

# PrO-Research Centrifuges

Research. Universities. Pharmaceutical. Laboratories

## By Centurion Scientific Quick Start User Manual

It is imperative to read the full manual before use, this quick start is a guideline only. See disc supplied and information is also available on our website.

See back page.



27 years of  
Excellence

By  
**CENTURION**  
SCIENTIFIC LIMITED  
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## Transport and Set Up

### Before Setting Up

1. Check the centrifuge and the packaging for any shipping damage. Inform the shipping company and Centurion Scientific Ltd immediately if any damage is discovered.
2. Remove the packaging.
3. Check the order for completeness. (see "Items Supplied" on page 3) If the order is incomplete, please contact Centurion Scientific Ltd.

### Location

The centrifuge should only be operated indoors.  
The set-up location must fulfill the following requirements:

- A safety zone of at least 30 cm must be maintained around the centrifuge.
- People and hazardous substances must be kept out of the safety zone while centrifuging.
- The supporting structure must be stable and free of resonance.
- The supporting structure must be suitable for horizontal setup of the centrifuge.
- The centrifuge should not be exposed to heat and strong sunlight.

### WARNING

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

- The set-up location must be well-ventilated at all times.

### Transporting the Centrifuge

- Due to its weight, the centrifuge should be carried by several people.
- Always lift the centrifuge at both sides.



- Transport the centrifuge upright and if at all possible in its packaging.

### NOTICE

Store the original centrifuge packaging. Contact a shipping company for the transport or inform the customer service.

Always remove the rotor before moving the centrifuge. If you do not remove the rotor you might damage the centrifuge drive or centrifuge spindle.

### WARNING

Always lift the centrifuge on both sides. Never lift the centrifuge by its front or back panel. Always remove the rotor before moving the centrifuge.

## Aligning the Centrifuge

The horizontal alignment of the centrifuge must be checked every time after moving it to a different location. The supporting structure must be suitable for horizontal setup of the centrifuge.

### CAUTION

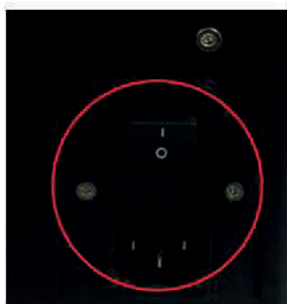
If the centrifuge isn't leveled, imbalances can occur and the centrifuge can be damaged. Do not place anything under the centrifuge feet to level the centrifuge.

## Mains Connection

1. Turn off the power supply switch located on the Left side of the centrifuge (press "O")



Power supply switch



2. Plug the centrifuge into grounded electrical sockets only.
3. Check whether the cable complies with the safety standards of your country.
4. Make sure that the voltage and frequency correspond to the figures on the rating plate.
5. Establish the connection to the power supply with the connecting cable.

## Storage

### WARNING

When removing the centrifuge and accessories from use you have to clean and if necessary disinfect or decontaminate the entire system. In doubt contact the Centurion Scientific customer service.

- Before storing the centrifuge and the accessories, it must be cleaned and if necessary disinfected and decontaminated.
- Store the centrifuge in a clean, dust-free location.
- Be sure to place the centrifuge on its feet.
- Avoid direct sunlight.

## Shipping the Centrifuge

Before shipping the centrifuge please bear the following in mind:

- The centrifuge must be clean and decontaminated.
- The decontamination must be confirmed in a special form.

### WARNING

Before shipping the centrifuge and accessories you have to clean and if necessary disinfect or decontaminate the entire system. In doubt contact the Centurion Scientific customer service.

Supplied with the rotor are full instructions on how to fit it correctly. Also on the CD supplied and on our website too.

**These instructions must be followed.**

Failure to follow these instructions could cause serious damage to the centrifuge and possibly injury to persons nearby.

Warranty will be invalid, if these instructions are not followed.

Rotors should be hand tightened and checked on a regular basis.

Maintenance instructions for the Rotor and the centrifuge are contained in the main manual CD.

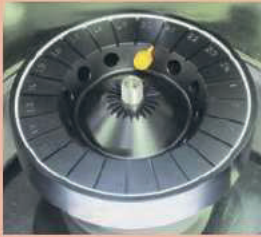
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## Making Sure your Rotor is Balanced

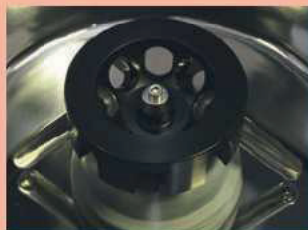
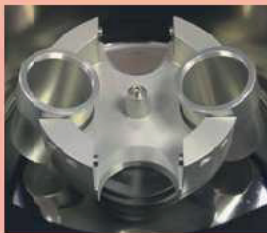
In Centrifugation it is vitally important that rotors are balance correctly, any slight imbalance when weighing or placing your sample in the rotor could be exagerted once the Centrifuge is spinning.

Please take note of the bellow rotor positions.

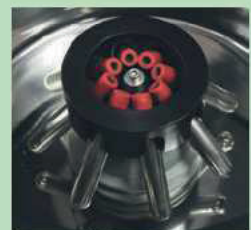
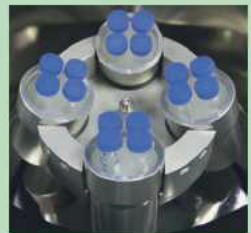
**Incorrect**



**Incorrect**

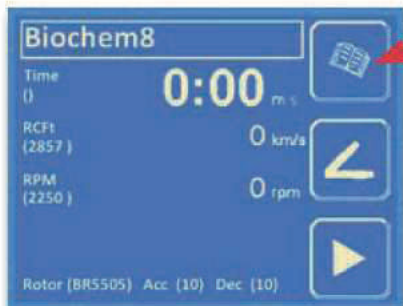


**Correct**



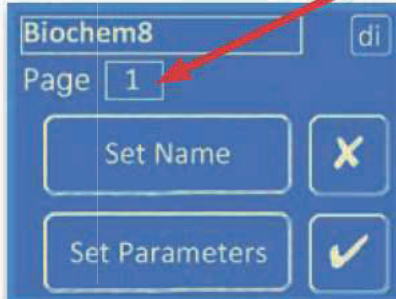
## Start point

FIRST build a program



Display shown at turn on

PRESS program key  
(book emblem top right)

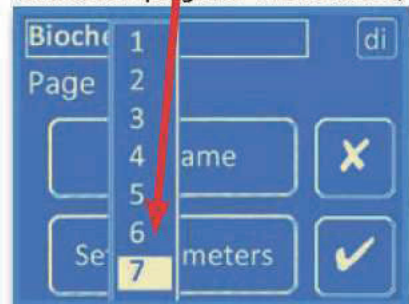


Display shown when program key pressed

PRESS Page number rectangle

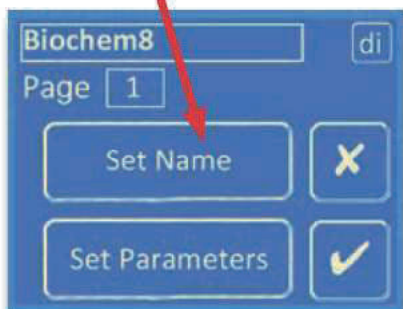
SELECT page number required

1-9 pages with 12 names per page (a total of 108 programs can be stored)



Display shown when Page key pressed

PRESS Set Name



KEY in name required

Upto 14 characters, letters & numbers (we have chosen Biochem8 for these illustrations)



Display shown when Set Name pressed

PRESS tick if correct



Display shown when chosen name is being entered

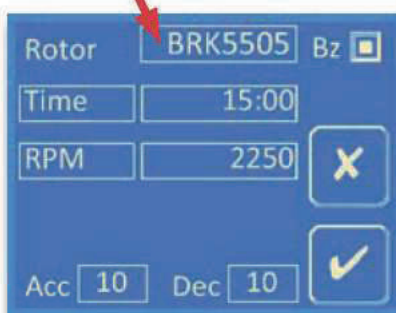
## ROTOR PROGRAMMING

PRESS Set Parameters



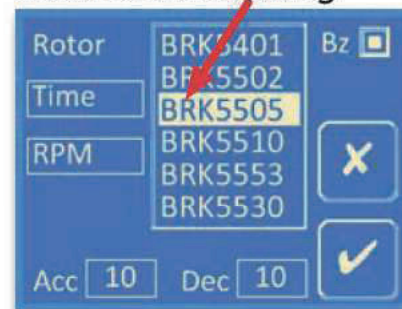
Display shown after pressing Tick on name settings

PRESS Rotor rectangle



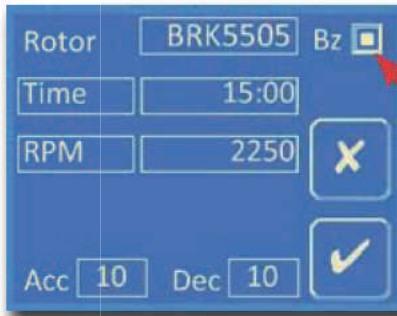
Display shown after pressing Set Parameters

SELECT rotor required by pressing down and releasing



Display shown after pressing Rotor rectangle

Correct rotor should be shown in Rotor display



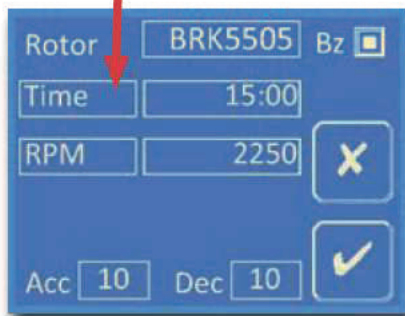
Display shown after selecting rotor

- Turn ON Shows white square in centre

Turn end of run buzzer off by PRESSING Bz (Top right of display)

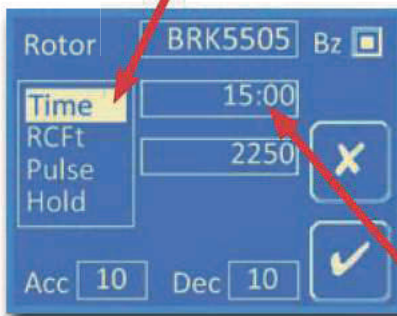
## TIME PROGRAMMING

PRESS Time rectangle



Display shown

SELECT and PRESS desired timer type:



Display shown when timer rectangle key pressed

**Time** 0 - 9999 minutes

**RCft** See W2t document for explanation

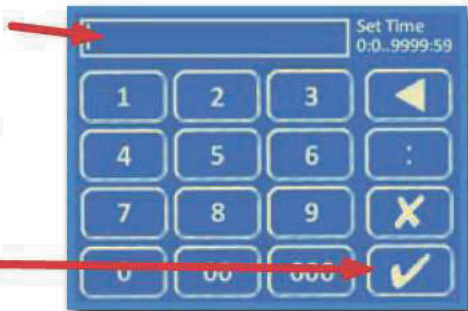
**Pulse** Timer counts up in seconds when START button held down. (90 seconds max)

**Hold** Timer is held on till stop button is pressed

PRESS Rectangle next to Time box

SELECT Time required in minutes & seconds  
Hold and Pulse cannot be changed  
Or select RCft number from previous run

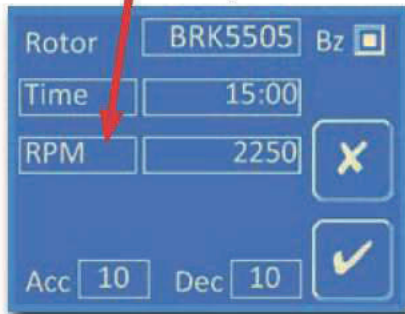
PRESS Tick after selection



Display shown when Time Numerical rectangle is selected

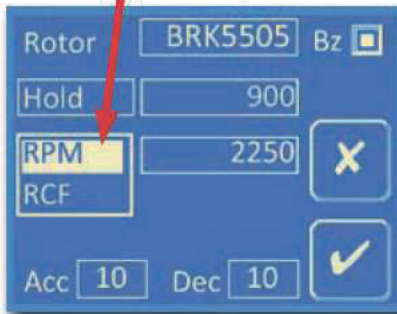
## RPM PROGRAMMING

PRESS RPM square



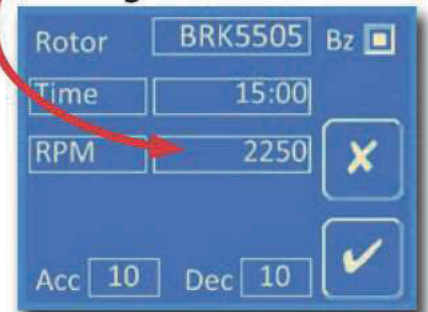
Display shown

SELECT RPM (speed) or RCF (G Force)



Display shown when RPM pressed

PRESS Numerical rectangle next to box



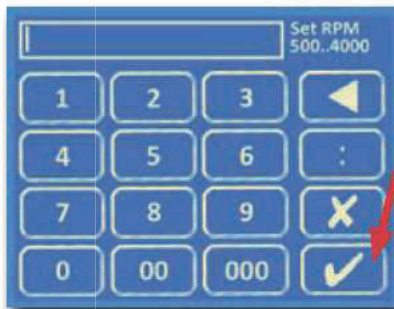
Display shown after selecting RPM

, continued...

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# How to use & Program

SET Speed (RPM) or RCF in numerical form



Display shown after pressing numerical rectangle

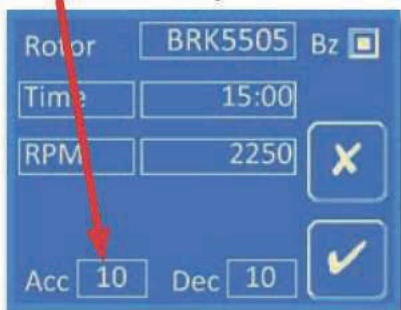
PRESS Tick after selection.

for REFRIGERATED MODELS only SET Temperature - SEE following page 7A, then return to set Acceleration and Deceleration rates below

## ACCELERATION and DECELERATION rates

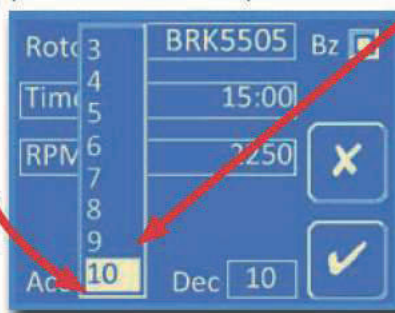
SET Acceleration rate

PRESS Acc Square



Display

SELECT Rate 1-10 (1 is slowest 10 fastest)



Display shown when Acc pressed

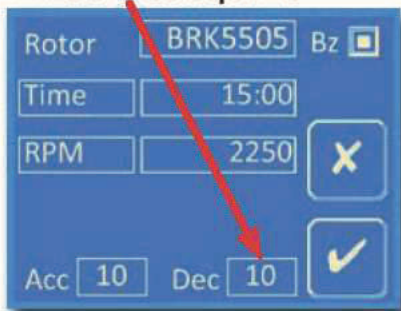
PRESS number required & release



Display after selecting Acc

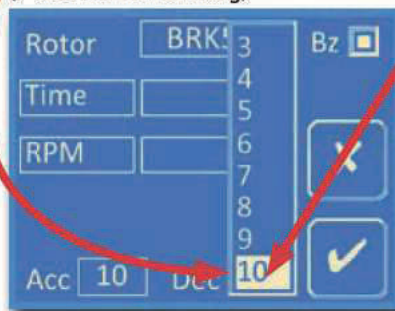
SET Deceleration (Brake) rate

PRESS Dec Square



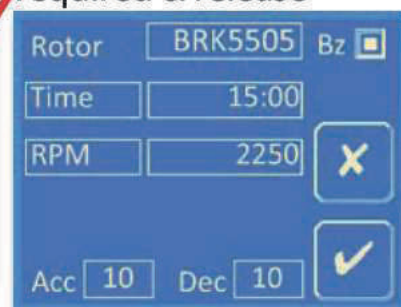
Display

Select rate 1-10 (1 is off 10 full braking)



Display shown when Dec pressed

PRESS number required & release



Display after selecting Acc and Dec rates

If you are satisfied with all parameters Check Rotor, timer type, RPM or RCF Acc & Dec rates



Then PRESS Tick box (bottom right)

continued



## NOW LOAD THE CENTRIFUGE



Display

PRESS Central button on right to open lid

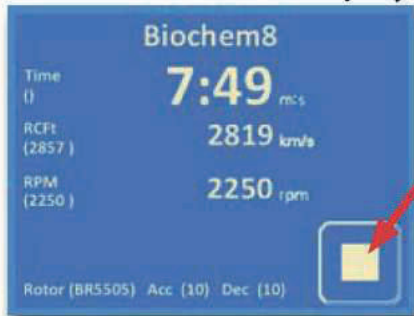
LOAD your samples evenly

FIT LID to rotor (if part of rotor type)

CLOSE Centrifuge lid pressing both sides down firmly.

PRESS Start button (arrow triangle, bottom right)

## RUNNING screen display



Display showing running screen

If you require early termination

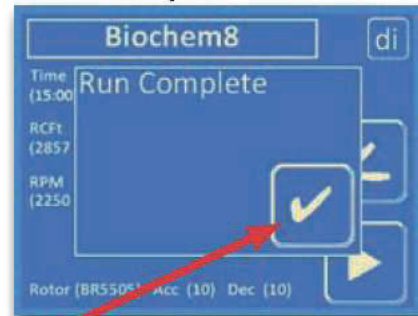
Time, Hold, RCFt

PRESS Square bottom right.

OR in pulse mode

RELEASE when counter (seconds) has reached desired number

## Run Complete



Display showing screen when run finished (with Buzzer selected)

PRESS run complete Tick (only shows IF Buzzer is selected)

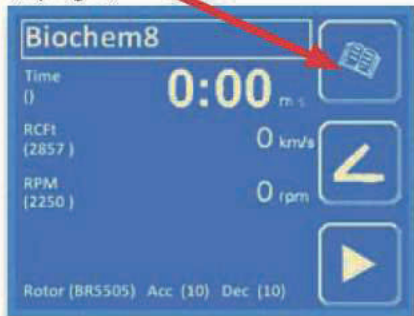


PRESS lid open button (centre right)

You may now retrieve your samples

## HOW TO RETRIEVE SET PROGRAMS

PRESS program button (top right)



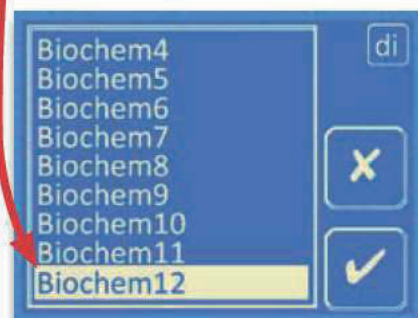
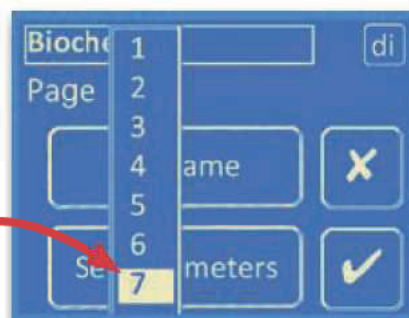
Display

### Note:

Centurion K3 range centrifuges can store up to 108 programs, these are conveniently grouped into 9 pages with up to 12 names available per page, each name can consist of up to 14 alphanumeric characters.

PRESS & SELECT required name then PRESS desired name (12 names available)

PRESS Page numerical box (9 pages available)



your stored program will now be retrieved.

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## Refrigerated Centrifuge only

Centurion and nobody else, can bend the rules of Physics therefore. For correct use and stability of sample's, please follow these instructions.

If the unit has been used for some time, over an hour, at the same temperature, then equilibration is not necessary. However if it has just been turned on then we recommend the following for the best and most accurate results.

### Below ambient or 18C (4-18C)

Turn on the unit. Select your temperature, make sure the rotor is in position and firmly fixed. Close the lid. Wait at least 20 minutes.

Whilst waiting place your samples, with tubes in refrigerated unit at the desired temperature.

After your set temperature has been reached use the precondition mode by pressing down the Function button and Start stop button together. Two dots will appear on the display showing precondition has been activated.

Precondition mode runs the centrifuge to ensure full mixing of the chamber air and therefore equilibrates all areas of the rotor and parts for maximum efficiency.

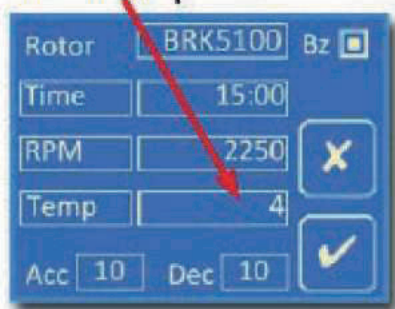
Once this has finished, lift the lid and load your samples in position See page 17 for correct fitment

See below pictures

### TEMPERATURE PROGRAMMING

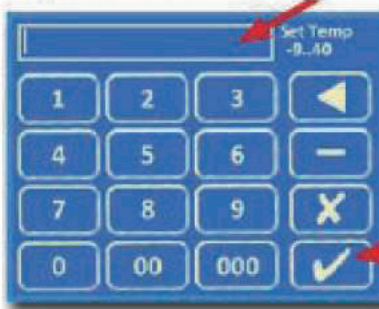
(Refrigerated models only - K2015R, K241R, K242R, K243R)

**PRESS Temperature numeric square**



Display shown K2015R, K241R K242R & K243R [all our illustrated screens show a chosen and actual temperature of 4°C]

**SET Temp [-9°C to 40°C] In numeric form**



Display shown when Temp is pressed

Note: See rotor appendix for minimum possible temperature at maximum speed per rotor:

**PRESS Tick after selection**

Note: Display illustrated elsewhere in this manual do not show the temp square or the temperature numeric square however they will be present on all refrigerated model displays as will set temperature and actual temperature where appropriate



**Preconditioning Start button**

See instructions above detailing use of this feature- note that this screen will show your selected parameters.

## Above ambient or 18C (18-40C)

Turn on the unit. Select the temperature to 4C, make sure the rotor is in position and firmly fixed.

Close the lid. Wait at least 20 minutes. This method allows the gases to warm up for higher temperature use. Once 4 has been reached set your desired temperature above ambient.

Whilst waiting, place your samples with tubes in a heated unit at the desired temperature.

After your set temperature has been reached use the precondition mode by pressing down the Function button and Start stop button together. Two dots will appear on the display showing precondition has been activated.

Precondition mode runs the centrifuge to ensure full mixing of the chamber air and therefore equilibrates all areas of the rotor and parts for maximum efficiency.

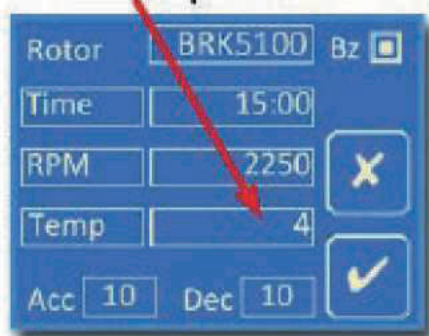
Once this has finished, lift the lid and load your samples in position See page 17 for correct fitment

See below pictures

### TEMPERATURE PROGRAMMING

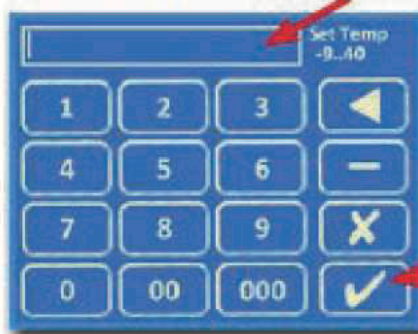
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#### PRESS Temperature numeric square



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Preconditioning Start button

See instructions above detailing use of this feature- note that this screen will show your selected parameters.

# Troubleshooting

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## Troubleshooting

### Mechanical Emergency Door Release

During a power failure, you will not be able to open the centrifuge lid with the regular electric lid release. A mechanical override is provided to allow sample recovery in the case of an emergency. However, this should be used only in emergencies and after the rotor has come to a complete stop

#### WARNING

The rotor can still be spinning at high speed. If touched, it can cause serious injuries. Always wait until the rotor has come to a stop without braking. The brake does not work when there is no current. The braking process lasts much longer than usual.

Proceed as follows:

1. Make sure the rotor has stopped (view port in the lid).

WARNING NEVER USE YOUR HAND OR OTHER TOOLS TO BRAKE THE ROTOR

2. Pull out the power supply plug.
3. On the bottom of the housing is one black plastic plug which you can pry out of the side plate with a screwdriver. It is located below the frontside of the centrifuge. It is reachable with a screwdriver. Pull the release cord attached to it to trigger the mechanical door release. The door will open and the samples can be removed. Open the front door.



Over hang the machine to gain access to emergency lid release



Mechanical Emergency Door Release on the downside

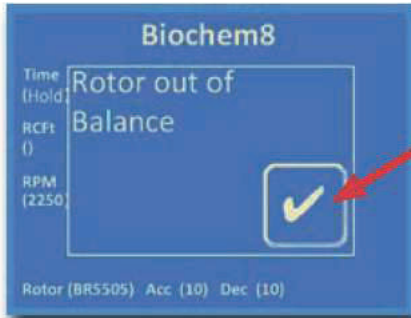
4. Place the centrifuge so that you have access to the downside of the front panel.

Due to its weight, the centrifuge should be carried by several people. Always lift the centrifuge at both sides.

5. Push the cord back into the centrifuge and mount the plug.

Reconnect the centrifuge once the power has been restored. Switch on the centrifuge. Press the OPEN key to have the door locks operative again.

## ERROR CODES ON DISPLAY

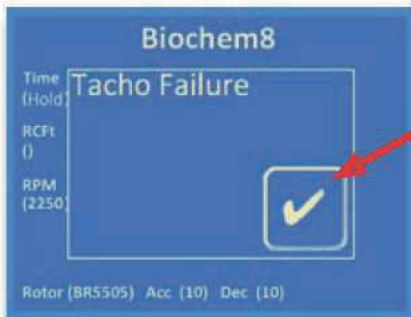
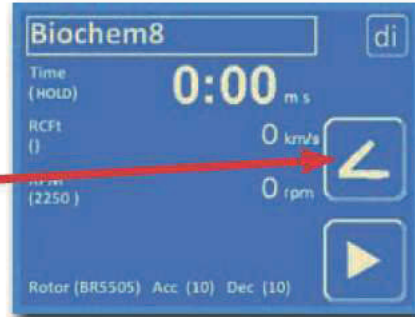


Error code shown on display

If Display shows Rotor out of balance  
An imbalance has occurred

When centrifuge has stopped PRESS tick button  
PRESS Lid open button

Check for:  
Improperly loaded tubes  
(see Safety pages)  
Broken tubes or  
incorrectly measured tube



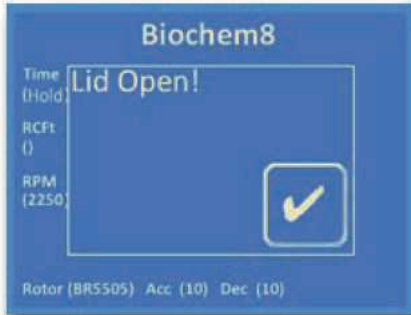
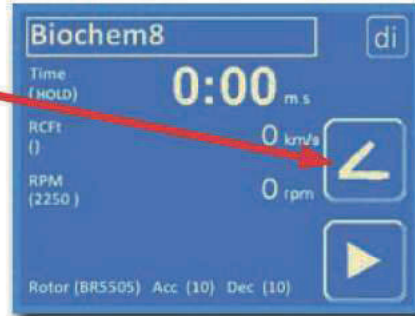
Error code shown on display

If Display shows Tacho failure

PRESS Tick button  
PRESS Lid open button

Check rotor for free rotation  
Are the tubes too tall?

CALL service department



Lid Open! Error code shown on display

If Display shows Lid Open!

Check lid is closed correctly

PRESS down firmly on lid  
(at both sides near front)

If not then CHECK SENSOR as below  
Or CALL Service Department



To check sensors go to parameters page.

First make sure Centrifuge lid is open.

Press 'di' (top right small button) for Diagnostics screen. (Shown below)

It reads as follows: (either 0 or 1 may show when this screen first appears, follow instructions below to perform diagnostic checks)



.... or greater (version number of installed firmware)

.....0 or 1 .....By rotating rotor Tacho will show 0 or 1 as rotor turns if so Tachometer is working

.....0 or 1 .....By rotating rotor Rotor Rec will show 0 or 1 as rotor turns if so sensor is working

.....0 or 1 .....By pressing rotor firmly or shaking hard Balance will show 0 or 1

.....0 or 1 .....By shutting the lid the Lid switch will go from 0 to 1 showing correct sensing

## **Fault seen**

### **Tacho Failure shown on the display**

NOTE this does not necessarily mean a Tachometer or board problem  
First check that the sample tubes are not too tall and preventing the rotor to move when the lid is closed  
check the rotor and motor for movement , they must rotate smoothly  
check the tachometer on the underside for dust or intrusions to the sensor  
If none of the above contact your Distributor

### **Rotor out of Balance shown on the display**

An imbalance has occurred  
Check you sample tubes for equal and opposite positioning  
See use and programming section for correct loading and instructions  
Turn off the centrifuge at the power inlet. WAIT 2 minutes  
If bAL still shows on display the detector is damaged

If none of the above contact your Distributor

### **Speed will not go beyond 2000rpm**

Electronics have set the rotor into safety mode  
if the machine model has an R at the end of its name , it has rotor recognition.  
check the sensor on top of the motor, check the magnets are clean(wipe with a dry cloth)  
on underside of rotor

If none of the above contact your Distributor

### **noisy**

balance the samples in the rotor, check the lid seals are in place and in good order

### **lid support is weak**

Gas strut failure, contact your distributor

### **When to contact Customer Service**

If you need to contact customer service, please provide the order no. and the serial no. of your centrifuge.  
This information can be found on the back near the inlet for the power supply cable



### Head Office

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Tel: +44 (0) 2392 631225

### Email:

**General:** [info@centurionscientific.co.uk](mailto:info@centurionscientific.co.uk)

**Sales:** [sales@centurionscientific.co.uk](mailto:sales@centurionscientific.co.uk)

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<http://goo.gl/N8j4OK>

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