

How to fix

VS1295 LED

Rotor recognition, tachometer, imbalance, lid & drive

Year 2018 onwards



CENTURION
SCIENTIFIC LIMITED



Ranges that use this Circuit board are

- PrO-Analytical
- PrO-Hospital
- PrO-CW
- PrO-Cytology
- PrO-Xtract
- PrO-Oiltest (display is red)
- PrO-Vet (Limited models)

Fault seen. Pages 9 - 10

First step how to enter the test area

See pages 4 -5. then use the section required

FA 40. Rotor recognition

See pages 13 - 15

FA 10. Tachometer

See pages 16-18

FA 30. Lid

See pages 19 - 20

FA 21 - 28. Imbalance

See pages 21 - 25

Temp no display.

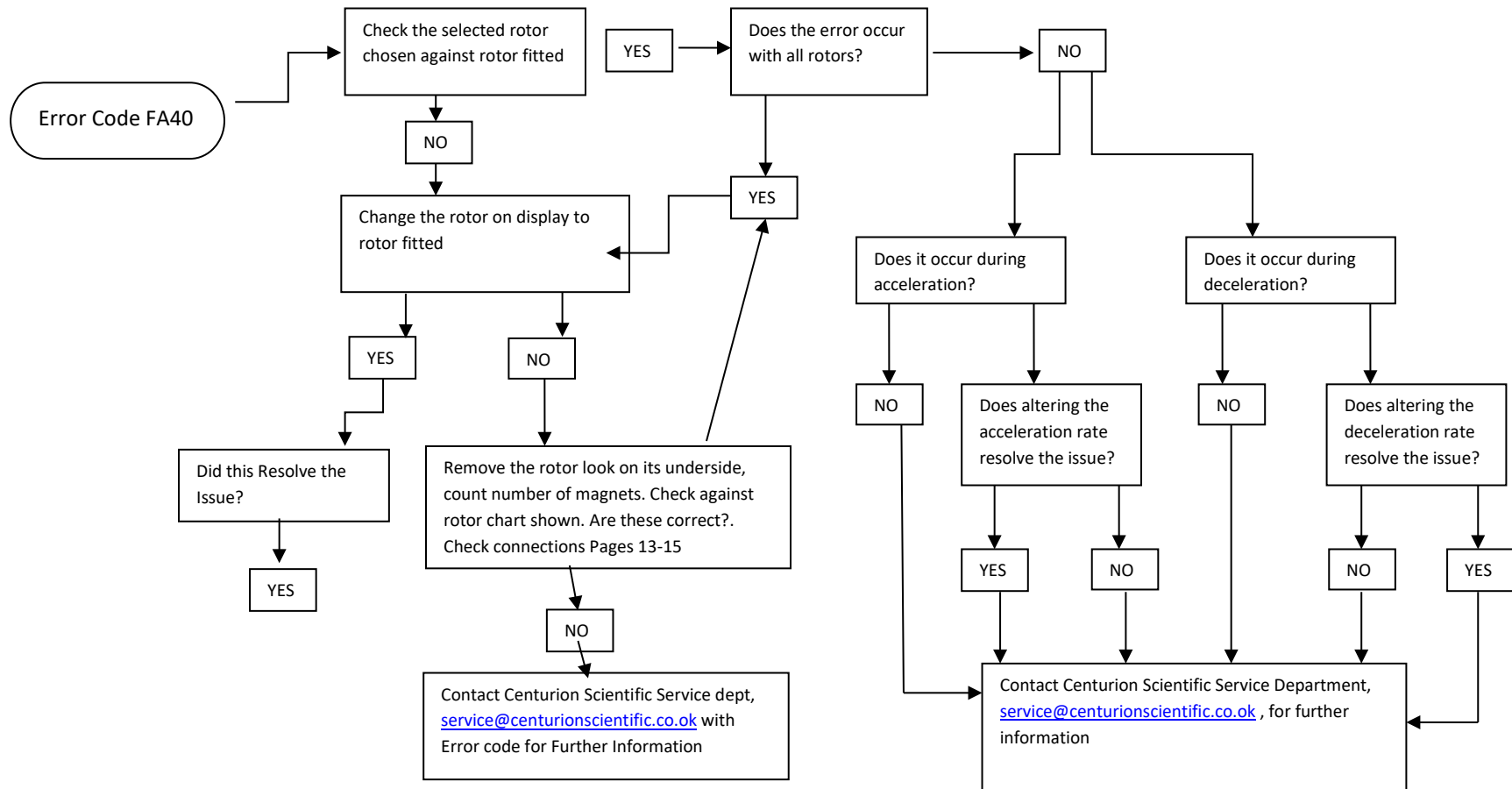
See pages 30

FA50 - 51 Drive/Druc

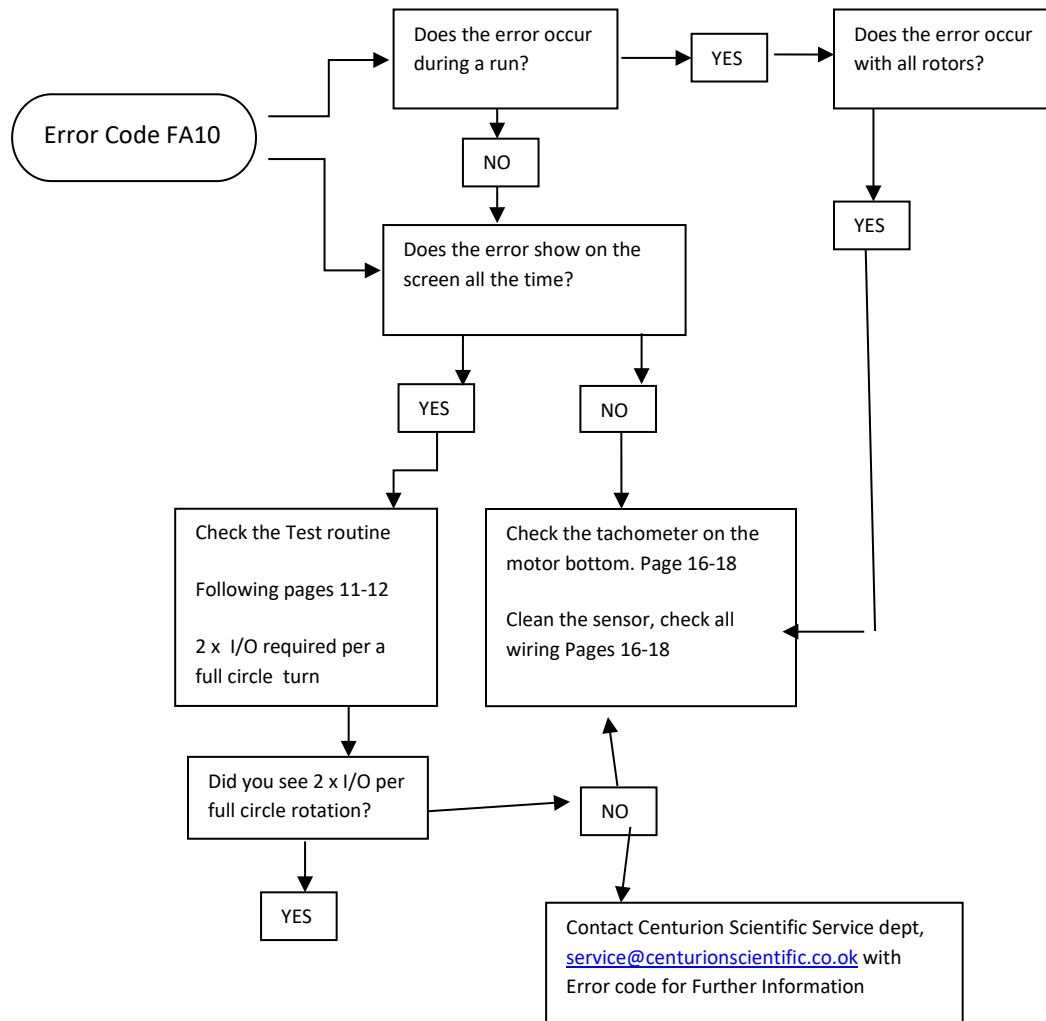
See pages 26 -29

Connections pages 32 - 38

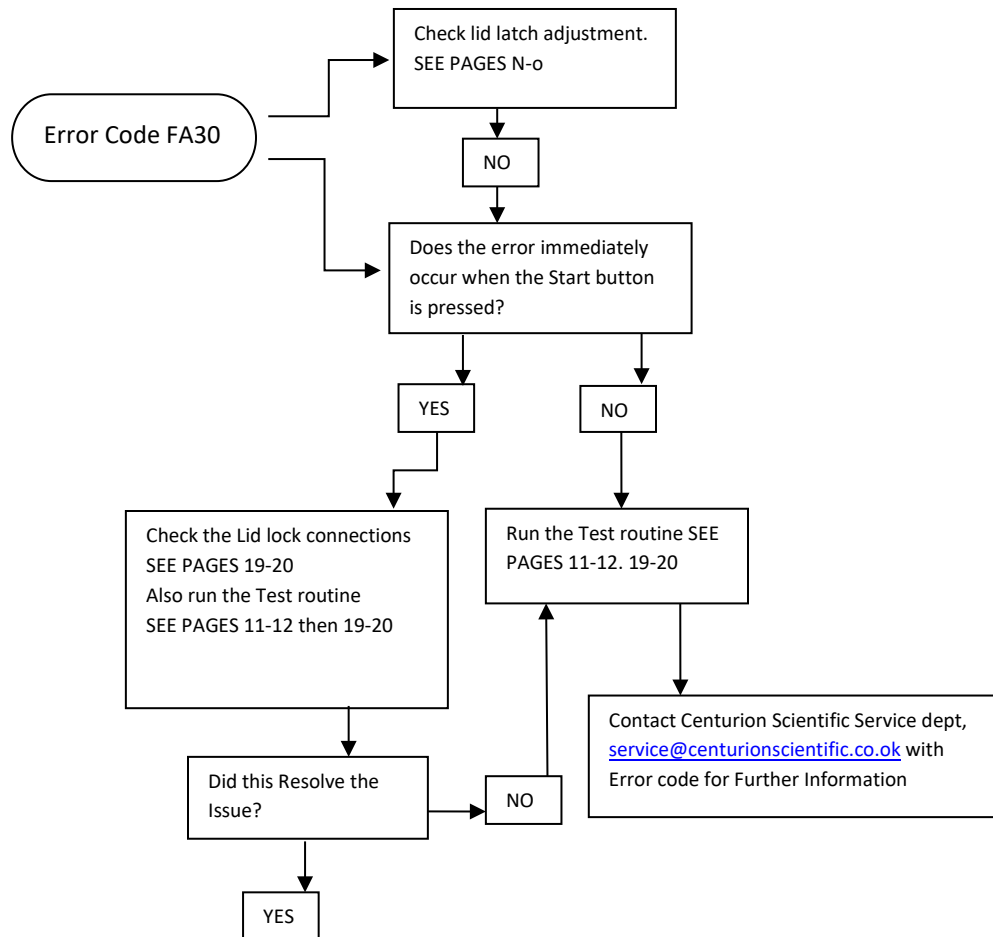
Error Code FA40 Rotor recognition. Flow Chart. VS1295



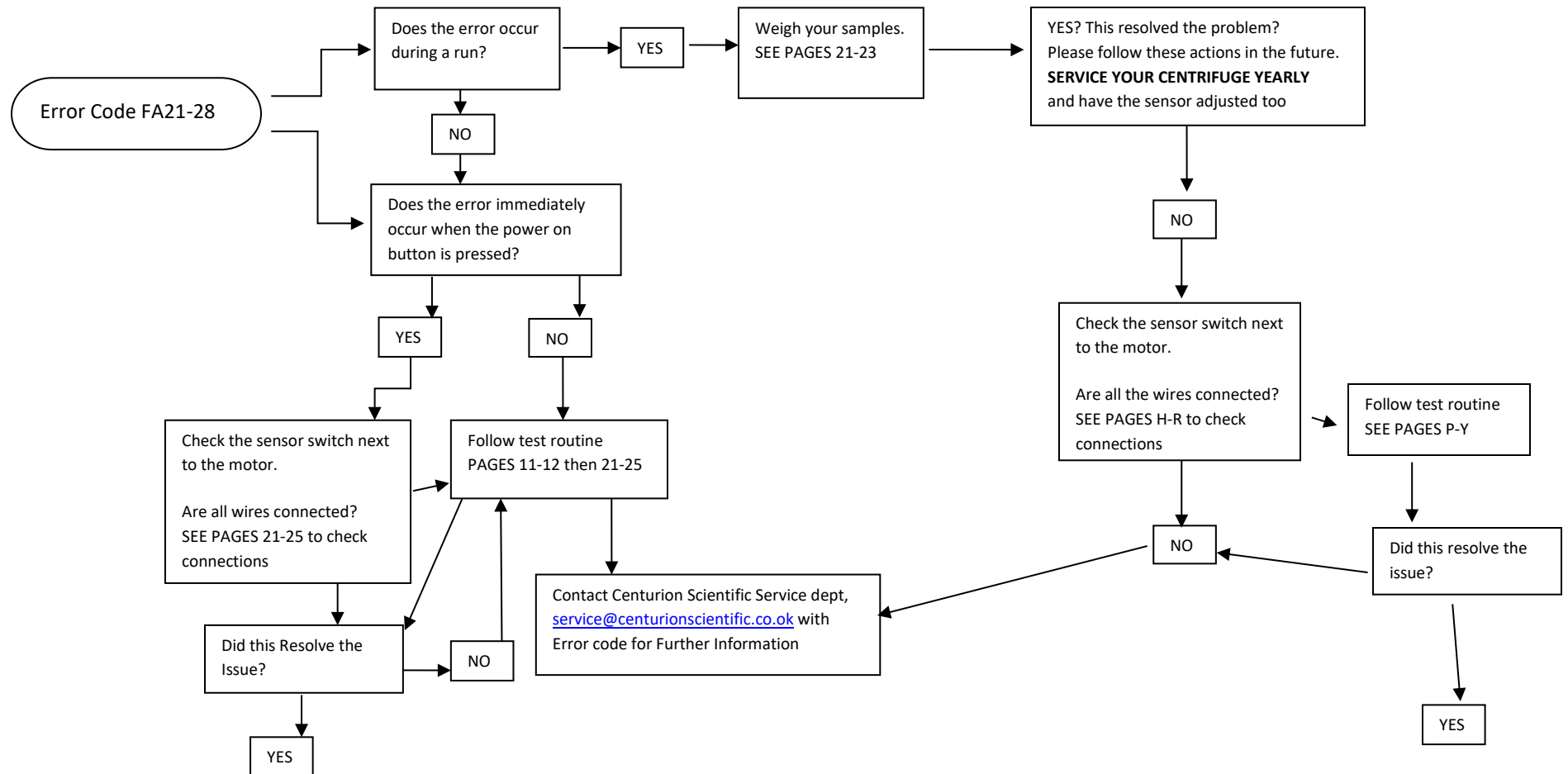
Error Code FA10 Tachometer. Flow Chart VS1295



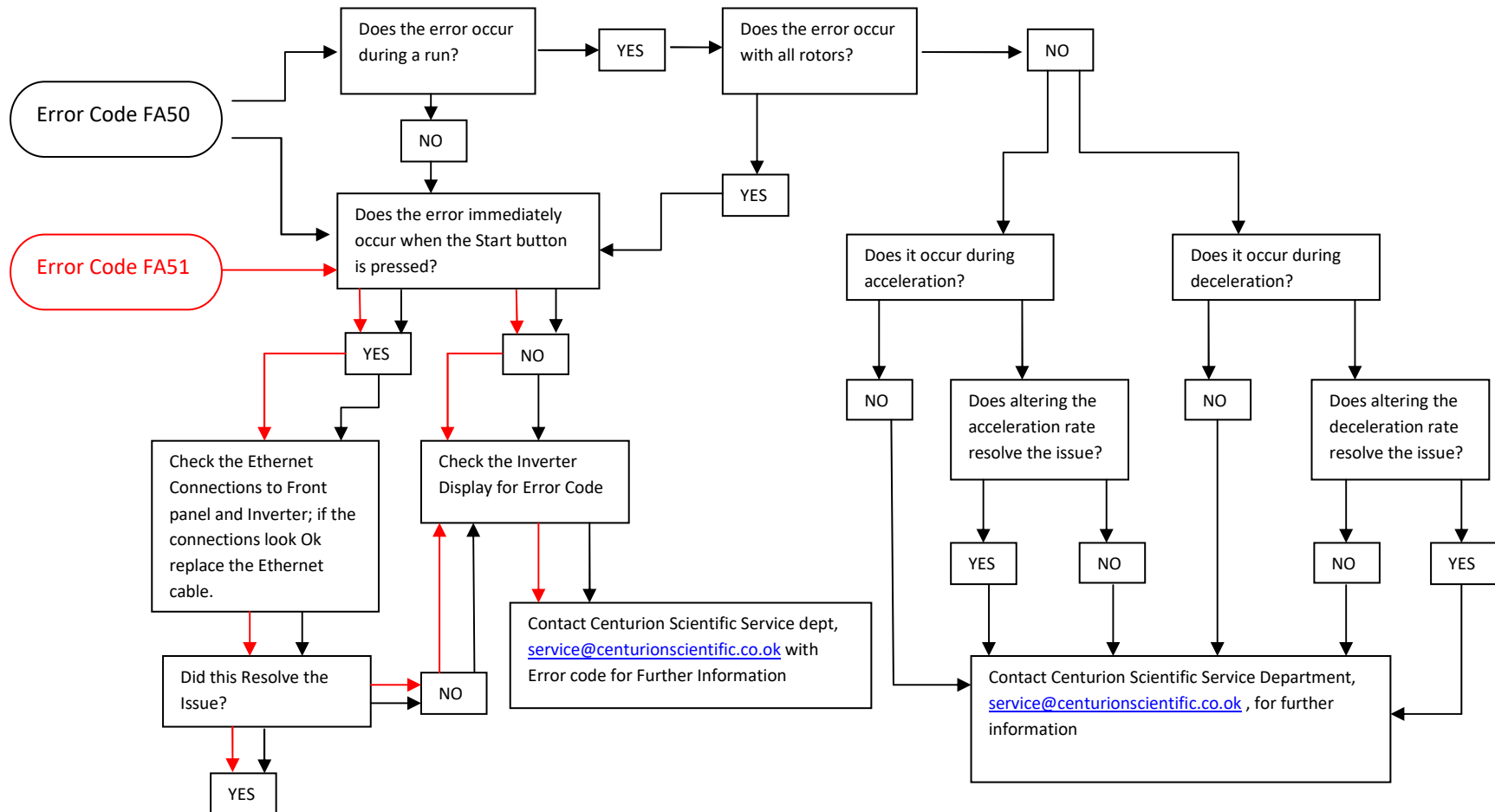
Error Code FA30 Lid. Flow Chart VS1295

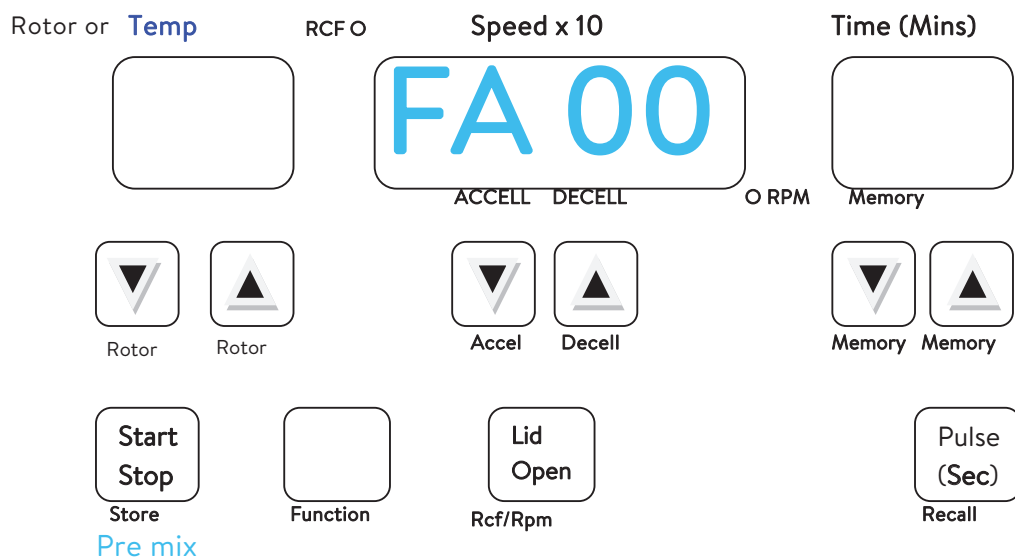


Error Code FA21-28 Imbalance. Flow Chart VS1295



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





Fault codes are shown in the Speed section of the LED display (shown above in Green)

The following List show what each Code means and what to do.

FA10	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. <i>If not Contact our Service Department</i>
FA21	Imbalance BG	Check the Following. Weigh your tubes to 1g of each other Place tubes in Rotor opposite each other (see Following Rotor pages for instructions) <i>If Fault code persists call our Service Department.</i>
FA22	Imbalance BD	As above.
FA23	Imbalance MG	As above.
FA24	Imbalance MD	As above.
FA25	Imbalance Base Sensor	<i>Contact our Service Department.</i>
FA26	Imbalance Motor Sensor	<i>Contact our Service Department.</i>
FA27	Data time out	<i>Contact our Service Department.</i>
FA28	Imbalance	See the following Rotor pages
FA30	Lid is open	Close the Lid, press down on 2 front corners, push firmly. <i>If problem persists Contact our Service Department</i>
FA40	Rotor recognition	Wrong rotor selected , look at code on rotor and select same in rotor selection

Fault codes are shown in the Speed section of the LED display (shown on previous page)

The following List show what each Code means and what to do.

FA50

Inverter Drive

Look at the Obround viewing port (Rear)

Note the Code shown in the inverter display. *

Turn off the power at the wall mains switch only.

WAIT 3 minutes, Turn on again and Run. If problem persists

Contact our Service Department, with the Inverter code

FA51

Inverter error

As above.



Obround viewing port shown. *

Temp



Refrigerated model only

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

Contact our Service Department



Speed will not go beyond 2000 Rpm.

- The Electronics have set the Speed to safe mode
- Check the rotor bottom has magnets fitted
- Check correct rotor is in use against program chosen
- If not then Contact our Service Department

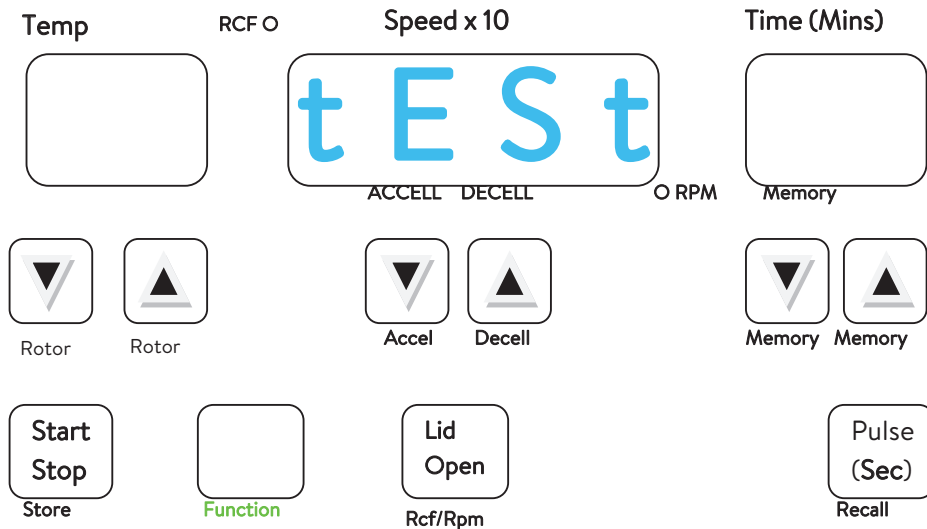
Noisy

- Unbalanced tubes, see Rotor pages
- Lid seal needs replacing
- Rotor Lid not fitted

Lid support fail

- Spring has failed. Contact our Service Department

HOW TO ENTER TEST AREA. *KEEP THE LID OPEN*
 Turn power on at rear whilst pressing **Function** button in



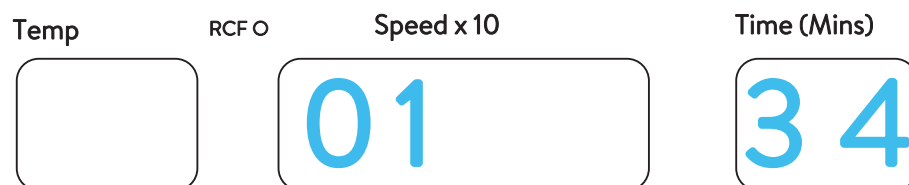
Release the **Function** button
 Press the Up arrow on time (**Memory**)
 You will then see the following



Press Memory up arrow to go to each line

Line 34

Buzzer Off (00) or On (01)



Buzzer on

LED/AMPLIFIER CHECK



Line 35

Press Decell button to increment segments

TEST Routine Diagnostics

Temp

RCF O

Speed x 10

00 00

ACCELL DECELL

O RPM

Time (Mins)

3 6

Memory

▼

Rotor

▲

Rotor

▼

Accel

▲

Decell

▼

Memory

▲

Memory

Start
Stop

Store

Function

Lid
Open

Rcf/Rpm

Pulse
(Sec)

Recall

Temp

RCF O

Speed x 10

00 00

A B C D

Time (Mins)

3 6

A. Rotor recognition.

B Tachometer

C. Lid sensor

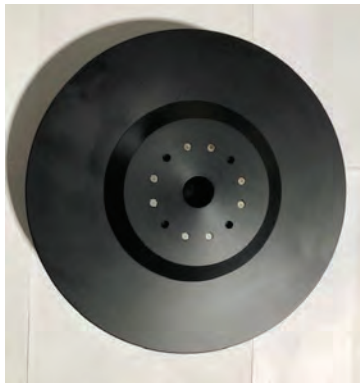
D. Imbalance

See following pages for each test. A B C D

Temp	RCF O	Speed x 10	Time (Mins)
		00 00	3 6

A

A. Rotor recognition.



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

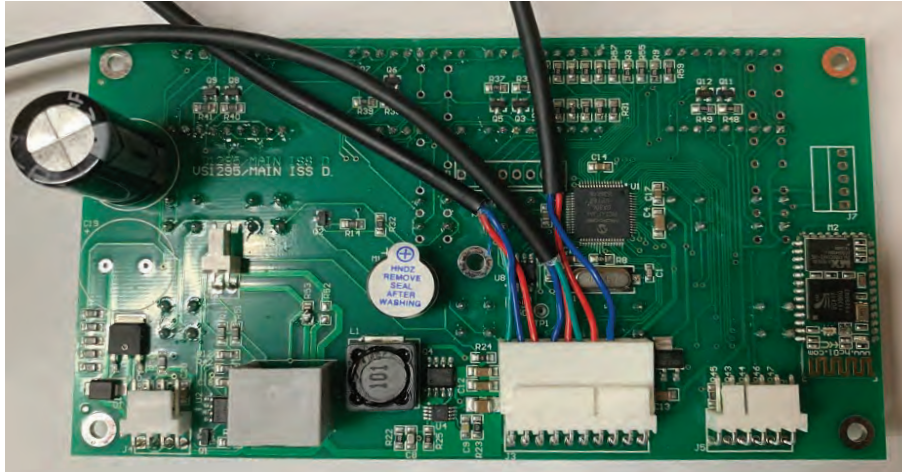
Temp	RCF O	Speed x 10	Time (Mins)
		10 00	3 6

A

A. Rotor recognition.

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	



10 pin connector



S Rotor recognition sensor



R Rotor recognition Pins 1,2,3



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. FA 10. Tachometer

Temp	RCF O	Speed x 10	Time (Mins)
		00 00	3 6

B

B. Tachometer

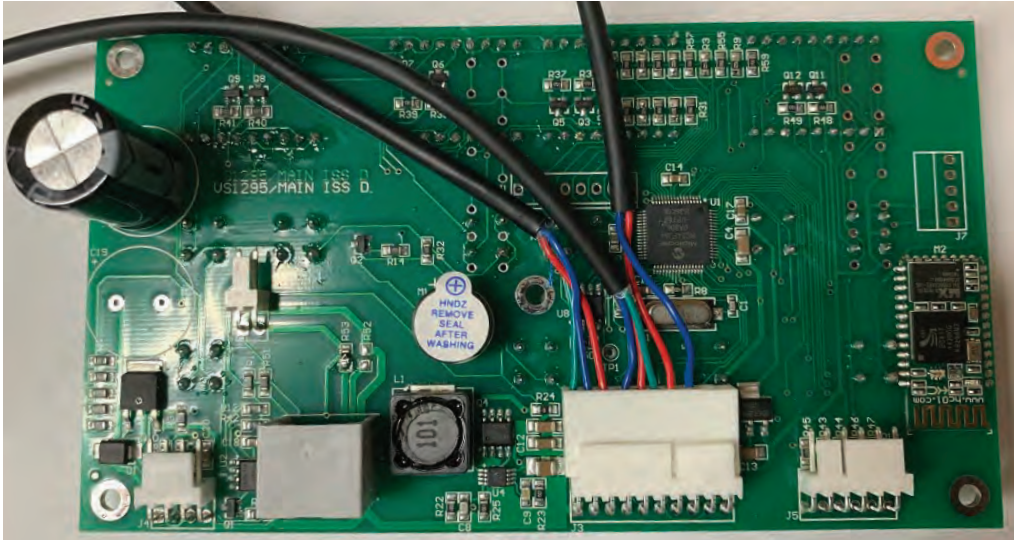


*Whilst rotating the rotor full circle
(360 degrees)
Check the number of 0/1 seen
These should be 2 per rotation*

Temp	RCF O	Speed x 10	Time (Mins)
		0 1 00	3 6

B

B. Tachometer



10 Pin connector



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.

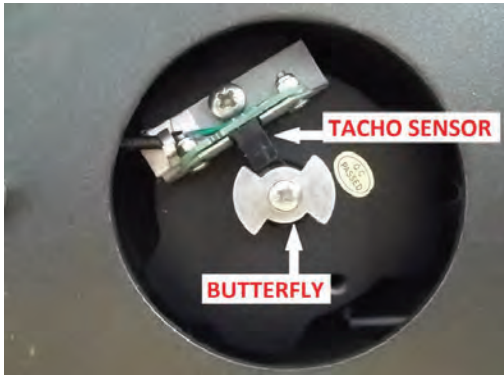
Following page shows how to clean the sensor and this is very important as over time dust , hairs and other matter can cover the sensor not allowing it to function correctly. A yearly service is critical to eradicate this problem.

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

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.

Temp RCFO Speed x 10 Time (Mins)

 00 00 3 6

C

OPEN state

C. Lid



Close the Lid

Temp RCFO Speed x 10 Time (Mins)

 00 10 3 6

C

CLOSED state

C. Lid



L. Board connection

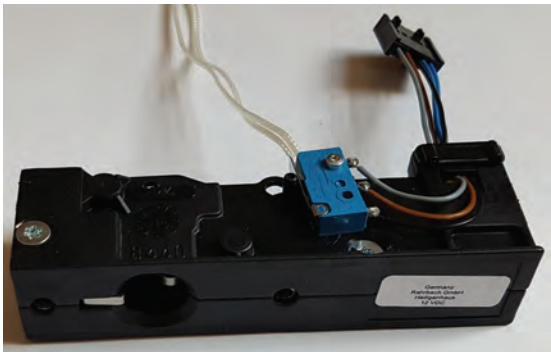


First make sure the lid is closed correctly.
Press down firmly in the center or both sides of lid for larger models.
Check lid latch fitted to lid is in the correct position as shown

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

Use Test routine to check 0/1 is correct

Lid lock connection LL



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

FA21-28 Imbalance

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



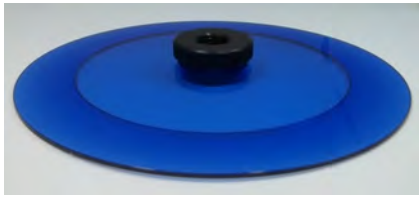
Place all your required tubes in all 4 buckets.
Equal amount per bucket.
Weigh each bucket containing tubes

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

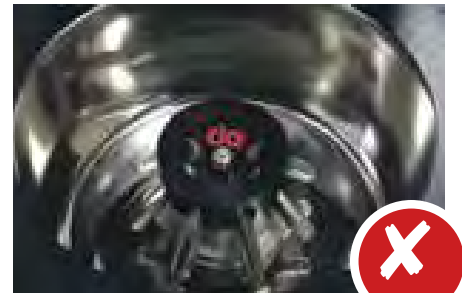
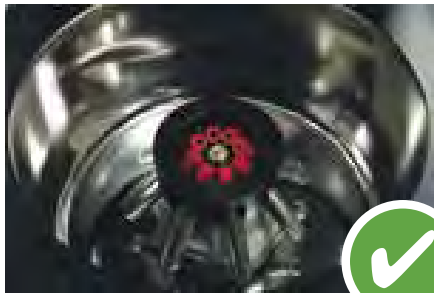
Always fit the lid supplied, as shown to the left



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

Tube & bucket placements Swing out rotors

Small Swing out rotor



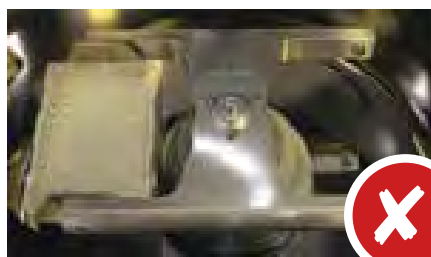
ALWAYS load your tubes opposite to each other
ALWAYS weigh samples to within **0.1 Gram**. For best separations
ALWAYS fit **ALL** the Tube Holders and any supports
CHECK The rotor screw fixing tightness regularly

Medium – Large Swing out Rotors



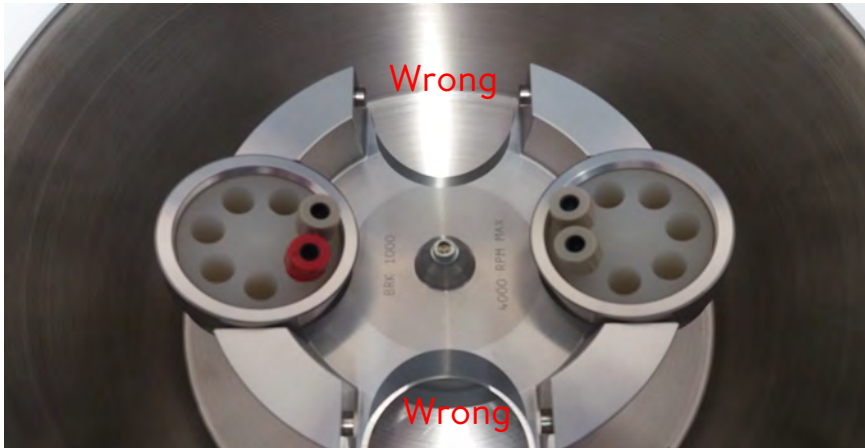
ALWAYS load your tubes opposite to each other
ALWAYS Weigh **Bucket** and all samples within to **1.0 Gram**
ALWAYS fit **ALL** 4 Buckets and 4 Adaptors supplied
CHECK the rotor screw fixing tightness regularly

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**

TEST Routine FA21-28. Imbalance

P 24

Temp	RCF O	Speed x 10	Time (Mins)
	00 00	3 6	

D

None imbalance state

D. Imbalance



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

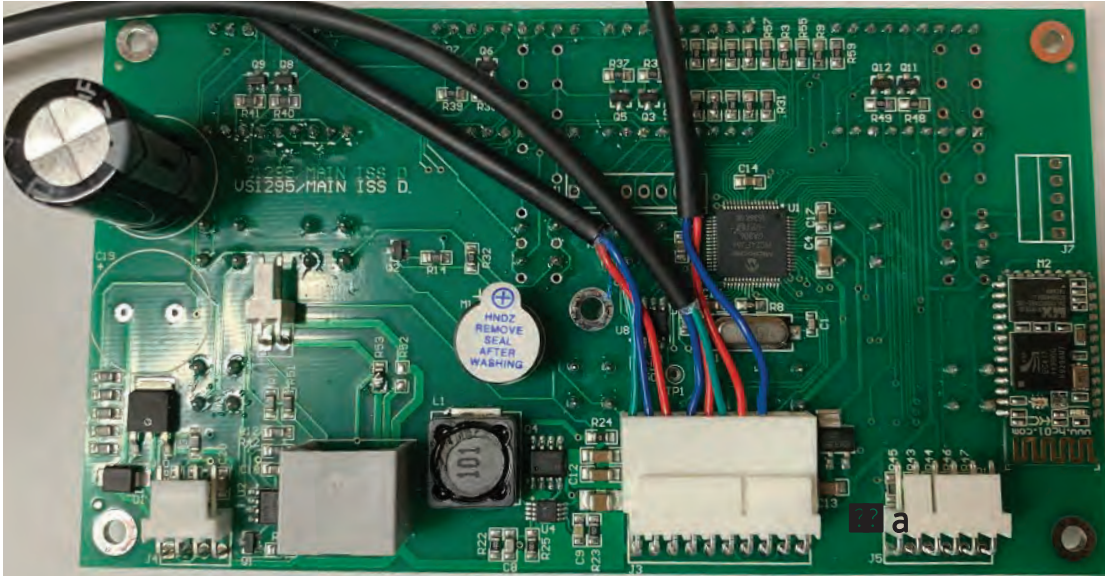
Temp	RCF O	Speed x 10	Time (Mins)
	00 01	3 6	

D

Imbalance state

D. Imbalance

Connections. Imbalance



10 pin connector



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



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)

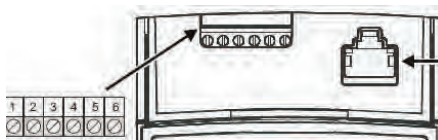


Control Terminals

- 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

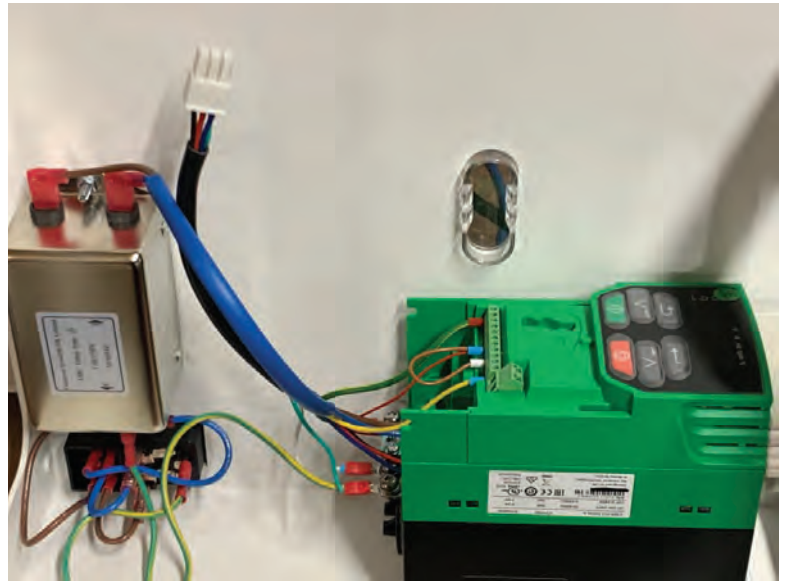
- 1: Green/Orange (To Ethernet Cable)
- 2: Blue (To Ethernet Cable)
- 3: Blue/Orange (To Ethernet Cable)



RS485: Ethernet Cable
from Control PCB (Early
Models)

Ambient model

Please see previous pages to assist here



Refrigerated Model



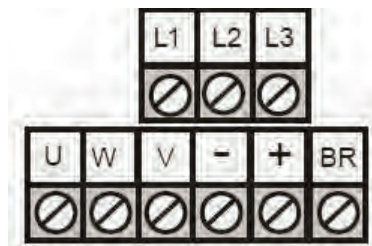
See following page for connections for connection to the Inverter

Some models use the RJ45 connection at both ends



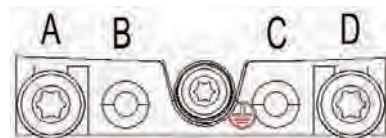


Nidec C200 Wiring 1.5Kw



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)

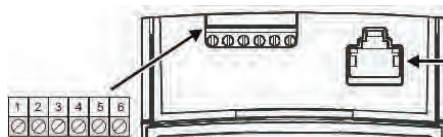


Control Terminals

- 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)

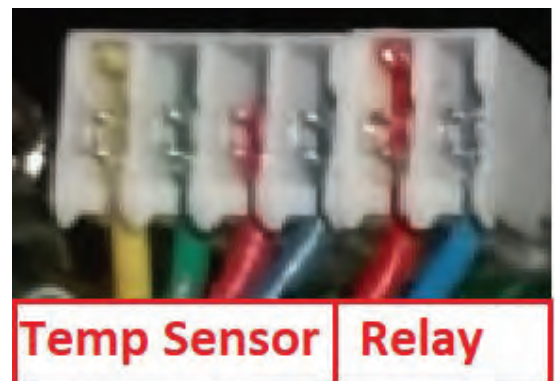
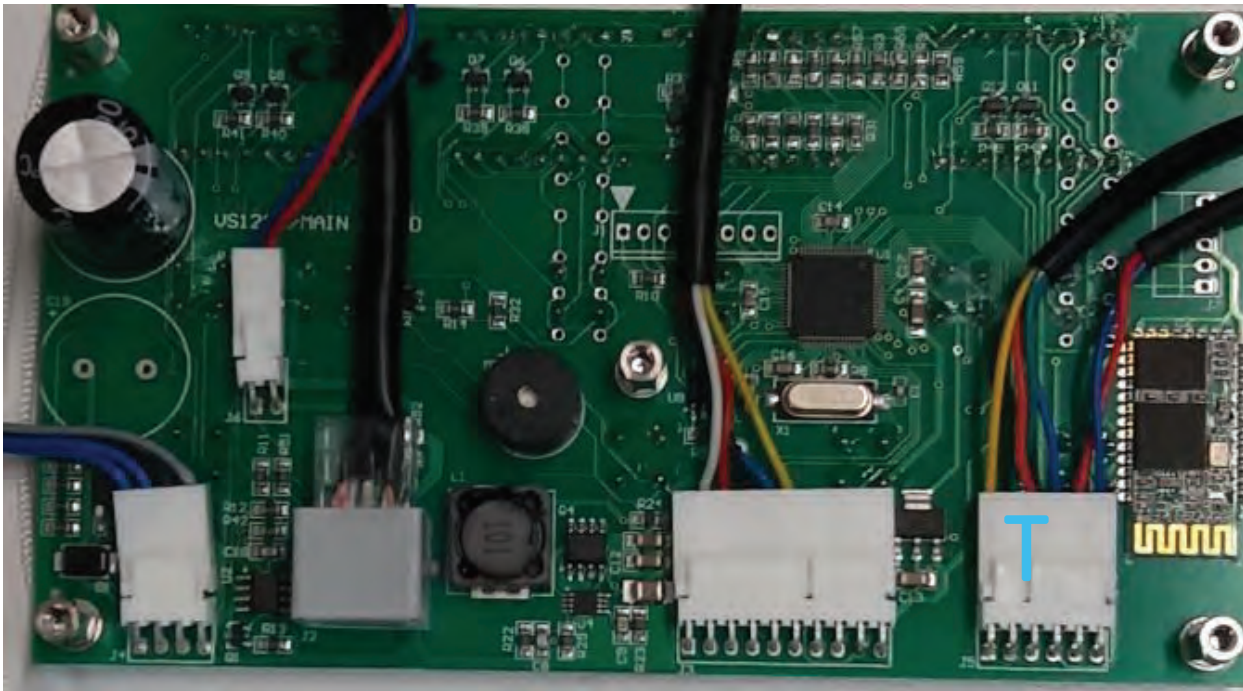
Temp



Refrigerated model only

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

Contact our Service Department



T

Final tests and return to use

BUZZER TEST

Press Memory up arrow
to go to each line

Temp	RCF O	Speed x 10	Time (Mins)
		BU Zt	St

Line 37

Buzzer Test . Press DECELL button to instigate

Temp	RCF O	Speed x 10	Time (Mins)
		BU ZO	n

Buzzer On
Can you hear it?

Buzzer Test . Press DECELL button to instigate

Temp	RCF O	Speed x 10	Time (Mins)
		BU ZO	FF

Buzzer Off

Buzzer Test . Press DECELL button to instigate

DOG TEST

Temp	RCF O	Speed x 10	Time (Mins)
		DO 9t	St

Line 38

Final Test (Dog Test). Press DECELL button

Temp	RCF O	Speed x 10	Time (Mins)
		HELL	0

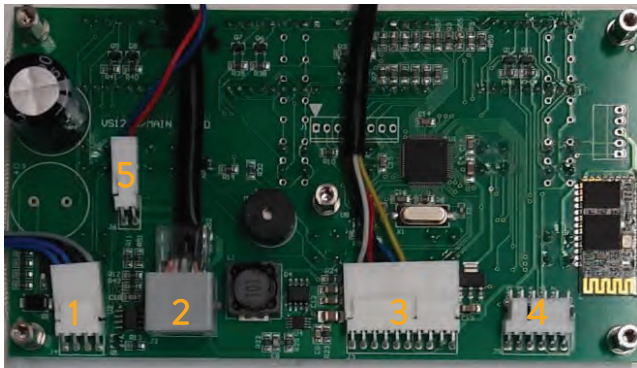
HELLO Should display on screen Centrifuge is out of TEST routine

CONNECTIONS

Year 2015 onward

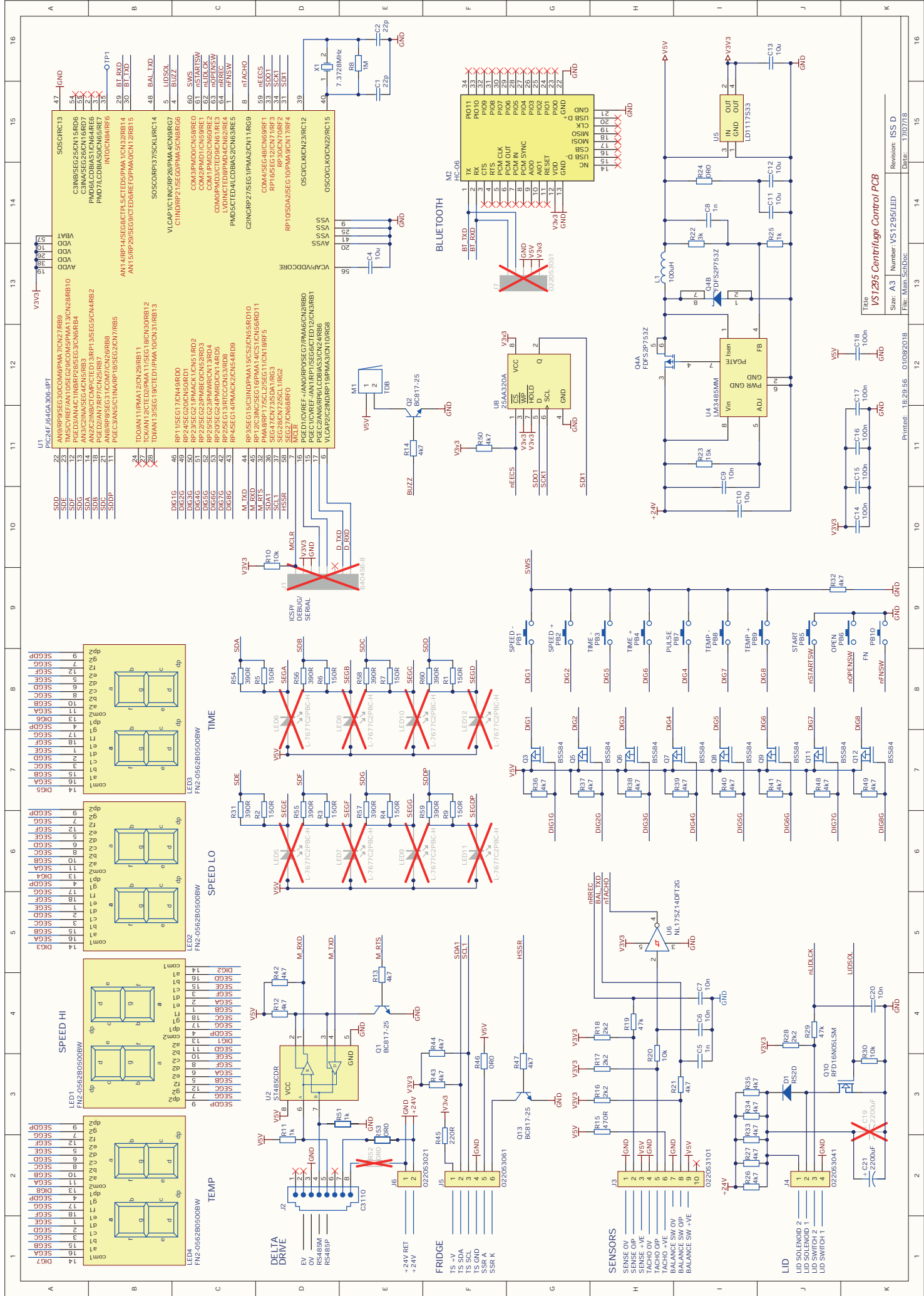


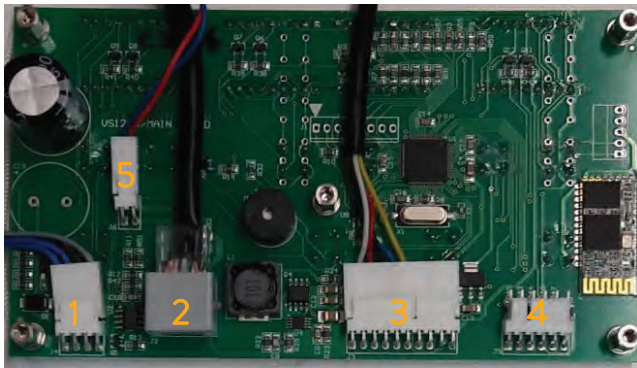
CENTURION
SCIENTIFIC LIMITED



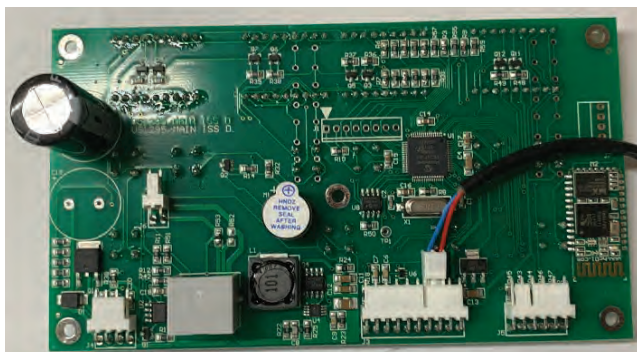
1. Lid (4 way)
2. RJ45 Ethernet connector
3. RRec,Tacho,Imbalance (10way)
4. Temperature (6 way). NOT USED
5. Delta Inverter only (2 way)

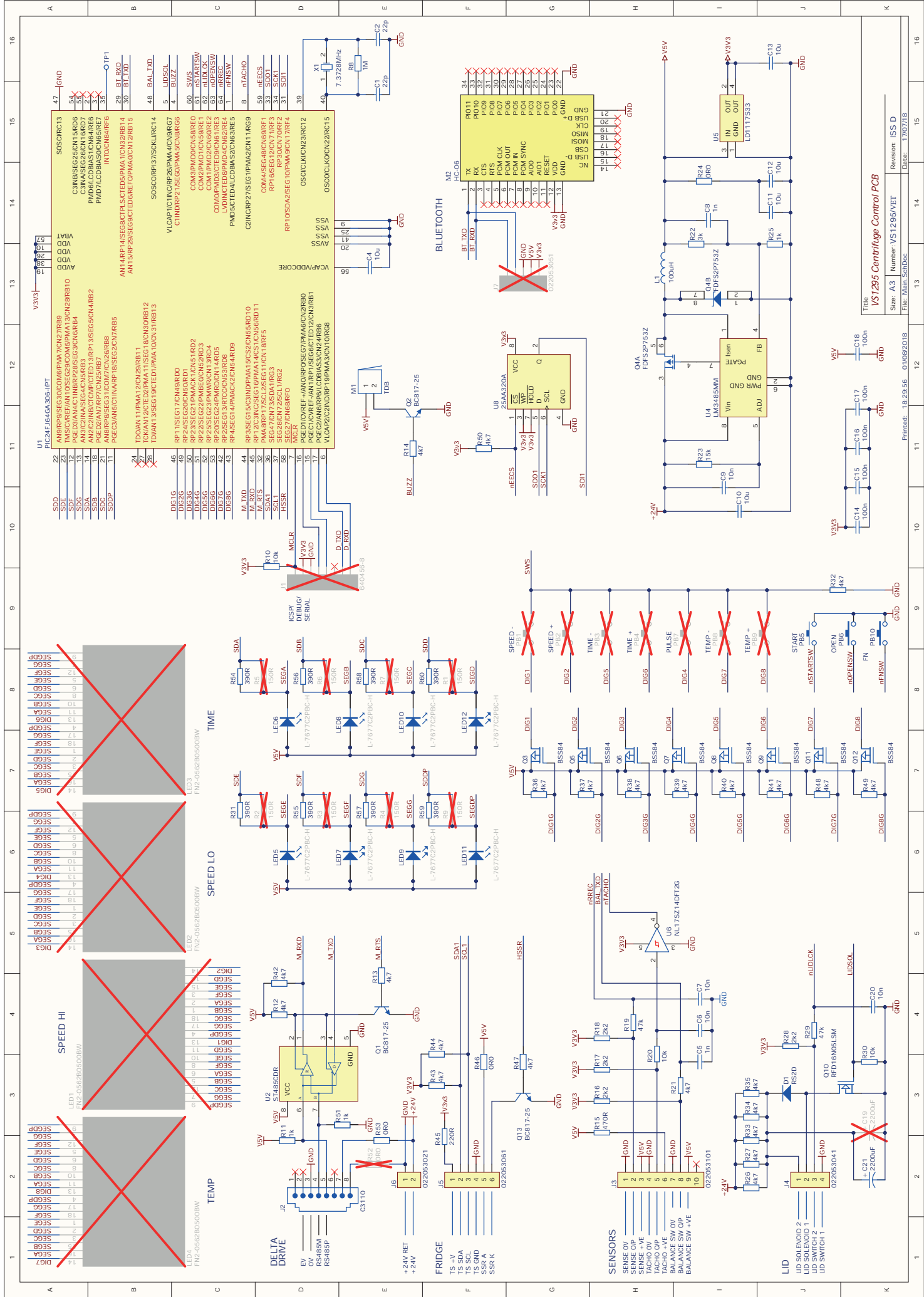


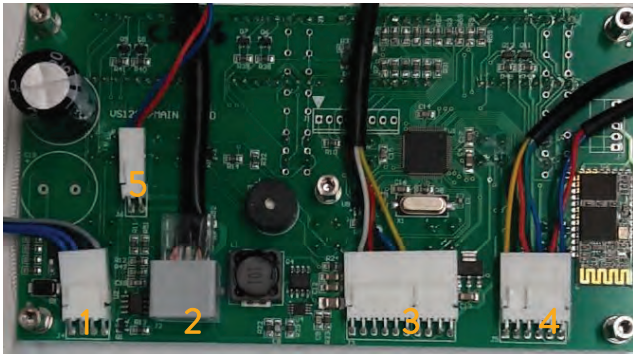




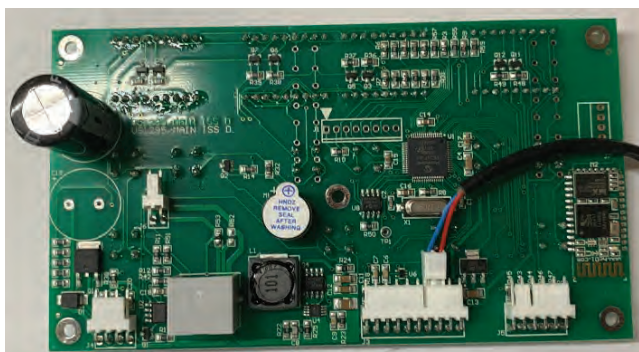
1. Lid (4 way)
2. RJ45 Ethernet connector
3. RRec,Tacho,Imbalance (10way)
4. Temperature (6 way). NOT USED
5. Delta Inverter only (2 way)

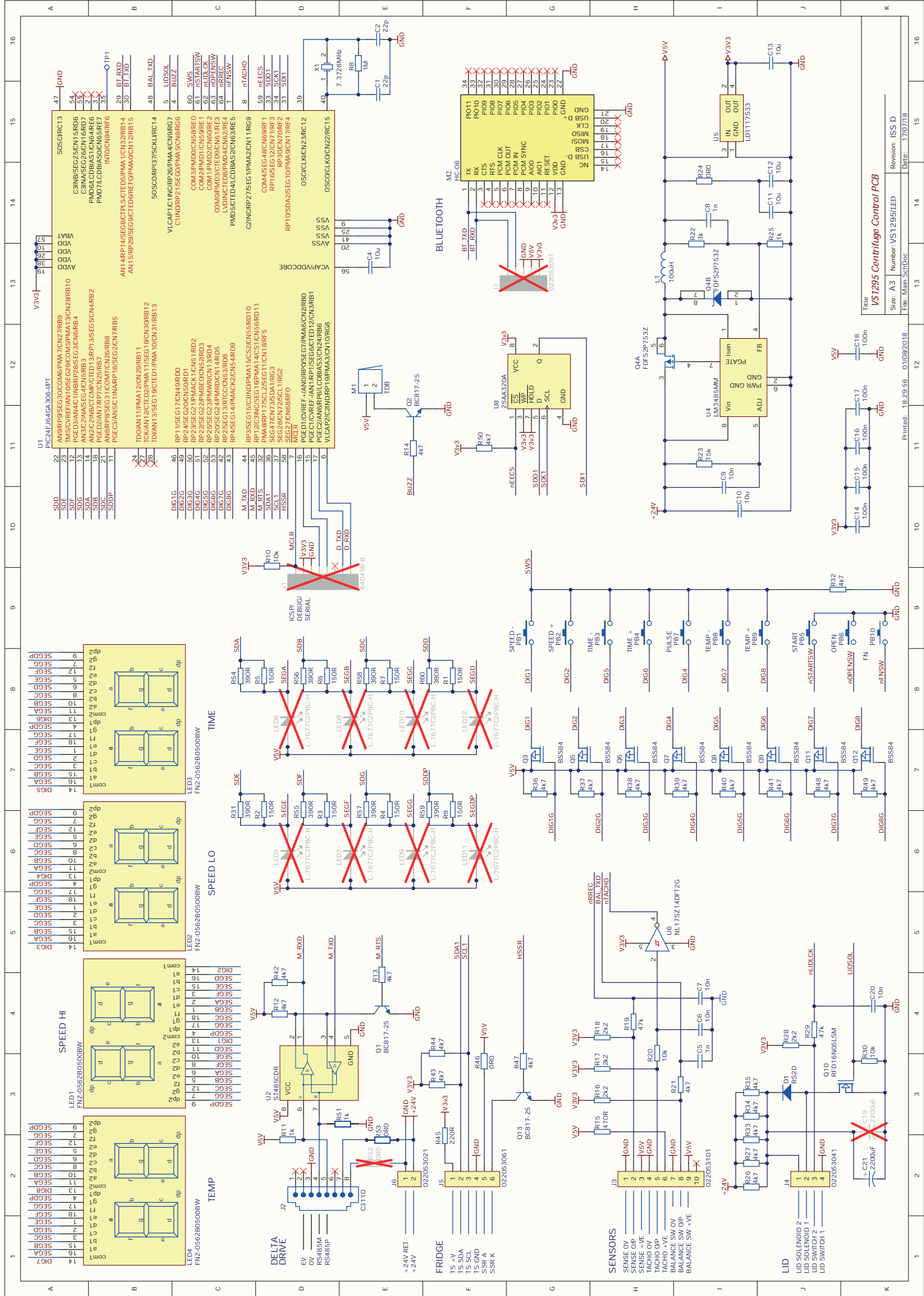






1. Lid (4 way)
2. RJ45 Ethernet connector
3. RRec,Tacho,Imbalance (10way)
4. Temperature (6 way).
5. Delta Inverter only (2 way)





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