

How to fix

VS1226

Rotor rec, Tachometer, imbalance, lid, drive & Screen



Year 2015 onwards



CENTURION
SCIENTIFIC LIMITED

Examples LCD types



Ambient



Refrigerated



Floor

PrO-Research
PrO-Cytology
PrO-Xtract

Fault seen. Page 4 -5

Fault Flow diagrams, all

See pages 6-10

See pages 11-13

Rotor recognition

See pages 14-16

Tachometer

See pages 17-18

Lid

See pages 19-23

Imbalance

See pages 28

Temp no display.

See pages 24-27

Drive

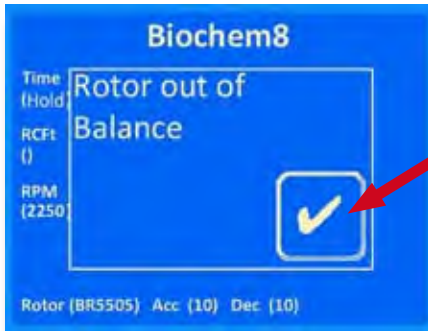
See page 29

LCD Screen Calibration

Connections

Pages 30 - 35

ERROR CODES ON DISPLAY



Error code shown on display

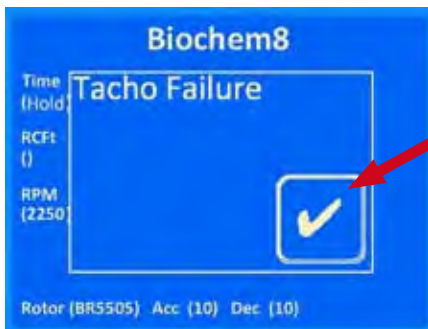
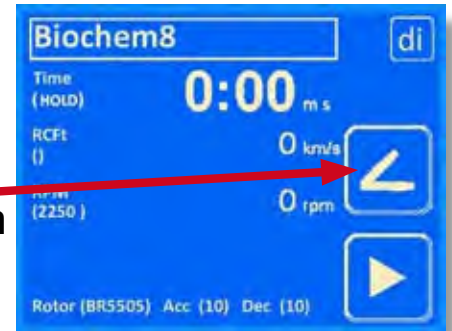
If Display shows Rotor out of balance

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

Press
here



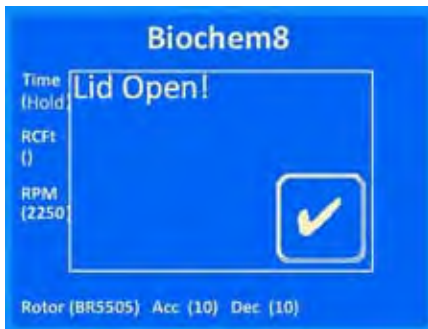
Error code shown on display

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 above)

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)

.... 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

Centurion Scientific Ltd - All Centurion equipment is designed and manufactured under strict Quality assurance conditions and rigorous testing and therefore should provide you with years of trouble free service. However, should you require repairs or maintenance work on your Centrifuge please contact our service department on +44(0) 2392 631225.

For none UK customers, please contact your local Centurion distributor for service, maintenance and after sales support.



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)

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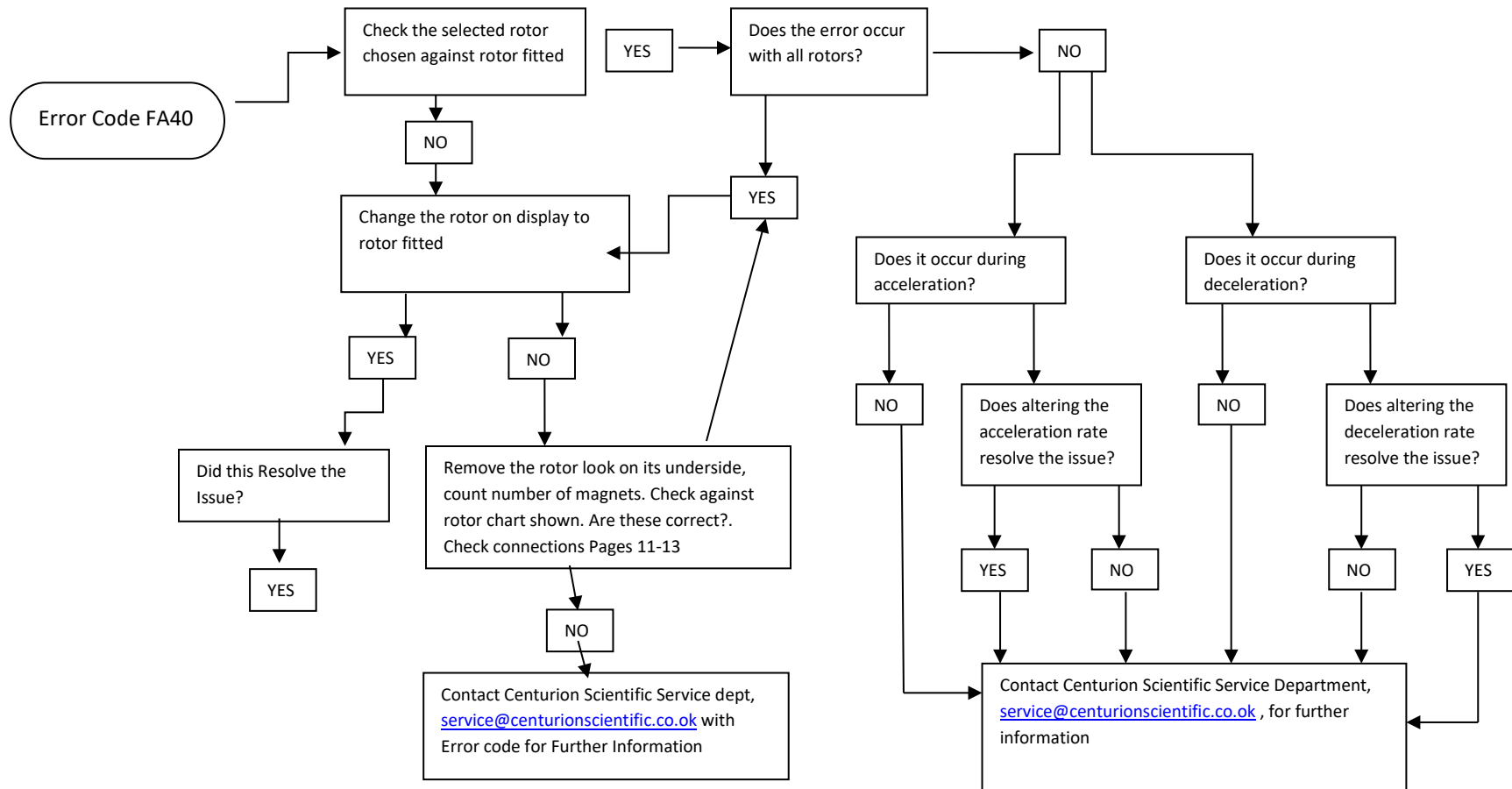
.....0 or 1.....By rotating rotor Tacho will show 0 or 1 as rotor turns if so Tachometer is working

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

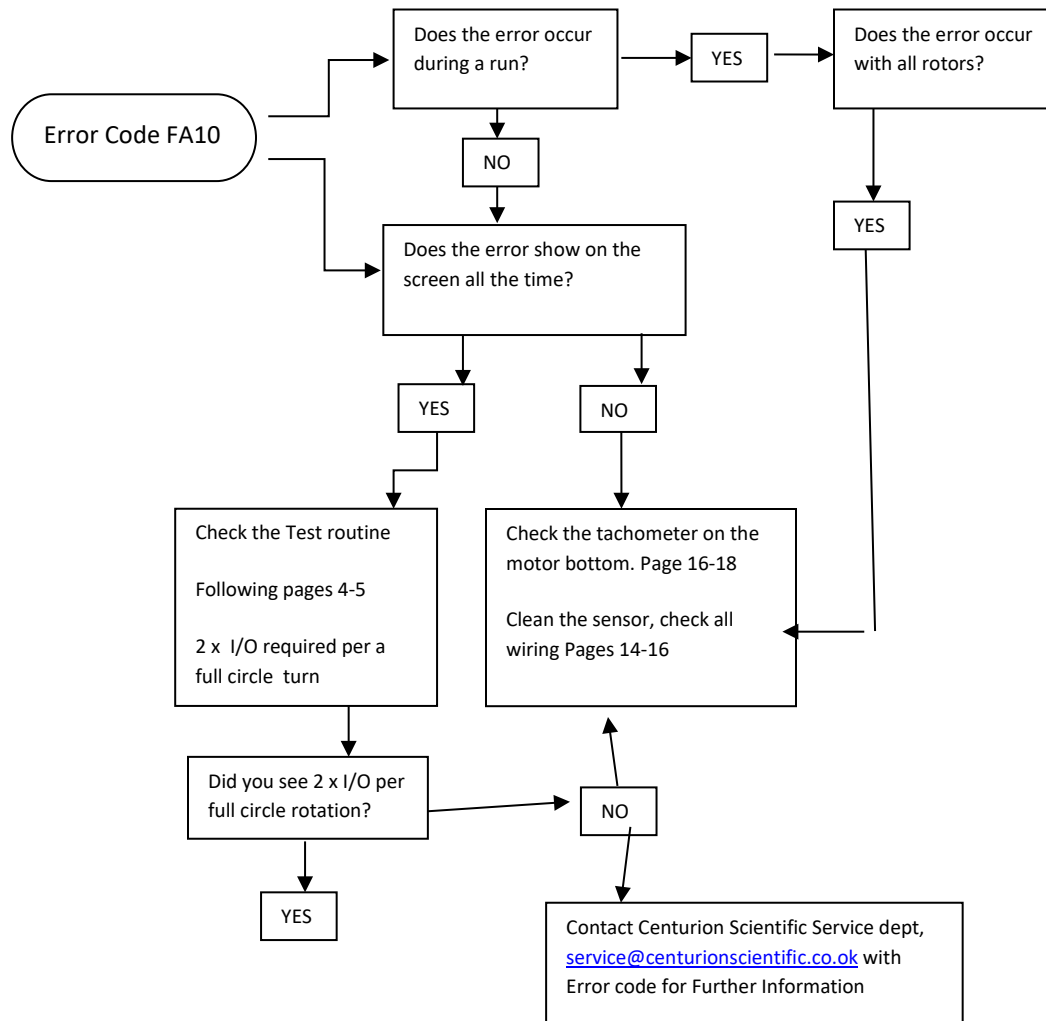
.....0 or 1.....By pressing rotor firmly or shaking hard Balance will show 0 or 1

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

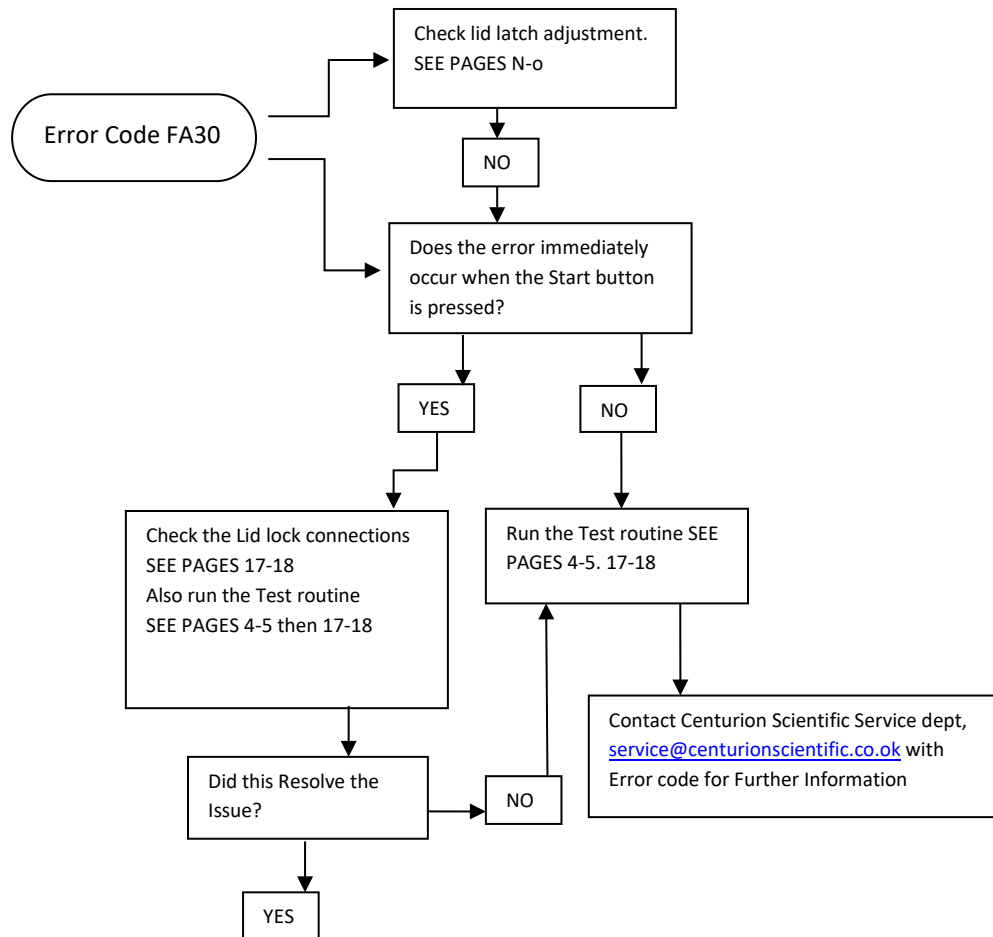
Error Code FA40 Rotor recognition. Flow Chart. VS1295



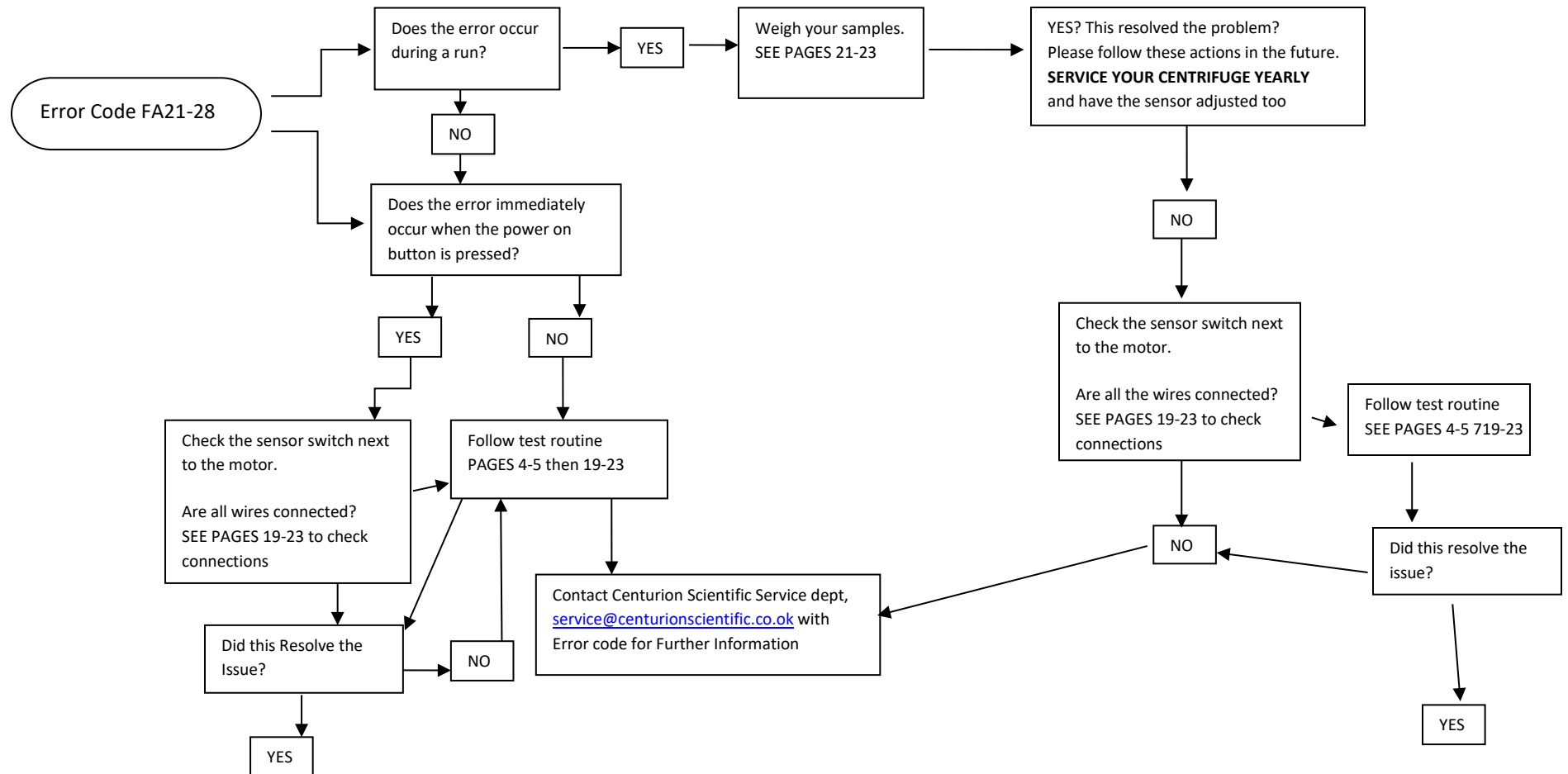
Error Code FA10 Tachometer. Flow Chart VS1295



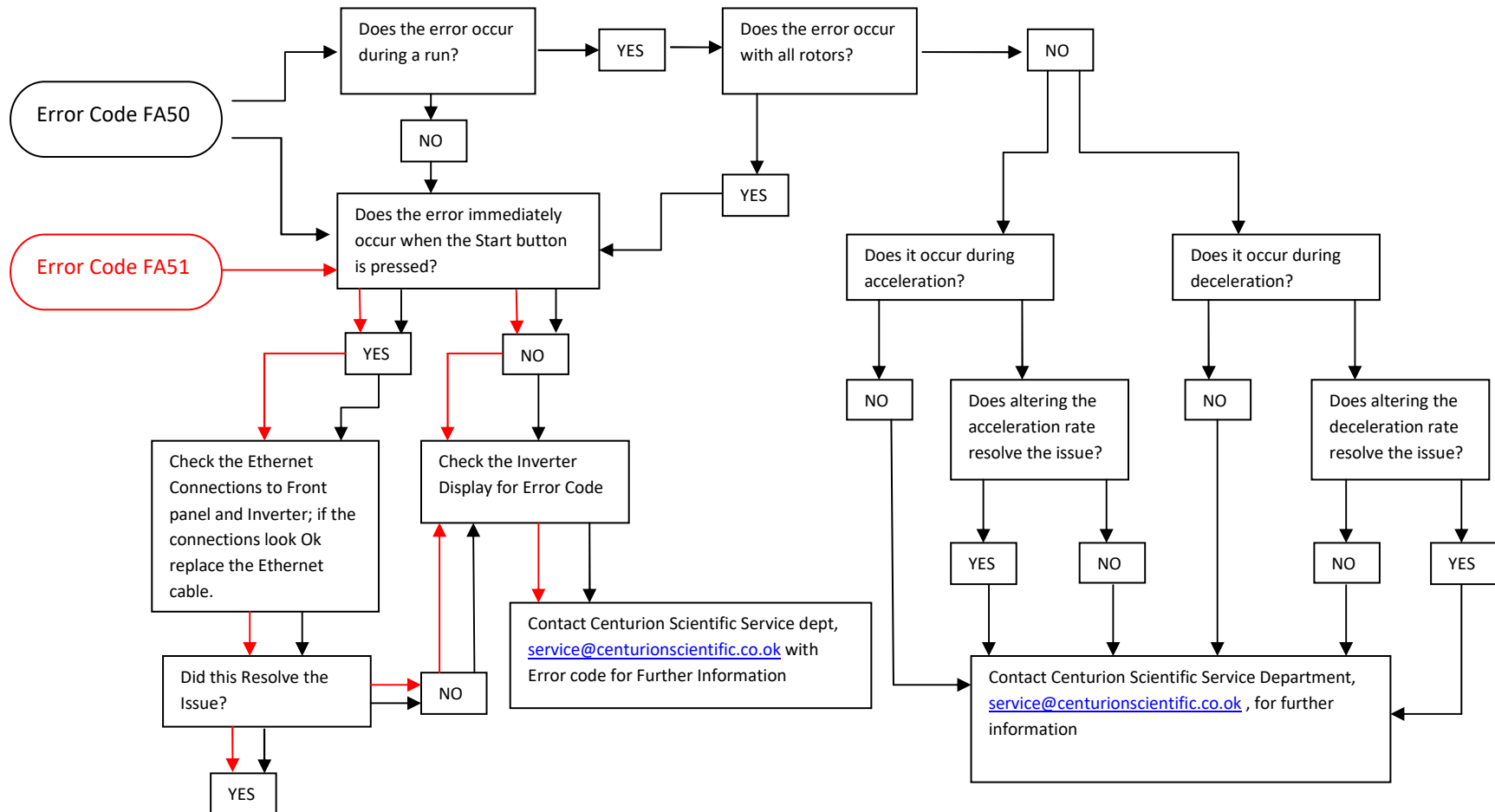
Error Code FA30 Lid. Flow Chart VS1295



Error Code FA21-28 Imbalance. Flow Chart VS1295



Error Code FA50 (Drive) FA51 (DRUC) Flow Chart





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

NOTE

Rotors have varying numbers

Examples only shown

Black rotor 8 magnets seen

White rotor 6 magnets seen



Whilst rotating the rotor a full circle (360 degrees) count the number of 0 to 1 shown on the display
These should match the number seen or to match chart supplied on the following page



..... 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

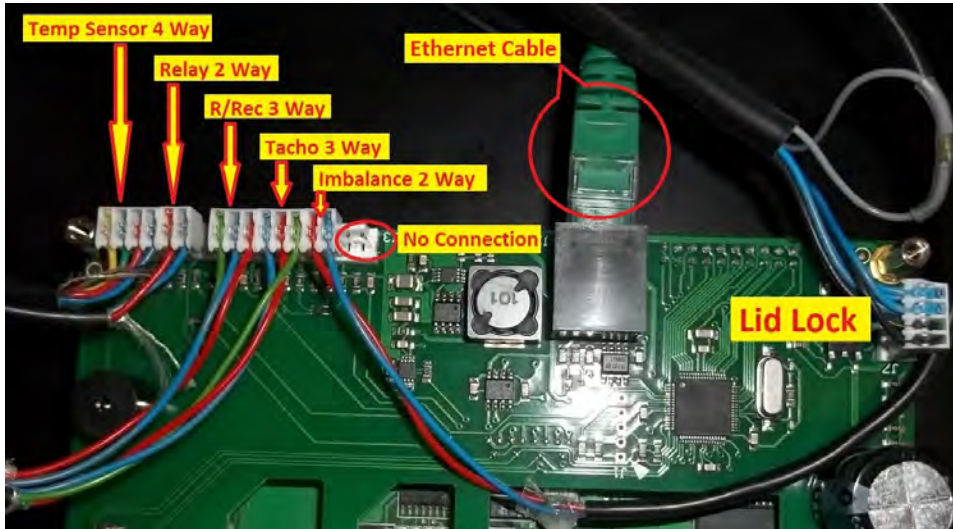
.....0 or 1.....By rotating rotor Rotor Rec will show 0 or 1 as rotor turns if so sensor is working

.....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

VS1226 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	



S Rotor recognition sensor



Magnets to underside of rotor must match chart on previous page designated to rotor

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)

TEST Routine. Tacho

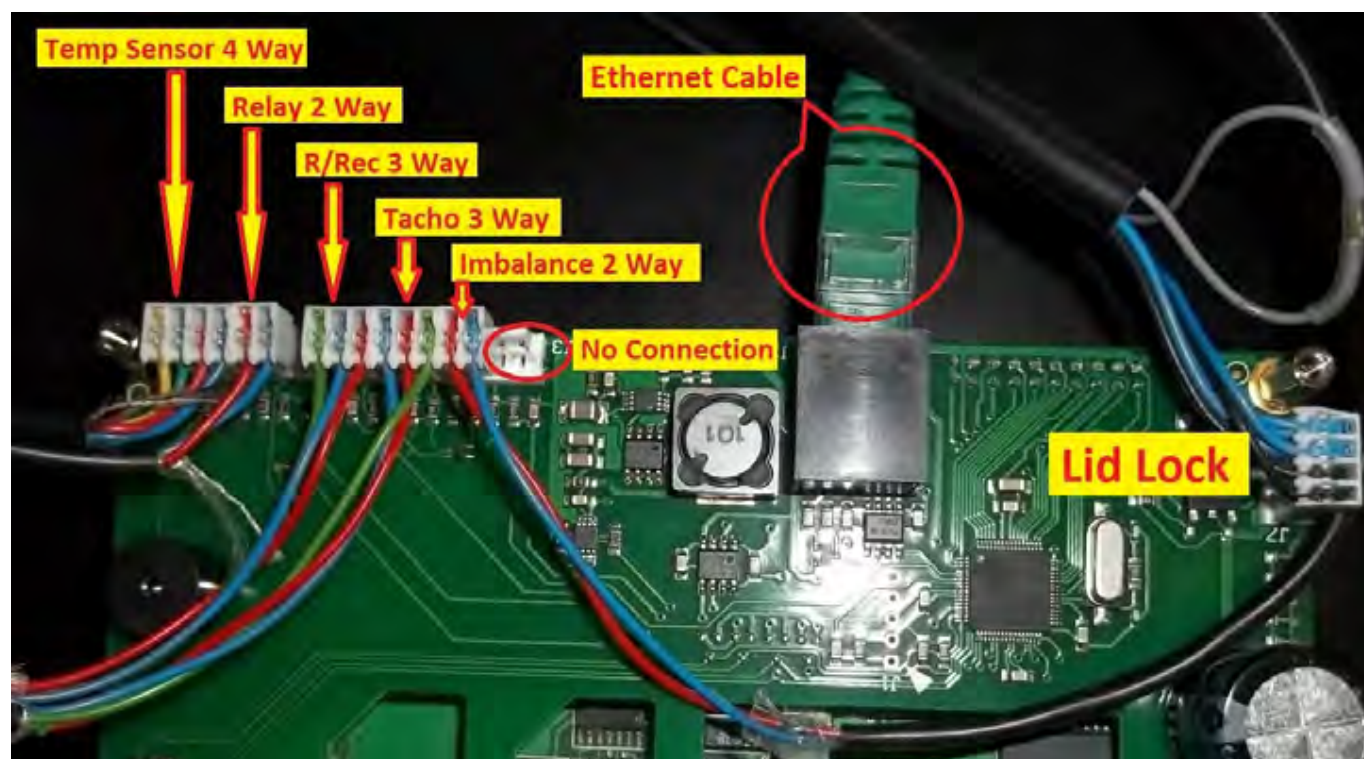


Whilst rotating the rotor full circle
(360 degrees)
Check the number of 0/1 seen
These should be 2 per rotation

Diagnostics

Firmware	Dev 06
Tacho	0
Rotor Rec	0
Balance	1
Lid switch	1

.....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



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

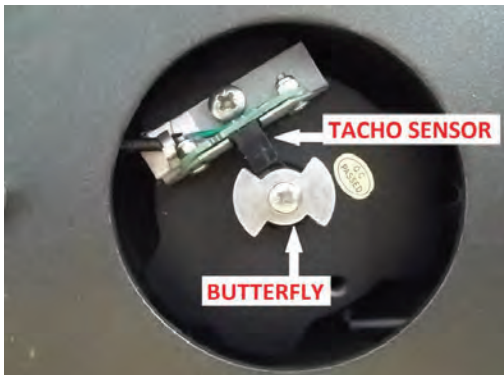
Following page shows how to clean the sensor and this is very important as over time dust , hairs and other matter can cover the sensor not allowing it to function correctly. A yearly service is critical to erradicate this problem.

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

FAULT . Tachometer

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.



Close the Lid

Diagnostics	
Firmware	Dev 06
Tacho	0
Rotor Rec	0
Balance	1
Lid switch	1



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

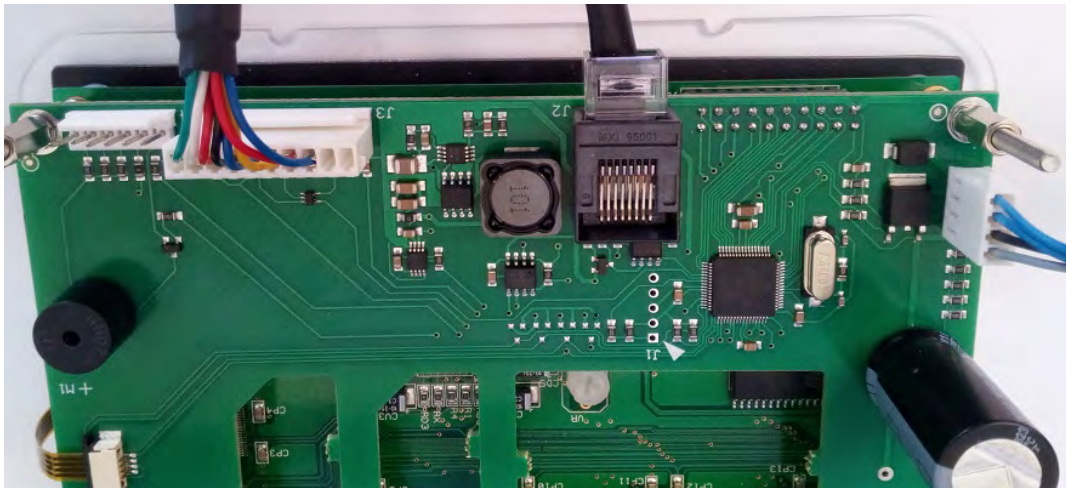
.....0 or 1.....By rotating rotor Tacho will show 0 or 1 as rotor turns if so Tachometer is working

.....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

P 18 **Connections** Lid switch



L



**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 Below

Check connection to board is correct and in
position L Connection to Lid Lock socket is in
position L L

Use Test routine to check 0/1 is correct

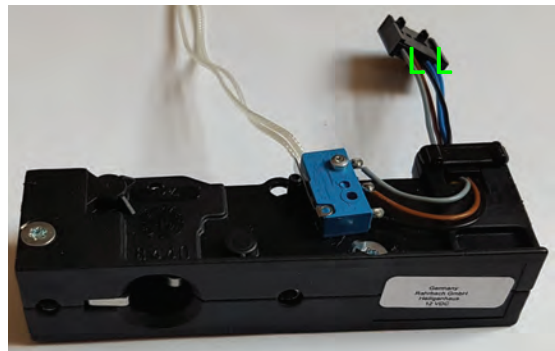


Note position of lid latch Pin from front to rear
Note height and use of Washer and a spring
washer with nut.

L Board connection



Lid lock connection L L



Imbalance check as follows first

P 19

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



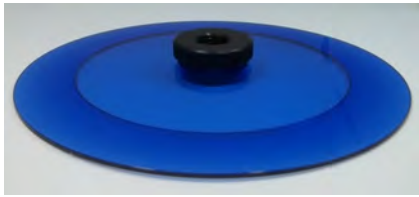
Place all your required tubes in all 4 buckets.
Equal amount per bucket.
Weigh each bucket containing tubes

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



For BRK5506 rotor use the adaptor

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

Small Swing out rotor



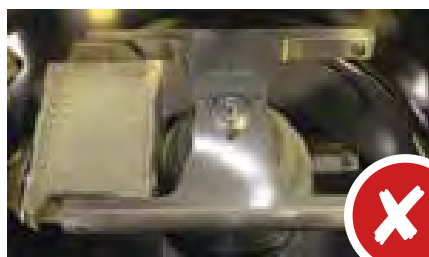
ALWAYS load your tubes opposite to each other
ALWAYS weigh samples to within **0.1 Gram**. For best separations
ALWAYS fit **ALL** the Tube Holders and any supports
CHECK The rotor screw fixing tightness regularly

Medium – Large Swing out Rotors

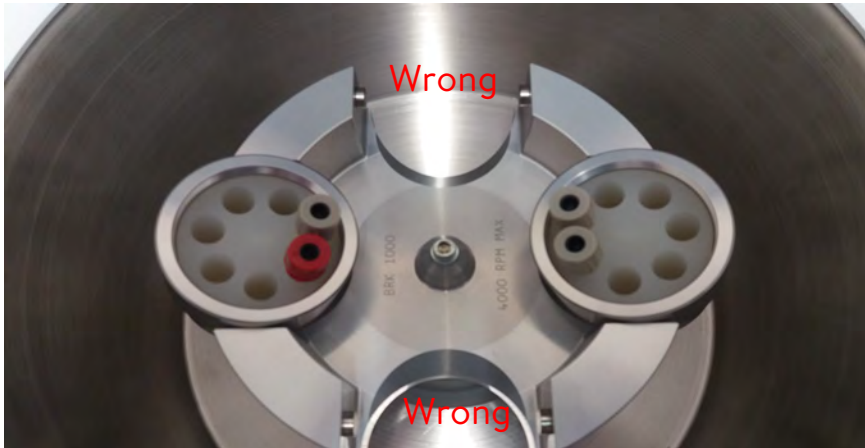


ALWAYS load your tubes opposite to each other
ALWAYS Weigh **Bucket** and all samples within to **1.0 Gram**
ALWAYS fit **ALL** 4 Buckets and 4 Adaptors supplied
CHECK the rotor screw fixing tightness regularly

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.

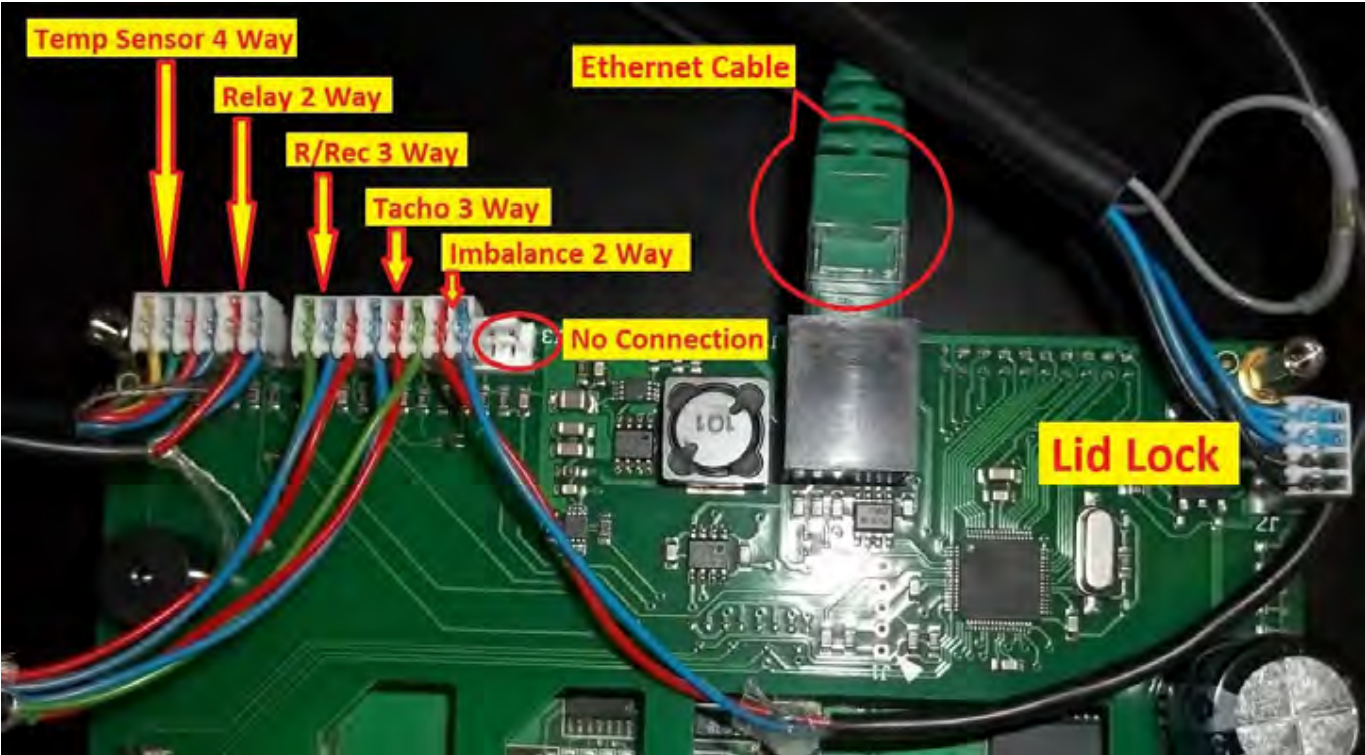
**NEVER use different size tubes as in B per bucket
Check they fit and do not hit the centre as shown in C**

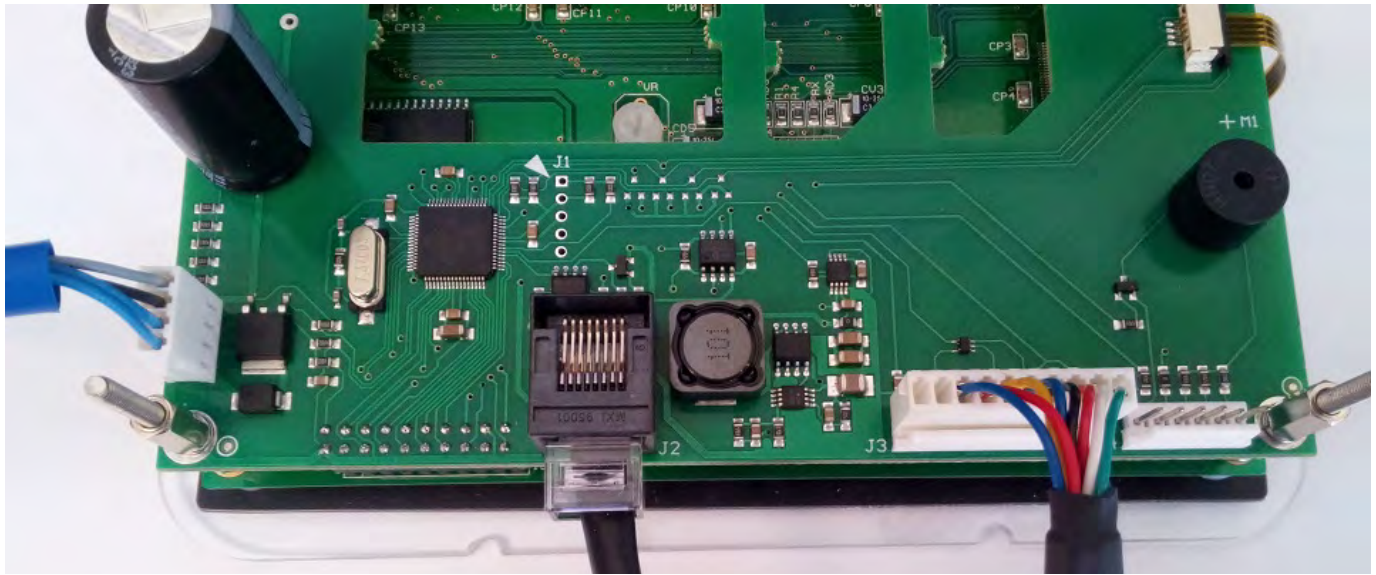


With rotor screw fixed to motor shaft
Push the rotor (hard) to the right side
8 should show on the display.
see below

Diagnostics	
Firmware	Dev 06
Tacho	0
Rotor Rec	0
Balance	1
Lid switch	1

..... 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
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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)

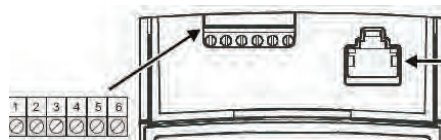


Control Terminals

- 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

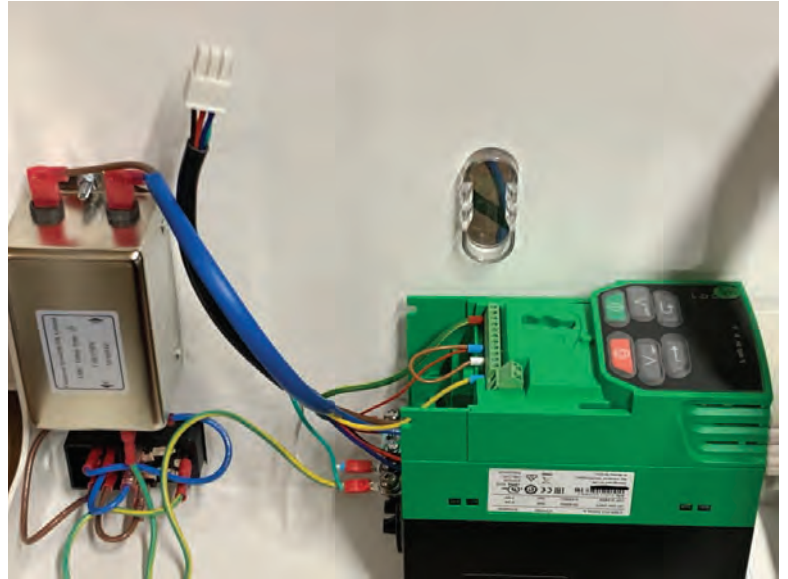
- 1: Green/Orange (To Ethernet Cable)
- 2: Blue (To Ethernet Cable)
- 3: Blue/Orange (To Ethernet Cable)



RS485: Ethernet Cable
from Control PCB (Early
Models)

Ambient model

Please see previous pages to assist here



Refrigerated Model



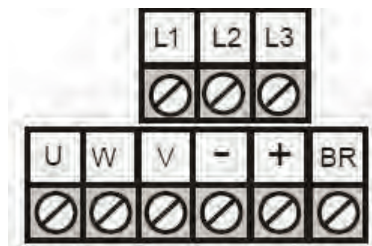
See following page for connections for connection to the Inverter

Some models use the RJ45 connection at both ends





Nidec C200 Wiring 1.5Kw



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)

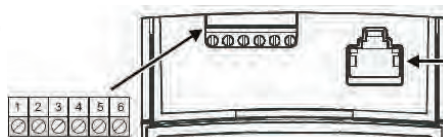


Control Terminals

- 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)

Temp no display

P 30

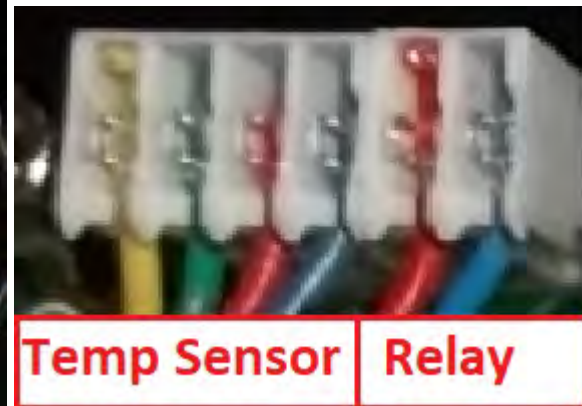
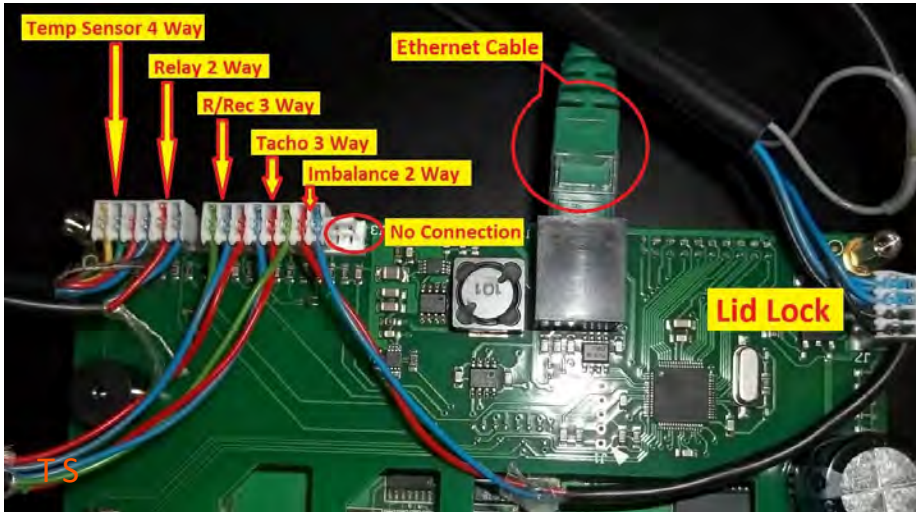
Temp

50

Refrigerated model only

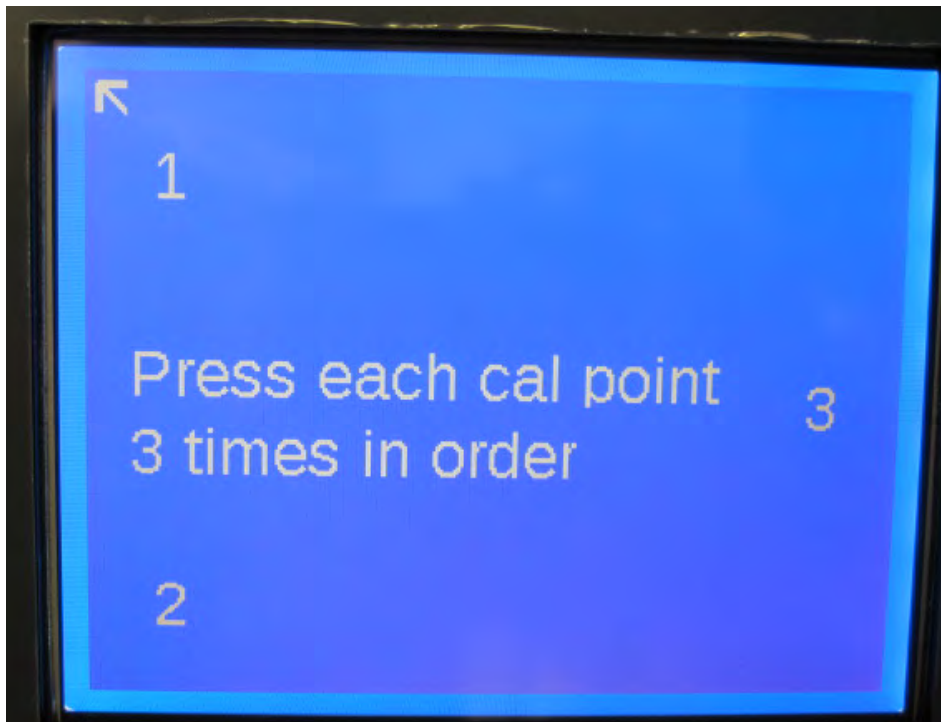
If this is shown in the Temp window there is a Temperature probe failure

Contact our Service Department



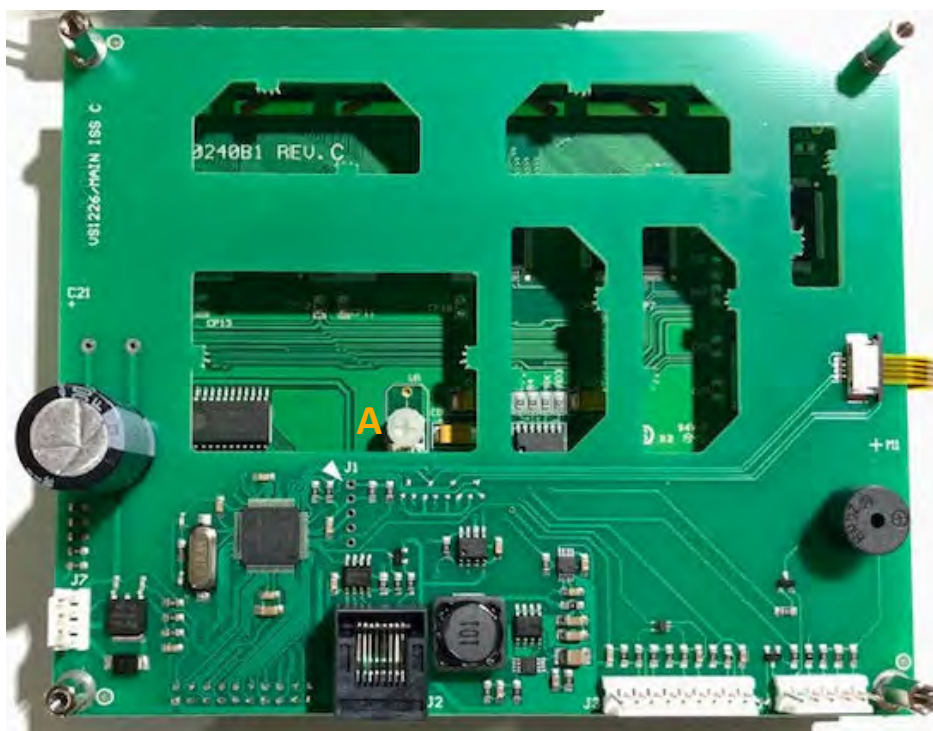
TS

With the machine turned off, place finger in centre of screen and then turn the machine on keeping finger on screen. The screen below will appear, follow the on screen instructions.



Front

Calibrate the screen by touching the screen three times as indicated on screen.



Rear

A. Adjust contrast Here

CONNECTIONS

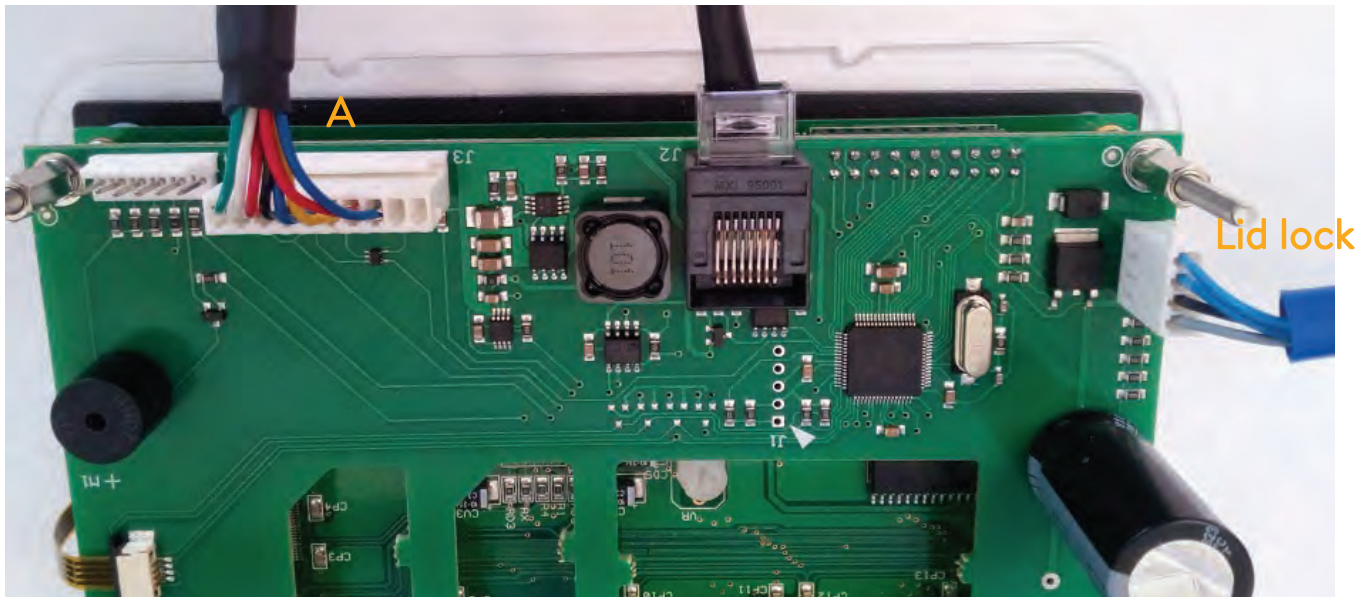
Year 2010 onward



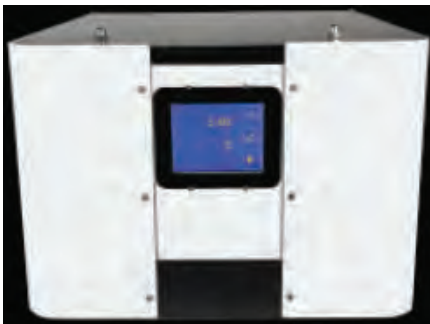
CENTURION
SCIENTIFIC LIMITED

15

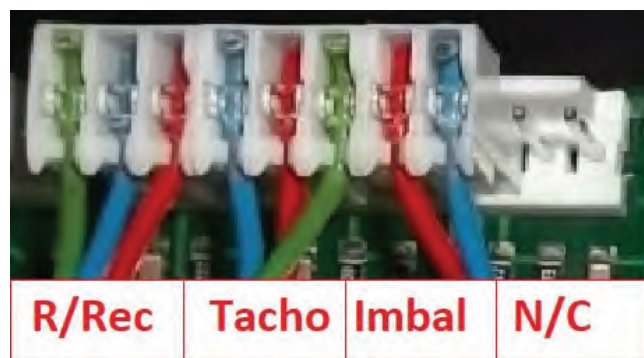
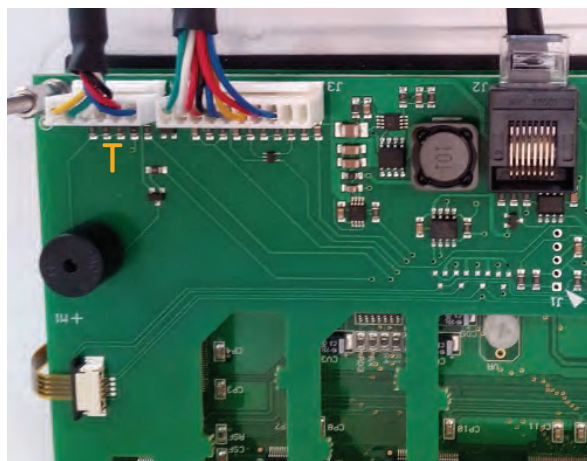
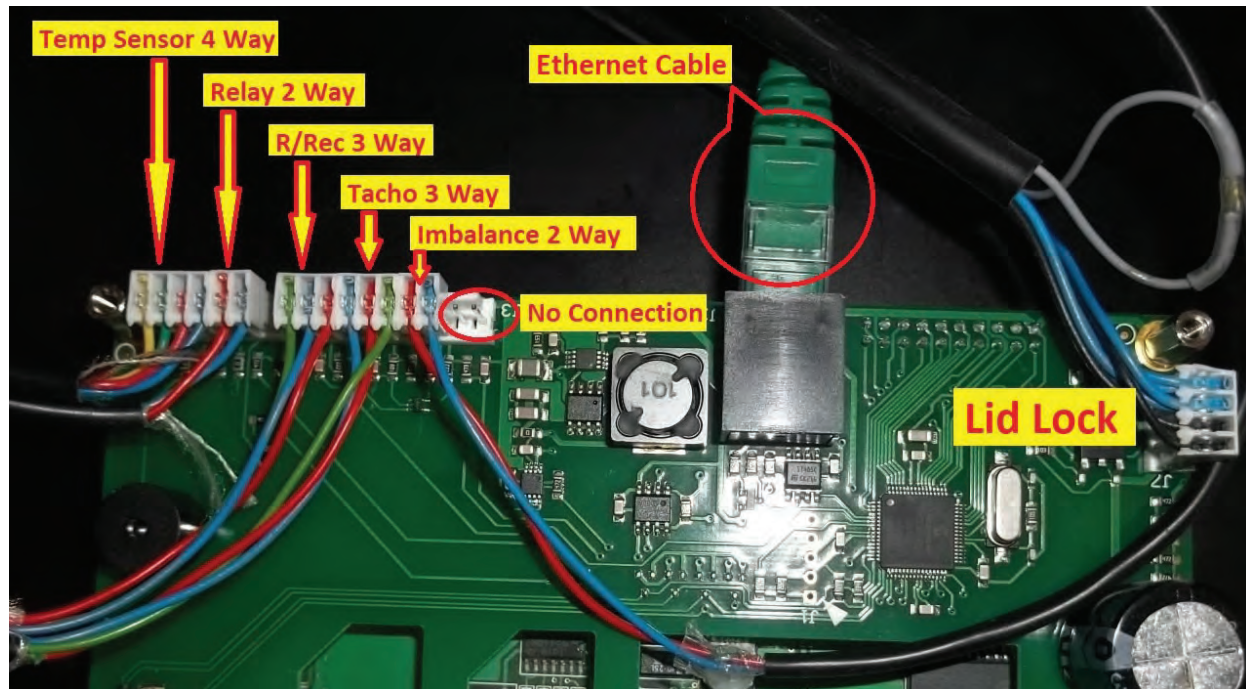
RJ45 Ethernet



A



Example



10 way connector

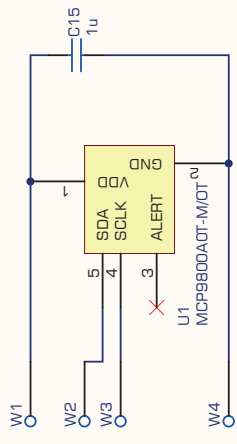
T temp sensor 1-4, relay. 5-6



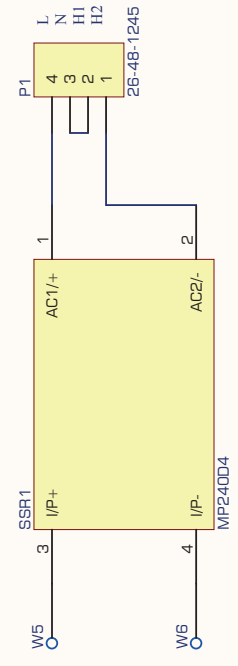
Examples



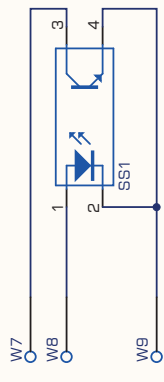
TEMP SENSOR PCB



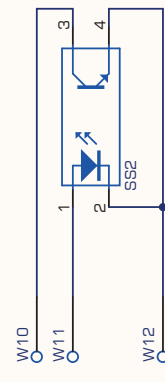
HEATER SSR PCB



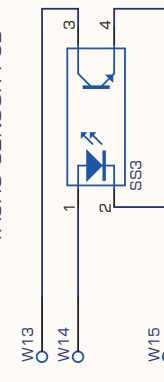
TACHO SENSOR PCB



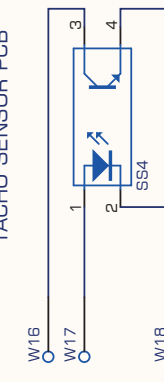
TACHO SENSOR PCB



TACHO SENSOR PCB



TACHO SENSOR PCB



See page 9 for full circuit diagram

Title VS1226 Centrifuge Aux PCBs		
Size: A4	Number: VS1226/MAIN	Revision: ISS C
File: AuxPCBS.SchDoc		
Date:		

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.

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PO18 9JL. UK

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