Cole-Parmer®

CF-200 Series
Centrifuge

Max
15000 *SPEED*
RPM
999:59 *TIME*
Min/Sec

short spin | rpm rcf | speed | start | stop open | time

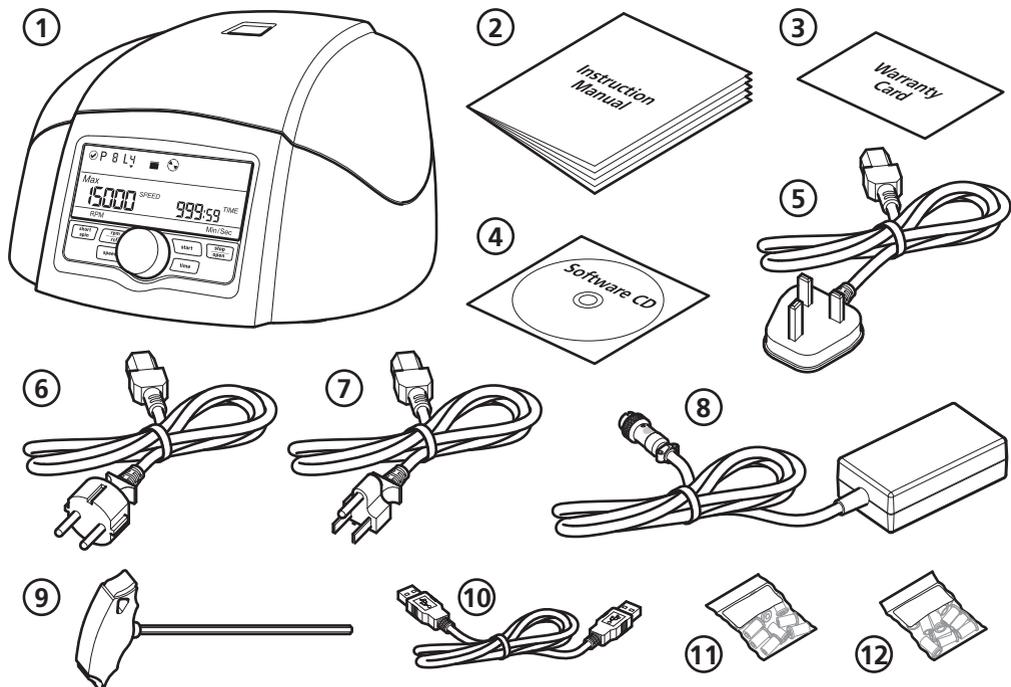P 8 L4
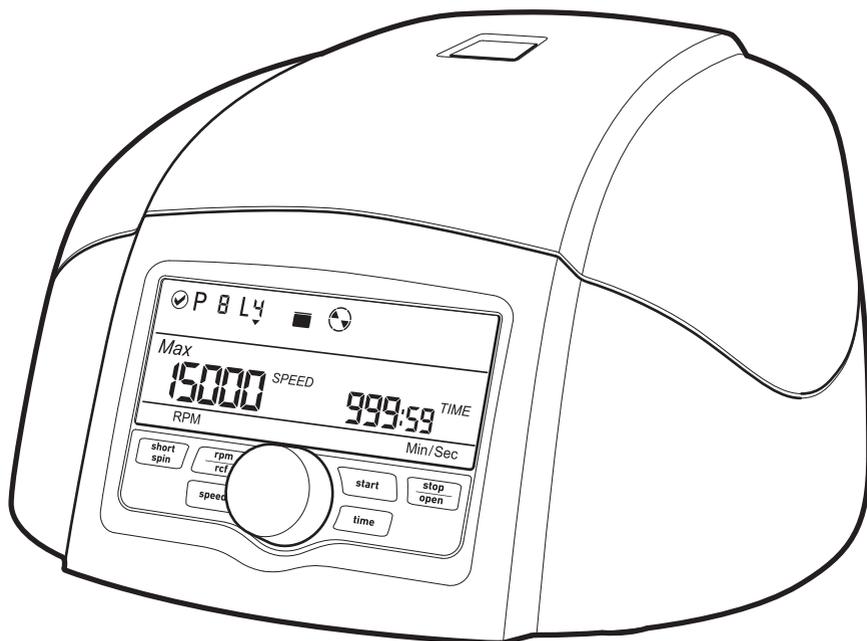
Instruction Manual
STU0003 / Version 1.2

Cole-Parmer®
essentials

Introduction

Thank you for purchasing this Cole-Parmer product. To get the best performance from the equipment, and for your own safety, please read these instructions carefully before use.

Before discarding the packaging check that all parts are present and correct.

① CF-200	② Instruction manual	③ Warranty card	④ Software CD
⑤ UK power lead	⑥ EU power lead	⑦ US power lead	⑧ Power adaptor
⑨ 'T' allen key	⑩ USB lead	⑪ Micro tube adaptor 0.2/0.3ml x12	⑫ Micro tube adaptor 0.4/0.5ml x 12

Note: Before first use, open the centrifuge and remove all the packaging from the rotor chamber. You will need to switch the centrifuge ON before the lid can be opened.

This equipment is designed to operate under the following conditions:

- ❖ For indoor use only
- ❖ Use in a well ventilated area
- ❖ Ambient temperature range 5°C to 35°C (41°F to 104°F)
- ❖ Altitude to 2000 m (6500 ft)
- ❖ Relative humidity not exceeding 60% and free from condensation
- ❖ Mains supply fluctuations not exceeding 10% of nominal
- ❖ Overvoltage category II IEC60364-4-443
- ❖ Pollution degree 2 IEC664
- ❖ Use with a minimum distance all round of 300 mm (12 in.) from walls or other items

If the equipment is not used in the manner described in this manual and with accessories other than those recommended by the manufacturer, the protection provided may be impaired.

General Description

The CF-200 is a compact microcentrifuge for the centrifugation of microfuge tubes ranging from 0.2ml to 2.0ml or 2 x 8 PCR tube strips at speeds of up to 15000rpm. The unit is supplied with a pre-installed 12 x 0.2/2ml rotor and a 2 x 8 0.2ml strip rotor can be ordered. The rotors are easily installed without the use of tools. Centrifugation speed can be displayed as either rpm or rcf and the timer can be set for run times of between 30 seconds to 999 minutes and infinite mode. In addition, a short spin button spins the rotor to the preset rpm then promptly decelerates. For safety, the door of the CF-200 remains locked while the rotor is in motion.

Important Safety Advice

Users should be aware of the following safety advice:

- ❖ **SHOCK HAZARDS OR UNSAFE PRACTICES ARE DANGEROUS** as they can cause severe personal injury, fire or death.
- ❖ **DO NOT** use combustible substances near hot objects.
- ❖ **DO NOT** use the equipment in hazardous atmospheres.
- ❖ **DO NOT** operate or handle any part of the product with wet hands or use on surfaces that may become flooded.
- ❖ **NEVER** move the product while still connected to the power supply.
- ❖ **HIGH TEMPERATURES ARE DANGEROUS** as they can cause serious burns to operators and ignite combustible material.
- ❖ **USE CARE AND WEAR PROTECTIVE GLOVES TO PROTECT HANDS**.
- ❖ **NEVER** lift or carry the instrument during operation.
- ❖ **DO NOT** position the unit so that it is difficult to disconnect from the mains supply using the mains plug.
- ❖ The mains outlet socket used should be located close to the equipment and readily identifiable and accessible to users.
- ❖ **DO NOT** leave equipment switched on and it is not recommended to leave any heating apparatus unattended during operation.
- ❖ The unit should be carried using both hands.

Symbols Defined

| WARNING | RISK OF ELECTRIC SHOCK | EARTH | BIOHAZARD |

Electrical Requirements

 THIS INSTRUMENT MUST BE GROUNDED

Before connection please ensure that the line supply corresponds to the power requirements below:

Power: 72W   Supply requirements: 100 - 230 VAC, 50-60Hz

The unit is provided with a power adaptor and three power cables consisting of a UK 3-pin and a "Schuko" 2-pin plug for 230 V installations and a NEMA 5-15 plug for 120 V installations.

Choose the power cable appropriate for your electrical installation and discard the other. Should neither power cable be suitable for connecting to the power supply, replace the plug with a suitable alternative..

THIS OPERATION SHOULD ONLY BE UNDERTAKEN BY A QUALIFIED ELECTRICIAN.

NOTE: Refer to the equipment rating plate to ensure that the plug and fusing are suitable for the voltage and wattage stated. The wires in the mains cable are as follows:

230V	120V
BROWN - HOT/LIVE	BLACK - HOT/LIVE
BLUE - NEUTRAL	WHITE - NEUTRAL
GREEN/YELLOW – EARTH	GREEN - EARTH

The appropriate power cable and power adaptor combination should be connected to the instrument BEFORE connection to the mains supply. Should the mains lead require replacement, a cable of 1.25mm² (AWG16) of harmonised code H05VV-F connected to an IEC320 plug should be used.

IF IN DOUBT CONSULT A QUALIFIED ELECTRICIAN

Product Features

- ❖ Imbalance detector with auto cutoff
- ❖ Large back light digital LCD display
- ❖ Maximum speed of 15000 RPM/15596 x g RCF
- ❖ USB port for remote terminal control capability
- ❖ Remote operation with data logger
- ❖ Lid safety interlock and auto lid open
- ❖ Convenient and easy user interface
- ❖ Quick acceleration and deceleration time
- ❖ One touch short spin centrifugation
- ❖ Last run memory feature
- ❖ Emergency lid release during power cut-off
- ❖ Countdown timer
- ❖ Automatic internal diagnosis and error display
- ❖ Speed setting by RPM/RCF mode
- ❖ Fully autoclaveable high strength aluminum rotor with metal lid
- ❖ Small footprint

Operation

Before Use

Place the unit on a firm, level surface, ensuring that all four feet on the base of the unit are positioned on the surface firmly. Avoid installation on a slippery surface or on a surface prone to vibration.
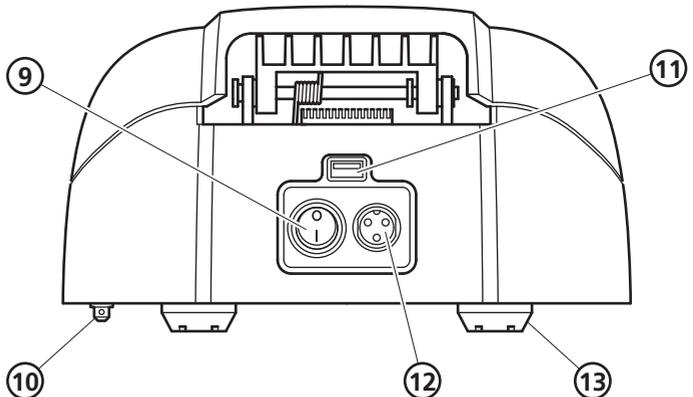
CF-200 Overview

Main View

① Centrifuge lid

② Aluminium protection lid

③ Rotor lid locking nutl

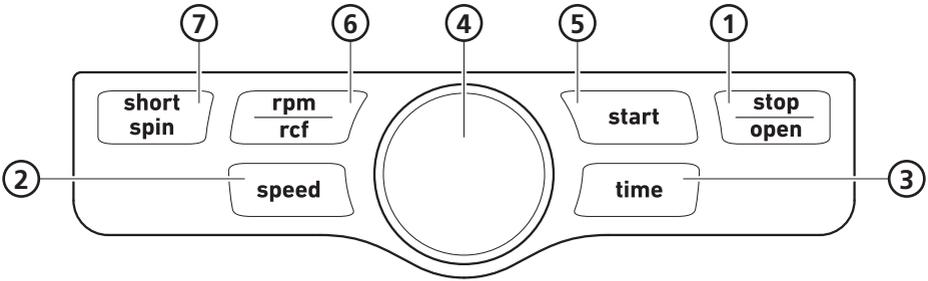④ Rotor lid

⑤ Display

⑥ Control panel

⑦ Lid lock

⑧ Rotor
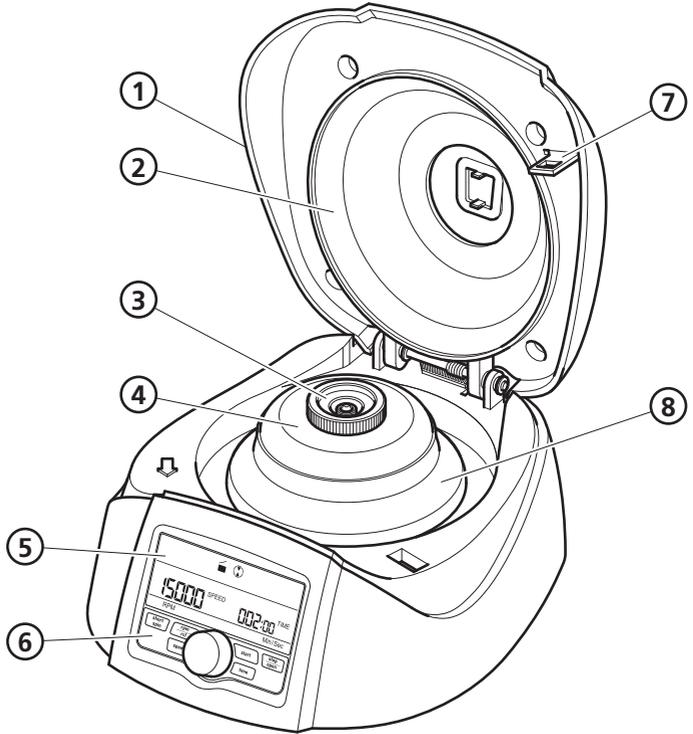
Rear View

⑨ ON/OFF switch

⑩ Emergency lid release

⑪ USB Connection

⑫ Power input

⑬ Non-slip feet

CF-200 Control Panel and Display

Control Panel

| ①	**stop / open**	- Press to stop. Lid opens automatically after rotor has come to a stop.
②	**speed**	- Press to select speed mode. Turn rotary dial (**4**) to set desired run speed.
③	**time**	- Press to select time mode. Turn rotary dial (**4**) to set desired run time.
④		- Use to set speed and time. Rotate clockwise/anti-clockwise to increase/decrease values.
⑤	**start**	- Press to start the centrifuge.
⑥	**rpm / rcf**	- Press to set/read rpm/rcf values.
⑦	**short spin**	- Press and hold after setting the required speed to run the centrifuge for a short time.

Display
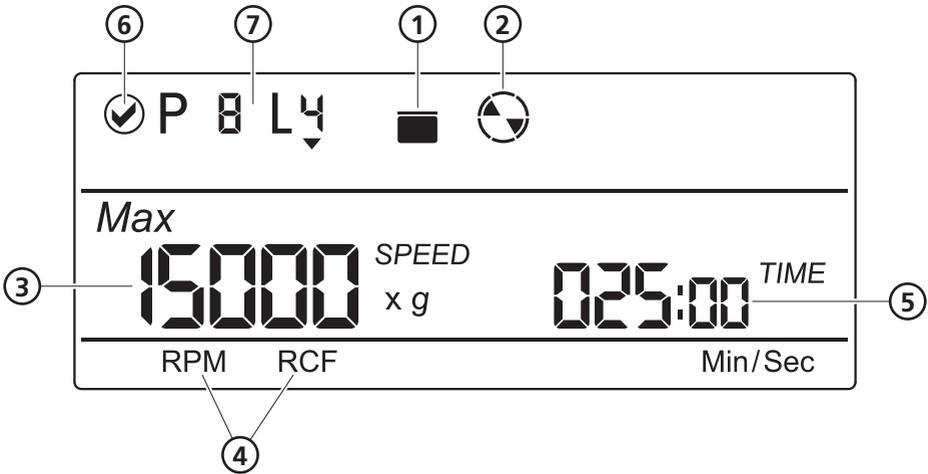
|		
①	*Closed* *Open*	- Indicates lid status.
②		- Indicates centrifuge status. The symbol will rotate when the centrifuge is running and will be static when the centrifuge has stopped
③	*Max* 15000 *SPEED* x *g*	- Indicates the speed at which the centrifuge is running. x g indicates the value in RCF mode.
④	RPM *or* RCF	- Indicates RPM or RCF mode and shows corresponding values.
⑤	025:00 *TIME* Min/Sec	- Indicates how long the centrifuge will run. The timer is a countdown timer and displays in Min/Sec mode.
⑥		- Indicates the centrifuge is connected via usb. When this mode is active, control panel buttons (except stop button) will be deactivated.
⑦	P 8 L4	- Indicates the specific program details being used. Applicable in remote operation mode.

Connecting the power adaptor

1. Ensure the power switch is OFF before connecting the power adaptor.

2. Connect the appropriate power cable to the power adaptor.

3. Connect the power adaptor to the centrifuge. Ensure you align the notch on the power adaptor with the rib on the centrifuge. If they are aligned correctly the plug will go in easily. **IF THESE ARE NOT ALIGNED YOU WILL NOT BE ABLE TO CONNECT THE POWER, DO NOT FORCE TOGETHER!**
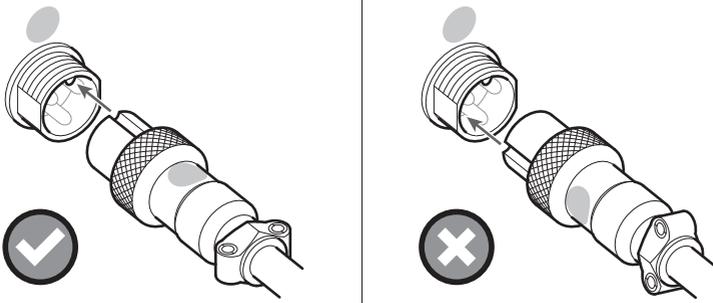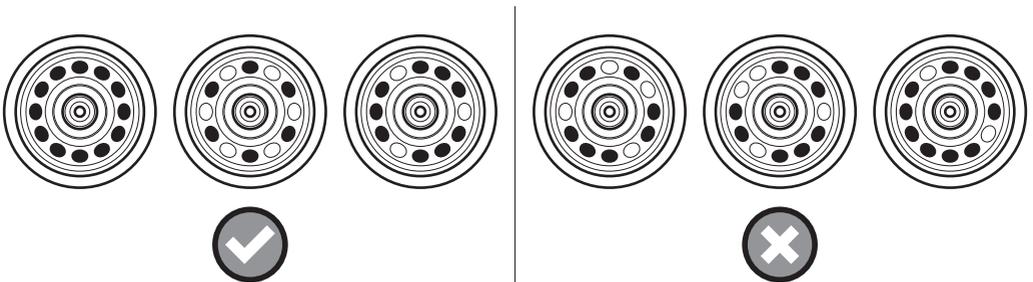

4. Once the plug is in position turn the locking ring clockwise to secure the connection.
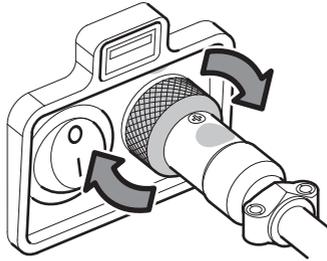
Loading the rotor

Always check the rotor is fitted correctly, firmly tightened and balanced before centrifugation. Below are examples of correctly and incorrectly balanced rotors.

The samples in the tubes should be of equal volume and must exceed the maximum capacity of 12 x 1.5/2ml. Do not use with liquid with a density higher than 1.2g/ml for full load operation.

Prior to centrifugation check the tubes for damage and they are loaded correctly. Damaged or incorrectly loaded tubes can cause vibration or imbalance which can lead to serious damage to the unit.

If the tubes are not loaded symmetrically then the imbalance detector will cut off the running centrifuge for device & user safety. This will stop the centrifuge and "**Err 55**" will be seen indicating tubes are not loaded symmetrically. To resume operation, load tubes symmetrically & restart the centrifuge.

Rotor removal and replacement

The rotor comes pre-installed with the centrifuge. If you want to remove or replace the rotor, follow the instructions below.

1. Open the lid.

2. Remove the **Rotor lid** by turning the **Rotor lid nut** anti-clockwise by hand.

3. Use the **T - allen key** to loosen the rotor nut by turning it anti-clockwise and remove.

4. Remove the **Rotor** by lifting it up and off the **Motor shaft**.

5. Load the replacement rotor onto the **Motor shaft**

6. Use the **T - allen key** to tighten the **Rotor nut** by turning it clockwise.

7. Place the **Rotor lid** on the rotor and turn the **Rotor lid nut** clockwise by hand to tighten.

Note: Check the **Rotor** is correctly fitted and the **Rotor nut** and **Rotor lid nut** are firmly tightened before running the next program.
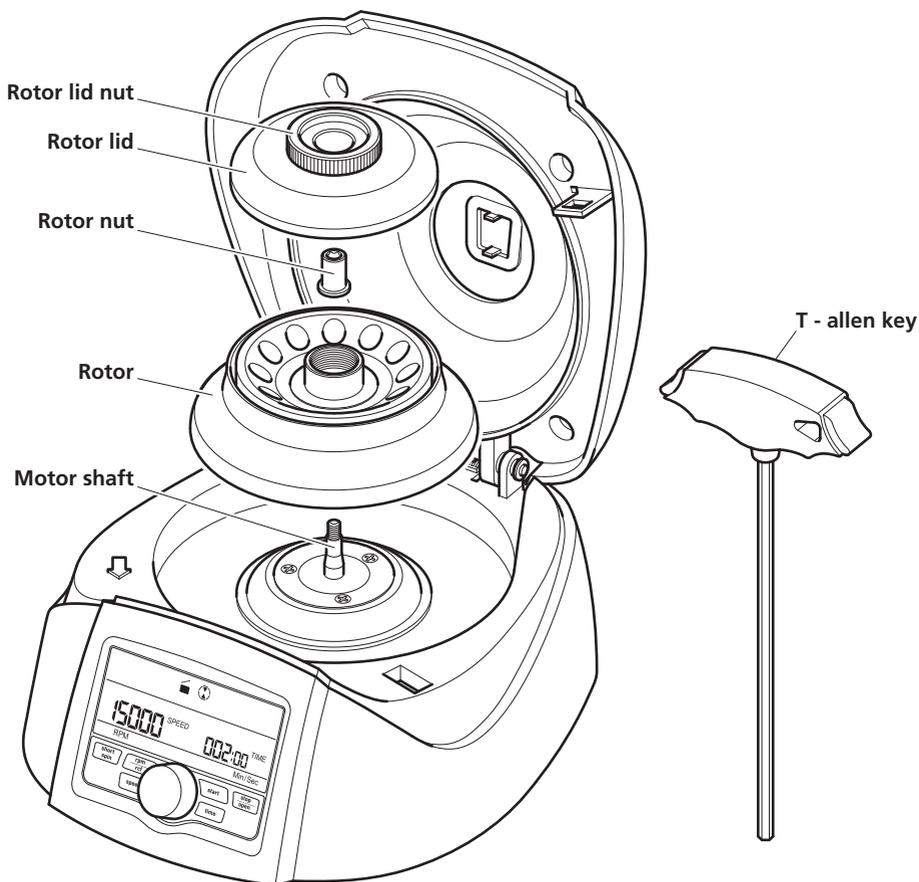
Starting the CF-200 centrifuge

After connecting the power adaptor, switch the power ON at the rear side of the centrifuge. Check the rotor is fitted correctly, firmly tightened and balanced before use. Centrifuge will not operate with an open lid.

Note: Wait 3 seconds between turning off and turning on the centrifuge. DO NOT turn the centrifuge off and on instantly.

Setting the speed and time

After closing the centrifuge lid; press the **speed** button to select the speed setting. Now turn the **rotary dial** clockwise to increase the speed value and rotate counter clockwise to decrease the speed value. The minimum and maximum speed of the centrifuge is 500 RPM and 15000 RPM respectively.

❖ Pressing the speed button "ONCE" will make the speed change in intervals of 1000 RPMs. For example: if the speed is 10000 RPM, then next speed will be 11000 RPM.

❖ Pressing the speed button "TWICE" will make the speed change in intervals of 100 RPMs. For example: if the speed is 10000 RPM, then next speed will be 10100 RPM.

❖ Pressing the speed button more than 2 times will restart the process.

❖ The input will be accepted if the setting dial is left idle for 3 seconds. The value will blink five times to indicate acceptance.

Press the **time** button to select the time setting. Now turn the **rotary dial** clockwise to increase the time and rotate counter clockwise to decrease the time. The centrifuge timer is set to run between 30 seconds to 999 minutes or operated in infinite time mode. Infinite timer will be indicated by ⌧:⌧ in display. The minimum time setting is 30 seconds. The timer in the centrifuge is a countdown timer and the time in the display will be in "Min/Sec" mode. The same will be shown on the display.

❖ Pressing the time button "ONCE" will make the time change in interval of minutes. For example: if the time is 005:00 (5 Mins 0 Sec), then the next time will be 006:00 (6 Mins 0 Sec).

❖ Pressing the time button "TWICE" will make the time change in interval of seconds. For example: if time is 005:00 (5 Mins 0 Sec), then next time will be 005:01 (5 Mins 1 Sec).

❖ Pressing the time button more than 2 times will restart the process.

❖ The input will be accepted if the setting dial is left idle for 3 seconds. The value will blink five times to indicate acceptance.

Press the **start** button to start operation and press **stop/open** button to stop the ongoing operation. When the centrifuge is running the symbol "⟳" will be rotating. Pressing the **stop/open** button will stop the operation. The centrifuge lid will automatically open once the rotor comes to a stop. If the program running time ends, the centrifuge will stop and the lid will automatically open. When the centrifuge is not running the symbol "⟳" will be stable. To open the lid without running the centrifuge, press the stop/open button.

Note: Speed and time can be changed while the centrifuge is running. Press the **speed/time** button and follow the above steps for setting speed/time. Once the speed/time is changed during centrifugation it will remain for the rest of centrifugation cycle. Speed/time can be changed multiple times during the centrifugation cycle.

Switching to RCF display

Press **rpm/rcf** button to change the mode from RPM to RCF (Relative centrifugal force). After pressing the button the display will show the speed in RCF. Maximum RCF speed of the centrifuge is 15596 x g. The system will automatically convert the values from RPM to RCF and vice versa.

Short spin centrifugation

Short Spin Centrifugation is the feature for short/pulse run. It will run as long as the **short spin** button is pressed. Set rotational speed prior to short spin as required. During the short spin the timer will be in incremental mode. After releasing **short spin** button the time in the display will show duration of short spin.

Opening the centrifuge lid in power failure

Disconnect the centrifuge from the power supply. Wait until the rotor has come to a standstill (this may take time). Once the rotor has stopped, pull down the **emergency lid release cap** below the centrifuge. This will open the centrifuge lid.

Emergency lid release cap
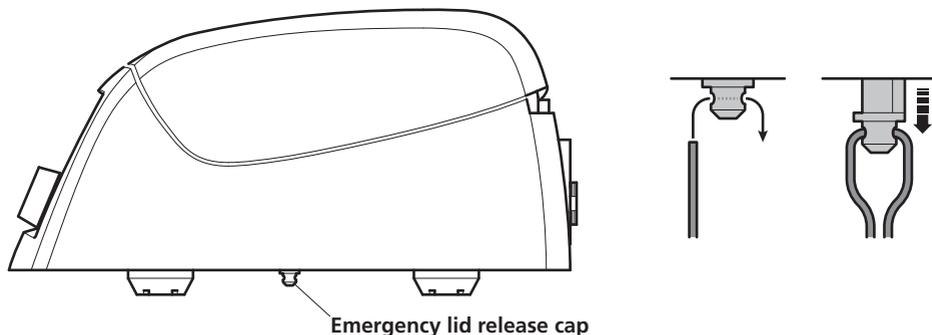
Imbalance detection

The centrifuge comes with an imbalance detection safety feature. When the rotor is not loaded symmetrically, the imbalance detector gets activated and stops any centrifugation. Error message "**Err 55**" will be shown on the display. Correct the imbalance load using the method described in the Loading the Rotor section (see page 8). After correcting the imbalance, turn off the centrifuge & turn it back on. The values will be the same as set before the imbalance occurred. The imbalance detection feature cannot be deactivated, as it is a factory fitted safety feature.

Remote operation and programming

For programming and remote operation the centrifuge needs to be connected to a computer.

System requirements

The Graphical user interface (GUI hereafter) software and data logger file require at least the following system to operate:

❖ Operation System: Windows® 7 with i3 Processor or higher with 32 bit or 64 bit operating system and Windows® XP Sp3.

❖ Microsoft .NET framework 4 and Microsoft Office Excel 2007 or 2010 is required for operating GUI.

Installing GUI software

GUI Software CD is provided with the centrifuge kit. Install the software from the CD by running the setup file. After installation the GUI software icon and centrifuge data logger file will appear on the desktop.

Connecting USB cable

Connect the USB cable to the centrifuge and another side to computer USB port. Without the USB connection the centrifuge will not operate through the software. USB connection is shown below.
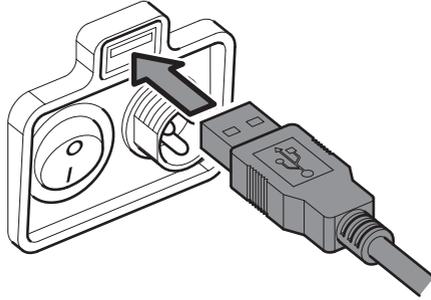

After the USB has been connected a symbol at the top left of the centrifuge display will appear to confirm and indicate that the centrifuge is recognizing the connection.
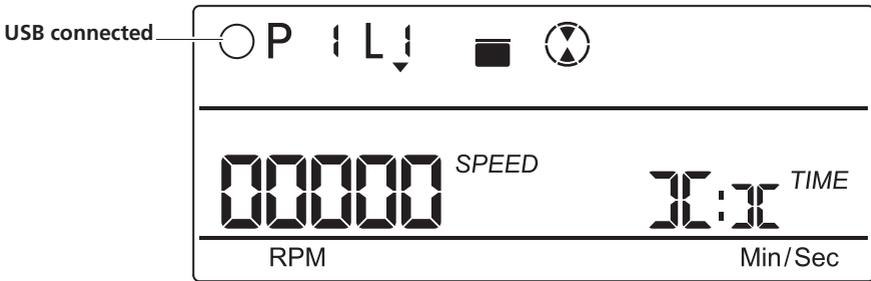
Once the USB cord is connected, the centrifuge unit controls will be disabled. The centrifuge can now be run using the program. Only the **stop/open** button will be functional on the control panel.

Understanding the GUI and operation

After installing the GUI software, open the GUI software by double clicking the software icon. The following GUI window will open on the computer screen.
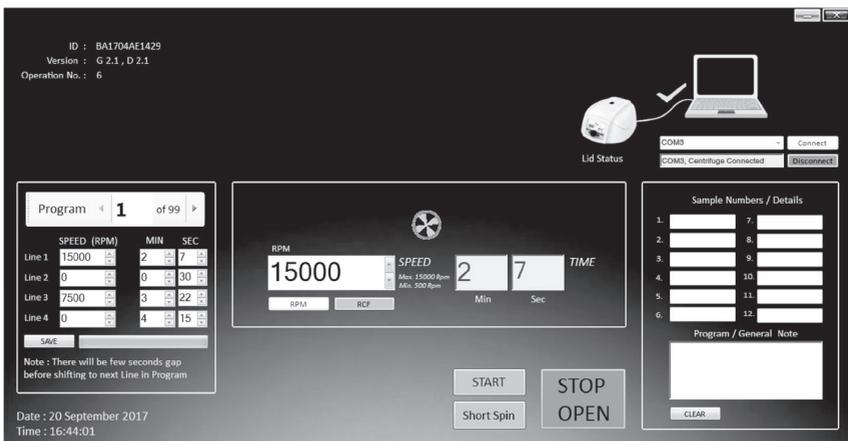
Com port connecting and disconnecting

Drop down box — COM3   Connect

Text box — COM3 , Centrifuge Connected   Disconnect

Buttons

Once you connect the USB cable, the Com port for the centrifuge is detected automatically. Click on the **Connect** button to connect centrifuge and computer for remote operation. After connection, the **Text box** will show **COM3, Centrifuge Connected**.

Note: If any other device is connected after connecting the centrifuge then the Com port software gets updated. Select the centrifuge Com port from the Com port **Drop down box** and click **Connect** to reconnect the centrifuge.

Note: Once the software is connected, the buttons on the centrifuge are deactivated and only **stop/open** button will operate.

The centrifuge details


```
        ID :  BA1704AE1429
   Version :  G 2.1 , D 2.1
Operation No. :  6
```
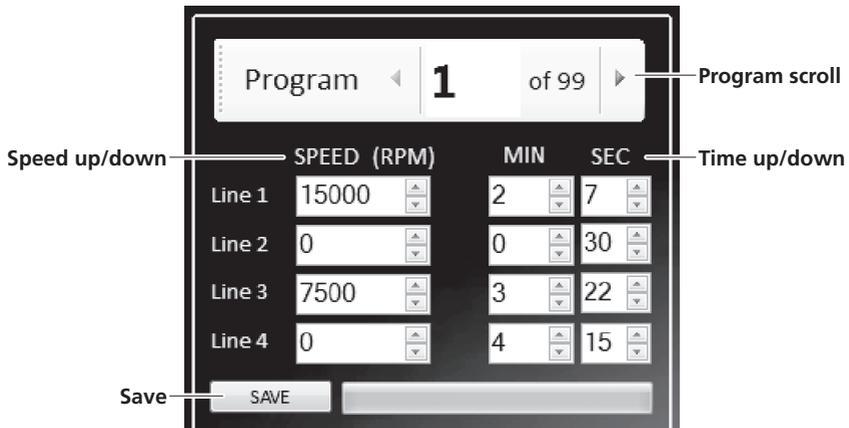
After the centrifuge has been connected, the centrifuge ID and version will display in the GUI screen. The operation number shows the number of operations performed using the software.

Setting a program

Remote operation provides 99 programs with 4 lines maximum per program. It can be used to pre-set and save programs for specific and or regular operations. Below is an example of a program:

    Line 1.   Run for 2 minutes and 7 seconds with speed 15000 RPM
    Line 2.   Then take a pause of 30 seconds
    Line 3.   Then run centrifuge for 3 minutes and 22 seconds with speed of 7500 RPM
    Line 4.   Then take a pause of 4 minutes and 15 seconds

Note: There is delay of 8 seconds between all 4 lines.

Program scroll

Speed up/down — SPEED (RPM)   MIN   SEC — Time up/down

	SPEED (RPM)	MIN	SEC
Line 1	15000	2	7
Line 2	0	0	30
Line 3	7500	3	22
Line 4	0	4	15

Save — SAVE

After completing at least one program line, the centrifuge display will change as shown below.

At least 1 program line filled —
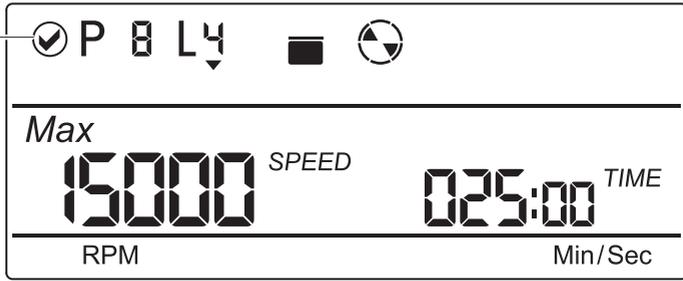
Click on the **Program scroll button** to select the required program out of the total 99 programs you wish to set. Starting with Line 1, click on **Speed up/down** buttons to select speed required, speed can be set only in RPM mode. Click on **Time up/down** buttons to select time required. Up to 4 lines of a program can be saved. Operation will always start from the 1st line. After changing speed and time for centrifugation according to user requirement click on the **Save** button to save/set the program. Follow the same procedure for other lines of the program as required.

Program note and sample numbers

Users can write the details of each sample used for centrifugation for reference purposes. Users can also write General Notes regarding the sample used, operation details or any other specific information which is worth mentioning in **Program / General Note** text box as shown in the diagram below. The data entered here will be saved in the data log report.

Click on the **CLEAR** button to clear the sample number and general note details of the program.

Pre-set program selection and operation

Click on the **Program** scroll button to select the required pre-set program out of total 99 programs.

After selecting the required program, click on the **START** button to start the operation. Operation will start from 1st line of the selected program. There is a delay pause of 8 seconds between all 4 lines. Once the 1st line operation is over it will wait for 8 seconds to start the 2nd line operation. During the operation all the buttons on the device and boxes of the GUI will be disabled except the **STOP/OPEN** button. When the centrifuge is running the symbol in the GUI will rotate.

Stop operation

Click on **STOP/OPEN** button to stop the ongoing operation. The centrifuge lid opens automatically when the rotor comes to a standstill. Users can also stop the ongoing operation by pressing **STOP/OPEN** button on the device. The lid status will be indicated on the GUI screen.

Active line speed display

The **Speed** box is used to read the speed value of active lines of the program. For example: if line 3 of the 46th program is running then the **Speed** box will display the speed value of line 3 of the 46th program. It can be used to change the speed value of the active line.

Click on **RPM** or **RCF** button to read speed value in RPM or RCF mode for active line.


Active line time display

Time box is used to read the remaining time value of active lines of the program. For example: if line 3 of the 46th program is running then the **Time** box will display the remaining time value of line 3 of the 46th program. This is a countdown timer.

Short spin centrifugation

After setting required speed click the **Short Spin** button for short spin operation. The timer display in this mode is incremated in seconds. During short spin operation the **Time** box will disable as the timer converts to a count up timer. Press the **stop/open** button to stop the short spin operation.
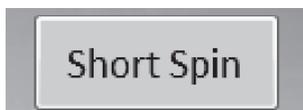
Centrifuge lid status

The images will be displayed in the screen according to the status of the lid.

Centrifuge status

This symbol shows the centrifuge status. When the centrifuge is running the symbol rotates and when centrifuge is not running the symbol is static.

Note: Centrifuge will get connected to a computer only if the USB cord is connected to both centrifuge and computer. Proper selection of centrifuge **Com port** is necessary to enable the remote operation.

Note: It is highly recommended not to use or work on any other application or do online work while GUI is operating.

Data Log

The remote operation comes with a data log features. All operations performed through the GUI will be saved as an excel sheet. With the help of the data log, users can view and make a print out of the previously performed operations.

Users can access the data log file from their desktop. Data logger file named "Centrifuge_Data_Logger" will generate automatically on the desktop of the user's computer once the operation is performed.

The following type of operation details will be saved in an excel sheet.

	A	B	C	D	E	F	G	H
7	Date : Friday, 19 July, 2013							
8	Time : 4:45:25 PM							
9	Centrifuge ID : AA1307B30001							
10	Version No. : G 1.2 , D 1.2							
11	Operation No. : 1							
12	S1:							
13	S2:							
14	S3:							
15	S4:							
16	S5:							
17	S6:							
18	S7:							
19	S8:							
20	S9:							
21	S10:							
22	S11:							
23	S12:							
24	Note :							
25	NORMAL Operation							
26	P : 1							
27	L : 1							
28	SET SPEED : 15000 RPM							
29	SET TIME : 2 Min And 51 Sec							
30	.---							
31	STOP TIME : 2 Min And 27 Sec							
32	Run TIME : 0 Hour And 0 Min And 24 Sec							
33	ERROR STATUS :							

⊮ ◂ ▸ ⊯ **Centrifuge_Data_Logger** ╱ Sheet2 ╱ Sheet3 ╱ 🗂 ╱

Note: The GUI software will not operate if "Centrifuge_Data_Logger" file is open.

Ensure to close the log sheet before remote operation.

Maintenance, Servicing and Cleaning

HOT: Before attempting any maintenance, servicing or cleaning, ensure that the unit is cool, and disconnect from the power supply.

WARNING: Ensure the unit is disconnected from the power supply before attempting any maintenance, servicing or cleaning.

The rotor and the outside of the centrifuge should be cleaned regularly with a moist cloth.

Ensure that while cleaning the unit it is not plugged in.

Wear protective gloves and safety glasses while operating and cleaning the device.

The brushless motor in the centrifuge does not require routine maintenance. Any required service should be performed by authorized, qualified personnel only. Repairs performed by unauthorized personnel may void the warranty.

Always keep the centrifuge housing, rotor chamber, rotor and rotor accessories clean. All parts should be wiped down periodically with a soft cloth. For more thorough cleaning, use a neutral cleaning agent (Ph between 6 and 8) applied with a soft cloth. Excessive amounts of liquid should be avoided. Liquid should not come into contact with the motor.

After cleaning, ensure that all parts are dried.

It is important to regularly clean the rotor.

If the rotor chamber needs cleaning, clean it with a cloth or a sponge moistened with a neutral detergent solution (like water).

Do not place the rotor into the cleaning solution!

Preventative maintenance should include keeping the product clean by protecting it from spillage, contamination or corrosive environments. If in doubt, please confirm that any intended method of decontamination will not damage the equipment by contacting Antylia Scientific.

WARNING: This product does not contain bio-seals as per IEC/EN/CSA 61010-2-20 and cannot provide any level of containment in case of a spill or release of toxic, radioactive, or pathogenic micro-organisms thus these materials are not recommended to be used in this product.

NOTE: Do not use solvents for cleaning any parts of this equipment.

In Case of Accidental Spillage

WARNING: DO NOT TOUCH IF A SPILLAGE/BREAKAGE HAS OCCURRED. DISCONNECT THE POWER DIRECTLY AT THE POWER SUPPLY SOURCE.

If any part of the unit has been exposed to liquid, it cannot be assumed to meet all the safety requirements of EN 61010-2-020 until the drying out process has been fully completed and all safety requirements are met before the unit is used again.

In Case of Contamination

WARNING: THE FOLLOWING PROCEDURE IS INTENDED AS A GUIDE. SHOULD SPILLAGE OF A TOXIC OR HAZARDOUS FLUID OCCUR, THEN ADDITIONAL SPECIAL PRECAUTIONS MAY BE NECESSARY.

If the equipment has been exposed to contamination, the Responsible Body is responsible for carrying out appropriate decontamination. If hazardous material has been spilt on or inside the equipment, decontamination should only be undertaken under the control of the Responsible Body with due recognition of possible hazards. Before using any cleaning or decontamination method, the Responsible Body should check with the manufacturer that the proposed method will not damage the equipment. Prior to further use, the Responsible Body shall check the electrical safety of the unit. Only if all safety requirements are met can the unit be used again.

NOTE: In the event of this equipment or any part of the unit becoming damaged or requiring service, the item(s) should be returned to the manufacturer for repair accompanied by a decontamination certificate. Copies of the Certificate are available from the Distributor/Manufacturer.
At the end of its service life, the product must be accompanied by a Decontamination Certificate.

Repairs and Support

Any repairs or replacement of parts MUST be undertaken by suitably qualified personnel. Only spare parts supplied or specified by Antylia Scientific or its agents should be used. Fitting of non-approved parts may affect the performance and safety features designed into the instrument. For a comprehensive list of parts required by service engineers conducting internal repairs please contact the service department quoting the model and serial number:

Email: cpservice@antylia.com
Tel: +44 (0)1785 810475

For any other technical enquiries please contact the Technical Support Department at;
Email: cptechsupport@antylia.com
Tel: +44 (0)1785 810433

Spares and Accessories

Please contact your local sales specialist or email cpspares@antylia.com to enquire about available spares.

Please visit www.coleparmer.com for a full list of available accessories.

Technical Specification

General Specification

Motor type	Brushless DC motor
Maximum speed	15000 rpm
Run time	30 seconds to 999 minutes and infinite mode
Speed setting	Variable: 500 - 15000 rpm
Speed accuracy	± 100 rpm
Maximum volume	12 x 2ml (microtubes)
Maximum RCF	15596 x g
Ambient temperature	5 - 40ºC
Permissable relative moisture	<80%
Air pressure	80 to 106 kPa
Acceleration time	30 seconds
Deacceleration time	40 seconds
Noise level	<60 dB
Input power	100 - 240VAC, 50/60 Hz, 2.5A
Output power	24VDC, 6A
Power consumption	72W

Weights and Dimensions
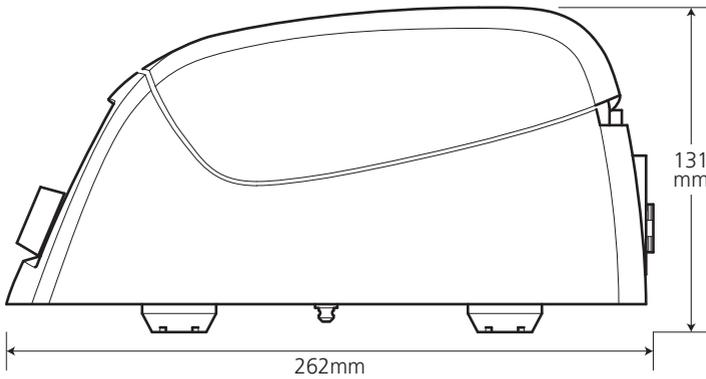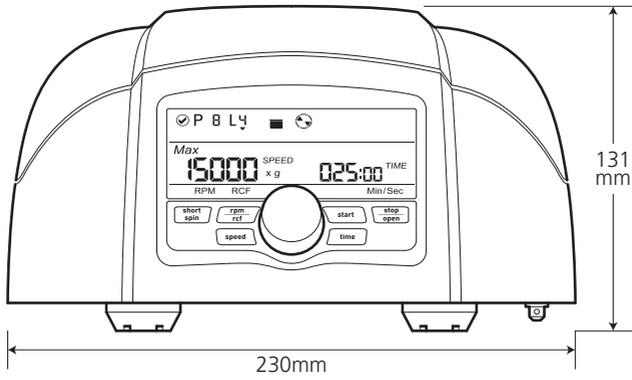
Weight 4.04kg
(with rotor)

Fault Finding

Problem	Cause	Solution
Display does not work even if the power is switched on.	No mains power.	Check mains power supply.
	Power failure.	Check mains supply to Lab.
	Improper connection.	Check adaptor is connected properly.
	Lid is not closed properly.	Close lid properly
	Error with lid closing and opening mechanism.	Contact service department
Err 55	Rotor not loaded properly.	Load rotor symmetrically and restart centrifuge.
Centrifuge lid cannot be opened.	Rotor is still spinning.	Wait for the rotor to come to a stop.
	Power failure.	Use emergency lid release to open centrifuge after the rotor has stopped.
Centrifuge shakes during acceleration and makes noises while running.	Rotor is not loaded symmetrically.	Load rotor symmetrically and restart centrifuge.
	Either a broken tube, damage to the rotor or motor is the cause of the noise.	Replace broken tubes. For damage to rotor/motor contact service department.
	Rotor is damaged	Remove and change rotor.
Display error.	Display connection is loose	Contact service department.
Err 1	Lid is not properly latched.	Open lid and close it properly.
Err 52	Rotor is stuck.	Turn OFF the centrifuge, check the rotor is fitted correctly and turn ON the centrifuge.
Power tripping.	Cable does not fit properly.	Remove cable and connect properly.
Last run memory not displayed.	The centrifuge was turned ON immediately after being turned OFF.	Maintain a 3 second gap between turning the centrifuge OFF and ON.
System gets hung up.	Electronic error.	Switch OFF centrifuge and then switch it ON again. If the error still shows, contact the service department.

Important notes

1. If the system gets hung up or gets hot due to over current, turn OFF and turn ON (restart) the centrifuge and check it again.
2. Maintain a 3 second gap between restarting the centrifuge. Instant ON-OFF can lead to a reset, erasing last run memory.
3. If the motor gets hot due to which there will be a fluctuation in speed value then allow the centrifuge to cool for at least 30 minutes. Do not do any operation for 30 minutes
4. It is highly recommended not to use or work on any other application or do online work while GUI is operating.
5. The GUI Software will not operate if "Centrifuge_Data_Logger" file is open. Close the "Centrifuge Data Logger" file and open software for remote operation.
6. Do not use liquids with density higher than 1.2g/ml for full load operation.

CE UKCA This product meets the applicable CE Directives and UKCA Legislation for radio frequency interference and may be expected not to interfere with, or be affected by, other equipment with similar qualifications. We cannot be sure that other equipment used in its vicinity will meet these standards and so we cannot guarantee that interference will not occur in practise. Where there is a possibility that injury, damage or loss might occur if equipment malfunctions due to radio frequency interference, or for general advise before use, contact the manufacturer.

Declaration of Conformity is available to view online at www.coleparmer.com

Ordering Information

Order No.	Series	Model	Legacy SKU
85230-00	CF-200	CF-200	SCF3

Warranty Registration

Cole-Parmer®
essentials

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