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- Please note pictures are for illustration purposes only
- Wire colours may vary
**Fixings**

### Side fixing screws

A. M4 X 12mm [4] Within hinged black cover

B. M4 X 12mm [6] Dome head screw

C. M4 X 10mm [6] Counter sunk screw

### Lid Latch fixings

D. M6 dome nut

E. Lid lock latch

### Gas strut fixings

F. Gas strut lower fastening clip

G. 6mm opening Gas strut clevis clip (Top)

### Motor top plate fixing screws

H. Emergency lid release plug (Black) Located to under side of base

I. Rotor recognition sensor M3 X 6mm Counter sunk screw

J. M5 x 10 Pan head with spring washer
Help page

**Tacho** on display means the motor has not seen a revolution in 4 seconds. IT DOES NOT ALWAYS MEAN A TACHOMETER FAILURE. The use of tubes that are too long, or an obstruction can cause the same effect. Alternatively, a motor invertor or board failure meaning no power or revolution to the motor. Check the tubes and rotation first with an empty rotor. If it turns, then tubes are the problem. If it doesn’t turn, then this would be the motor, invertor to the mains is at fault.

Always check that the display is lit, and the lid locks are fine.

Check tachometer using Test 13. **See page 3.**

**Bal** on display means an imbalance has occurred. If this bal display does not clear on restarting, then the detector or it’s 5 volt lines are broken. Check back to the circuit board. The detector is wired closed. A break in the 5 volt line will show this display. **See page 16.**

ALWAYS WEIGH AND OPPOSE SAMPLES IN AN EVEN FASHION IN THE ROTOR. This ensures a long life and good separations.

**Lid** on display means the lid is not closed properly. Push down hard on both edges of front section of lid.

It is imperative that you use a good strong work surface for any centrifuge to optimise separation and reduce noise. Recommendations lid adjustment.

Centralise using not under lid latch
Codes shown on the LED Display

**OPEN** - You may now open the Lid

**tAcho?** - Check that your tubes are not too long and fouling the lid or anything else is stopping rotation of the rotor.

**Lid?** - Close the Lid

**bAL?** - An imbalance has occurred. Please check the tubes are diagonally opposite and of the same weight. Check if the tubes are broken. If so use better quality, or if glass reduce the speed to the manufacturers recommended G force.

NOTE: If **druH** or **drIuE** (drive) show please Contact Service Department, or refer to technical manual.

CR 2000 model only

**rotor?** - The sensor has found the speed to be incorrect to the rotors settings, it will have readjusted. Please recheck your speed and try again.
If this continues contact the service department.

**rrEc ?** - A problem with the sensor or inverter has occurred please contact the service department.

Test **tESt Routine**
(all C series LED models)
This allows you to turn on or off the buzzer and to check the sensors for, Tachometer, Rotor recognition, Lid open & Imbalance detector.

See 23 Each go 0/1 as you turn rotor or operate Imbalance detector or shut lid
Centrifuge lid in open position. **Mains off at rear switch.**
Press function (keep held down) whilst turning on at rear switch. When test shows release function button.
Press time up arrow See numbers in time display go to ...... 18
Buzzer off or on (0/1) ............................................................. 18
Set speed Rpm digits in 10 or 100 Rpm steps ...................... 19

**EEE St** - E prom check Press Speed up arrow ............................ Number not shown
**8888 88** - LED display check increment speed up arrow .............. Number not shown
Rotor rec Tacho Lid open Imbalance ................................. 24

**Bu2t St** - Buzzer test press speed up arrow ............................ Number not shown
**Do9t St** - Watchdog test Press speed up arrow. **HELL 0** - (Hello) should display, then back to normal.
Circuit board replacement - LED

Part number: 3022301

- Subject to change R&D
- For illustration purposes only
Dismantling sequence prior to replacement

NOTE: Remove mains electricity power cord first

1. Un-hinge black cap. Unscrew and remove 4 screws to front panel.
2. Remove all screws to composite sides (at rear). Both sides should now be removed. Store safely with consequent screws, washers and hinge caps (black).
3. Remove bottom clip to Gas Struts and pull off the bracket.
4. Remove black metal top cover with lid as follows.
5. Remove all M4 screws to rear, not around mains inlet. Then remove 2 counter sunk screws near front lid lock holes.
6. Pull off black top cover and lid. Place carefully to one side.
7. Un-screw and remove M4 screws underneath front panel, by pulling centrifuge forward over work surface. Not too far!
8. Unplug 10 way connector to circuit board.
9. Remove complete panel to another area.
10. Unplug 4 way connector to board and blue Ethernet Cable.
11. To remove circuit board unscrew all M3 pillar nuts to rear.
12. Slide off the M3 threaded rods carefully.

Replacement is reversal of above. Do not over tighten the pillar nuts.

Make sure rubber pads are fitted to the A6 switches before fitting.
Motor replacement

Part number: 1189001

Part number: 1188001
(C2041)
Motor with cover and rotor recognition

Dismantling sequence prior to replacement.

NOTE: Remove mains electricity power cord first

1. Un-hinge black cap. Unscrew and remove 4 screws to front panel.
2. Remove all screws to composite sides (at rear). Both sides should now be removed. Store safely with consequent screws, washers and hinge caps (black).
3. Remove bottom clip to Gas strut(s) and pull off the bracket.
4. Remove black metal top cover with lid as follows.
5. Remove all M4 screws to rear, not around mains inlet. Then remove 2 counter sunk screws near front lid lock holes.
6. Pull off black top cover and lid. Place carefully to one side.
7. Remove stainless steel top cover to motor top, by removing 4 M5 screws.
8. Pull bowl up and out. Note under seal to bowl top position.
9. Unscrew with spanner or box key All 3 M8 nuts to motor chassis. Place to one side.
10. Unplug motor connection to mains in supply. Turn over motor to view bottom and remove 12 way cable plug to circuit board socket.
Lay motor at an angle and fit the mains connector, then fit the 12 way small connector to bottom circuit board.

Fit the 3 way connector if so fitted.

Place motor over Anti vibration mounts and add spring washer’s and M8 nuts. Tighten carefully by holding AV mounts to prevent any twist in the mounts. Not recommended.

Push rotor recognition sensor through hole in rubber boot if fitted the place bowl over motor. Make sure seal to barrier ring is fitted correctly (opening to centre rear for ventilation). Check free turning of motor and all satisfactory before refitting top and sides. As reversible of above.

**Tachometer** The tachometer is a horseshoe LED type, 5 volt, sensing dark and light current off the butterfly interrupter.

NO ADJUSTMENT necessary, apart from fix to array. Keep array clean for optimum use.
Inverter replacement

Part number: 6002001

Dismantling sequence prior to replacement

NOTE: Remove mains electricity power cord first

1. Un-hinge black cap. Unscrew and remove 4 screws to front panel.
2. Remove all screws to composite sides (at rear). Both sides should now be removed. Store safely with consequent screws, washers and hinge caps (black).
3. Remove bottom clip to Gas Struts and pull off the bracket.
4. Remove black metal top cover with lid as follows.
5. Remove all M4 screws to rear, not around mains inlet. Then remove 2 counter sunk screws near front lid lock holes.
6. Pull off black top cover and lid. Place carefully to one side.
7. Remove all wiring to inverter.
8. Unscrew and remove all 4 M4 screws to base of Inverter.

Replacement is reversal of above.
The replacement will be programmed for use. Do not change any parameters.
**Wiring to induction motor from inverter**

- **Black** to U
- **Brown** or **Red** to V
- **Blue** to W
- Grey to PE (Next to W)
- Grey to B7
  (Above does not matter which direction)
- PR to T1

**Wiring to inverter from mains filter**

- Red/ Brown to L1
- Blue/ Black to L2-N
- Earth to Tag 🌐
Mains inlet & filter replacement

Dismantling sequence prior to replacement

NOTE: Remove mains electricity power cord first

Mains inlet is double fused, with an IEC socket for power source. It is held in place with 2 X M3 screws. Fuses are 5X20mm, 6.3 (TA) Slow blow only.
1. Un-hinge black cap. Unscrew and remove 4 screws to front panel.
2. Remove all screws to composite sides (at rear). Both sides should now be removed. Store safely with consequent screws, washers and hinge caps (black).
3. Remove bottom clip to Gas Struts and pull off the bracket.
4. Remove black metal top cover with lid as follows
5. Remove all M4 screws to rear. Not around mains inlet. Then remove 2 countersunk screws near front lid lock holes.
6. Pull off black top cover and lid. Place carefully to one side.
7. On rear panel unscrew 2 M3 countersunk screws holding mains inlet in place.
8. Disconnect tab connectors to filter and tab connectors to inverter.
9. Remove filter by unscrewing M4 screws

Replacement is reversal of above.

**Note:** EMC filter must be used to comply with EMC Regulations.
Lid lock replacement - LED

Part number: **6844000**
Dismantling sequence prior to replacement.

NOTE: Remove mains electricity power cord first

1  Un-hinge black cap. Unscrew and remove 4 screws to front panel.
2  Remove all screws to composite sides [at rear] Both sides should now be removed. Store safely with consequent screws, washers and hinge caps (black).
3  Remove bottom clip to Gas Struts and pull off the bracket.
4  Remove black metal top cover with lid as follows.
5  Remove all M4 screws to rear, not around mains inlet. Then remove 2 counter sunk screws near front lid lock holes.
6  Pull off black top cover and lid. Place carefully to one side.
7  Unscrew and remove M4 screws underneath front panel, by pulling centrifuge forward over work surface. Not too far!
8  Unplug 10 way connector to circuit board.
9  Remove complete panel to another area.
10 Unplug 4 way connector to board.
11 To remove Lid locks unscrew 2 x M6 Countersunk screws. (See A page 14)

Replacement is reversal of above.

Lid lock is powered via 12 volts through capacitor charging.

Adjustment

Latches (in lid) need to be centralised to lid lock opening. Adjust with under nuts.
Lid seal replacement

**Part number:** 4171001
Pro-Vet multi, Pro-Sep S
CW12, CYT04

**Part number:** 4151001
(C2041)

**Part number:** 4191001
(C2012, C2015, Pro-Vet HE, Pro-Sep E)

**Dismantling sequence prior to replacement.**

NOTE: Open centrifuge lid, then turn off and remove mains electricity power cord.

Remove old lid seal by gently pulling towards centre of bowl.

Replace by pushing u section into top wall all the way round.

NOTE the seal MUST be fitted correctly or damage may be caused if it releases from metalwork.
Gas strut replacement

Part number: 2172801
Pro-Vet multi, Pro-Sep S
CW12, CYTO4

Part number: 2152801
(C2041)

Dismantling sequence prior to replacement

NOTE: Remove mains electricity power cord first

1  Un hinge black cap. Unscrew and remove 4 screws to front panel
2  Remove all screws to composite sides (at rear sides) Both sides should now be removed. Store safely with consequent screws, washers and hinge caps (black)
3  Remove bottom clip to Gas Struts and pull off the bracket
4  Unscrew other end of gas strut from Lid
5  Replace and reverse procedure of above
Imbalance detector

**Part number:** 2000104

This detector is wired normally closed, and uses a 5 volt DC supply from the circuit board. Any interruption in this supply line will mean that Bal will show on the display.

Dismantling sequence prior to replacement

**NOTE: Remove mains electricity power cord first**

1. Un-hinge black cap. Unscrew and remove 4 screws to front panel.
2. Remove all screws to composite sides (at rear). Both sides should now be removed. Store safely with consequent screws, washers and hinge caps (black).
3. Remove bottom clip to Gas Struts and pull off the bracket.
4. Remove black metal top cover with lid as follows.
5. Remove all M4 screws to rear, not around mains inlet. Then remove 2 counter sunk screws near front lid lock holes.
6. Pull off black top cover and lid. Place carefully to one side.
7. Remove stainless steel top cover to motor top, by removing 4 M5 screws.
8. Pull bowl up and out. Note under seal to bowl top position.
9. Unscrew 2 M4 screws, unplug socket to circuit board, then remove imbalance detector.
10. Replace with new detector, and replug into circuit board.
11. Adjust end shaft of detector to within 2-5mm of motor chassis.

Note: check adjustment by using Test 13. Push motor to one side to check correctly interrupting detector.
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Circuit board replacement - LED
# Spare Parts list

For models:
C2004  
C2006  
CR2000  
CYT04  
CW12  
Pro-Vet Multi  
Pro-Sep S

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<th>Part Number</th>
<th>Description</th>
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<td>Hanning Small motor</td>
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<td>1185201</td>
<td>Anti vibration mounts blue dot (C2006 only)</td>
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<td>1184205</td>
<td>Anti vibration mounts Robush (All others)</td>
</tr>
<tr>
<td>1080001</td>
<td>Complete Tacho &amp; Imbalance Assembly</td>
</tr>
<tr>
<td>2000013</td>
<td>Mains inlet Switch complete</td>
</tr>
<tr>
<td>2000171</td>
<td>EMC filter complete with wiring</td>
</tr>
<tr>
<td>6002001</td>
<td>Inverter Emerson 3.7 KV</td>
</tr>
<tr>
<td>6100086</td>
<td>Ethernet Cable</td>
</tr>
<tr>
<td>3022301</td>
<td>LED Circuit board VS1223</td>
</tr>
<tr>
<td>6844000</td>
<td>Lid lock 12 volt Rharbach</td>
</tr>
<tr>
<td>4071021</td>
<td>Bowl complete – stainless steel</td>
</tr>
<tr>
<td>4171001</td>
<td>Bowl seal (top)</td>
</tr>
</tbody>
</table>

* No discount on these items
# Spare Parts list

For models:
- C2012
- C2015
- Pro-Vet HE
- Pro-Set E

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1189001</td>
<td>Hanning Small motor</td>
</tr>
<tr>
<td>1184203</td>
<td>Anti vibration mounts Orange</td>
</tr>
<tr>
<td>108001</td>
<td>Complete Tacho &amp; Imbalance assembly</td>
</tr>
<tr>
<td>2000013</td>
<td>Mains inlet Switch complete</td>
</tr>
<tr>
<td>2000171</td>
<td>EMC filter complete with wiring</td>
</tr>
<tr>
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<tr>
<td>3022301</td>
<td>LED Circuit board VS1223</td>
</tr>
<tr>
<td>6844000</td>
<td>Lid lock 12 volt Rharbach</td>
</tr>
<tr>
<td>4091021</td>
<td>Bowl complete – Stainless steel</td>
</tr>
<tr>
<td>4191001</td>
<td>Bowl seal (top)</td>
</tr>
</tbody>
</table>

* No discount on these items
## Spare Parts list

**For models:**

**C2041**

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1188001</td>
<td>Hanning large Motor</td>
</tr>
<tr>
<td>1184202</td>
<td>Anti Vibration mounts Large</td>
</tr>
<tr>
<td>1080001</td>
<td>Complete Tacho &amp; Imbalance assembly</td>
</tr>
<tr>
<td>2000013</td>
<td>Mains inlet switch complete</td>
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<tr>
<td>2000171</td>
<td>EMC Filter complete with wiring</td>
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<tr>
<td>6002001</td>
<td>Inverter Emerson 3.7KV</td>
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<td>LED Circuit board VS1223</td>
</tr>
<tr>
<td>6844000</td>
<td>Lid lock 12 volt Rharbach</td>
</tr>
<tr>
<td>4051021</td>
<td>Bowl complete – Stainless steel</td>
</tr>
<tr>
<td>4151001</td>
<td>Bowl seal (top)</td>
</tr>
</tbody>
</table>

* No discount on these items
User’s Notes
Established in the market place since 1989

Manufactured by:
Centurion Scientific Ltd
email: info@centurionscientific.co.uk
www.centurionscientific.co.uk