

Portable display centrifuges

Ambient instruction manual



PrO-Research

IMPORTANT Read before using

- Check the Centrifuge and the Packaging for any shipping damage. Inform the shipping company and Centurion Scientific immediately
- Check the order for completeness, if not contact Centurion Scientific

Location

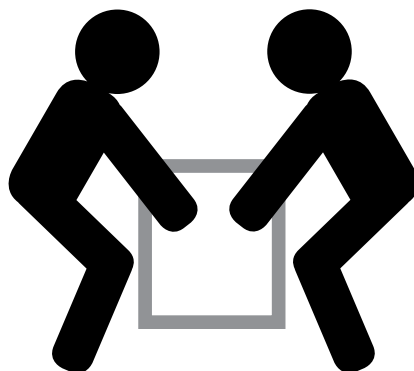
The Centrifuge should only be operated indoors.

The set up location must fulfil the following requirements

- **A safety zone of at least 30Cm must be maintained around the Centrifuge**
 - **People and hazardous substances must be kept out of this zone during centrifugation**
 - The bench or supporting structure must be stable and free from resonance
 - The Bench or supporting structure must be suitable for horizontal use of the centrifuge
 - The Centrifuge should Not be exposed to heat or strong sunlight
 - Ultra violet rays can damage the stability of plastics and coatings
 - Do not subject the Polypropylene, Delrin rotors or accessories to direct sunlight
 - The Zone location must be well ventilated at all times
-
- **Store the original packaging, Keep this for future service to base , if required.**

Transporting the Centrifuge

- Always remove the Rotor before transportation
- Due to its weight the Centrifuge should be carried by several people
- Transport the Centrifuge upright and if possible in its packaging
- Always lift the centrifuge at both sides (see below). NOT front to rear.



Fixing of rotor

Fixing for micro and fixed angle rotors

BRK5401. BRK54XXseries. BRK53XX series. BRK52XX series

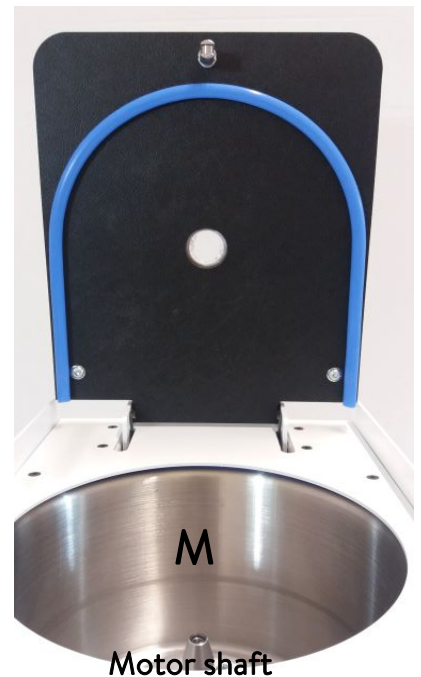


Locate 3 pins of fixing, into 3 holes at the top of the rotor
Push down firmly into holes.

Lift and fit rotor onto the motor shaft. **M**

Fit the Screw and spring washer, screw down tight with the supplied tool.

Check tightness regularly.



Fixing for Swing out rotors.

BRK5508, BRK5506, BRK1001, BRK3000, BRK5540, BRK5740.



Lift and fit rotor onto the motor shaft. **M**

Fit the Screw and spring washer, screw down tight with the supplied tool.

Check tightness regularly

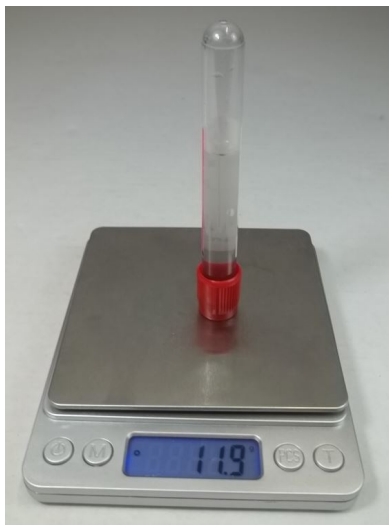
Rotor balancing. **Very Important**

Balancing of tubes for Micro and Fixed angle rotors



Tare (zero) your scales first

Weigh a tube, note its weight Weigh another and match its weight to within 0.1 gram



Swing out rotor, buckets. Balancing



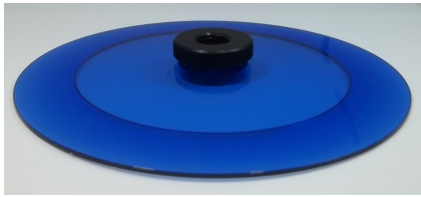
Place all your required tubes in all 4 buckets.
Equal amount per bucket.
Weigh each bucket containing tubes

Match other 3 buckets, with tubes to within 1 gram of each other



For BRK5506 rotor use the adaptor

Tube placement micro rotors



Haematocrit Rotor

Always fit the lid supplied, as shown to the left



- ALWAYS** load your tubes opposite to each other
- ALWAYS** weigh samples to within 0.1 Gram. For best separations. (see page 4)
- ALWAYS** fit the lid supplied
- CHECK** the Rim seal gasket and replace **every 2 months** (Part number 8011)
- CHECK** the rotor screw fixing tightness regularly



Micro tube Rotor

Always fit the lid supplied, as shown to the left



- ALWAYS** load your tubes opposite to each other
- ALWAYS** weigh samples to within 0.1 Gram For best separations. (see page 4)
- ALWAYS** fit the lid supplied
- CHECK** the two top seals and replace regularly (Part number 8044)
- CHECK** the rotor screw fixing tightness regularly

Tube placement Fixed angle rotors



Small fixed angle Rotors

Always fit the lid supplied, as shown to the left

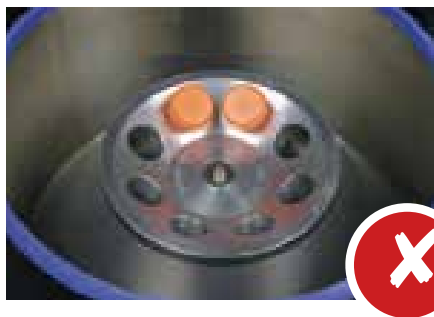
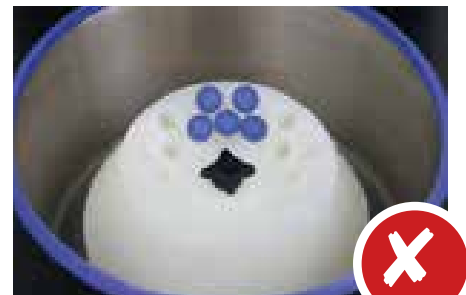
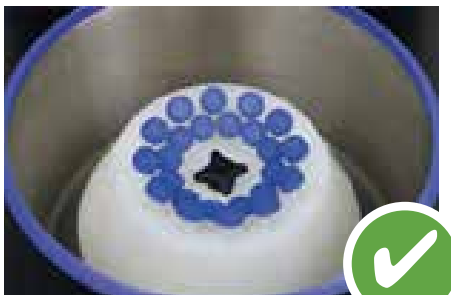


ALWAYS load your tubes opposite to each other
ALWAYS weigh samples to within **0.1 Gram**. For best separations. (see page 4)
CHECK The rotor screw fixing tightness regularly



Large fixed angle Rotors

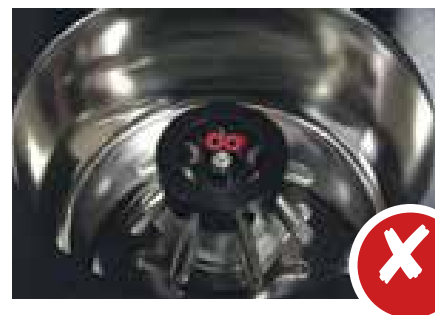
Always fit the lid supplied, as shown to the left



ALWAYS load your tubes opposite to each other
ALWAYS weigh samples to within **0.1 Gram**. For best separations. (see page 4)
CHECK The rotor screw fixing tightness regularly

Tube & bucket placements Swing out rotors

Small Swing out rotor



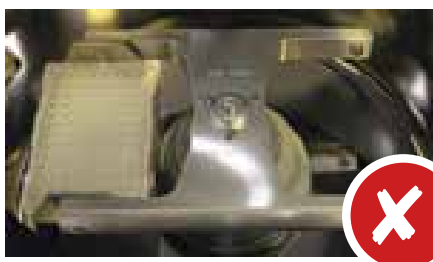
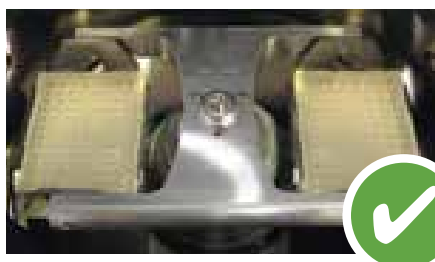
ALWAYS load your tubes opposite to each other
ALWAYS weigh samples to within **0.1 Gram**. For best separations
ALWAYS fit **ALL** the Tube Holders and any supports
CHECK The rotor screw fixing tightness regularly

Medium – Large Swing out Rotors



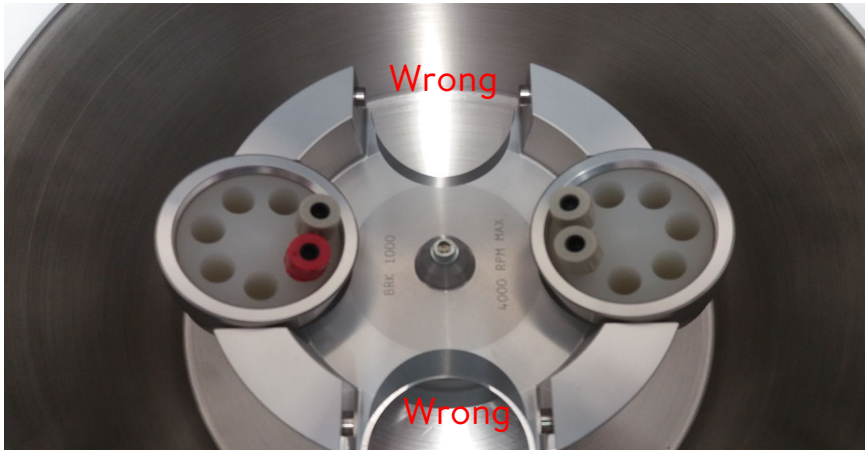
ALWAYS load your tubes opposite to each other
ALWAYS Weigh **Bucket** and all samples within to **1.0 Gram**
ALWAYS fit **ALL** 4 Buckets and 4 Adaptors supplied
CHECK the rotor screw fixing tightness regularly

Microtitor Rotor



ALWAYS load your plates opposite to each other
ALWAYS weigh samples to within **1.0 Grams**. For best separations
ALWAYS fit **both** Buckets supplied (**2**)
CHECK the rotor screw fixing tightness regularly

Tube placements Swing out rotor



This is not balanced!

Even though there are two samples in two buckets opposite to each other it is not balanced.

NEVER run swing out rotors with only two buckets



All four buckets must be used at all times



C



A



B

Always use the same size tubes as in A per bucket.

**NEVER use different size tubes as in B per bucket
Check they fit and do not hit the centre as shown in C**

Tube placement Cytology & Cell wash rotors

Cytology Rotors

Always fit the lid supplied, as shown below



- ALWAYS** load your holders opposite to each other
- ALWAYS** weigh samples to within **0.5 Gram**. For best separations
- ALWAYS** fit the lid supplied
- Check** the two top Gaskets and replace regularly (Part Number 8055)
- CHECK the rotor screw fixing tightness regularly**

Manual Cell Washing Rotor



- ALWAYS** load your tubes opposite to each other
- ALWAYS** weigh samples to within **0.2 Gram**. For best separations Regularly smear a small amount of Silicon grease over the O rings
- Check** the inner and outer O rings and replace regularly (Part Number 8066)
- CHECK the rotor screw fixing tightness regularly**

Care & maintenance. Centrifuge



Always keep your Centrifuge clean and free from moisture at all times, this will help prevent corrosion.



Do not use any kind of scourers or abrasive material to clean the Centrifuge and ensure that a pH neutral cleaner is always used.



It is recommended that your centrifuge is switched off and the lid left open overnight to ensure that any moisture build up can evaporate.



Keep a 30Cm distance around your Centrifuge.
Do not site the unit in sunlight



Always ensure that lids and accessories are correctly tightened before running the unit.



Use only official Centurion Scientific Ltd accessories with your centrifuge.



It is recommended that regular maintenance and cleaning of the unit and accessories is carried out.



Yearly servicing is required to validate your warranty and increase the life of your Centrifuge and accessories. See PrO-Care pages

Care & maintenance. Rotor



Always check rotors for cracks and damage, if found replace your rotor. DO NOT USE as dangerous



Autoclave for the maximum number of times shown in the sales literature. In brackets(20)



Rotors have a Seven year lifespan and must be replaced .
DO NOT USE beyond their Lifespan



It is recommended that regular maintenance and cleaning of the rotor and accessories is carried out.



Ensure that all buckets are present in the rotor when running your centrifuge, as using the unit with an unbalanced rotor can cause distortion and excessive wear. Read tube placements section in the previous section



Do not use any kind of scourers or abrasive material to clean the buckets and ensure that a pH neutral cleaner is always used.



Aluminium buckets should be kept clean and moisture free to keep them in a good, safe operating condition.



Yearly servicing is required to validate your warranty and increase the life of your rotor and accessories

Emergency Lid release

Mechanical Emergency Door release

During a power failure, you will not be able to open the Centrifuge lid via the Display button

Mechanical override is provided to allow sample recovery

However this is for Emergency use only

This should Not be used for normal use.

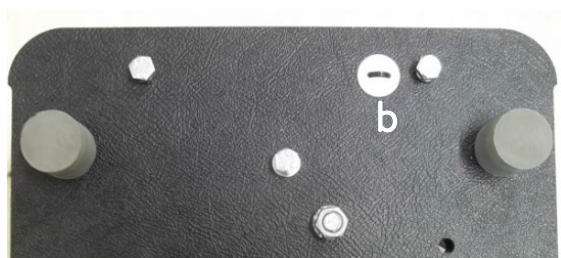
Warning

The rotor can still be spinning at a high speed, if touched it can cause serious injuries.

Always wait till the rotor has stopped.

Proceed as follows

- Make sure the Rotor has stopped (view via the port in the Lid)
- Once stopped turn off the power via the inlet Switch
- Pull the Centrifuge slightly over the bench (as shown in (a))
- You will notice one (b) or some models two plastic plug (c). Plug *
- Pop open with a screwdriver (tool) and pull downwards .
- The lid will pop open You can now retrieve your samples



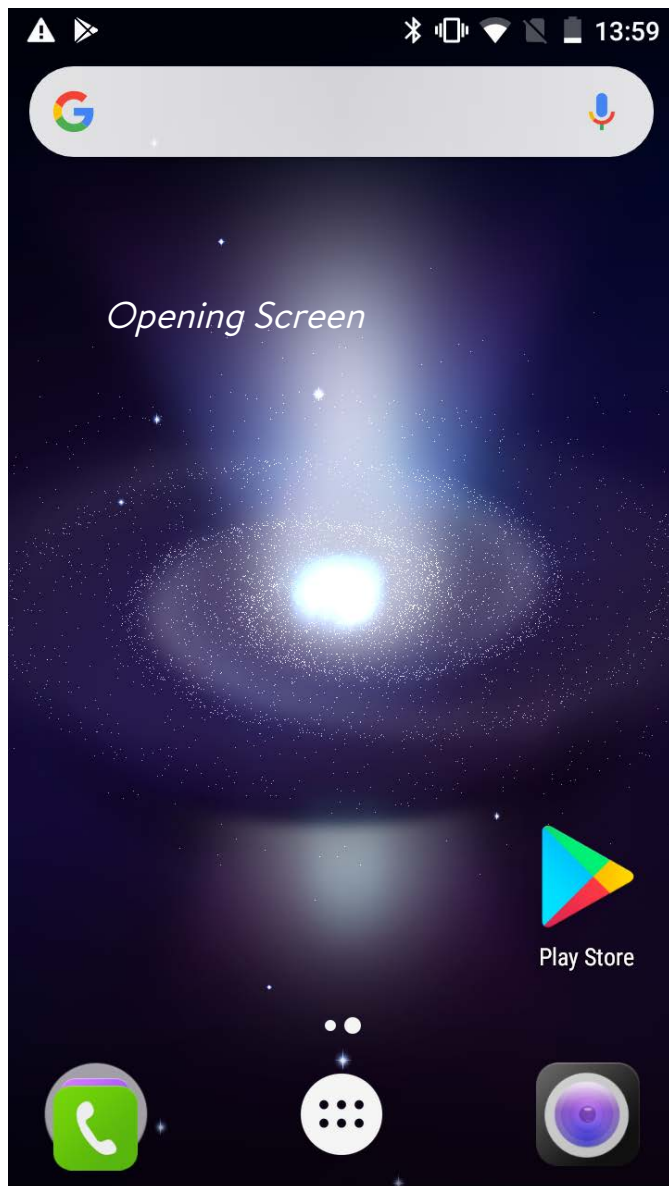
After replace the Plastic plugs back into their original position.

Reconnect the centrifuge power line once the mains power has been restored.

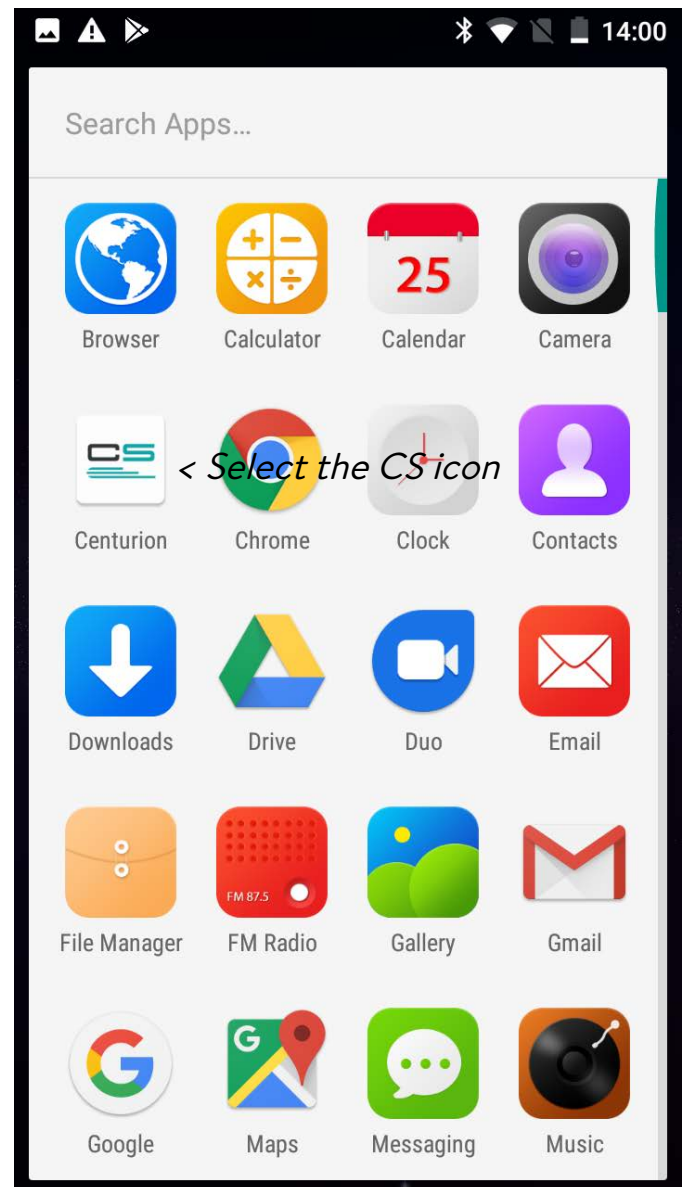
Check all is working correctly by closing the lid, wait 5 seconds then press lid open.

If not working refit or Contact your Distributor

Start point



Turn on the screen will show above



Then shows app icons select the CS

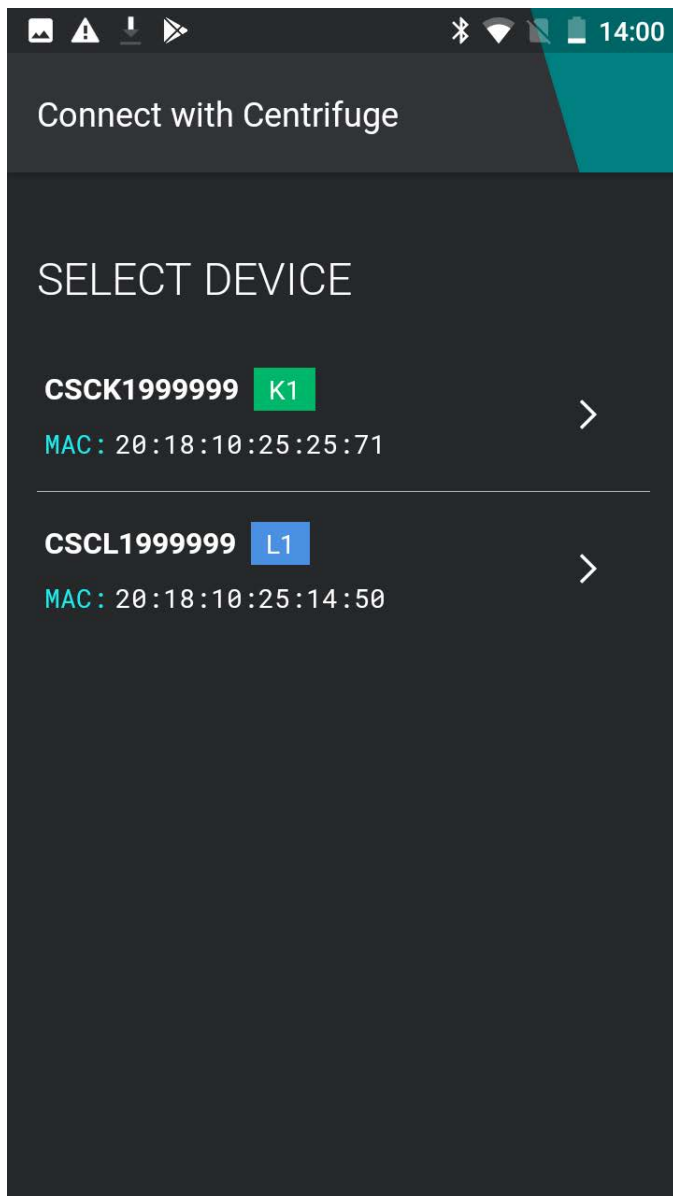
*Once Cs is selected the
Flash page shows >*

Flash page shows for a few seconds

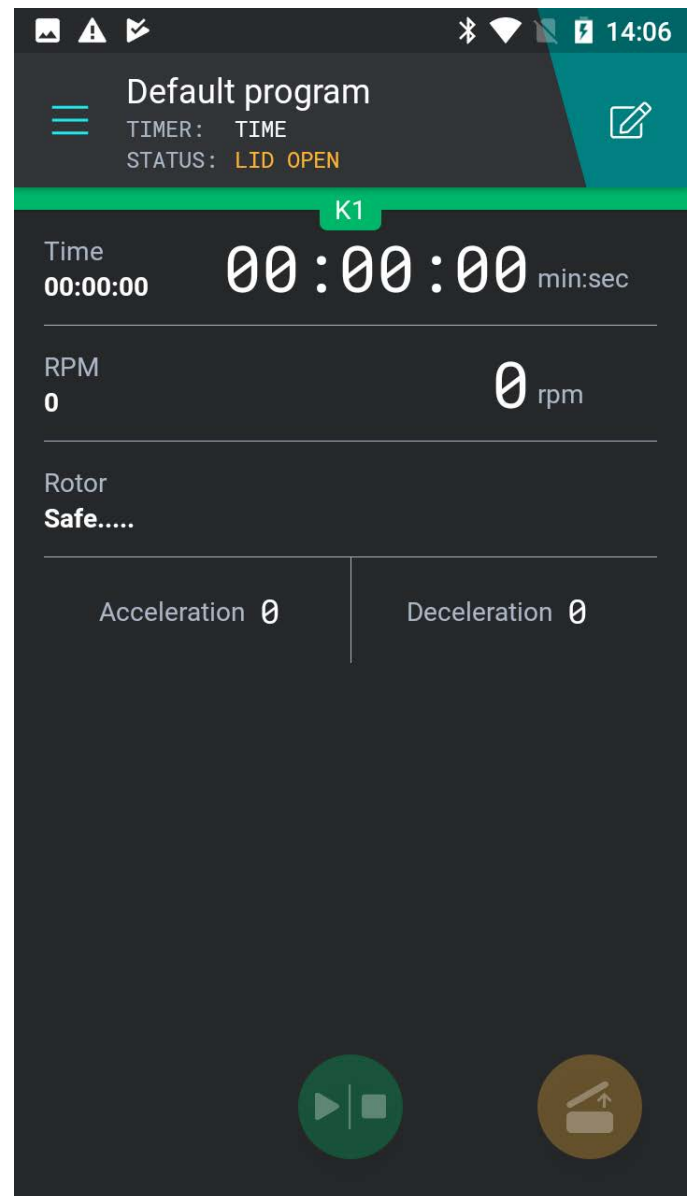


Start point

Tablet to Centrifuge matching & setting a program



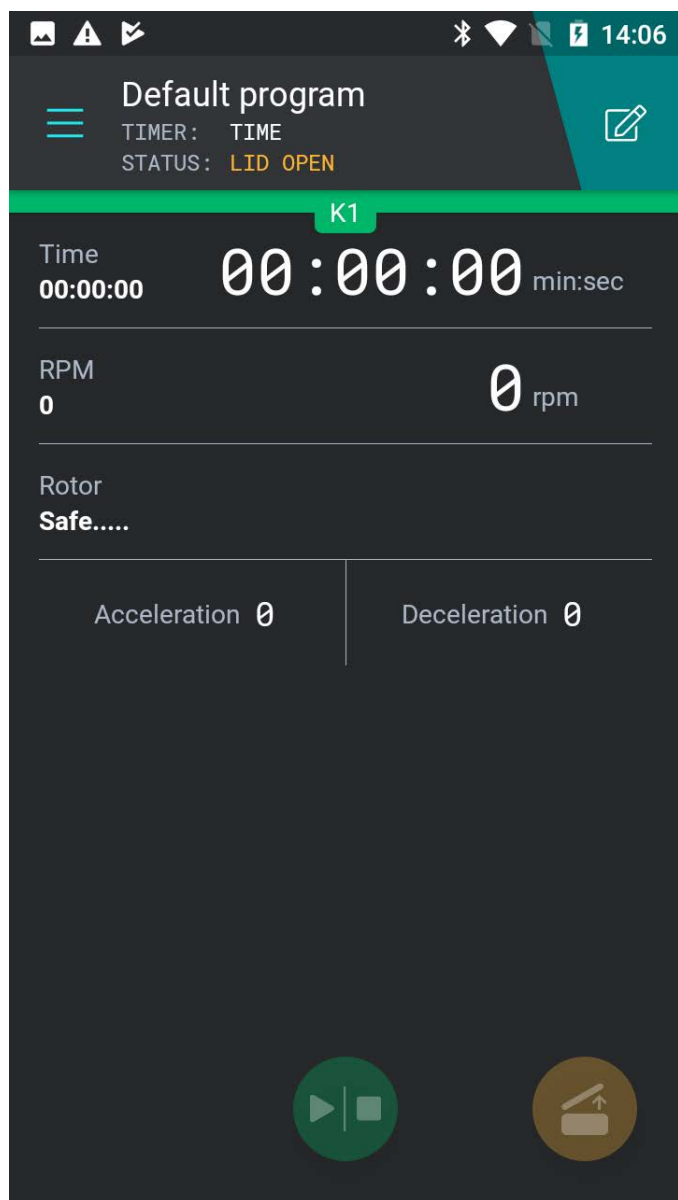
*Select device (make sure that the device selected is turned on).
This matches the tablet to the Centrifuge*



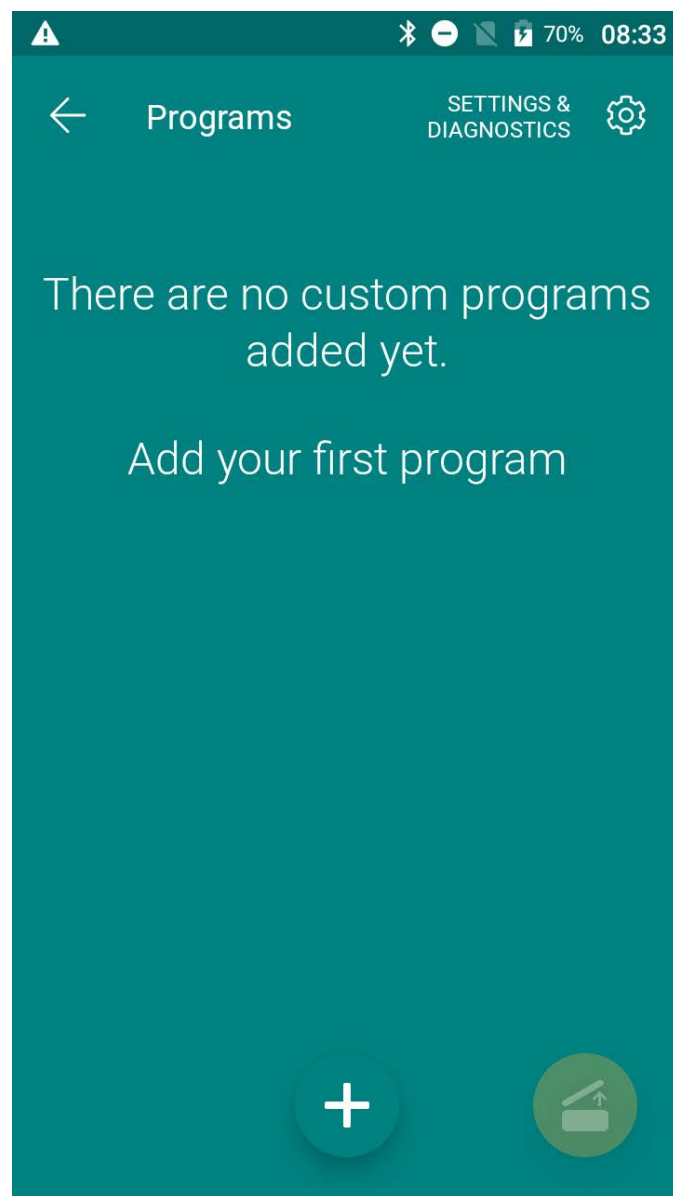
Opening Screen

Start point

Create a program



Press the  icon next to Default program.
The program screen will appear.



To add a new program press the  icon

Start point

Create a program

NAME

Program name

ROTOR

SELECT

TIMER TYPE

TIME RCFt PULSE HOLD

SPEED TYPE

Press the Program name icon on the Create Program screen and the keyboard will appear.

NAME

Centurion 1

ROTOR

SELECT

TIMER TYPE

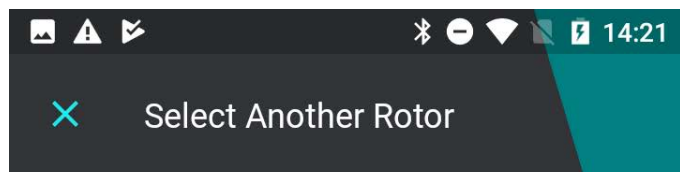
TIME RCFt PULSE HOLD

SPEED TYPE

*Type in a program name
Then press the  icon*

Start point

Create a program



Display indicative only

BRK5424

Fixed angle. With sealed lid

Max Speed: 15000
Min RCF: 10
Max RCF(G): 22010
Max Capacity: 24 x 2ml
Max tube size: 11 x 50mm



Green tick



Select a rotor
Press the rotor select icon on
the Create Program screen.
Press the < or > arrows to see
your desired rotor.
Then press the green tick

An image of the selected rotor will be
shown.

Start point

Create a program

The screenshot shows the 'Create Program' screen with the following options:

- NAME:** Centurion 1
- ROTOR:** BRK5424 (with a 'SELECT' button)
- TIMER TYPE:** TIME, RCft, PULSE, HOLD (with 'TIME' selected)
- SPEED TYPE:** RPM, RCF (with 'RPM' selected)
- SELECT A TIME:** A dropdown menu showing a list of time options.

Cancel			Confirm
98 hours	3 min	58 sec	
99 hours	4 min	59 sec	
0 hours	5 min	0 sec	
1 hours	6 min	1 sec	
2 hours	7 min	2 sec	

Select timer type
For Time press time icon and
then press 00.00.00 in the
Select a Time Box.
From the drop down box
select the required time.

Then press Confirm

The screenshot shows the 'Create Program' screen with the following options:

- TIMER TYPE:** TIME, RCft, PULSE, HOLD (with 'TIME' selected)
- SPEED TYPE:** RPM, RCF (with 'RPM' selected)
- SELECT A TIME:** A text box showing '00:05:00'.
- RPM:** 200-15000
- ACCELERATION:** 0-9
- DECELERATION:** 0-9

A numeric keypad is displayed below the text box, with a blue checkmark button at the bottom right.

The time is shown in the select a time
window.

Start point

Create a program

The screenshot shows the 'Create Program' screen with the following elements:

- TIMER TYPE:** Four buttons labeled 'TIME', 'RCFt', 'PULSE', and 'HOLD'. 'TIME' is selected.
- SPEED TYPE:** Two buttons labeled 'RPM' and 'RCF'. 'RPM' is selected.
- SELECT A TIME:** A text box containing '00:05:00'.
- RPM:** A text box containing '15000' with a cursor at the end. The range '200-15000' is displayed to the right.
- ACCELERATION:** A text box containing '0.0' with a range of '0-9'.
- DECELERATION:** A text box containing '0.0' with a range of '0-9'.
- Bottom Panel:** A numeric keypad with digits 1-9, 0, and a decimal point, along with a blue checkmark button.

Select speed type
For RPM select RPM and
press 0 in the RPM box. Type
in the required speed .
Then press the  icon

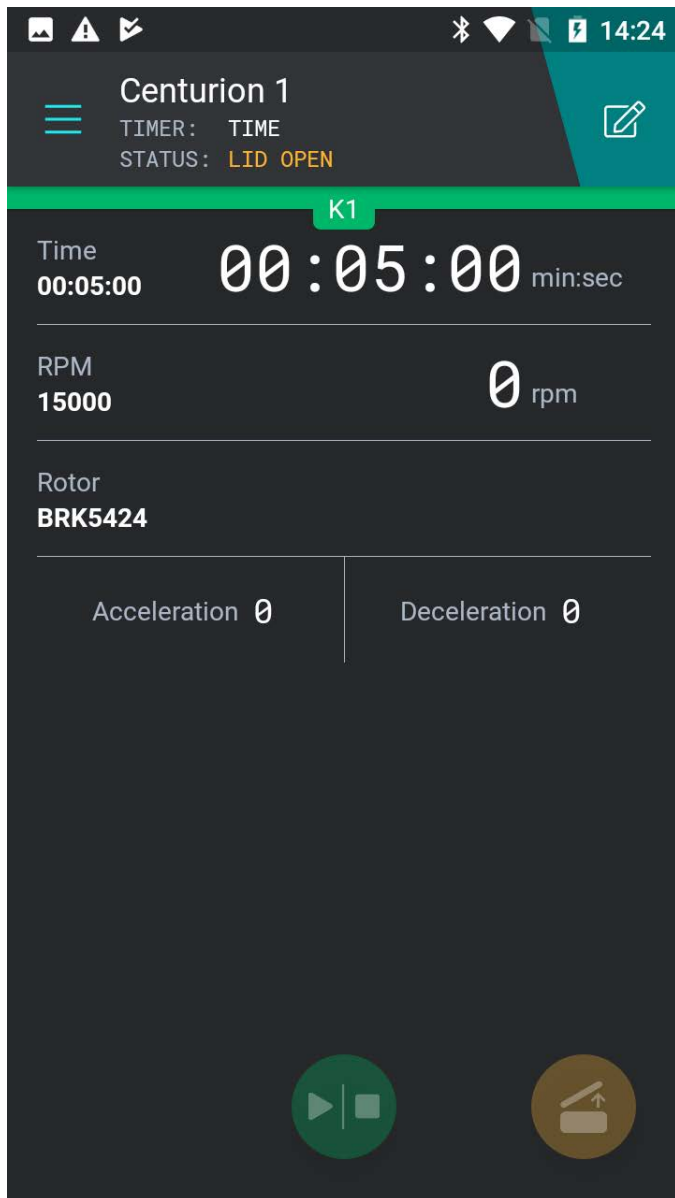
The screenshot shows the 'Create Program' screen with the following elements:

- TIMER TYPE:** Four buttons labeled 'TIME', 'RCFt', 'PULSE', and 'HOLD'. 'TIME' is selected.
- SPEED TYPE:** Two buttons labeled 'RPM' and 'RCF'. 'RPM' is selected.
- SELECT A TIME:** A text box containing '00:05:00'.
- RPM:** A text box containing '15000' with the range '200-15000' displayed to the right.
- ACCELERATION:** A text box containing '0' with a range of '0-9'.
- DECELERATION:** A text box containing '0' with a range of '0-9'.
- BUZZER ON FINISH:** Two buttons labeled 'ON' and 'OFF'. 'ON' is selected.
- Bottom Panel:** A large green circular button with a white checkmark.

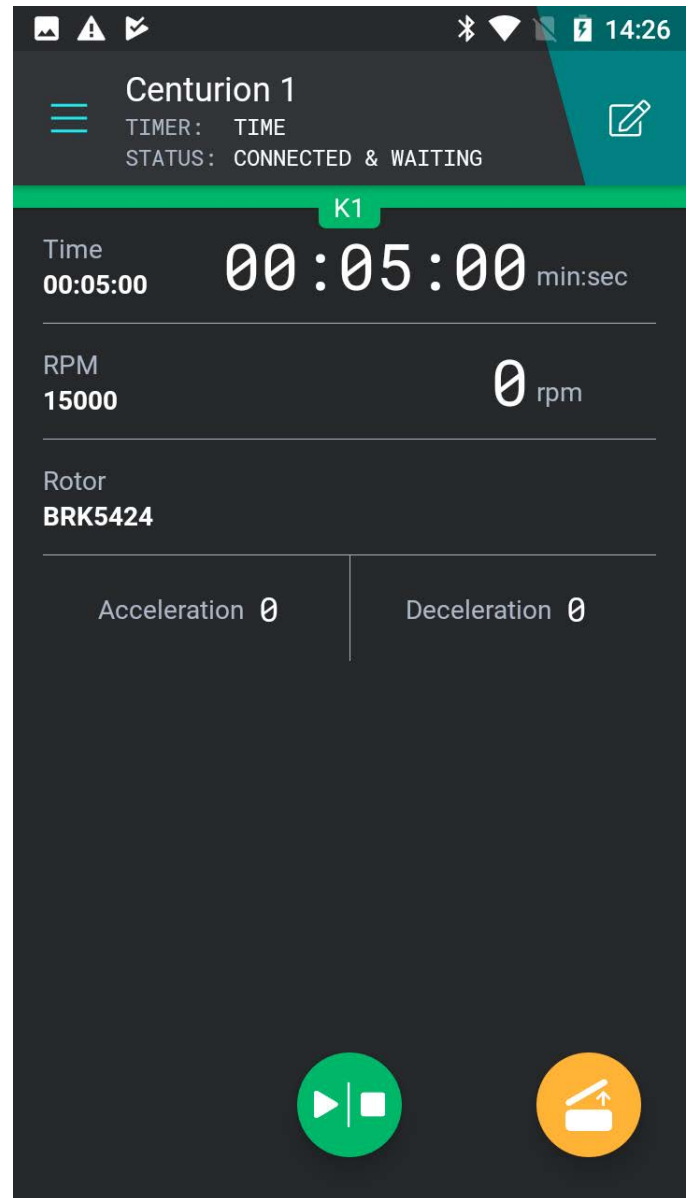
Rotor speed shown in RPM box.

Start point

Create a program



Setting Acceleration



Setting Deceleration

Start point

Create a program

The screenshot shows the 'Edit Program' screen with the following settings: TIME (selected), RCf, PULSE, HOLD, SPEED TYPE (RPM, RCF), SELECT A TIME (00:05:00), RPM (15000), and ACCELERATION (9). The 'ACCELERATION' field is highlighted with a red border, and a red cursor is visible inside it. The 'DECELERATION' field is set to 0.

The numeric keypad shows digits 1 through 9, a minus sign, a comma, 0, a period, and a blue checkmark icon. The digit '9' is highlighted with a red border, indicating it is the selected value for acceleration.

Select Acceleration

Press the number in the acceleration box and select your desired acceleration, 0 being the slowest and 9 the fastest.

Then press the  icon.

The screenshot shows the 'Edit Program' screen with the following settings: TIME (selected), RCf, PULSE, HOLD, SPEED TYPE (RPM, RCF), SELECT A TIME (00:05:00), RPM (15000), and DECELERATION (9). The 'DECELERATION' field is highlighted with a red border, and a red cursor is visible inside it. The 'ACCELERATION' field is set to 9.

The numeric keypad shows digits 1 through 9, a minus sign, a comma, 0, a period, and a blue checkmark icon. The digit '9' is highlighted with a red border, indicating it is the selected value for deceleration.

Select Deceleration

Press the number in the deceleration box and select your desired deceleration, 0 being the slowest and 9 the fastest.

Then press the  icon.

Start point

Create a program

14:30

Edit Program

TIMER TYPE

TIME RCft PULSE HOLD

SPEED TYPE

RPM RCF

SELECT A TIME

00:05:00

RPM 200-15000

15000

ACCELERATION 0-9 DECELERATION 0-9

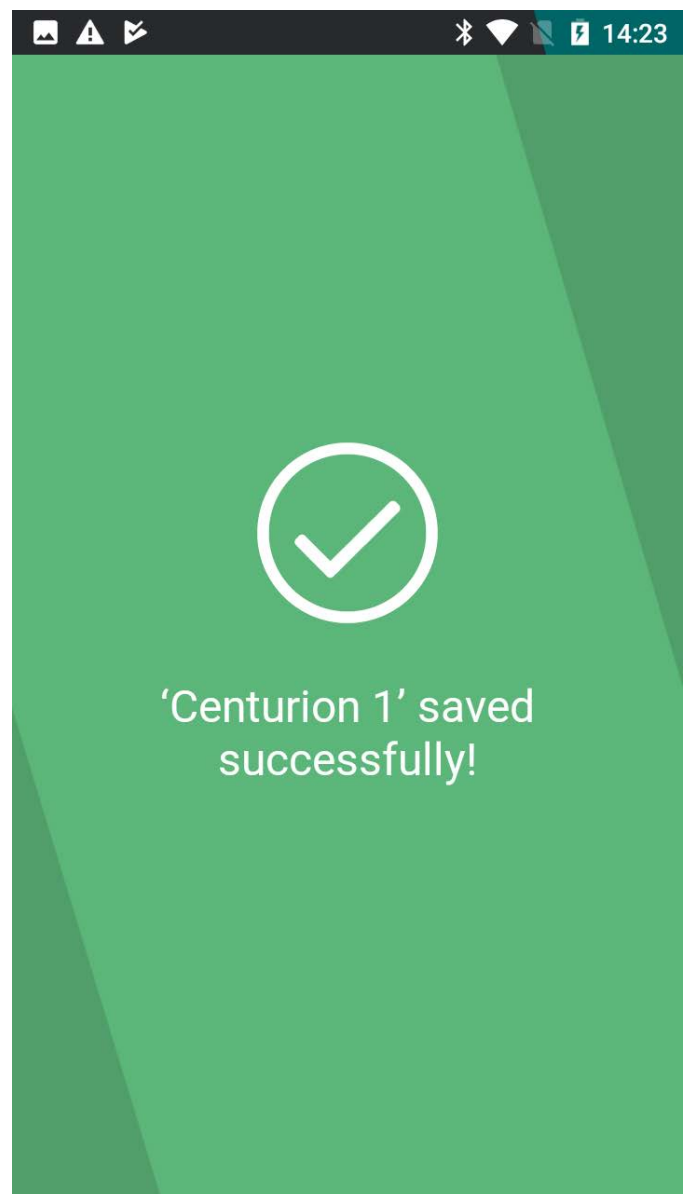
9 9

BUZZER ON FINISH

ON OFF

✓

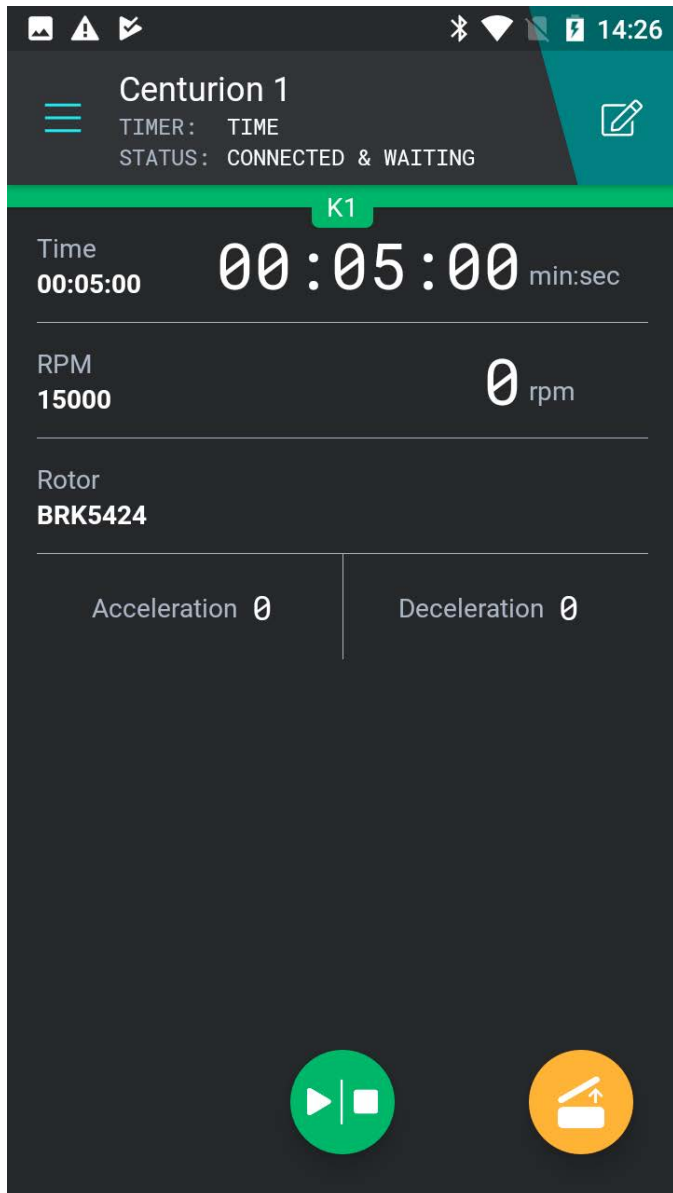
Select Buzzer
Press buzzer On or OFF
Then press the green tick



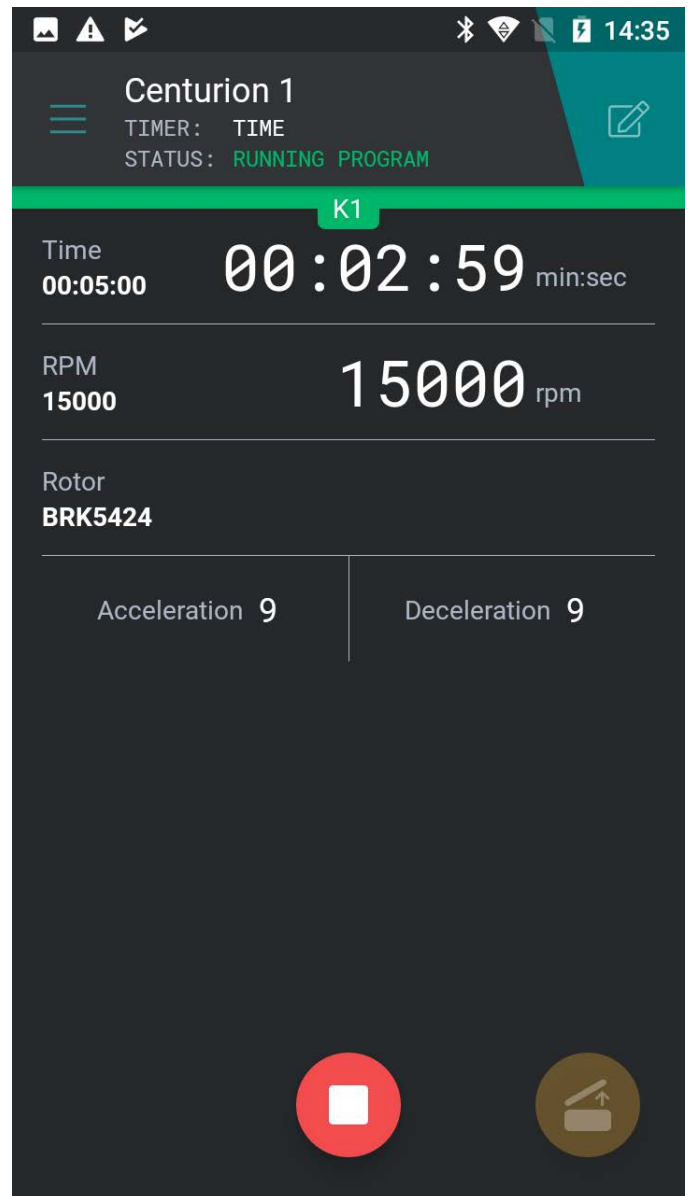
Program saved successfully

Start point

Running a program

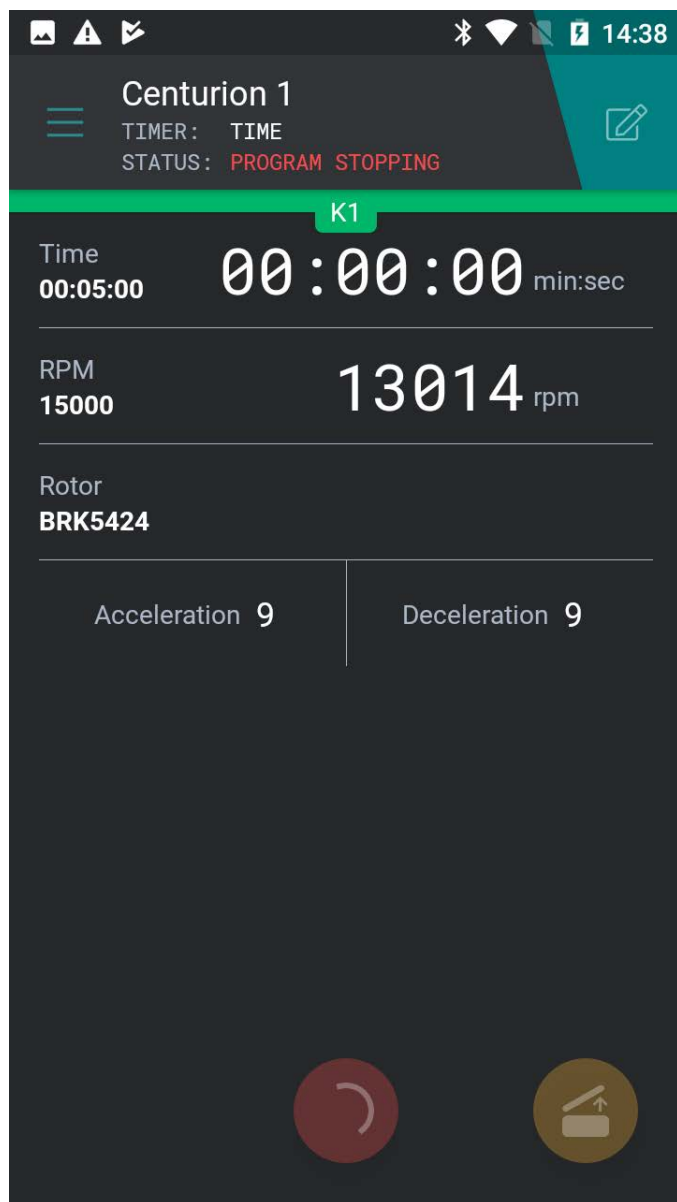


Running a program
Press the  icon to start your program.

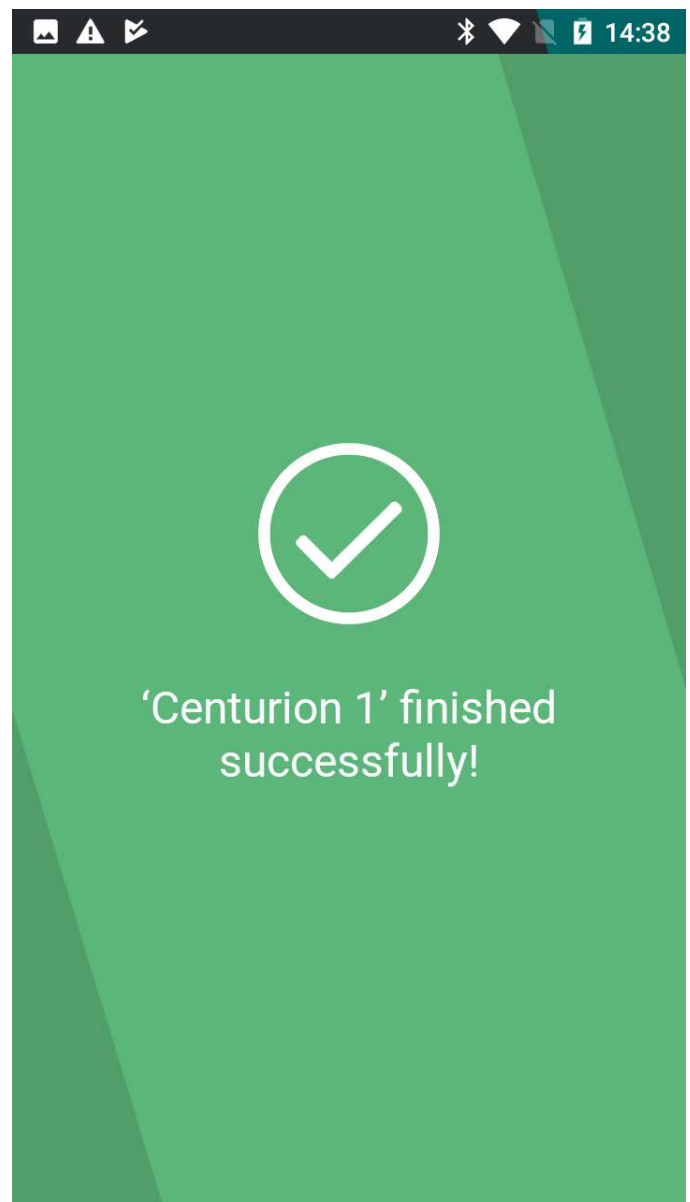


Program Running

Start point Running a program



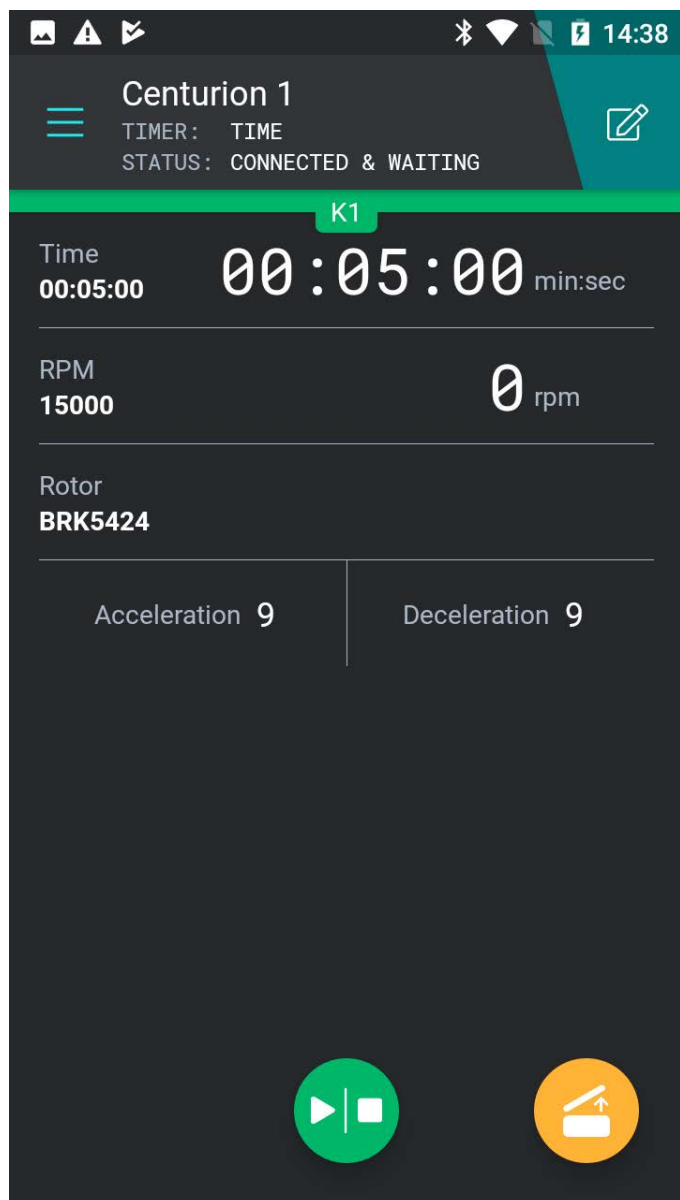
Program stopping



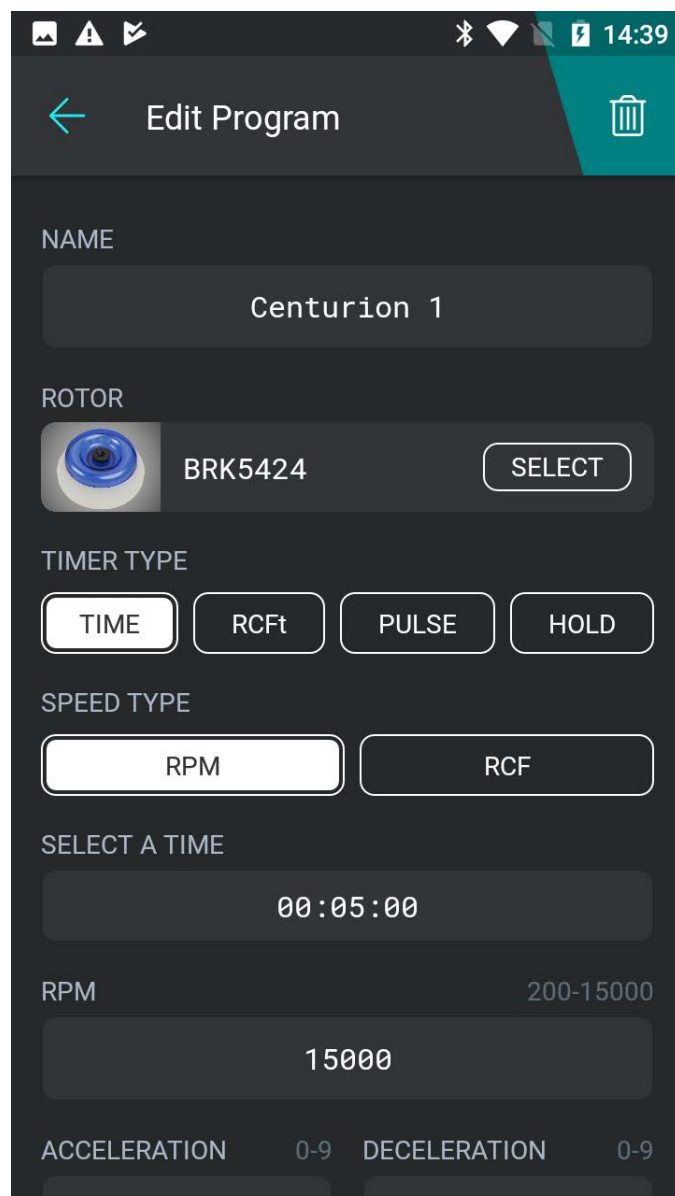
*Program finished.
Press tick to return to run screen*

Start point

Edit a program



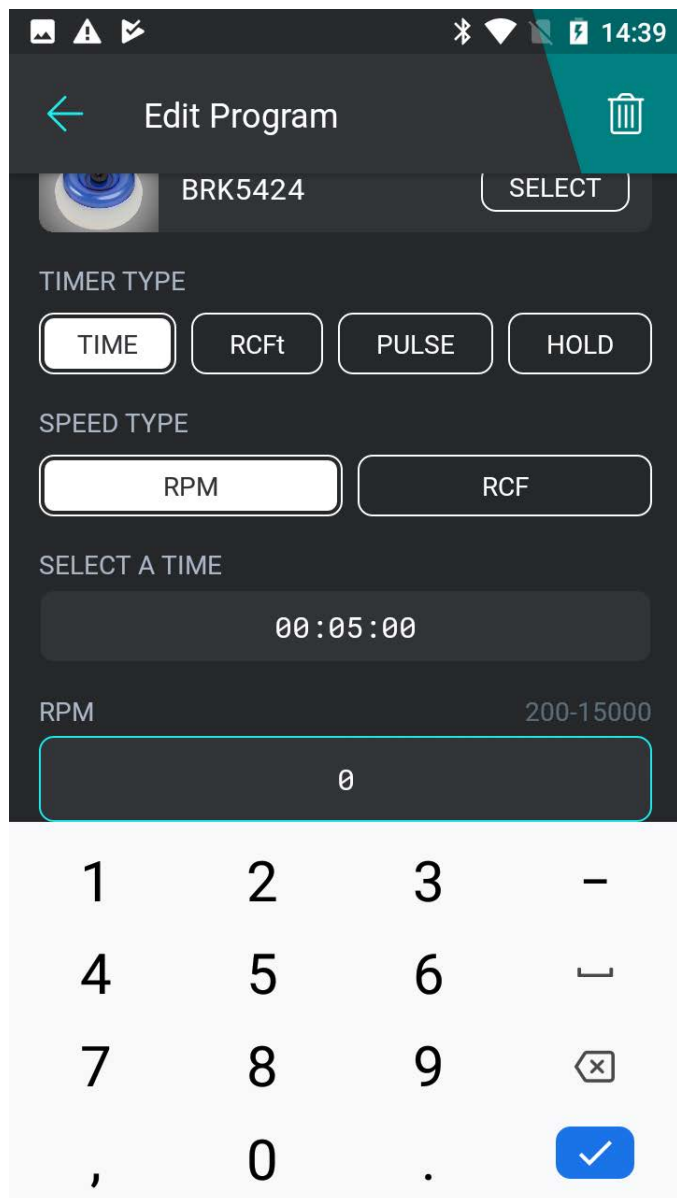
Edit a program
Press the  edit icon to go to the edit screen.



Edit a program
Edit screen

Start point

Edit a program

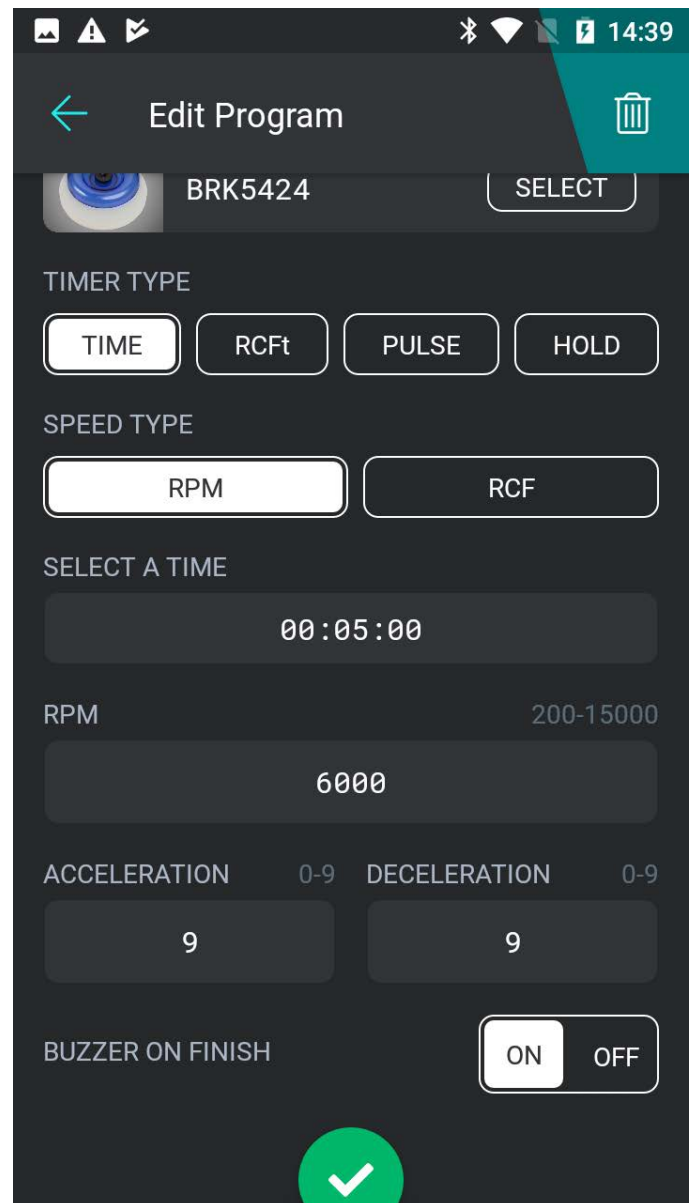


The screenshot shows the 'Edit Program' screen with the following settings:

- Program Name: BRK5424
- TIMER TYPE: TIME
- SPEED TYPE: RPM
- SELECT A TIME: 00:05:00
- RPM: 0

A numeric keypad is displayed at the bottom, with a blue checkmark icon in the bottom right corner.

Edit a program
Select the parameter you wish to change and adjust.
Then press the  icon.



The screenshot shows the 'Edit Program' screen with the following settings:

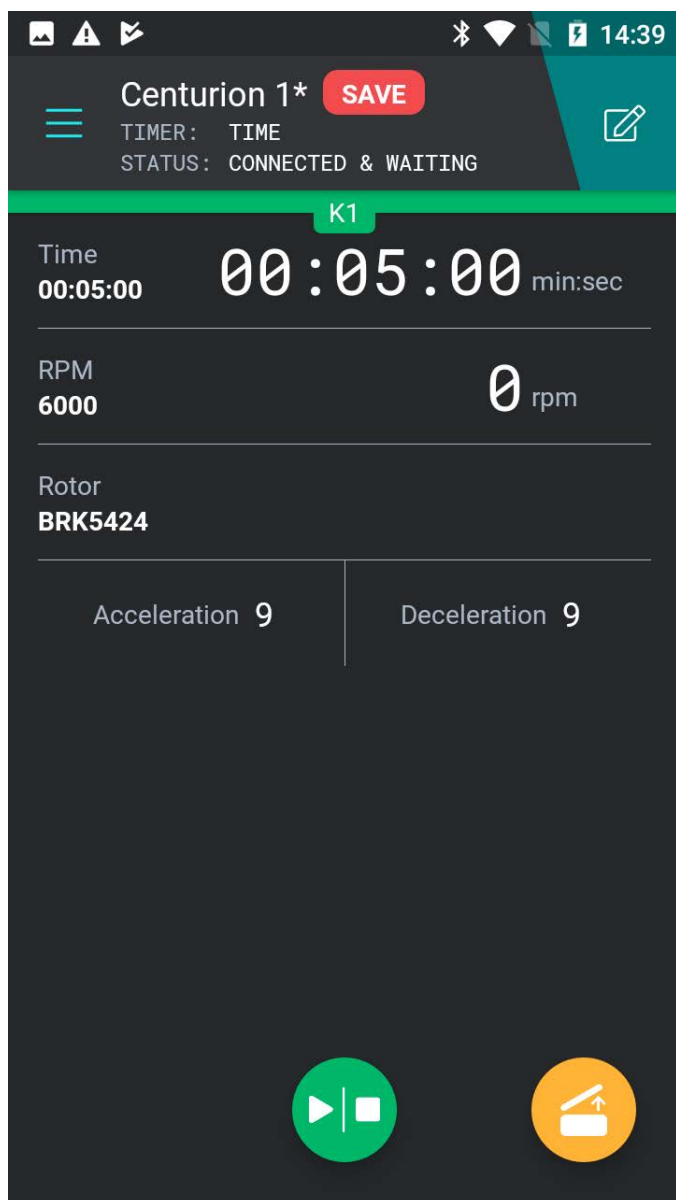
- Program Name: BRK5424
- TIMER TYPE: TIME
- SPEED TYPE: RPM
- SELECT A TIME: 00:05:00
- RPM: 6000
- ACCELERATION: 9
- DECELERATION: 9
- BUZZER ON FINISH: ON

A green checkmark icon is visible at the bottom center of the screen.

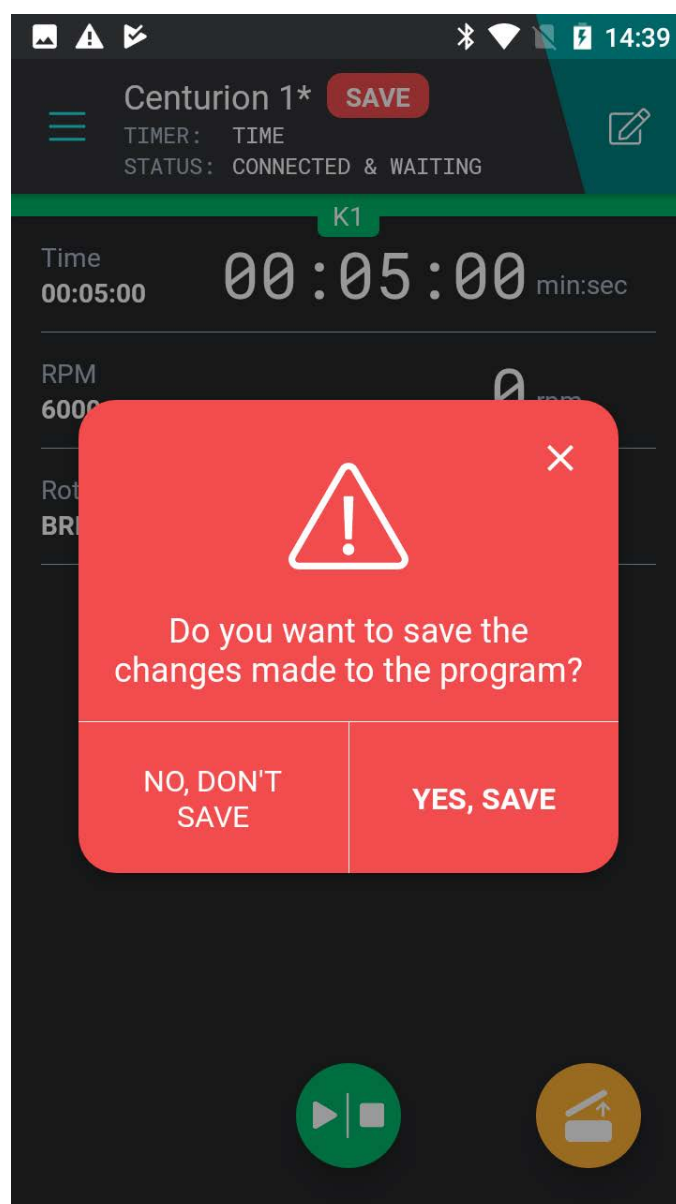
Edit screen
Press the green tick  when you have completed editing.

Start point

Edit a program



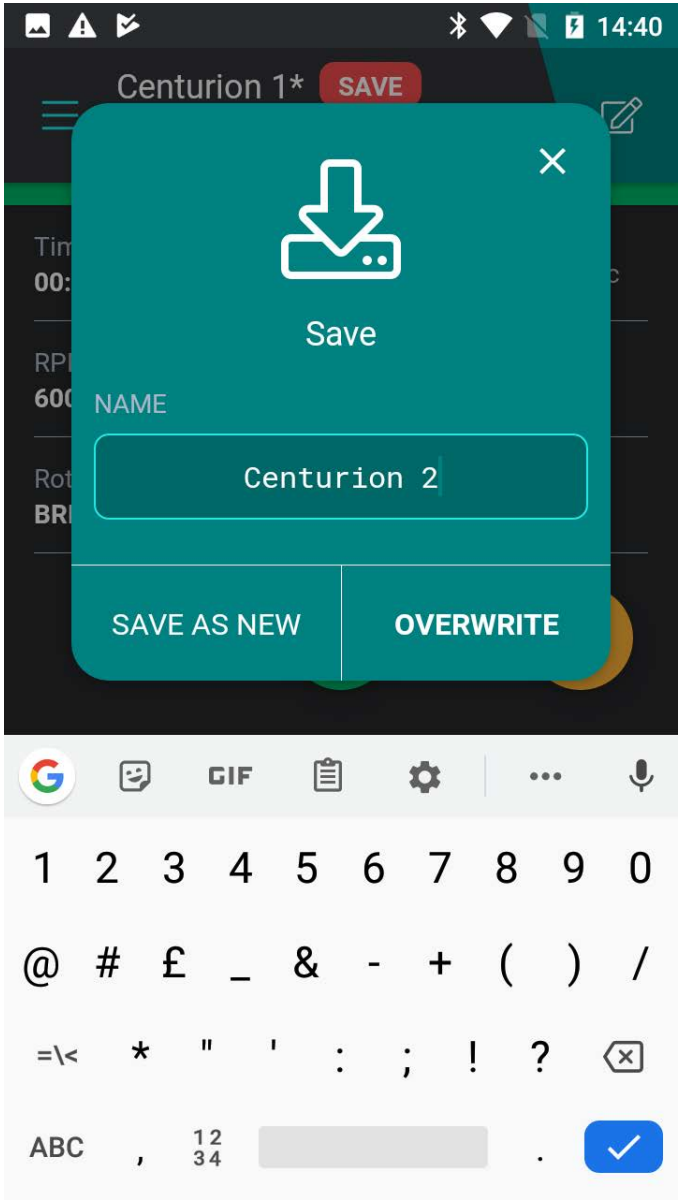
Edit a program
*Press the **SAVE** icon at the top of screen*



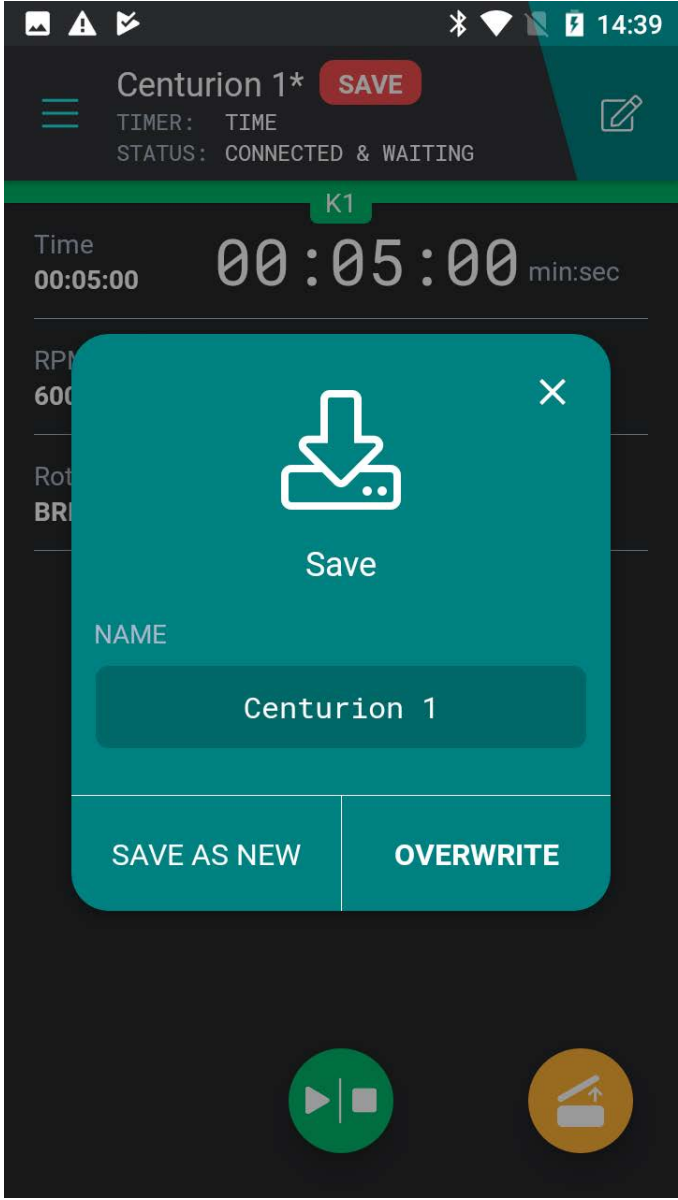
Select "YES, SAVE"

Start point

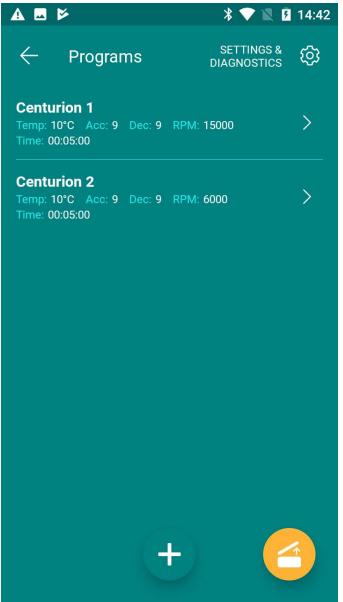
Edit a program



Type in new program name

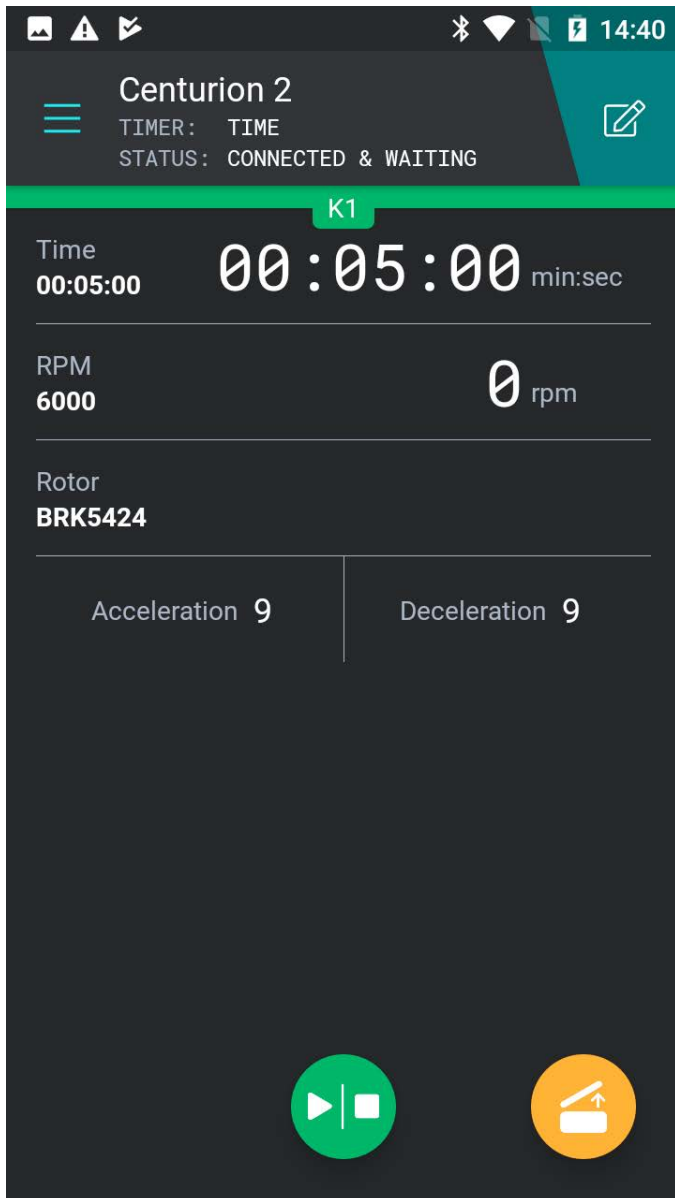


Select "SAVE AS NEW"

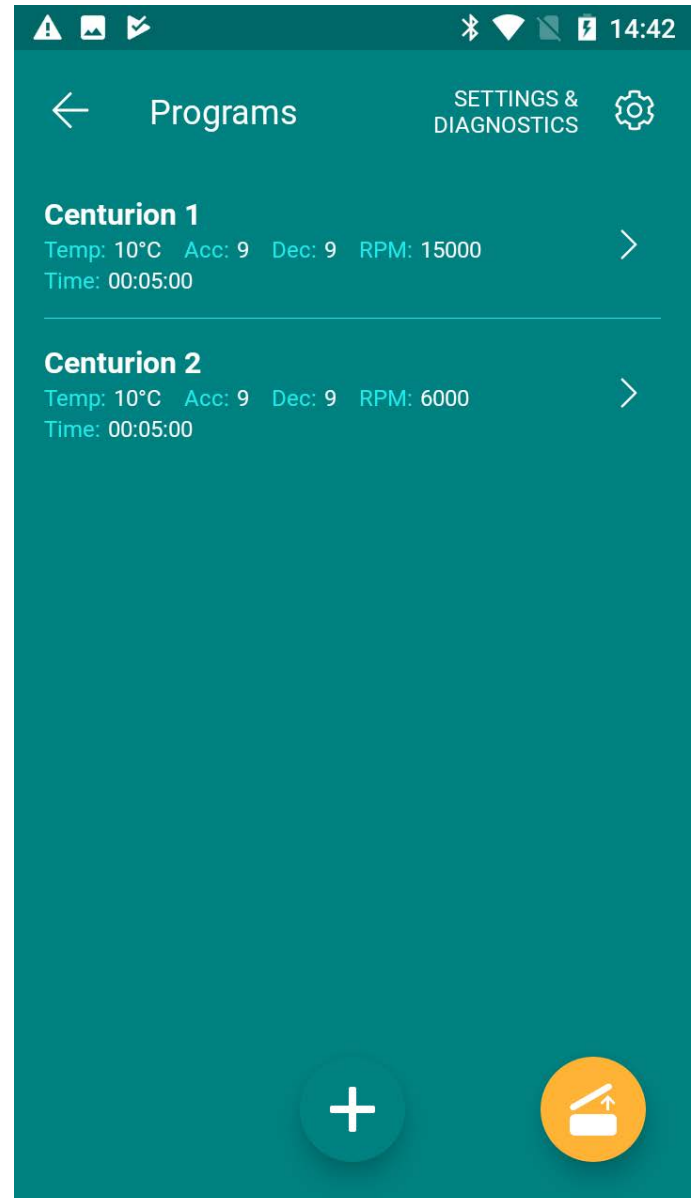


Start point

Selecting a program



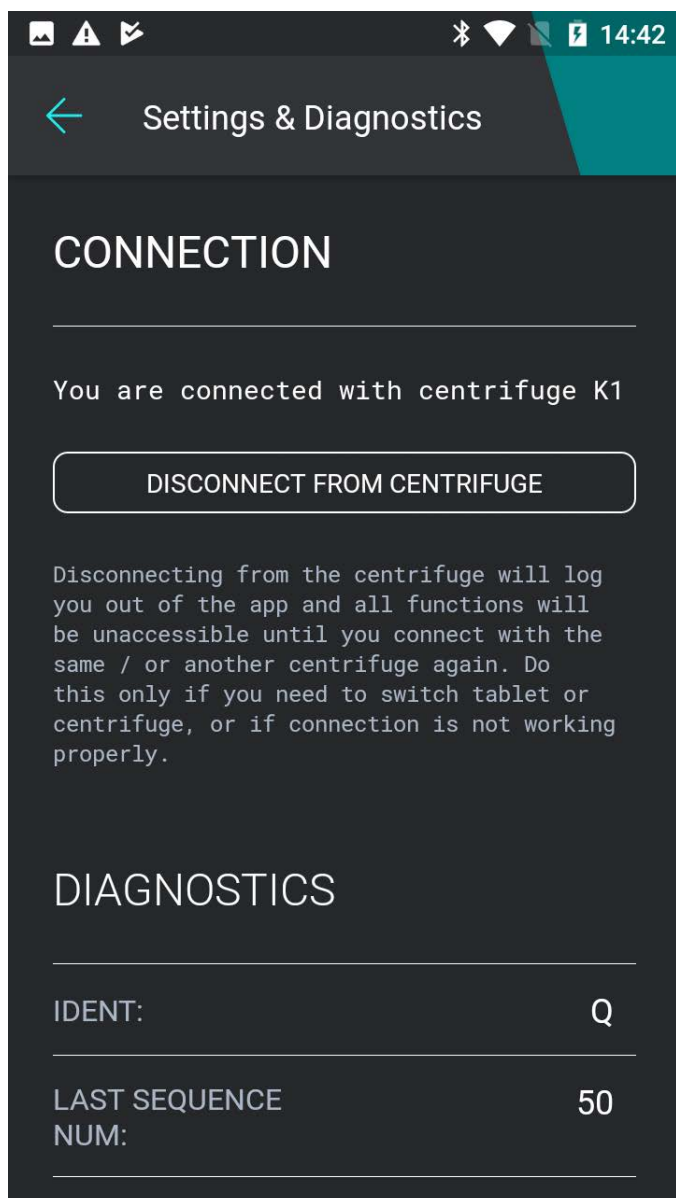
Select a program
Press the  icon to access the program screen

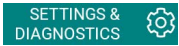


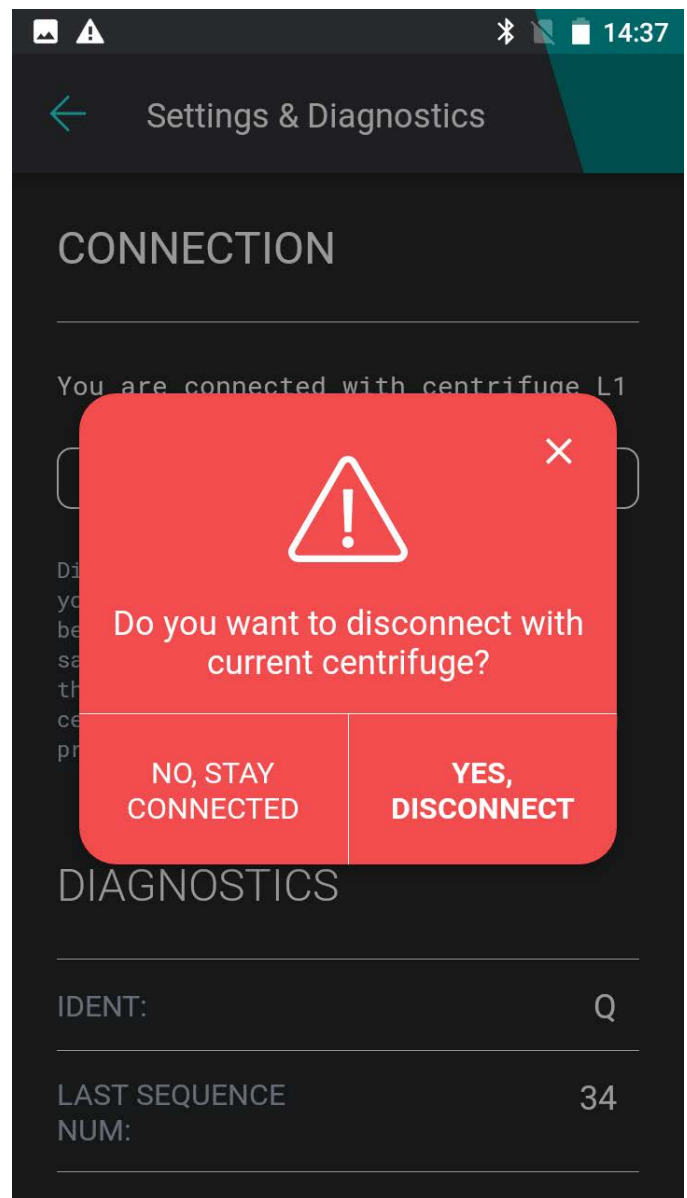
Select program

Start point

Settings & Diagnostics

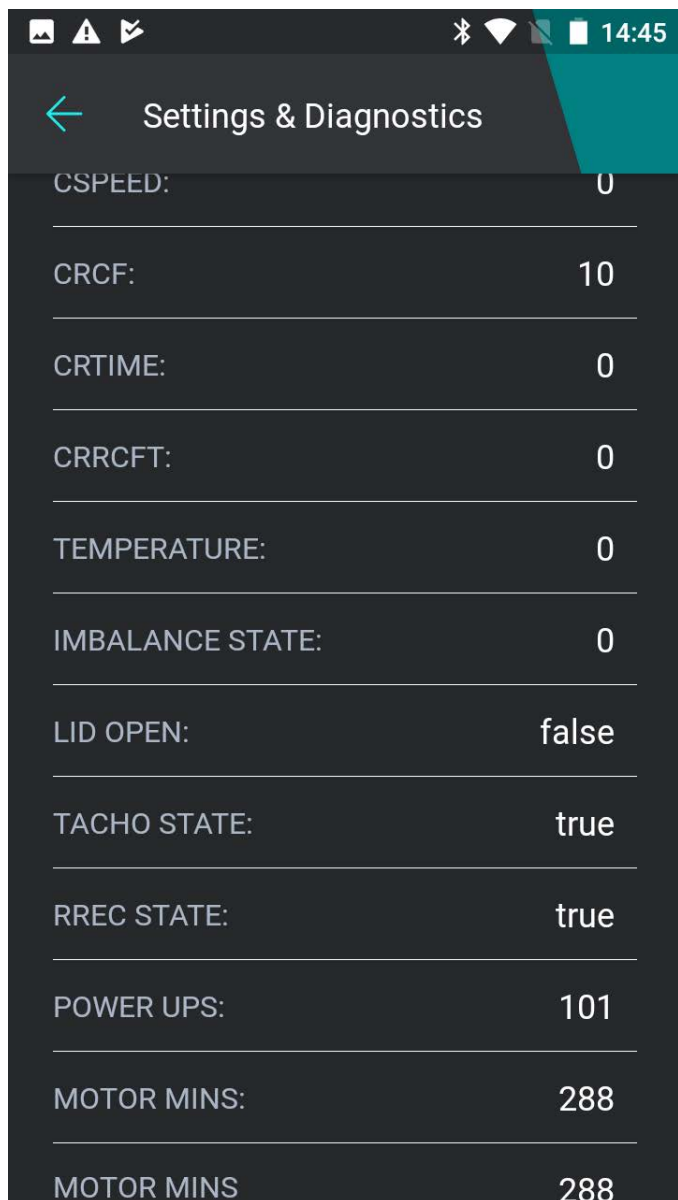


Settings & Diagnostics
To access the settings & diagnostic page press the  icon on the run screen and then press the  icon on the programs screen. To disconnect the centrifuge press the "Disconnect from Centrifuge" icon.



Settings & Diagnostics
Press "YES, DISCONNECT" to disconnect from the current centrifuge.

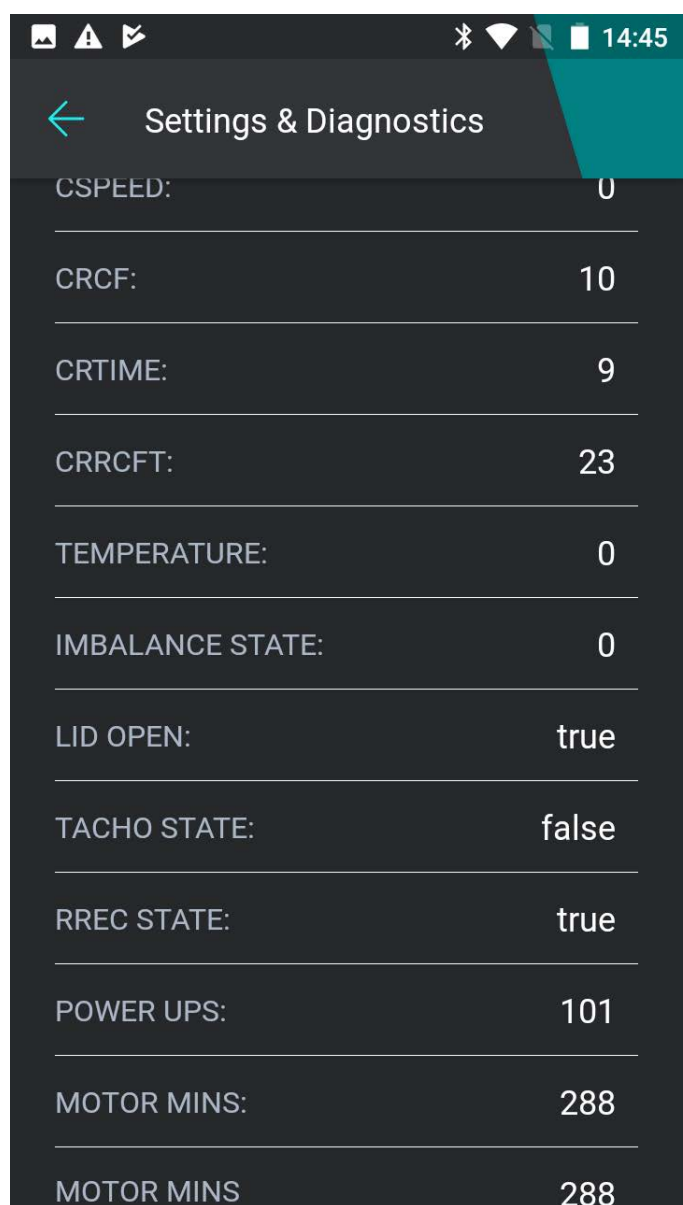
Start point Settings & Diagnostics



A screenshot of a mobile application interface titled 'Settings & Diagnostics'. The screen displays a list of sensor readings with their current values. The status bar at the top shows the time as 14:45 and various system icons. The background is dark grey with a teal header bar.

CSPEED:	0
CRCF:	10
CRTIME:	0
CRRCF:	0
TEMPERATURE:	0
IMBALANCE STATE:	0
LID OPEN:	false
TACHO STATE:	true
RREC STATE:	true
POWER UPS:	101
MOTOR MINS:	288
MOTOR MINS	288

Settings & Diagnostics For imbalance, lid, tachometer & rrec status scroll the page up until the sensor status are seen.



A second screenshot of the same 'Settings & Diagnostics' screen, showing the same list of sensor readings but with different values, indicating a change in the system's state.

CSPEED:	0
CRCF:	10
CRTIME:	9
CRRCF:	23
TEMPERATURE:	0
IMBALANCE STATE:	0
LID OPEN:	true
TACHO STATE:	false
RREC STATE:	true
POWER UPS:	101
MOTOR MINS:	288
MOTOR MINS	288

Checking sensors status.

Make sure the centrifuge is switched on, a rotor is fitted and the lid is in the open position, rotate the rotor slowly by hand and check the following:-

LID OPEN: true (lid open) false (lid closed)

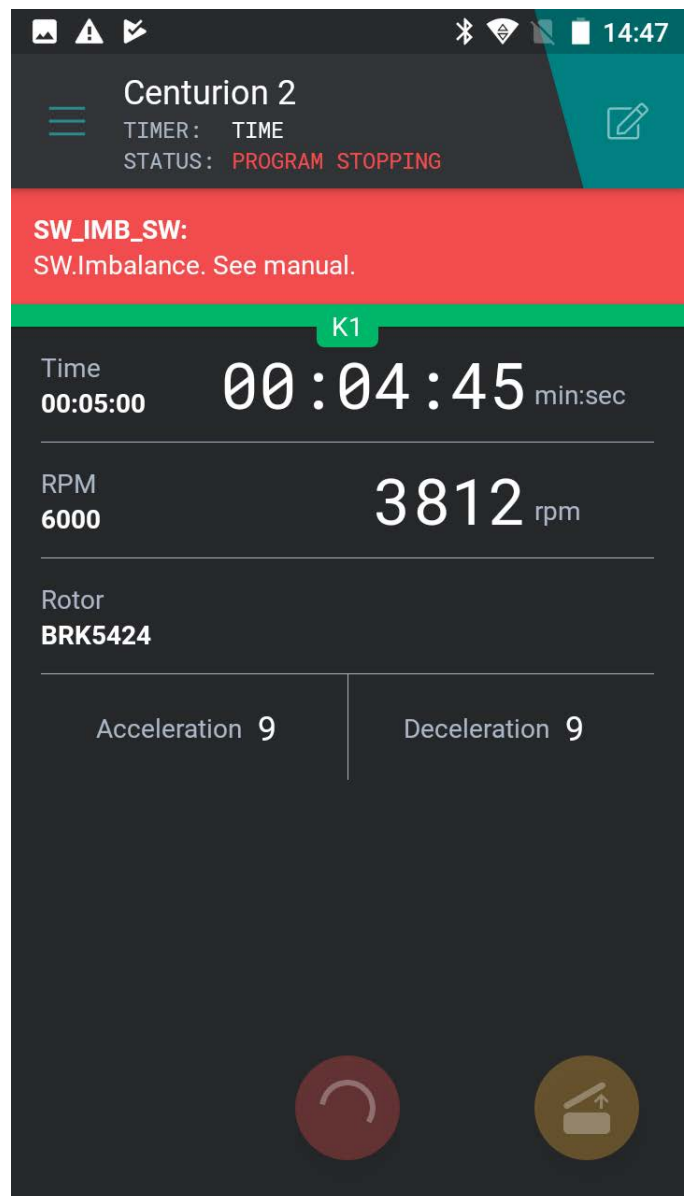
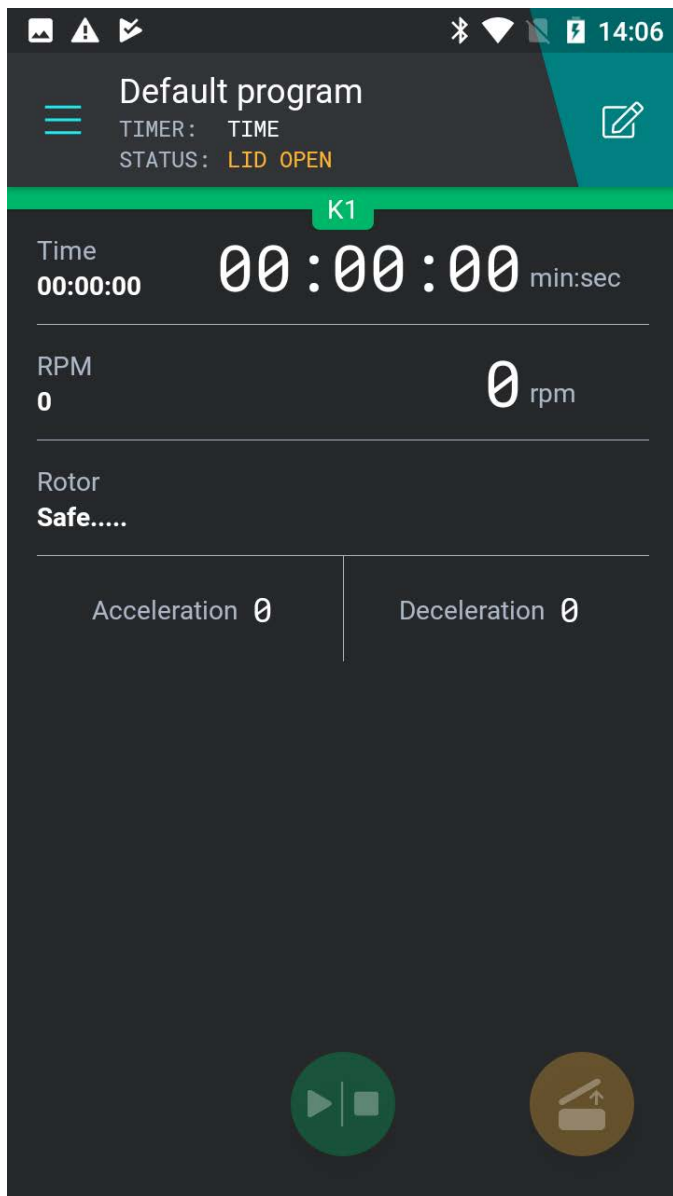
TACHO: This will toggle between false and true.

RREC: This will toggle between false and true.

To check imbalance function move the rotor from side to side and look at the imbalance status.

IMBALANCE: 0 means OK and 8 means imbalance.

Start point Fault Screens



Fault Screens

LID OPEN

Start/stop and lid open icons grayed out.

Close the Lid, press down on front middle or on 2 front corners (model dependent), push firmly.

If problem persists Contact our Service Department

Fault Screens

IMBALANCE.

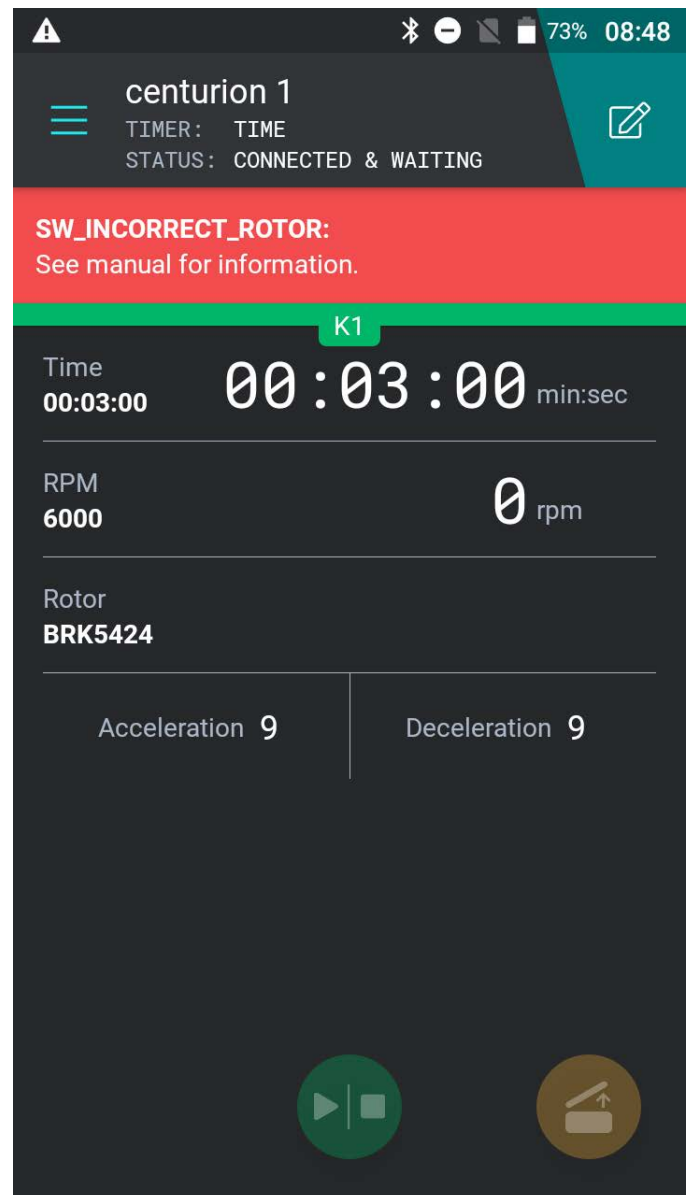
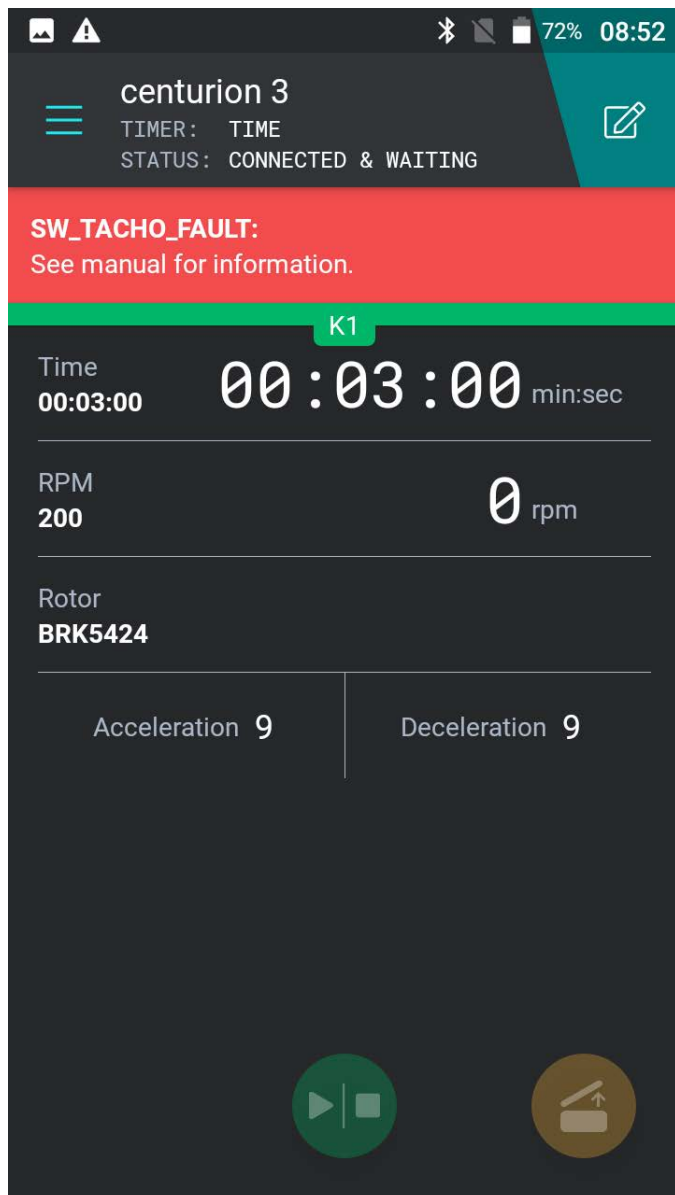
Check the Following.

Weigh your tubes to 1g of each other

Place tubes in Rotor opposite each other (see Rotor pages for instructions)

If Fault persists call our Service Department.

Start point Fault Screens



Fault Screens

TACHO.

No rotation seen

Check the Following with the Lid open.

Tubes are too tall and foul the Lid, replace with correct ones

Check the rotor to see if it freely turns, if not look for Objects in the bowl that may be fouling and remove.

If not Contact our Service Department

Fault Screens

R/REC.

Wrong rotor fitted or missing magnets if so.

Contact our Service Department

Nomograph. For Rcf evaluation.

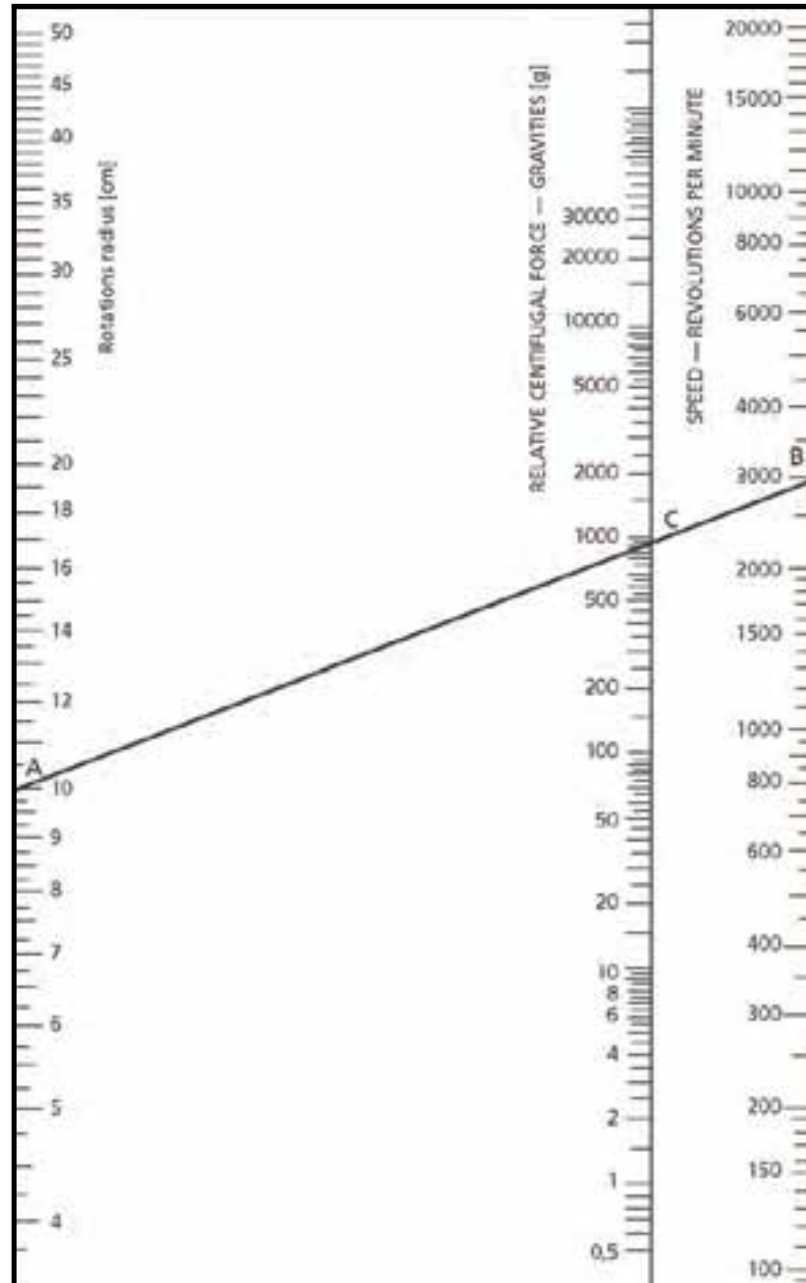
NOTE centrifuges can be programmed in Rcf(G)

Example

To find the relative centrifugal force at a radial distance of 10 cm from the center of rotation when operating the centrifuge at a speed of 3000 r.p.m., place a straightedge on the chart connecting the 10cm point on the Rotating Radius Scale (A) with the 3000 r.p.m. point on the Speed Scale (B).

Read the point at which the straightedge intersects the Relative Centrifugal Force Scale (C) – in this case, 1000 x gravity.

Similarly, if the desired “r.c.f.” is known, the necessary speed for a given rotating radius may be determined by connecting the two known points and reading the intersection of the straightedge with the Speed Scale.



Equation for Calculating R.C.F.

$$\text{R.C.F.} = .00001118 \times r \times N^2$$

R.C.F. = relative centrifugal force (gravities)

r = radius from center of rotation to bottom of tube (cm)

N = rotating speed (rev. per minute)

EC Declaration of Conformity

*Declares that product: PrO-Analytical, PrO-Hospital series
Product options: Rotors plus Accessories.*

This instrument is fully guaranteed against manufacturing defect for a period of two years from date of Invoice.

Manuals for Technical, Service, Instruction, analysis and replacement part work in both Pdf and video are available from our Support website. WWW.ServicePrO-Care.com

Conform to the following Product specifications

IEC 1010-1, 1010-2 020, IEC 1010-2-0202 020, 7,2,101
EN61010, EN61010-7, 7.5 expelled parts, BS5724, BS7687:2.20
BS EN 61010-2-020 1195, 73/23/EEC Low voltage directive
EMC EU 89 336 (Inclusive 93/68/EEC)

Supplementary Information CE Marking

The product herewith complies with requirements of the following directives and carries the CE mark accordingly

The low voltage Directive 89/336/EEC (inclusive 93/68/EEC)

This product was tested in typical configuration with Centurion Scientific Ltd and other Test House facilities

Quality Control. ISO 900001:2008

Internal systems for testing Sub assemblies (5) and final product

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced specifications. The unit complies with all the applicable essential requirements of Directives

Certified by K Cooper QA & R&D Manager

Certificate of Origin

**Centurion Scientific Ltd of
The Old Stables, Church Farm, Stoughton, Chichester, West Sussex,
PO18 9JL United Kingdom**

**Hereby confirm that all Centrifuges, rotors and accessories supplied
by us are of United Kingdom origin.**

***Signed for and behalf of Centurion Scientific Ltd
Granted 2019 onwards***

Bea Carron. Company administrator

PrO-Care

Service, Warranty & Maintenance packages

The lifespan of a centrifuge depends upon how well it is looked after and maintained.

Many of our centrifuges have lived a life of over 15 years.

This is not only due to our stringent manufacturing process and high quality components but also to a yearly servicing package. Making them a cost effective solution of centrifugation.

Whilst our centrifuges come with a confidence giving warranty, yearly services are imperative to ensure your warranty is valid, this also ensures your machine is working to its best ability and lengthens its life span. Also as centrifuges are a dangerous machine, safety checks are required too.

For UK customers we offer a back to base service package including carriage to us and return all within 48 hours. Centrifuge seals , fuses & other parts are replaced, adjustments made, rotor checked for stress cracks, seals changed if necessary (extra charge) PAT (portable appliance test) is included Obligatory in UK.

For worldwide customers we offer a full parts package per model. The designated country distributor services the units accordingly.

Call our Office to discuss or visit our Service website

WWW.ServicePrO-Care.com

www.Centurionscientificglobal.com

Switchboard. 0044 (0) 2392 631225

Research & service

The Old equine Barn
Church Farm
Stoughton Chichester
PO18 9JL. UK

Ambient

manufacturing

The Old Grain Barn
Church Farm
Stoughton Chichester
PO18 9JL. UK

Refrigeration

Manufacturing

The Old Drier Barn
Church Farm
Stoughton
Chichester
PO18 9JL. UK

Sales

The Old Stables Church
Farm Stoughton
Chichester

