

How to fix

VS1223 LID

Rotor recognition, tachometer, imbalance, lid & drive



Year 2000 onwards



CENTURION
SCIENTIFIC LIMITED



PrO-Vet (Limited models)

Fault's seen. Page 5

LID OPEN

See pages 6-8.

IMBALANCE

See pages 9-13

NON REVOLVE. Tachometer fault

See pages 14-16

NON REVOLVE. Rotor recognition fault

See pages 17-19

INVERTER

See pages 20-23

Connections. Board all

See pages 24-26

Programs

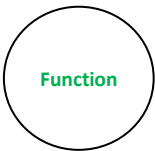
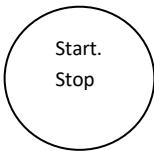
See pages 27 -31

Program

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4

Fault

- ☐ Lid open
- ☐ Imbalance
- ☐ None revolve
- ☐ Inverter



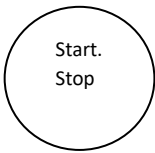
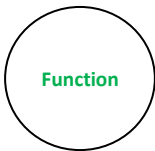
Program

See following pages for analysis methods per model

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4

By pressing **Function** button you select any
One of four programs, each light up accordingly
Actual details are shown in this manual per model

*Once running, your selected program will flash
When the run is finished it will flash faster*



Once your program has been selected, load your tubes,
evenly and same weight, close the lid and press start.
Selected program light will Flash whilst running, when
finished A buzzer will sound (can be switched off)

Press



retrieve your samples.

How to turn the Buzzer off.

Press Function and Start stop.

Top Fault LID will flash when Buzzer is enabled

Bottom fault LID will flash when disabled

Fault Codes. **Orange coloured displays**

Fault

- | | | |
|-----------------------|---------------------|---|
| ☐ | Lid open. | Close lid firmly (check that nothing is fouling closure)

If problem persists contact Service |
| ☐ | Imbalance | An imbalance has occurred, load samples opposite and evenly
Weigh your samples to match, clean your rotor.
If problem persists contact Service |
| ☐ | None revolve | Rotor will not turn, open lid, check if it turns freely, are your tubes too tall?
If problem persists contact Service |
| ☐ | Inverter | A fault has occurred. Turn off your Centrifuge wait 3 minutes
Turn on again.
If problem persists contact Service |



Close the Lid

Remove the Front panel and check the connections as shown in the following page.

Connections to the board and to the Lid lock

You can gain access to the underlid by using the Emergency lid release

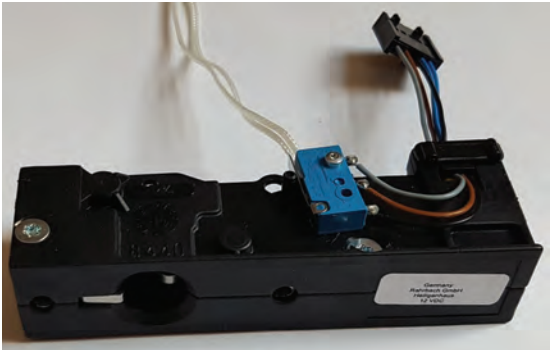
P 7 **Lid open . Connections**



L. Board connection



Lid lock connection LL



First make sure the lid is closed correctly.
Press down firmly in the center or both sides of lid for larger models.
Check lid latch fitted to lid is in the correct position as shown
Check connection to board is correct and in position L
Connection to Lid Lock socket is in position LL



Lid latch position
Note orientation of latch
Pin position front to rear
Note height and use of
washer and spring washer
ALL Important

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.

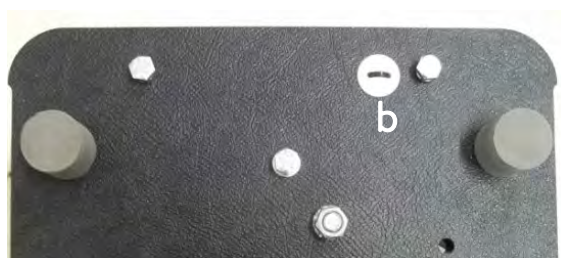
Warning

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



First check that all samples are correctly weighed and opposite each other
DO NOT run the centrifuge with only one tube fitted,
a tube TO THE SAME WEIGHT must be used opposite to its position

See the following pages to assist

If this is not the problem remove the front panel and check the connections to the board.

Check the connections to the Imbalance detector based next to the electric motor.

NOTE the wiring is Normally closed, so any breakages or poor connections will show as IMBALANCE on the display

Further adjust the imbalance detector so the arm roller is within 3mm of the touch point

Rotor balancing. **Very Important**



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

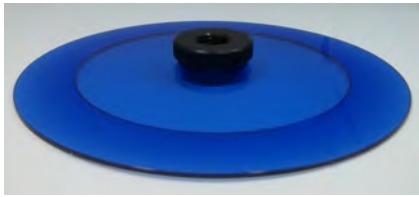


Place all your required tubes in all 4 buckets.
Equal amount per bucket.
Weigh each bucket containing tubes

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



For BRK5506 rotor use the adaptor



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



Small fixed angle Rotors

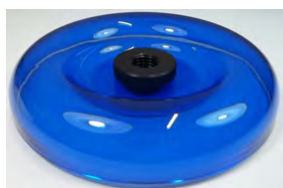
Always fit the lid supplied, as shown to the left



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

P 13

Small Swing out rotor



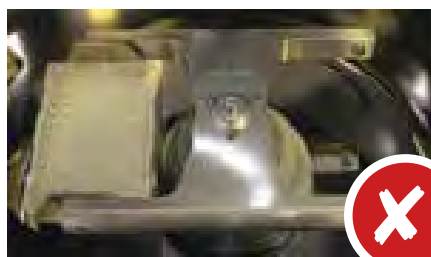
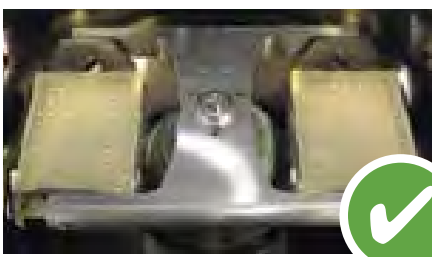
ALWAYS load your tubes opposite to each other
ALWAYS weigh samples to within **0.1 Gram**. For best separations
ALWAYS fit **ALL** the Tube Holders and any supports
CHECK The rotor screw fixing tightness regularly

Medium – Large Swing out Rotors

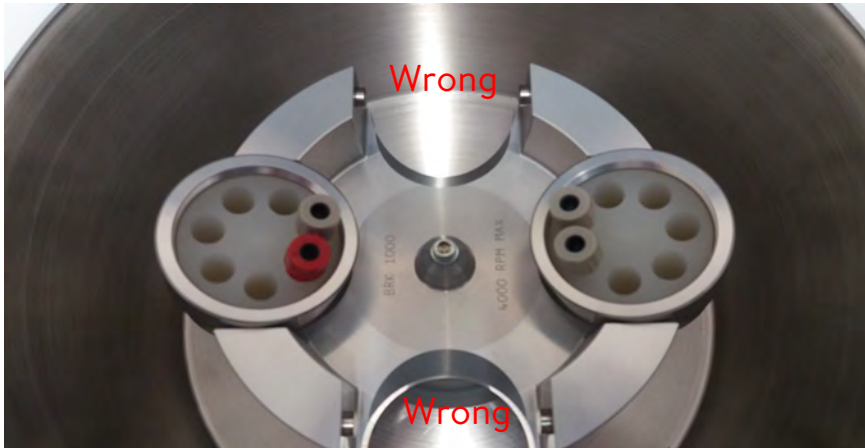


ALWAYS load your tubes opposite to each other
ALWAYS Weigh **Bucket** and all samples within to **1.0 Gram**
ALWAYS fit **ALL** 4 Buckets and 4 Adaptors supplied
CHECK the rotor screw fixing tightness regularly

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



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



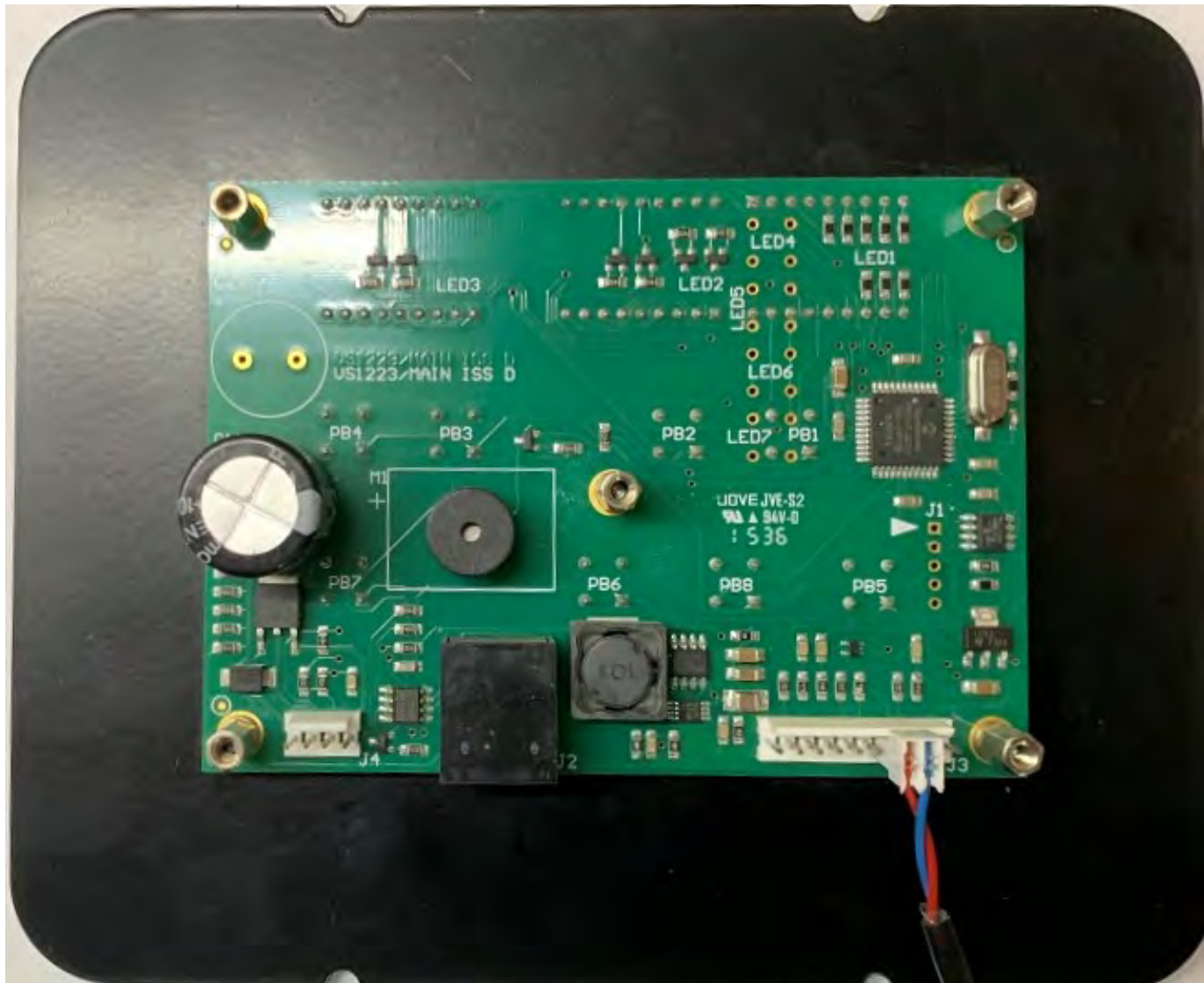
A



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**



| Imbalance Pins 7,8 note 9,10 not used

NOTE

Wiring to the Imbalance switch is wired normally closed so any breaks in the wire can cause the fault. Please check wiring and imbalance switch for good connectivity.

ALSO the cause may have been by poor sample weighing causing a severe imbalance and damage

NONE REVOLVE



First check that nothing is fouling the rotor

Tubes that are too long , lid not fitted correctly, or a foreign object

OPEN the lid turn the rotor (see above) and feel the movement, if OK

REMOVE the front panel check connections

Check the tachometer on the motor base as shown in the following page

With a air canister blast the sensor area to remove any dust or hairs

Check wiring here

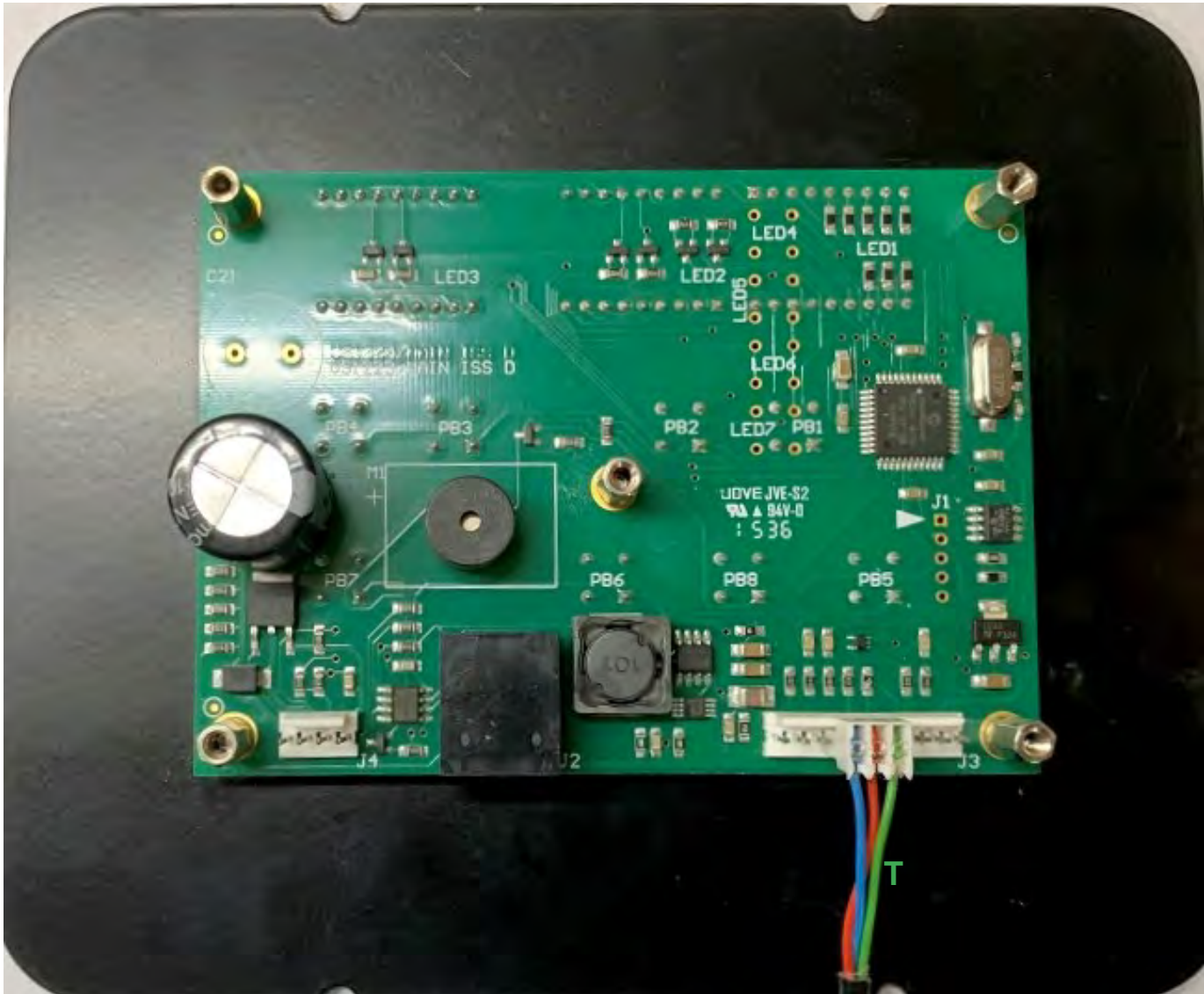
If not the tachometer you may have programmed a wrong rotor or the Rotor recognition system is not seeing the programmed rotor.

Either by a missing magnet (see pictures to follow of underside of rotor)

CHECK the chart to see correct number as shown

If a magnet is missing contact us for a replacement

NOTE this is usually caused by too many Autoclave uses a maximum number is shown in the literature.



T Tachometer Pins 4,5,6

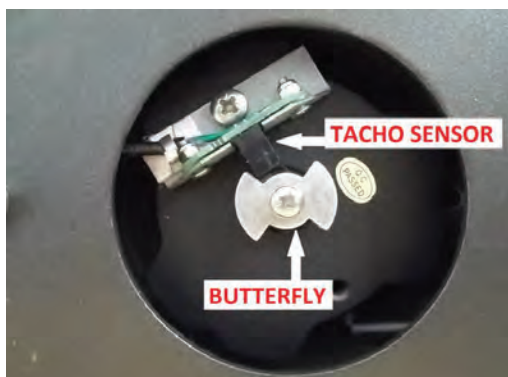
Check connections to Circuit board pins 4,5,6 on the 10 way connector must be correct as color of wires too.

Following page shows how to clean the sensor and this is very important as over time dust , hairs and other matter can cover the sensor not allowing it to function correctly. A yearly service is critical to eradicate this problem.

NOTE position of sensor (as shown) is critical too, see following page

In some cases this can also cause variations in speed or not reaching speed if incorrectly aligned

To check and clean the tachometer sensor turn off the centrifuge via the switch on the rear and unplug it from the mains supply then tip the centrifuge on its side. You will then see a hole in the base of the centrifuge which will give you access to the tacho sensor and butterfly after removing the grill (4 screws)



2021 Style

Make sure that the tacho sensor and butterfly are free from dirt and foreign objects i.e animal hair, tissues etc. Clean with a cotton bud or air blast



Make sure the sensor is at the angle shown.

Make sure the butterfly is firmly fixed to the motor shaft. Tighten if necessary.

NOTE: When the centrifuge is running it draws air in through the grill hole in the bottom. Anything that is near or under the machine can be drawn in.

NOTE. All now have a circular bracket holding the sensor
The above is for clarity

Tachometer sensors rarely fail, check wiring on solder pads and connection to display board. See following page.



Count the number of magnets on the underside of the rotor.

NOTE

Rotors have varying numbers

See chart on the following page

Examples only shown

Black rotor 8 magnets seen

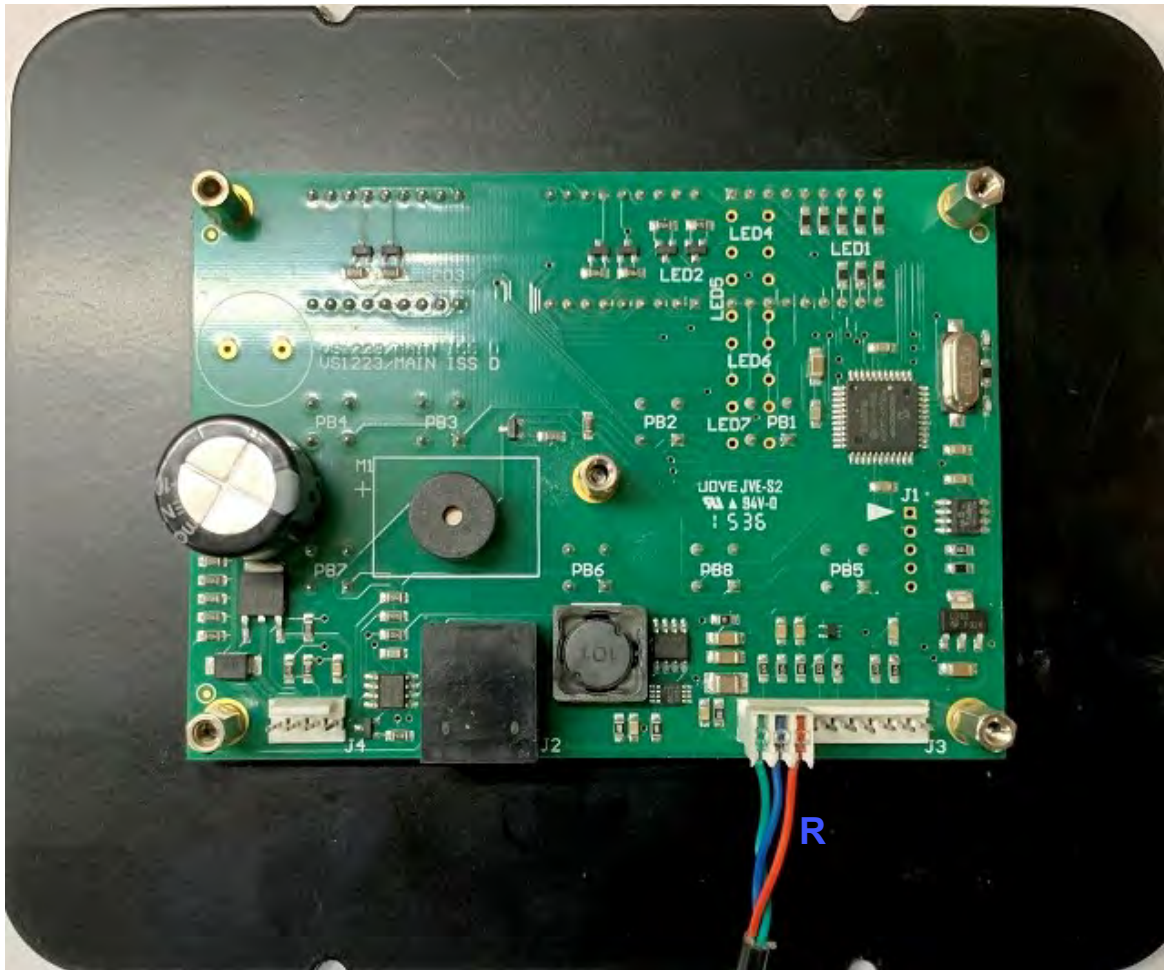
White rotor 6 magnets seen



S Rotor recognition sensor

VS1295 only. Magnets per rotor

Name	Magnets	Max Capacity	Max tube size	Description	Max speed	
BRK5218	12	24 x 2ml	11 x 50mm	Fixed angle. With sealed lid	15,000	
BRK5248	11	48 x 2.2ml	11 x 50mm	Fixed angle. With sealed lid	15,000	
BRK5249	11	24x2.2ml & 24x0.5ml	11x50 & 6x30mm	Fixed angle. With sealed lid	15,000	
BRK5298	11	8 x PCR strips	6 x 40mm	Fixed angle. With sealed lid	15,000	
BRK5424	10	24 x 2ml	11 x 50mm	Fixed angle. With sealed lid	15,000	
BRK5436	10	36 x 0.5ml	8 x 30mm	Fixed angle. With sealed lid	15,000	
BRK5448	10	48 x 0.2ml	6 x 40mm	Fixed angle. With sealed lid	15,000	
BRK5494	10	4 x PCR strips	6 x 40mm	Fixed angle. With sealed lid	15,000	
BRK5463	10	36 x 2ml	11 x 50mm	Fixed angle. With sealed lid	15,000	
BRK5464	10	18x2ml & 18x0.5ml	11x50 & 8x30mm	Fixed angle. With sealed lid	15,000	
BRK5499	10	2xPCR strips 10x2ml	11 x 40mm	Fixed angle. With sealed lid	13,200	MM only
BRK5463	9	36 x 2ml	11 x 50mm	Fixed angle. With sealed lid	13,200	MM only
BRK5464	9	18x2ml & 18x0.5ml	11x50 & 8x30mm	Fixed angle. With sealed lid	13,200	MM only
BRK5401	8	24xcapillary & 12x2ml	2x75mm & 11x40mm	Haematocrit & Fixed angle	13,000	
BRK5648	8	48 x 2.2ml	11 x 50mm	Fixed angle. With sealed lid	13,000	
BRK5649	8	24x2.2ml & 24x0.5ml	11x50 & 6x30mm	Fixed angle. With sealed lid	13,000	
BRK5698	8	8 x PCR strips	6 x 40mm	Fixed angle. With sealed lid	13,000	
BRK5407	7	4x15ml & 4x10ml	17x120mm & 13x110mm	Fixed angle. With Sealed Lid	8,000	
BRK5540	7	4xstd or 2xhigh plates	85 x 128mm	Microtitor Rotor	3,500	
BRK5740	7	4xstd or 2xhigh plates	85 x 128mm	Microtitor Rotor	3,500	
BRK5404	6	4 x 50ml	30 x 115mm	Fixed angle. With sealed lid	6,000	
BRK5408	6	8 x 15ml	17 x 120mm	Fixed angle. With sealed lid	6,000	
BRK5100	6	6 x 100ml	45 x 125mm	Fixed angle. With sealed lid	6,000	
BRK5406	6	6 x 50ml	30 x 115mm	Fixed angle. With sealed lid	6,000	
BRK5412	6	12 x 15ml	17 x 120mm	Fixed angle. With sealed lid	6,000	
BRK5308	6	8 x 50ml	30 x 115mm	Fixed angle. With sealed lid	6,000	
BRK5324	6	24 x 15ml	17 x 120mm	Fixed angle. With sealed lid	6,000	
BRK5316	6	16 x 15ml	17 x 120mm	Fixed angle. With sealed lid	6,000	
BRK5206	5	6 x 50ml	30 x 115mm	Fixed angle. With sealed lid	10,000	
BRK5212	5	12 x 15ml	17 x 120mm	Fixed angle. With sealed lid	10,000	
BRK5204	5	4 x 50ml	30 x 115mm	Fixed angle. With sealed lid	10,000	
BRK5202	5	8 x 15ml	17 x 120mm	Fixed angle. With sealed lid	10,000	
BRK5434	4	24 x 15ml	17 x 120mm	Fixed angle.	4,000	
BRK5431	4	8 x 50ml	30 x 115mm	Fixed angle	4,000	
BRK5256	4	6 x 250ml	62 x 130mm	Fixed angle	10,000	
BRK3000	3	See below	See below	Swing out	4,000	
BRK3002	3	4 x 500ml	98 x 160mm	Swing out	4,000	
BRK3003	3	4 x 750ml	98 x 170mm	Swing out	4,000	
BRK3004	3	4 x 1000ml	98 x 180mm	Swing out	4,000	
BRK5508S	2	8 x 5ml	13 x 82mm	Swing out	4,000	
BRK5508M	2	8 x 10ml	15 x 115mm	Swing out	4,000	
BRK5508L	2	8 x 15ml	17 x 120mm	Swing out	4,000	
BRK7000	2	4 x 750ml	TBA	Swing out	4,000	
BRK5506	1	4 x 125ml	45 x 100mm	Swing out	4,000	
BRK1001	1	4 x 250ml	62 x 100mm	Swing out	4,000	
BRK5600	1	4 x 100ml Oil tubes	Small, Tall & Pear	Oil Test Swing Out	4,000	
BRK4940	0	12 x Dual holders	0.2 to 6ml	Cytology Rotor	2,500	
BRK4460	0	12 x Dual holders	0.2 to 6ml	Cytology Rotor	2,000	
BRK5450	0	12 x place	10 x 75 OR 12 X 75mm	Fixed angle	3,500	



R Rotor recognition Pins 1,2,3

Check connection to Circuit board as above and to the sensor at the top of the motor (see top right picture).

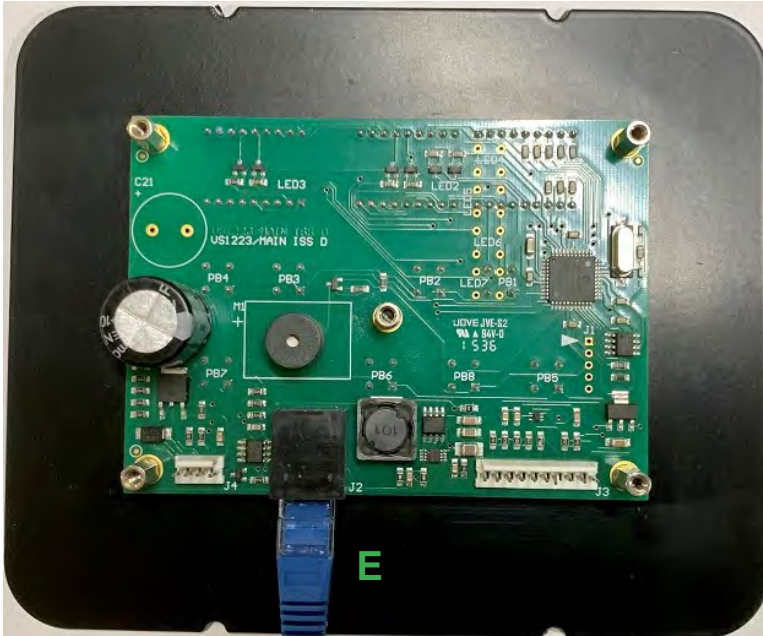
Count magnets on the underside of the rotor and match to table on previous page
If all correct utilise the Test routine on previous pages, counting the number of 0/1
match the number of magnets per rotor over a full turn of the rotor 360 degrees.

If all correct it maybe that you are trying to use a rotor not designated for this model
NOTE. If rotor is not designated to this model it may not allow speed beyond beyond
2000 Rpm too, (Safety mode)

It is unlikely that the Inverter has failed

Remove the front panel and check the ethernet cable connection to the board and back to the Inverter, replace the cable or correct poor connections

See the following pages for connections to the board and Inverter



E RJ45 Ethernet cable



Check connection to RJ45 socket (above)
and to Inverter (see diagram following page)
Picture to left assists too
Note.

some models use RJ45 to both end connections.
It has been known for cables to fail, please check by
using another and replace.





Nidec C200 Wiring 0.37Kw



Power Terminals

- L1: Brown (From Filter)
- L2/N: Blue (From Filter)
- +: N/C
- BR: N/C
- U: Black (From Motor)
- V: Red (From Motor)
- W: Blue (From Motor)



Earth Terminals

- D: Green (From Motor)
Green/Yellow to Chassis
- C: White (From Motor)
- A: Green/Yellow (Link to CT1)

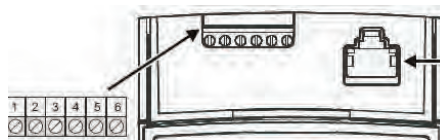


Control Terminals

- 1: Green/Yellow (Link to Earth Terminal A)
- 9: Brown Link to 11 & Red to Ethernet Cable (Later Models)
- 11: Brown Link to 9
- 14: Yellow (From Motor)
- 41: Brown To Motor Speed Control (Refrigerated Models Only)
- 42: Brown To Motor Speed Control (Refrigerated Models Only)

Communication Module Terminals

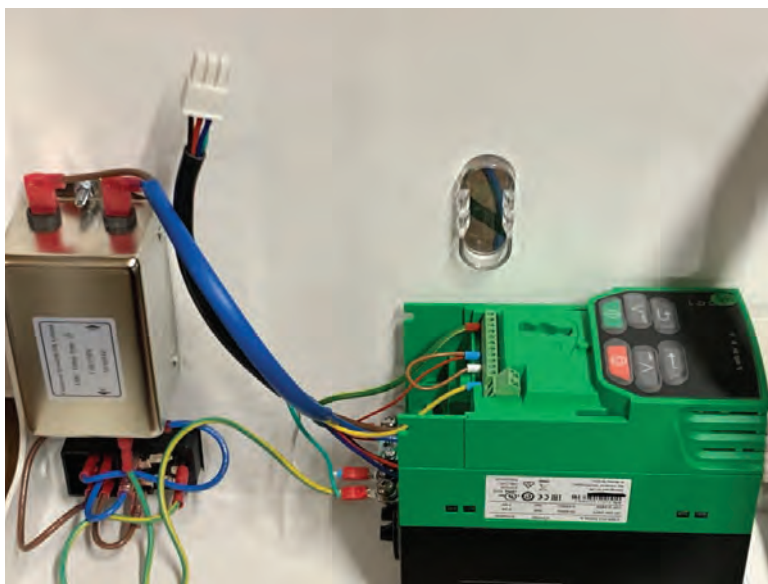
- 1: Green/Orange (To Ethernet Cable)
- 2: Blue (To Ethernet Cable)
- 3: Blue/Orange (To Ethernet Cable)



RS485: Ethernet Cable
from Control PCB (Early
Models)

Ambient model

Please see previous pages to assist here



Refrigerated Model



See following page for connections for connection to the Inverter

Some models use the RJ45 connection at both ends



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

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