

Portable display centrifuges

Refrigerated 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

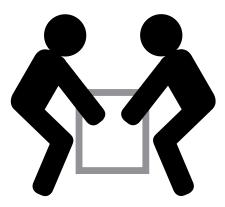
The Centrifuge should only be operated indoors.

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





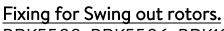


Locate 3 pins of fixing, into 3 holesat the top of the rotor Push down firmly into holes.

Lift and fit rotor onto the motor shaft. MFit the Screw and spring washer, screw down tight with the supplied tool.

Checktightness regularly.

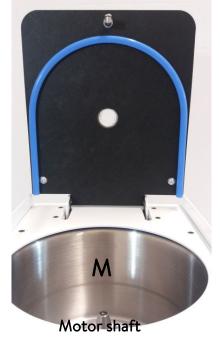




BRK5508, BRK5506, BRK1001, BRK3000, BRK5540, BRK5740.







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



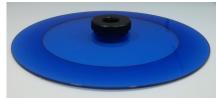
Place all your required tubes in all 4 buckets. Equal amount per bucket. Weigh each bucket containing tubes

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 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. (seep 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







Always fit the lid supplied, as shown to the left

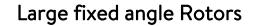






ALWAYS load your tubes opposite to each other ALWAYS weigh samples to within 0.1 Gram. For best separations. (see page 4) **CHECK The rotor screw fixing tightness regularly**



















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 <u>Bucket</u> and all samples within to 1.0 Gram
ALWAYS fit <u>ALL</u> 4 Buckets and 4 Adaptors supplied
<u>CHECK the rotor screw fixing tightness regularly</u>

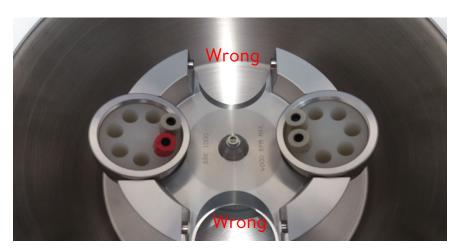
Microtitor Rotor





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



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 <u>Seven</u> 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

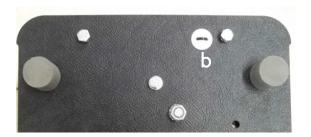
During a power failure, you will not be able to open the Centrifuge lid via the Display button Mechanical override is provided to allow sample recovery However this is for Emergency use only This should Not be used for normal use.

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.

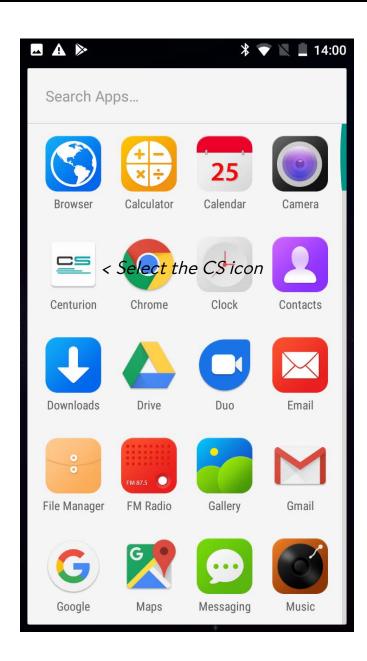
Reconnect the centrifuge power line once the mains power has been restored.

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

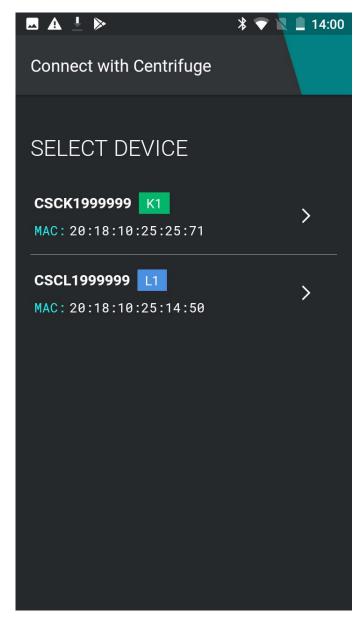
Then shows app icons select the CS

Once Cs is selected the Flash page shows >



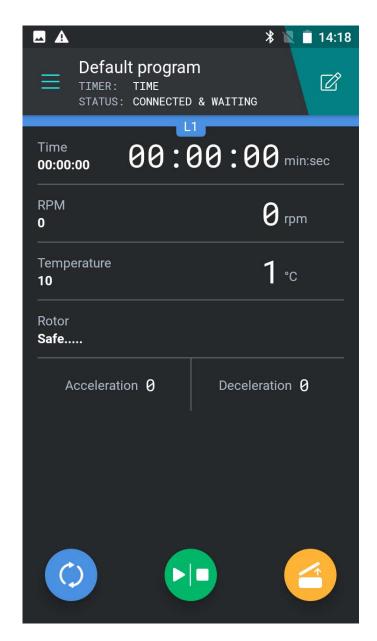
Flash page shows for a few seconds

Start point Tablet to Centrifuge matching & setting a program

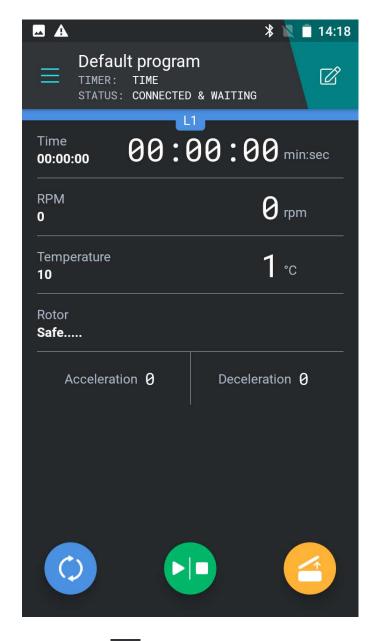


Select device (make sure that the device selected is turned on).

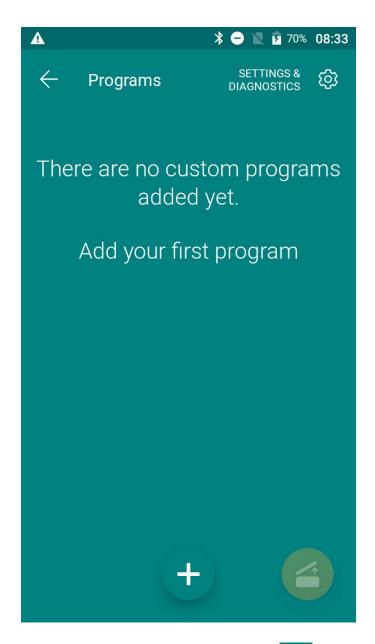
This matches the tablet to the Centrifuge



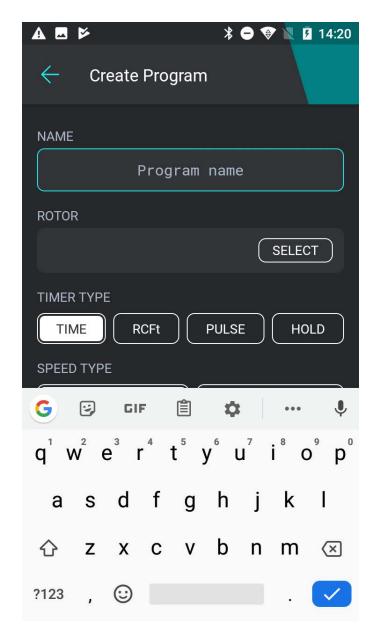
Opening Screen



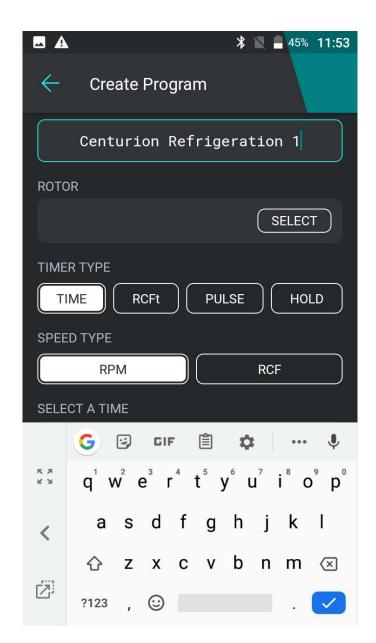
Press the icon next to Default program.
The program screen will appear.



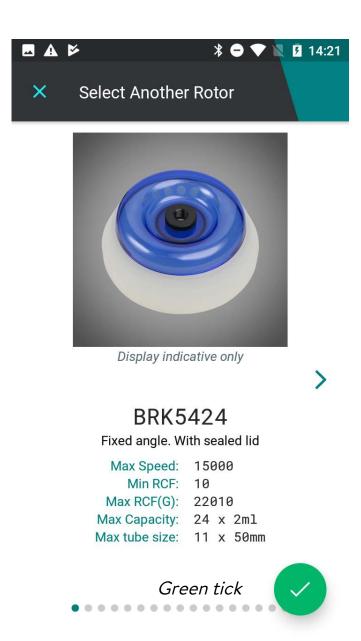
To add a new program press the + icon



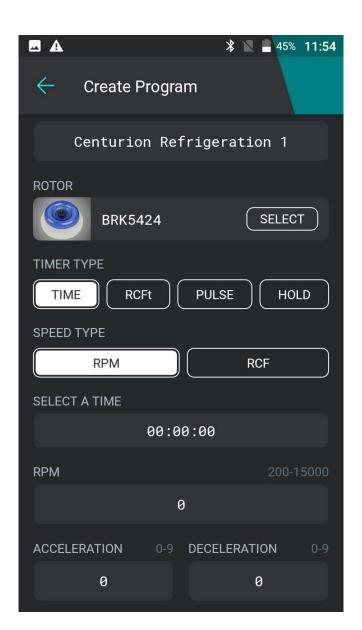
Press the Program name icon on the Create Program screen and the keyboard will appear.



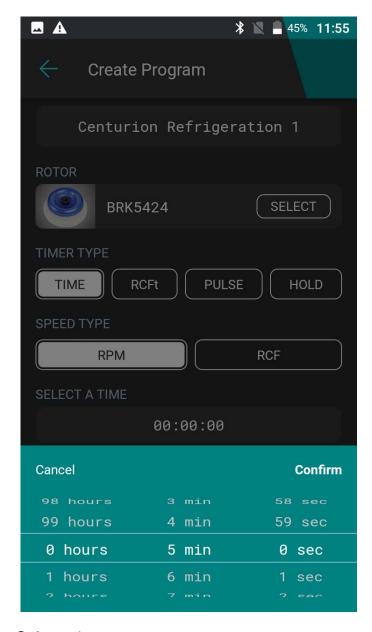
Type in a program name. Then press the vicon



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

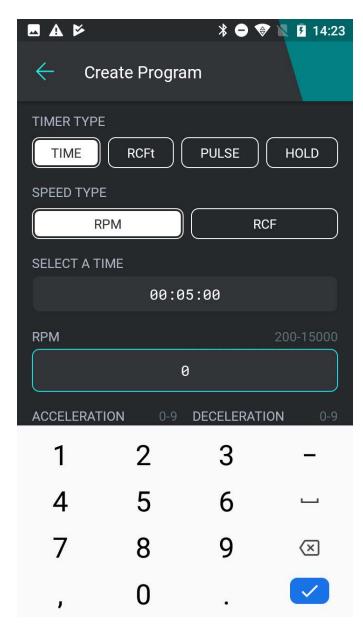


An image of the selected rotor will be shown.

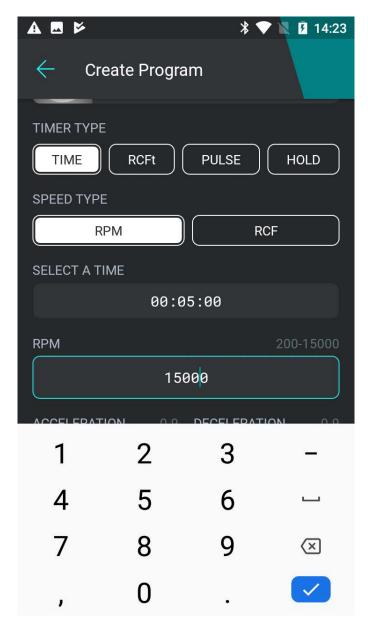


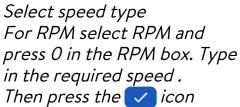
Select timer type
For Time press time icon and
then press 00.00.00 in the
Select a Time Box.
From the drop down box
select the required time.

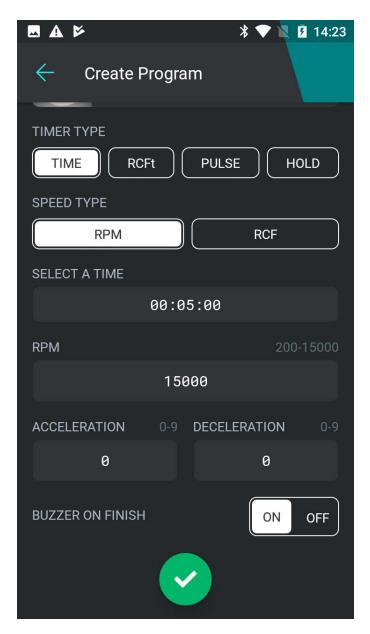
Then press Confirm



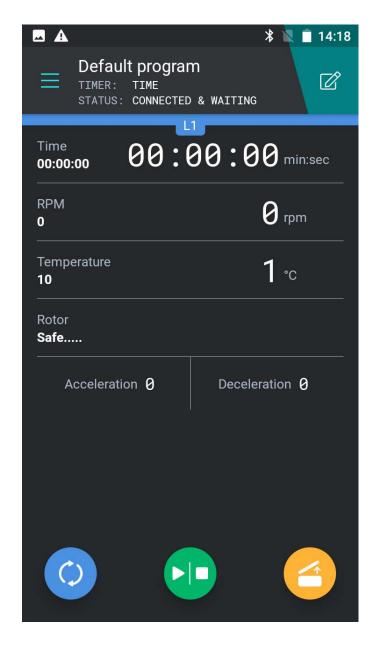
The time is shown in the select a time window.

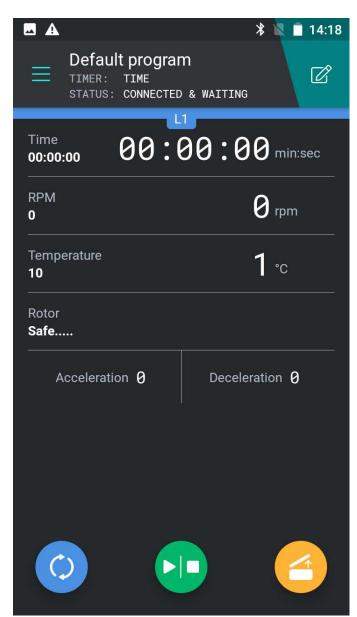






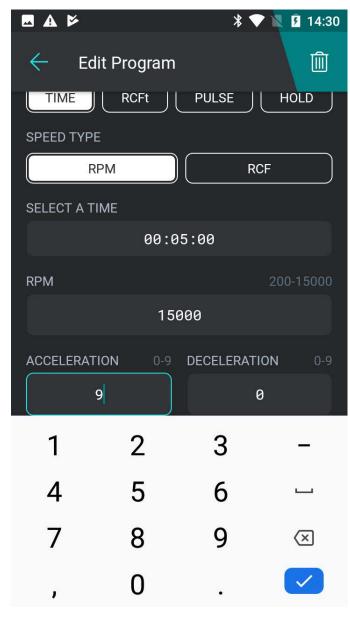
Rotor speed shown in RPM box.



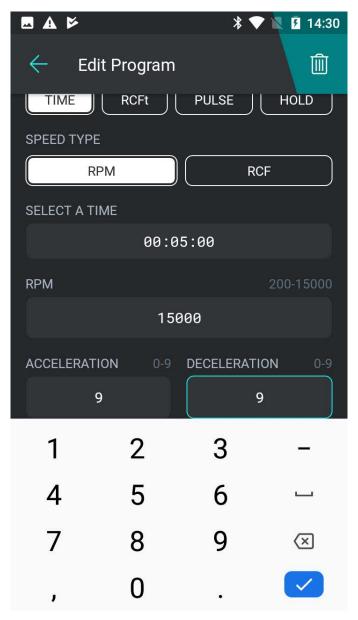


Setting Acceleration

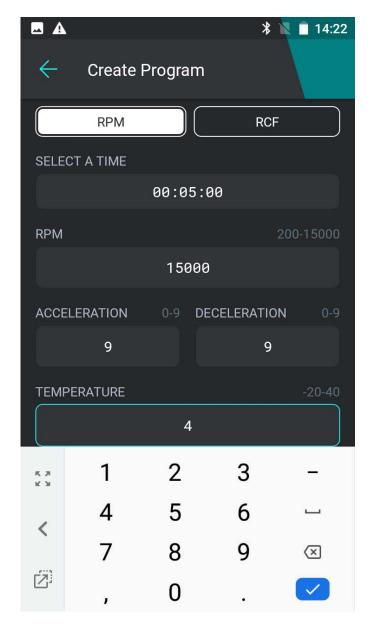
Setting Deceleration



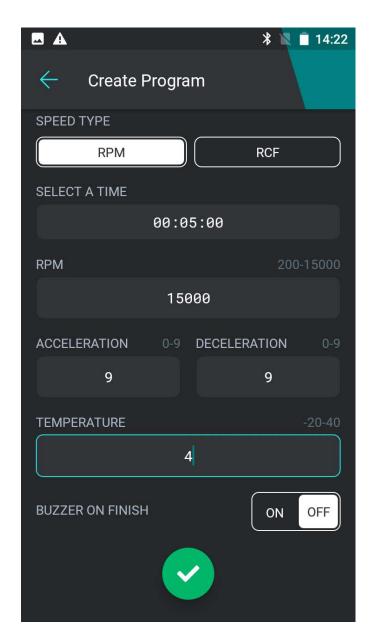
Select Acceleration
Press the number in the
acceleration box and select your
desired acceleration, 0 being the
slowest and 9 the fastest.
Then press the icon.



Select Decelaration
Press the number in the
deceleration box and select your
desired deceleration, 0 being the
slowest and 9 the fastest.
Then press the icon.



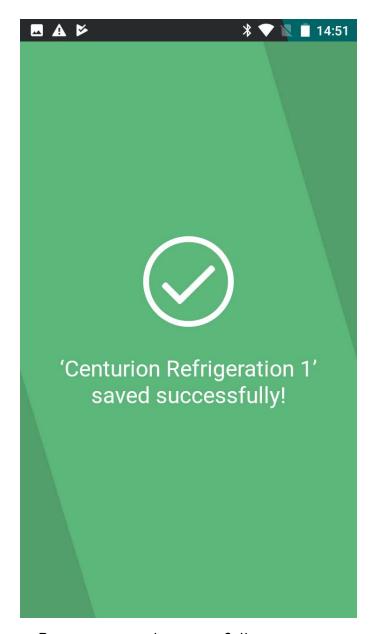
Select a temperature
Press the number in the
temperature box and select
your desired temperature.
Then press the icon.



Selected temperature shown in temperature box



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



Program saved successfully

Start point Running a program

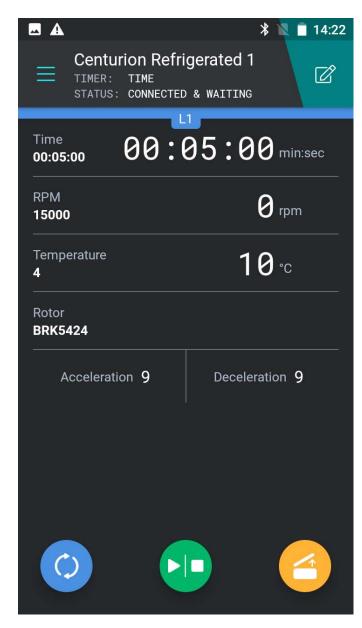
Notes on the correct method of sample temperature control.

- Turn on the Refrigerated centrifuge (make sure your required rotor and accessories are fitted and tightened down correctly. CLOSE THE LID
- 2. Set your desired temperature, speed or Rcf and time for your needs.
- 3. Press the Pre-condition icon this will instigate the pre-condition run, -20 to 20C half of the maximum rotor speed for 20 minutes, 21 to 40C maximum rotor speed for 20 minutes.

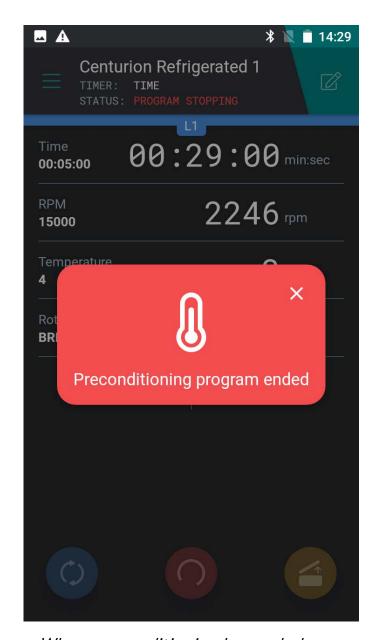
 This ensures the bowl chamber is mixed and the rotor acclimatises to the required temperature (Best practice).

 During this pre-condition your samples should be set to your required temperature by either heating or cooling as needed.
- 4. Once pre-condition has finished open the lid, add your samples (quickly) loading as per rotor instructions.
- 5. Close the lid and press start.
- 6. When the rotor has stopped, open the lid and retrieve your samples. NOTE
 - If your temperature parameter is the same each time just load your samples (must be at set temperature) otherwise follow steps 2-5.

Start point Running pre-condition

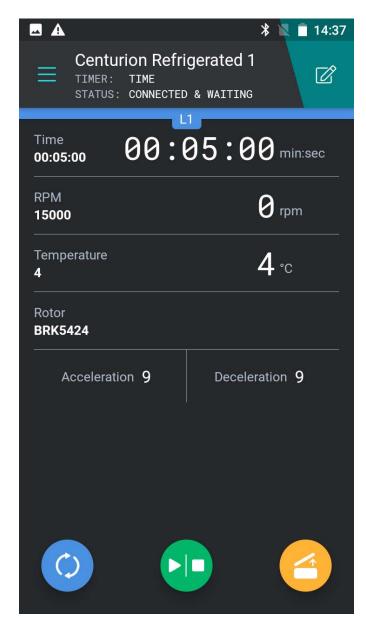


Pre-condition
After selecting your desired
settings, see above, Press the
pre-condition icon,
This will instigate the precondition run.



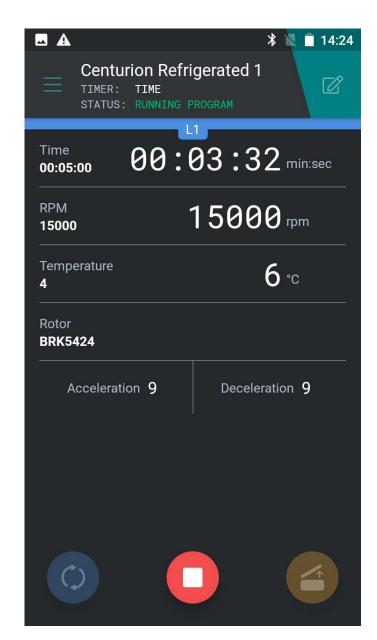
When preconditioning has ended press the X in the precondition program ended box to return to run screen

Start point Running a program



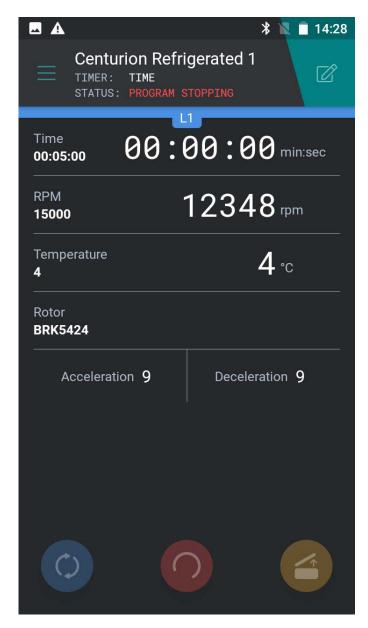
Running a program

Press the icon to start your program.

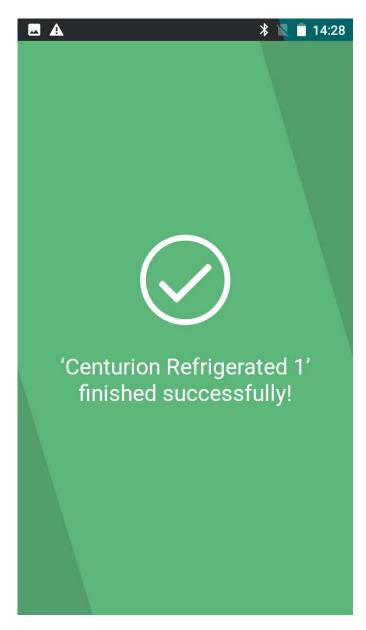


Program Running

Start point Running a program

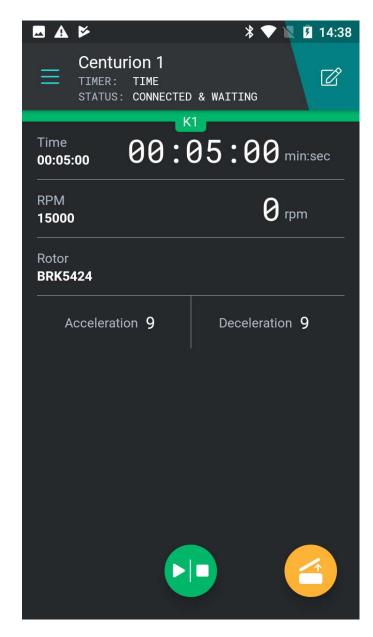


Program stopping



Program finished.

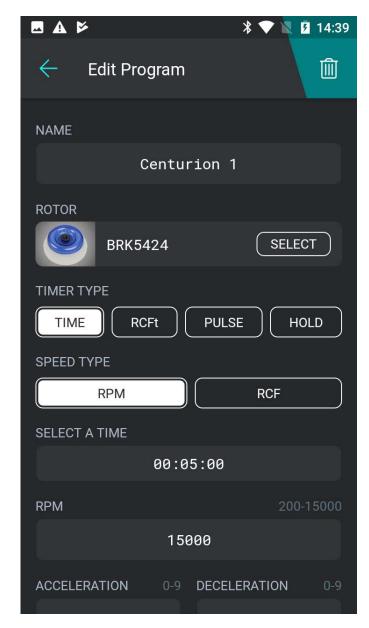
Press tick to return to run screen



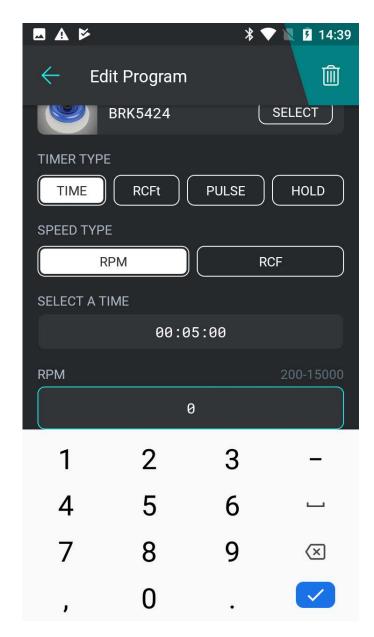
Edit a program

Press the @ edit icon to go

to the edit screen.



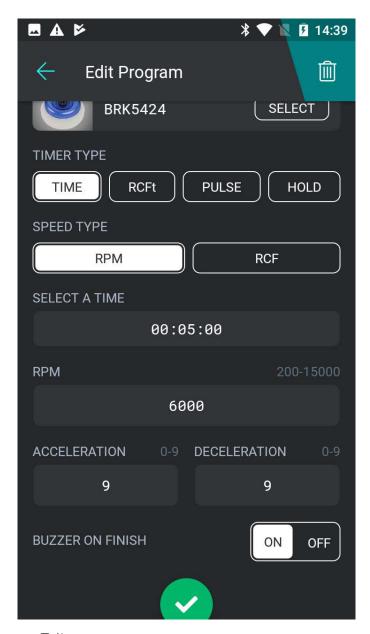
Edit a program Edit screen



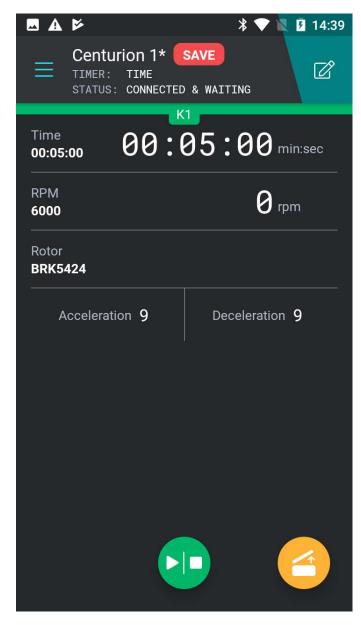
Edit a program

Select the parameter you wish
to change and adjust.

Then press the icon



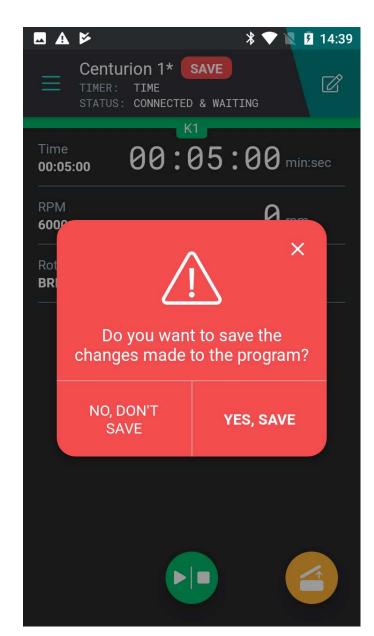
Edit screen
Press the green tick when
you have completed editing



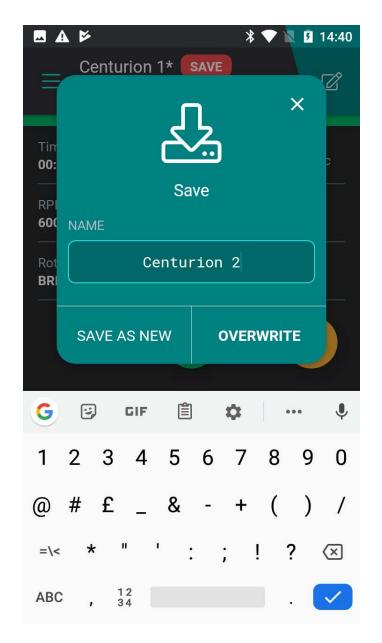
Edit a program

Press the NE icon at the top

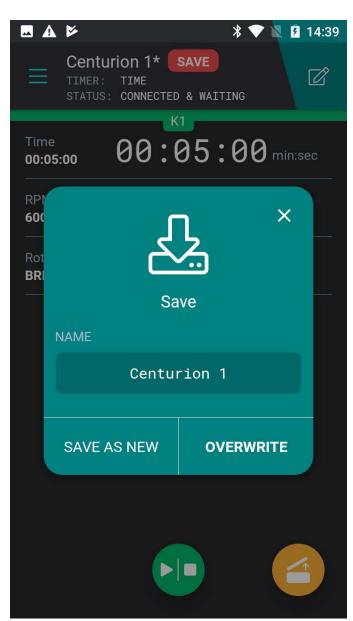
of screen



Select "YES, SAVE"



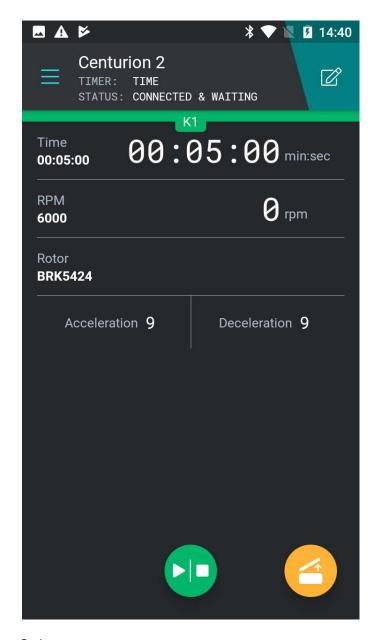
Type in new program name



Select "SAVE AS NEW"



Start point Selecting a program



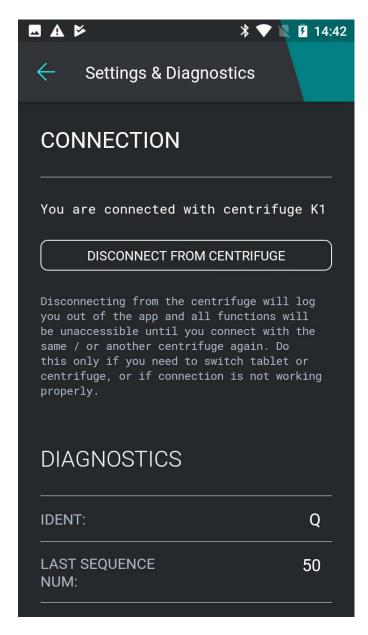
Select a program

Press the icon to access
the program screen

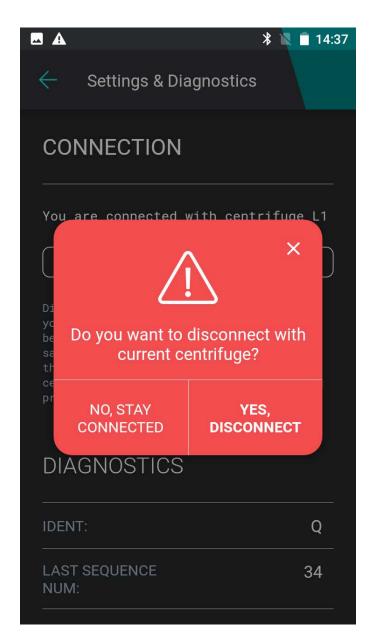


Select program

Start point Settings & Diagnostics

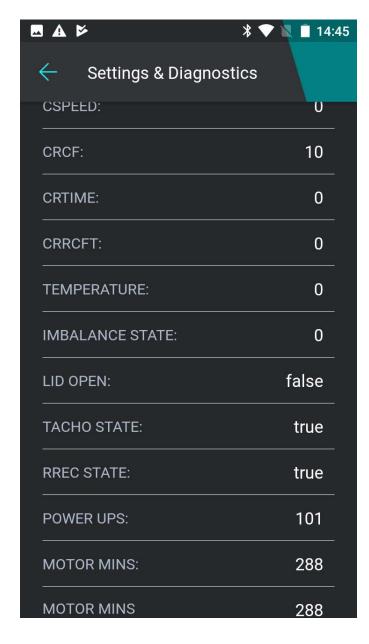


Settings & Diagnostics
To access the settings &
diagnostic page press the
icon on the run screen and
then press the SETTINGS © icon
on the programs screen.
To disconnect the centrifuge
press the "Disconnect from
Centrifuge" icon.



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

Start point Settings & Diagnostics



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

■ A ▷ * *	▼ 14:45
← Settings & Diagnostics	
CSPEED:	U
CRCF:	10
CRTIME:	9
CRRCFT:	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:-

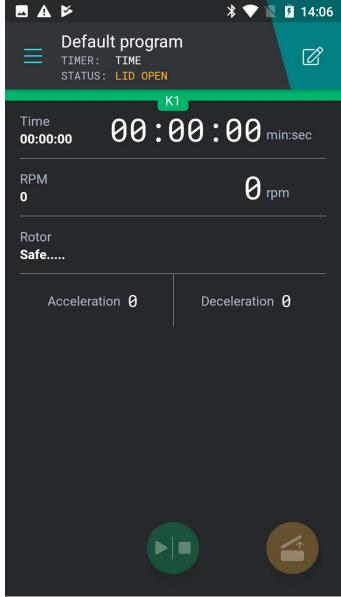
LID OPEN: true (lid open) false (lid closed) TACHO: This will toggle between false and true.

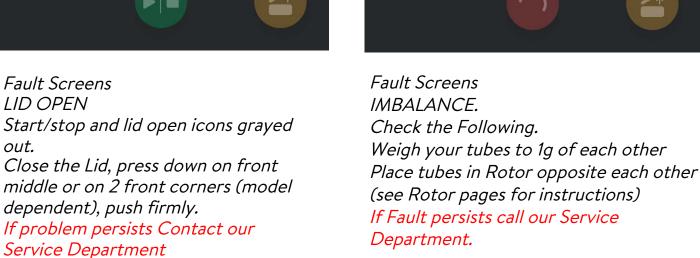
RREC: This will toggle between false and true.

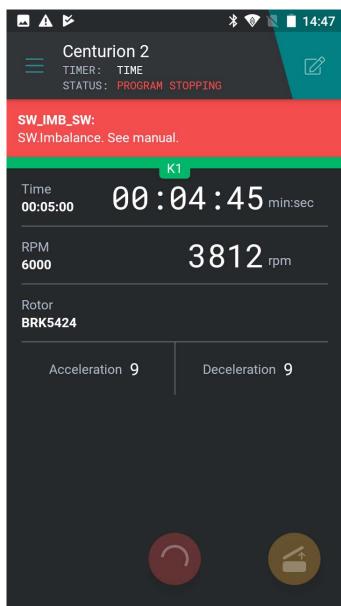
To check imbalance function move the rotor from side to side and look at the imbalance status.

IMBALANCE: 0 means OK and 8 means imbalance.

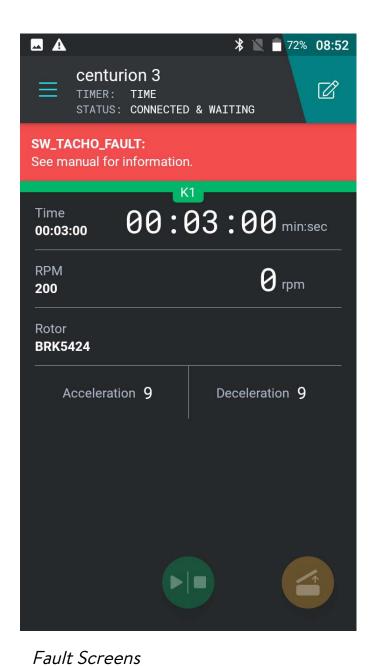
Start point Fault Screens



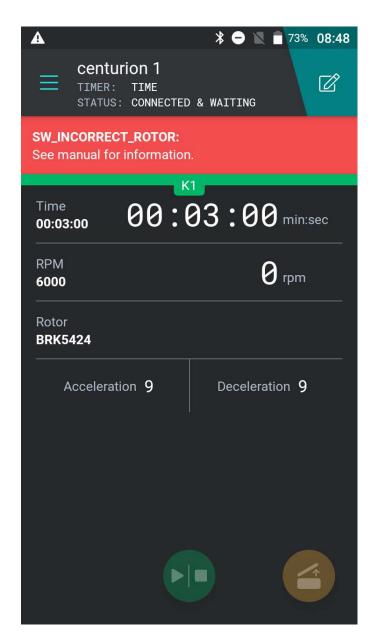




Start point Fault Screens



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

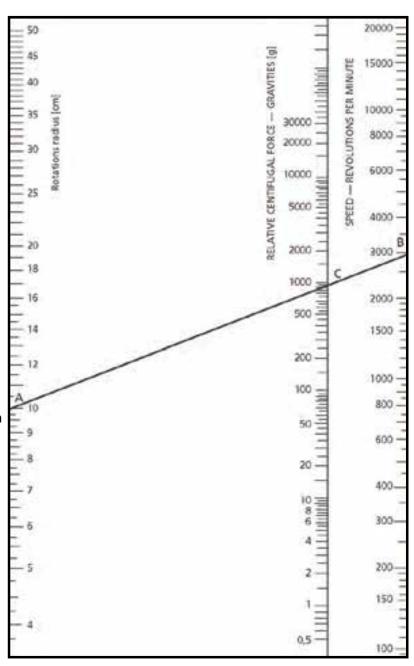
Nomograph. For Rcf evaluation. NOTE centrifuges can be programmed in Rcf(G)

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.

R.C.F. = .00001118 x r x 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

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FIG LIMITED • CENTURION SCIENTIFIC LIMITED • CENTURION SCIENTI
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SA SCIENTIFIC LIMITED - CENTURION SCIENTIFIC LIMITED - CENTURI

Hereby confirm that all Centrifuges, rotors and accessories supplied und scientific Limited Centurion C

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PrO-Care

Service, Warranty & Maintenance pakages

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

Church Farm

PO18 9JL. UK

Research & service **Ambient** The Old equine Barn manufacturing Stoughton Chichester

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

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Sales

The Old Stables Church Farm Stoughton Chichester