, 8 for 23 l. Class B: 8 for 18 l and 6 for 23 l.
- Weight of wrapped materials 18 l 3 Kg, 23 l 4,5 Kg. Unwrapped: 18 l 4 Kg, 23 l 6 Kg. Porous: 18 l 1Kg (B) /0,5 Kg (S) ,23 l 1,5 Kg (B)/1 Kg (S).
- Multi-language graphic display with temperature, Sterilization and drying time, chamber pressure, program and stage of cycle.
- Night cycle.
- Initial checking and tracking through messages.
- Stainless steel chamber made of thick one-piece molded steel.
- Loading with self-priming pump.
- Electronic drying in vacuum
- Memory Test System (MTS): store and print 10 cycles.

Safety

- Electrical: fuses and earthed.
- Motor-operated closure with triple-protection,
- Safety valve.
- Several messages keep the operator informed about the device situation.
- Air entry through bacteriological filter.
- Double-stage vacuum pump release the air avoiding air bubbles.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/EU, 93/42/CE.
Standards: EN 61010-1, EN 61010-2-010, EN 61010-2-040, EN 61326-1, EN 13060.

Versions	Dimensions (mm) (w x d x h)			Net weight (Kg)	Dimensions de bandejas (mm)	Clase	Consumption (W)	Volumen cámara (l)	Ciclos tests
AU 005	505	610	400	45	185 x 285	B	2400	18	B+V+H
AU 006	505	695	400	49	185 x 440	B	2400	23	B+V+H
AU 007	450	610	400	41	185 x 285	S	2400	18	B+V
AU 008	450	695	400	45	185 x 440	S	2400	23	B+V

ATTENTION: for 23 litres models drying time lasts 5 minutes, total time 15 min.
THESE ECOCLAVES CAN NOT STERILIZIE LIQUIDS. B=Bowie & Dick / V=Vacuum Test / H=Helix

Programs

Instruments & materials	Cycle	Ecoclave B		Ecoclave S		Wrapped
		Total time (min)	No. vaccum	Total time (min)	No. vaccum	
Delicate holow and stainless steel	121°C hollow wrapped	51	3	45	2	yes
Stainless steel hollow	134° Hollow wrapped	49	3	38	2	yes
Solid rubber /delicate	121°Solid wrapped	50	1	43	2	yes
Stainless steel solid	134° Solid wrapped	40	1	30	2	yes
Solid and stainless steel hollow	134° Prion	60	3	50	2	yes
Delicated, hollow and porous	121°Porous	65	3	48	2	no
Porous	134° Porous	59	3	45	2	yes
Soldid rubber and delicate	121°Rapid	44	1	38	2	no
Solid stainless steel/ rubber	134°Rapid	34	1	28	2	no
Hollow rubber and stainless steel	134° Hollow unwrapped	41	3	30	2	no
Ciclo Test Helix /Bowie & Dick	134° Helix/ B&D test	29	3	30	2	-
Test cycle vacuum	<40° Vacuum test	15	1	15	1	-

DISTILLERS

CE

Ortoalresa's **distillers** allow obtain distilled water, from the water supply, with ideal characteristics for its use in other equipment and appropriate for laboratory use: reagents preparation, bacteriological cultures, final cleaning of glassware, etc.

Features

- Automatic distillers of continuous production and with water flow control.
- Stainless steel interior, steel painted with epoxy for housing.
- Reduced size.
- Easily removable for its cleaning.
- High quality of distillation: obtains water of types III and IV (laboratory degree water)
- Conductivity at 20ºC: 1,5 microsiemens/ cm.
- Resistivity at 20ºC: 0,67 megaohms/ cm.

Easy to use

- Control panel with general switch, with light pilot and temperature selector.
- Water in-put connection adjustable to the feed tube.
- Drainage of cooling water out-put connection adjustable to containers.

Safety

- Safety system which switches off the heaters in the failure of cooling water and switch on again when it's recovered.
- Electric: earthed.
- Sealed with a silicone gasket.
- Safety system with hydraulic manager of temperature that protects the distiller in case of overheating.
- Optional accessory for limiting the flow of water optimizing the flow down to the minimum necessary.

EU Directives: 2011/65/EU, 2012/19/EU, 2014/30/EU, 2014/35/UE.
Standards: EN 61326-1.

Versions	Dimensions (mm) (w x d x h)			Net weight (Kg)	Voltage (V)	Frecuency (Hz)	Power (W)	Capacity (l/h)	Refrigeration water (l/h)
DA 005	370	220	440	12	220	50-60	3.000	4	60
DA 006	370	260	640	14	220	50-60	6.000	8	84
DA 007	370	220	440	12	110	50-60	3.000	4	60

Accessories

	Description
PP 354	Plastic tank for 30 litres with tap.
PV 192	Flow water limiter DA 005/007
PV 193	Flow water limiter DA 006

Water purification
After distillation process we obtain water with quality type III and IV, this depends directly on incoming water quality and other environmental factors.

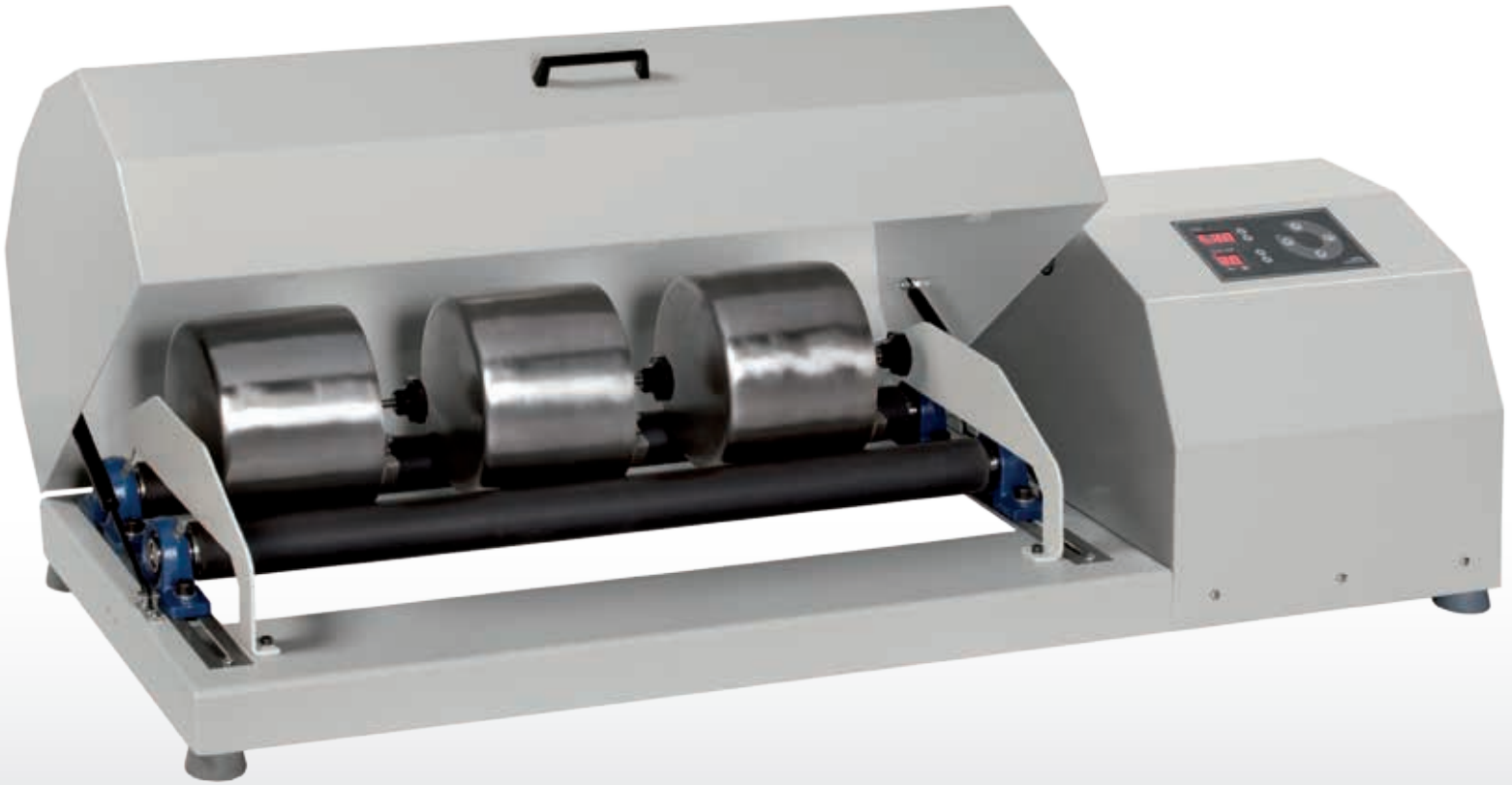
Below we show the effectiveness of the distillation process against different compounds and organisms:

Destillation

Pyrogen and virus	
Bacteria	
Particles	
Dissolved inorganic solutes	
Dissolved inorganic gases	
Dissolved organic	

Excelent Good Low

BALL MILL



CE

Other laboratory products: Ball Mill

The **ball mill** splits the sample because of the hits against the balls. It moves along an arc of a semi-circle due to the dragging of the pitcher in the cylinder motor.
Isolated jars prevent the contamination of samples.

Its function and design makes it suitable for mill works in laboratories of public works, manufacture of paints, ceramic, milling of raw materials for the manufacture of pharmaceutical and food products.

Features

- High resistance cylinders: solid steel interiors and tough and flexible cover which enables the turn of the jars without damages.
- Metal cover which has been proved to have high resistanEC.
- Light button of on/off.
- Stop plate.
- Timer from 1 to 99 min., programmable in 1 min. steps or hold position.

Easy to use

- Stop emergency button.
- Adjustable cylinders to adapt jars with different diameters.
- Useful length of the cylinders: 700mm
- Capacity: 1 jar of 15 liters, 2 jars of 5 liters, 3 jars of 3 liters, 4 jars of 1 liter.
- Jars available in alumina of stainless steel.
- It is controlled by a microprocessor.
- Drive roller speed can be regulated (between 50 and 300 RPM) or jar speed (depending on the diameter).

Safety

- Electric: ground power and fuses.
- Main switch.
- Cylinders cover with window and interior lighting.
- Safety system in the cover: when it is open the cylinders stop moving.

EU Directives: 2014/30/EU, 2014/35/UE , 2011/65/EU, 2012/19/UE.
Standards: EN 61010-1, EN 61010-2-051, EN 61326-1.

Versions	Voltage (V)	Dimensions (mm) (w x d x h)			Consumption (W)	Frecuency (Hz)	Net weight (Kg)
ML 007	230 - 220	1250	490	340	150	50-60	72
ML 008	120 - 110	1250	490	340	150	50-60	72

Accessories

Stainless steel jars				Alumina jars		
15 litres	5 litres	3 litres	1 litre	1 litre	3 litres	5 litres
PI 226	PI 064	PI 063	PI 062	PV 035	PV 036	PV 037

Stainless steel balls		Alumina balls	
	Diameter		Diameter
PI 058	15 mm. (1 kg. approx.)	PV 040	20 mm. (1 kg. approx.)
PI 059	20 mm. (1 kg. approx.)	PV 042	30 mm. (1 kg. approx.)
PI 060	30 mm. (1 kg. approx.)	-	-
PI 061	9 mm. (1 kg. approx.)	-	-

For an optimum milling, we recommend to fill the jars with the following proportions: leave 50% on the capacity empty, 25% of the capacity with balls and the remaining 25% with the product to be milled.

SIEVE SHAKER & SIEVES

CE

The analytic **sieve shaker OASS203** is designed to obtain reproducible results in accordance with the standard ISO 9001 for measuring and control equipment. It is an essential device for research laboratories and for quality assessment of any type of industries during the analysis of the production process. It allows to define mechanic characteristics of particles, concentration by joining forces, miscibility, perShapence with regard to stress, organoleptic characteristics, etc.

Versions	Dimensions (mm) (w x d x h)			Consumption (W)	Voltage (V)	Frecuency (Hz)	Net weight (Kg)
TA 005	280	370	765	120	220-240	50-60	14,5
TA 006	280	370	765	120	110-120	50-60	14,5

Features

- Capacity up to 6 kg of sample.
- Three-dimensional movement.
- It can fit wet and dry sieves.
- It is controlled by a microprocessor.
- Max. capacity: 8 sieves of 50 mm of high or 16 of 25 mm of high.
- Includes standard lock system and cover, easy to assemble.

Easy to use

- Adjustment of the sieve power (100% corresponds to 6400 RPM). This allows better spread of the sample through the sieve and better efficiency in the sieve process.
- It is programmable up to 16 memories.
- Timer from 10 sec. to 99 min. programmable in 10 sec. steps and hold position.
- Adjustable by intervals from 1 to 99 seconds.

Safety

- Extremely silent. It has the least noise level of those available.
- Metal cover. It is tough and stable.
- Electric protection with ground power and fuses.

Accessories

- Sieves of stainless steel AISI 304 for the ring, AISI 316 for mesh and AISI 304 for perforated plate. With sealing gasket and marked with indelible laser.
- Sieves diameters available: check accessories table in pag. 90.
- Max. capacity: 8 sieves of 50 mm of high or 16 of 25 mm of high.
- Range of particle sizes which can be analyzed: from 20 μ to 125 mm .
- The calibration certificate is available.

EU Directives: 2014/30/EU, 2014/35/EU, 2011/65/EU, 2012/19/UE
Standards: EN 61010-1, EN 61010-2-051, EN 61326-1.

Accessories: Sieves

Available dimensions: Ø 200 x 50 mm; Ø 200 x 25 mm; Ø 100 x 50 mm; 8" x 2" (Ø 203 x 50 mm); 8" x 1" (Ø 203 x 25 mm). For other mesh dimensions, you can consult us on telf. +34 91 884 40 16 o in the email info@ortoalresa.com. Sieves of stainless steel AISI 304 for the frame, AISI 316 for the mesh and AISI 304 for the perforated plates.

Sieves of stainless steel of Ø 200 x 50 mm

Standard ISO 3310-2: Perforated plates sieves (AISI 304)	
Code	Mesh (mm)
PI 065	125.00
PI 069	100.00
PI 070	80.00
PI 071	63.00
PI 072	50.00
PI 073	40.00
PI 074	25.00
PI 075	20.00
PI 076	16.00
PI 077	12.50
PI 078	10.00

Standard ISO 3310-1: Mesh sieves (AISI 316)	
Code	Mesh (mm)
PI 079	8.00
PI 080	6.30
PI 081	5.00
PI 082	4.00
PI 297	3.15
PI 083	2.50
PI 348	2.36
PI 084	2.00
PI 321	1.7
PI 085	1.6
PI 086	1.25
PI 087	1.00
PI 088	0.80
PI 089	0.63
PI 090	0.50
PI 091	0.40
PI 146	0.315
PI 092	0.25
PI 093	0.20
PI 094	0.16
PI 095	0.125
PI 096	0.100
PI 097	0.080
PI 098	0.063
PI 099	0.050
PI 100	0.040
*PI 435	0.025
*PI 384	0.020
PI 066	Receiver
PI 067	Cover
PI 351	Receiver for wet processing
PI 350	Cover for wet processing

*Sieves for wet processing

Sieves of stainless steel of 8" x 2" (Ø 203 x 50 mm)

Standard ASTM E323: Perforated plates sieves (AISI 304)	
Code	Mesh
PI 150	5"
PI 151	4,24"
PI 152	4"
PI 153	3 ½"
PI 154	3"
PI 155	2 ½"
PI 156	2.12 "
PI 157	2"
PI 158	1 ¾"
PI 159	1 ½"
PI 160	1 ¼"
PI 161	1.06"
PI 162	1"
PI 163	7/8"
PI 164	¾"
PI 165	5/8"
PI 166	0.53"
PI 167	½"
PI 168	7/16"

Standard ASTM E11: Mesh sieves (AISI 316)	
Code	Mesh
PI 169	3/8"
PI 170	5/16"
PI 171	0.265"
PI 172	¼"
PI 173	3 ½"
PI 174	No. 4
PI 175	No. 5
PI 176	No. 6

Standard ASTM E11: Mesh sieves (AISI 316)	
Code	Mesh
PI 177	No. 7
PI 178	No. 8
PI 179	No. 10
PI 180	No. 12
PI 182	No.16
PI 181	No. 14
PI 183	No.18
PI 184	No. 20
PI 185	No.25
PI 186	No. 30
PI 187	No. 35
PI 188	No. 40
PI 189	No. 45
PI 190	No. 50
PI 191	No. 60
PI 192	No.70
PI 193	No.80
PI 194	No.100
PI 195	No.120
PI 196	No.140
PI 197	No.170
PI 198	No.200
PI 199	No.230
PI 200	No. 270
PI 201	No.325
*PI 250	No.400
PI 202	Cover
PI 203	Receiver
PI 221	Cover for wet processing
PI 235	Reciver for wet processing

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About centrifugation

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