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Figure 1

HAEMATOSPIN 1400
3 CONTROLS & SYMBOLS

**Lid Locked**
Locking lever in UP position. Switch interlock engaged

**Lid Unlocked**
Locking lever in DOWN position. Switch interlock disengaged.

**Power Cord connection**
Power cord and moulded socket.
In accordance with international colour codes:
- BROWN (Live)
- BLUE (Neutral)
- GREEN/YELLOW (Earth)

**Fused Input Socket**
Fuses 3.15 Amp (F).
Caution: Isolate from power source before removing fuses.

**1. Indicator Light**
Illuminated when the power supply is connected.

**2. Pulse**
Push button momentary action, it engages the motor whilst the button is pushed in.

**3. Timer run**
Graduated 0-15 in 1 minute increments, it engages the motor for desired time run. Automatic switch off at zero.
4 INSTRUCTIONS FOR USE

INSTALLATION:

1 Inspect the packaging for damage. If you suspect damage to the device, notify the supplier or manufacturer immediately quoting model and serial number.

2 Unpack the machine and check the parts against the following list.

   1 Instruction Manual
   2 Haematospin 220/240 volt
   3 24 Place Haematocrit Rotor & lid, or selected rotor
   4 2 Rotor Screws
   5 Power cord
   6 Fuse pack (Spares)
   7 1 Pkt. Heparinised Tubes 100s
   8 1 Pkt. Plain Tubes 100s
   9 1 Tray Cristaseal

3 The unit comes provided with a plug on mains lead with 5 Amp fuse. Lead in accordance with international colour codes:

   Brown : Live  Blue : Neutral  Green/yellow : Earth

4 Check that the specifications on the rating plate corresponds to supply voltage. The rating plate is located on base of the centrifuge.

5 Retain packaging material for further use, should the need arise to return for repair.

ROTOR ASSEMBLY:

1 Unlock lid and open it to reveal the rotor drive nub location, see diagram at right.

2 Assemble rotor on drive nub and align the two screw holes. Insert the two fixing screws provided, tighten them down evenly, spin rotor to check concentricity. Check that the rim gasket is located on inner wall of rotor.

3 The Multi Combi, Std combination & 24 place haematocrit rotor have their own lids – this is to ensure the containment of tube contents should there be any spillage or breakage.

4 Arrange the tubes/containers in the rotor evenly so the rotor remains balanced during operation and screw down the lid firmly.

NB: Always ensure the rotor lid is screwed down firmly before operating device.
4 INSTRUCTIONS FOR USE (cont'd)

TUBE SAMPLE PREPARATION

1. Capillary tubes used for centrifugation must conform to British Standard BS 4316 to withstand the forces of centrifugation and give accurate results. Please ensure that the tubes to be used are marked on the packaging "BS4316" or equivalent standard.

2. Take blood into tube by capillary action to within 15mm from the end. Use **HEPARINISED** tubes for direct capillary blood and **PLAIN** tubes for venous blood rendered incoagulable. Avoid air bubbles in the capillary tube and use the guide on the edge of the Cristaseal tray to check the correct blood volume i.e. 40 - 60mm of blood.

3. Seal the unfilled end of the tube with **CRISTASEAL**, holding the tube at a 90° angle to the Cristaseal tray. Push the tube to the bottom of the tray and then twist and remove the sealed tube.

4. If a capillary tube is broken leaving broken glass in the Cristaseal, the tray must be **DISPOSED OF SAFELY**.

5. For centrifugation place the tube in numbered slot with sealed end pointing outwards. Make sure the sealed end is actually touching the rim seal gasket at outer edge of rotor. No balancing of capillary tubes is required due to the high precision of the rotor.

   **NOTE.** The rim seal gasket should be changed at least once a month or sooner if deterioration is evident.

6. Always ensure that where provided the rotor lid is screwed down firmly before operating centrifuge.

**DO NOT OPERATE THE CENTRIFUGE WITHOUT ROTOR LID FITTED**

**THIS ENSURES THAT THE CONTENTS ARE PROPERLY HELD IN POSITION IN THE ROTOR DURING SPINNING.**
4 INSTRUCTIONS FOR USE (cont'd.)

CENTRIFUGE OPERATION

1 Ensure the timer is in the ZERO position.

2 Connect the power cord to inlet socket and convenient power source, the green POWER lamp will illuminate.

3 Close the lid and ensure that the lever is in the LOCKED position.

4 Set the desired time normally 6 minutes is sufficient including initial acceleration (to achieve a good separation of blood samples). At the end of the timed run the motor automatically switches off and the automatic brake system operates.

DO NOT MOVE THE CENTRIFUGE WHILE THE MOTOR IS OPERATING

5 When the set time has elapsed, auto-braking will bring the rotor to a stop. 
**Note:** The timer normally shuts off at approx. 30-45 seconds before ‘0’. 
It is recommended to add approx. 30 seconds to the ‘set’ time from ‘0’ to allow for shut off. 
This is a characteristic of the timer. For instance if the time of 3 minutes is set, set timer to 3 minutes 30 seconds approx. if a time of 5 minutes is set, set timer knob to 5 minutes 30 seconds approx. and so on.

6 When the rotor has stopped, unlock and open the lid. (all rotors stop within 45 seconds - allow this time to elapse for safety). See braking times on Page 10.

7 To remove the rotor lid, unscrew counter-clockwise, then lift clear to reveal tubes.

8 Remove the tubes and read the percentage packed cell volume on the MICRO-HAEMATOCRIT READER. If the tubes are not to be read immediately, place them in a vertical position to preserve sharp boundaries. For ROTOREADER use, see separate instructions.
4 INSTRUCTIONS FOR USE (cont'd.)

1. After centrifugation unscrew cover from the rotor.
2. Push the ROTOREADER firmly on to the central spindle.
3. Rotate the centrifuge rotor to bring the required tube to be read nearest to you and restrain from further movement by holding rotor edge.
4. By turning castellated knob 'C', the base line (outside black line 'D' on ROTOREADER), is brought into line with the base of blood column 'E' (top face of tube seal).
5. For the following operations the centre knob remains stationary on the central spindle:
6. Turn the ROTOREADER by knob 'F' to the inner spiral black line 'G' to coincide with the top of blood column 'H'.
7. Place MAGNIFIER onto the rotor reader.
8. Read off the percentage at boundary of packed cells 'J'.

NOTE: ROTOREADER castellated knob is eccentric so that the device will allow for differing depths and types of tube seal.

IMPORTANT: Do not operate the centrifuge with ROTOREADER attached to the rotor.
4 INSTRUCTIONS FOR USE (cont'd)

PERIODIC INSPECTION, CLEANING AND DISINFECTING

In order to ensure the proper operation of this centrifuge, periodic preventive maintenance is necessary.

INSPECTION

To ensure correct and safe use of the centrifuge, inspect the rotor and lid regularly, using the following procedure:

a) Remove the rotor from the centrifuge by undoing the two fixing screws located near the drive shaft and remove the rubber rim gasket.

b) Clean the rotor and rotor lid using the prescribed method detailed below.

c) Inspect all rotor surfaces for damage, dents, gouges or modifications.

d) Inspect all rotor surfaces, particularly near the drive shaft and fixing screws, for damage, corrosion, hairline cracks, surface pitting or discoloration of the metal.

e) If any of the above conditions are found, the rotor must be replaced with a new one.

Never continue to use an impaired rotor because doing so could result in damage to the centrifuge and injury to operating personnel.

CLEANING AND DISINFECTING

NEVER ATTEMPT TO CLEAN THE ROTOR OR ROTOR LID WHILE THEY ARE INSTALLED ON THE CENTRIFUGE

To clean and disinfect the rotor and rotor lid correctly, use the following procedure:

a) Remove the rotor from the centrifuge by undoing the two fixing screws located near the drive shaft and remove the rubber rim gasket.

b) Some disinfectants and cleaning agents adversely affect the rotor causing corrosion. DO NOT USE Phenolic disinfectants, chlorine bleach solutions, hydrogen peroxide, saline solutions, acids and halogen based bleaches.

c) Only Ethanol (70%), mild detergents and hot water are recommended.

d) In cases of extreme contamination, the rotor and lid may be steam cleaned or autoclaved under standard conditions. Remember to remove and dispose of the rubber rim gasket as this will not withstand autoclave temperatures.

e) After disinfecting / cleaning, the rotor and lid should be thoroughly rinsed in hot water, dried and re-inspected for hairline cracks and other defects which might have been hidden by dirt and corrosion.

f) Re-attach the rotor to the centrifuge using the two fixing screws, taking care not to damage or scratch the rotor surface. Replace the rotor lid only to finger tightness.

The use of other than genuine Hawksley replacement parts will void all performance claims and warranties.
5 ORDERING INFORMATION

CENTRIFUGES (EXCLUDING ROTORS)

01400-00 Haematospin 1400 220v/240v
01401-00 Haematospin 1400 110v/115v
01410-10 Haematospin Vetspin Dual Speed 220v/240v

ROTORS

01971-00 Rotor Haematocrit 24 Place (Capillary Tubes length 75mm 75 ul)
01986-00 Rotor Combi 16 way (Capillary Tubes length 75mm 75 ul and Micro Tubes 1.5 to 2ml)
01985-00 Rotor Multi-Combi 8H & 4x4T (Capillary Tubes length 75mm 75 ul and Micro Tubes 1.5 to 4ml)
01881-00 Rotor 20 Place (Acetal) 30º (Micro Tubes 1.5 To 2ml)
01890-00 Rotor 8 Place (Acetal) 30º (Micro Tubes 1.5 To 2ml)

<table>
<thead>
<tr>
<th>ROTOR TYPE</th>
<th>Fast Speed (rpm)</th>
<th>R.C.F (g)</th>
<th>Brake Time (secs)</th>
<th>Slow Speed (rpm)</th>
<th>R.C.F (g)</th>
<th>Brake Time (secs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haematocrit 24 place</td>
<td>11,700</td>
<td>14,000</td>
<td>25</td>
<td>5,700</td>
<td>3,300</td>
<td>17</td>
</tr>
<tr>
<td>Combination 16H &amp; 16T</td>
<td>11,300</td>
<td>13,000</td>
<td>45</td>
<td>5,500</td>
<td>3,100</td>
<td>30</td>
</tr>
<tr>
<td>Multi-Combi 8H &amp; 4x4T</td>
<td>11,100</td>
<td>12,500</td>
<td>45</td>
<td>4,600</td>
<td>2,200</td>
<td>30</td>
</tr>
<tr>
<td>Fixed angle Acetal 20T</td>
<td>11,800</td>
<td>14,000</td>
<td>25</td>
<td>5,800</td>
<td>3,400</td>
<td>18</td>
</tr>
<tr>
<td>Fixed angle Acetal 8T</td>
<td>16,000</td>
<td>19,000</td>
<td>8</td>
<td>9,000</td>
<td>6,000</td>
<td>6</td>
</tr>
</tbody>
</table>

H = Haematocrit capillary tubes    T = Other Tubes
NB: Above data will vary with each system and is issued as a guide only.
Note: SLOW SPEED data is only applicable to the 01410-00 Vetspin Dual Speed
5. ORDERING INFORMATION

ACCESSORIES

01502-00 Reader
01503-00 Cristaseal (Box 10 Trays)
01504-00 Rim Seal Gasket (Pkt 20)
01560-00 Rotoreader And Magnifier
01561-00 Magnifier
01562-00 Rotoreader
01603-00 Capillary Tubes Heparinised 75mm (Box 10 X 100)
01604-00 Capillary Tubes Plain 75mm (Box 10 X 100)
01605-00 Capillary Tubes Heparinised 75mm (Box 1000)
01606-00 Capillary Tubes Plain 75mm (Box 1000)
01902-00 Lid Cushion
21804-00 Baffleplate
6. QC TEST REPORT

UNIT Haematospin 1400 CATALOGUE NO 01400-00 SERIAL NO............................

BATCH NO.......... VOLTS 240 MOTOR NO............................

CARD NO.......... QC BY.................. DATE.................................

TEST REPORT

1. Lid catch and switch adjustment ......... TICK
2. Timer operation .......... TICK
3. Pulse button operation .......... TICK
4. Motor noise level .......... TICK
5. Rotor balance .......... TICK
6. Speed accuracy High Speed: RPM 10,500 to 12,000 (using rotor – Std 24 place) ......... RPM
7. Auto-braking system function (Std. rotor 25sec. approx.) .......... TICK
8. Fuse labels and 1off fuse pack .......... TICK
9. Rating plate - Correct details .......... TICK
10. Rotor screws (packet 2), rotor when supplied .......... TICK
11. General finish and appearance .......... TICK

ELECTRICAL SAFETY CHECKS

11. Earth leakage current at 110% rated supply voltage (Below 750ua) PASS ......... ua
12. Dielectric strength test at 1000 volts for 1 second PASS ......... TICK
13. Earth bond test 25 Amps for 5 seconds resistance not more than 0.1 ohm PASS ......... OHM
7 SPECIFICATION

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This is an IVD Device.

TYPE: Haematospin 1400 (Automatic braking)
MODEL NO.: 01400-00
CLASSIFICATION: Class 1 Equipment
SHOCK PROTECTION: Type B
DEGREE OF MOBILITY: Portable
MODE OF OPERATION: Intermittent
DUTY CYCLE: Five minutes on three minutes rest
POWER CONSUMPTION: 380 Watts at 220/240 V. 50 Hz. AC.
FUSES:
F1 and F2  3.15 Amp quick blow

MOTOR:
High precision, closed frame, AC/DC series wound brush gear. Class B insulation. Rated 220/240v at 50 Hz.

TIMER:
Full scale 0-15 minutes graduated in 1 minute increments. Automatic switch off at zero. Single pole switch rated 10 amps. at 240 volts AC

PULSE:
Push button single pole change over micro-switch, rated 10 Amps at 240 volts AC

POWER:
Neon indicator – Colour Green

SPEED
High Speed: 12000 rpm approx. (24 place rotor)

R.C.F.:
High 14000 × G. with 24 place rotor

ACCELERATION:
0 - 11800 rpm within 60 secs with 24 place rotor

BRAKE TIME:
11800 rpm within 25 secs with 24 place rotor

WEIGHT:
5.1 kg nett

DIMENSIONS:
225 mm High × 220 mm Dia. (Foot-print is 160 mm diameter)

CONSTRUCTION:
Body - die-cast aluminium LM6
Lid - steel spinning

FINISH:
Body - White stove enameled
Lid - Black Sparkle stove enameled

All specifications are accurate at the time of printing and in line with Hawksley's policy of continuous improvement. The right to modify the product specifications described is reserved, without advance notice.
8 TECHNICAL DESCRIPTION

SYSTEM BLOCK DIAGRAM

Fig 2
8 TECHNICAL DESCRIPTION (cont'd)

The device is constructed within a purpose-designed enclosure which houses the motor, PCB, timer, power indicator, fused inlet socket and ancillary components. See Fig. 2 System block diagram.

ITEM DESCRIPTIONS

MOTOR
A series wound open frame type, fitted with high-speed precision bearings and balanced armature. Windings to Class B insulation, with suppression VHF filters fitted in brush leads. Rated at 220/240 Volts AC/DC 50 Hz.

TIMER
Independent mechanical timing mechanism, infinitely variable throughout range, automatic run down and switch off at zero. Contacts rated 10 Amps at 240 Volts.

PULSE
A push button single pole change over micro-switch, which overrides timer switch.

AUTO BRAKING SYSTEM
12v DC applied to the motor windings when timer returns to zero.

POWER
Green neon indicator, illuminated when the power supply is connected.

FUSED INLET SOCKET
Moulded socket containing Live and Neutral fuses and power cord connection.

OPERATION

The blood samples are loaded within the rotor and the rotor lid is screwed down. The centrifuge lid is closed and locked with the mechanical lever.

The lever activates an internal switch permitting power to be supplied to the timer switch.

Turn timer knob clockwise to select time in minutes (0-15mins) alternatively press “Pulse” and hold in for short periods usually less than 1 minute.

Note: Centrifuge will start operating as soon as timer knob is turned.

Note: When setting timer add approx. one minute for start and stop in total cycle time.

When timer comes to zero, the automatic braking system is applied, and rotor comes to rest. See table of approximate stopping times on page 10.
WARRANTY & SERVICE

WARRANTY

This device is guaranteed for both parts and labour for a period of 12 months from date of the delivery.

The manufacturer accepts responsibility for the effect on safety, reliability and performance of the instrument only if:

a) Repair and/or adjustments are carried out only by person or persons authorized to do so by the manufacturer
b) The device is used in accordance with the instructions for use as detailed in this manual.

SERVICE

With good housekeeping and regular servicing this device should give trouble-free operation for many years.

The device should be serviced every 12 months. Details are available from Hawksley & Sons service department on Tel: +44 (0)1903 752815 Fax: +44 (0)1903 766050.

Further technical information, including full component lists, recommended spares lists, circuit diagrams, etc., may be made available on request from the Hawksley service department on Tel: +44 (0)1903 752815 Fax: +44 (0)1903 766050.

Hawksley & Sons Ltd will not accept liability for non-conformance to the current recommendations for use of this product which may lead to injury or other loss.
10. TROUBLE SHOOTING GUIDE

In the event of any fault condition, switch off and remove from power source, before attempting to investigate or dismantle the centrifuge.

POWER

Should power indicator fail to illuminate when the centrifuge is connected to power source.

Check:  
a) Fuses in mains input socket  
b) Power cord and plug  
c) Indicator light

MOTOR

Should motor fail to start when the lid is closed and time run is selected.

Check:  
a) Lid interlock switch  
b) Timer switch  
c) Motor brushes

AUTOMATIC BRAKING

Should braking time from full speed (with a 24 place rotor) exceed approximately 25 secs.

Check  
(a) Lid opened before end of brake cycle.

For further information please contact our SERVICE DEPARTMENT or an authorised distributor for advice and repairs.
11. CUSTOMER/USER INFORMATION

IVD medical equipment
This device is In-Vitro Diagnostic Medical Equipment.

RECOGNISED PARTS & ACCESSORIES

We strongly recommend the use of parts and accessories supplied by the manufacturer. The use of other manufacturer parts and accessories would not be compatible with this device and could degrade minimum safety.

DISPOSAL OF DEVICES/ACCESSORIES

Devices and accessories should be disposed of with due consideration to the environment. If any doubt regarding disposal advice should be sought from the local council or the environment agency.

USE OF SAMPLE TUBES

Sample tubes affected: Li-Heparin 500 or similar designed tubes.

Li-Heparin 500 sample tubes or similar must not be used in slots between 1 and 2, 5 and 6, 9 and 10 and 13 and 14 of the multi combi rotor-01985-00. This type of sample tube can be used in any of the other 12 slots of this rotor and in any of the 16 slots of the combi rotor 01986-00. Failure to observe this instruction will result in the bottom of the sample tube being deformed due to the high centrifugal forces generated by this device when used at high speed together with the fact that the ‘neck’ of this type of sample tube is not supported in the four slots as detailed above. This type of sample tube can be used in any of the slots of the multi combi rotor if SLOW SPEED is selected. If the user has any doubt as to the suitability of the sample tubes to be used they are advised to check with the distributor or manufacturer before use.

Approximate time setting for blood separation:

The following is a guideline ONLY.

Set timer for 4 minutes then operate centrifuge. After rotor assembly has come to a complete stop open lid and unscrew rotor lid check if definite separation (blood/plasma) has been achieved if separation has been achieved use the 4 minute time setting. If not screw on rotor lid close device lid, set timer to 5 minutes and operate the centrifuge re-check separation – adjust time setting as necessary. The above applies to separation using capillary and/or tubes of larger volume.
12. DECLARATION OF CONFORMITY

We declare that the following IVD device:

NAME: Haematospin 1400
MODEL NO. 01400-00

Conforms to the following directives:

98/79/EEC In-Vitro Diagnostic Medical Device Directive
73/23/EEC Low Voltage Directive (03/01/1997)
89/336/EEC EMC Directive
2002/96/EC Waste Electrical and Electronic Equipment (WEEE)

and the following standards:

ISO9001:2008 Quality
EN55014:1993 Limits and Methods of Measurement of Radio Disturbance
EN50419:2005 Marking of Electrical and Electronic Equipment in accordance with directive 2002/96/EC (WEEE)

SIGNED: ______________
Quality Assurance Manager
Hawksley & Sons Ltd

DATE OF ISSUE: 01/06/05