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| <b>Document Number:</b> | <b>SASoM/EQUIP/098.v1</b>               |
| <b>Title:</b>           | <b>Use of the JOUAN C422 centrifuge</b> |
| <b>Version:</b>         | <b>v1</b>                               |
| <b>Author:</b>          | <b>In Hwa Um</b>                        |

|                 |          |
|-----------------|----------|
| Effective from: | 21/03/16 |
| Valid to:       | 20/03/21 |

| <b>SOP History</b> |      |                   |
|--------------------|------|-------------------|
| Number             | Date | Reason for Change |
| v1                 |      | Original          |
|                    |      |                   |
|                    |      |                   |
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|                    |      |                   |

**1.0 Purpose –**

The purpose of this SOP is to outline the principles of the routine use and maintenance of the Jouan C422 centrifuge in Laboratory 248 at the St Andrews School of Medicine (SASoM).

**2.0 Scope –**

This SOP applies to routine use and maintenance of use and maintenance of the Jouan C422 centrifuge within the SASoM.

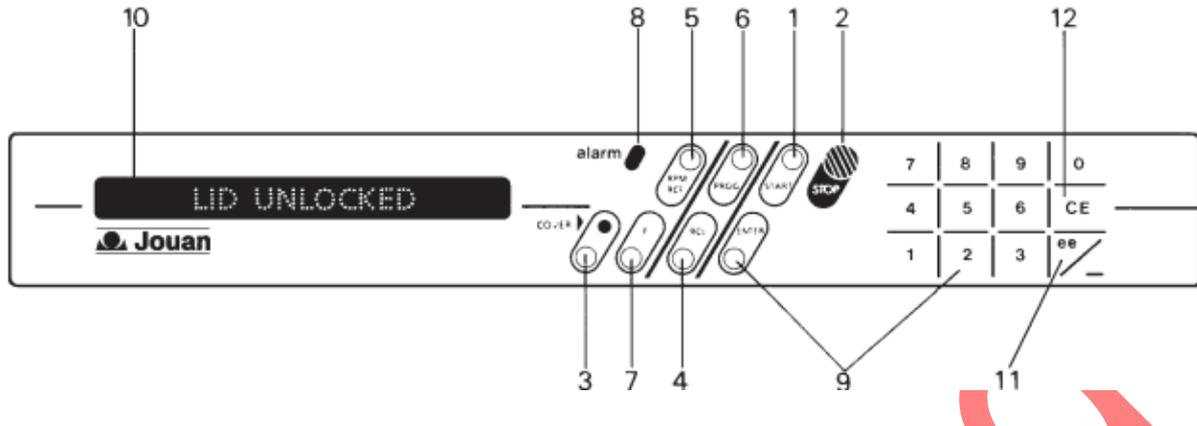
**3.0 Responsibilities –**

It is the responsibility of all users of use and maintenance of the Jouan C422 centrifuge within the SASoM to comply with this SOP.



Equipment Operation Procedure

4.0 Procedure –



| CONTROL INDICATOR         | FUNCTION  |
|---------------------------|---|
| "START" key (1)           | Starts the centrifugation according to the selected program if the cover is closed. As soon as the motor runs a rotating dash appears on the display, beside the program number.  |
| "STOP" key (2)            | Starts the braking phase. It is a manual stop key which cancels the end of the running program. During the braking, the symbol : I, is displayed changing in size, beside the program numbers until the speed reaches 0 r.p.m.  |
| "COVER" key and light (3) | The light indicates when the rotor is stopped. It is then possible to open the cover by pressing the "COVER" key (3) while holding the lid interlock button pressed in.   |
| "RCL" key (4)             | Used to recall a program from the memory.   |
| "RPM/RCF" key (5)         | Gives, at any time, the RCF value according to the r.p.m. and radius which are memorized, or gives the r.p.m. value when the RCF was programmed.  |
| "PROG" key (6)            | Starts the programming procedure which can be protected by a password.  |
| "F" key (7)               | <p>Multifunction key :</p> <ul style="list-style-type: none"> <li>- used for the language selection</li> <li>- used in centrifugation to display the programmed values</li> <li>- used to display the actual chamber temperature</li> <li>- used to skip backwards in the programming sequences.</li> </ul> |
| "Alarm" light (red) (8)   | Indicates a failure has been detected. The failure type is clearly written on the display.  |
| Numerical keyboard (9)    | Used to enter the positive or negative numerical values.  |



Equipment Operation Procedure

|                             |   |
|-----------------------------|---|
| Alphanumerical display (10) | Consists of 20 dot matrix characters. It indicates all the data :<br>- values and names of the parameters<br>- program number<br>- program messages<br>- failure messages                         |
| Negative value key (11)     | This key is used to enter negative values.  |
| Exponent key (11)           | Pressing this key at the end of a run gives the integral and time values (see 5.2.8.)<br><b>NOTE :</b> The software will automatically know whether key 11 is being used as negative or exponent. |
| "CE" key (12)               | "Correct error" key erases the last value just entered.   |
| Lid interlock button        | This button is situated on the right hand side of the machine. Push on it and hold, then press "COVER" key (3) to open lid.   |

**Switching on**

1. When the centrifuge is switched on, the display indicates the parameters of the last program which was run before the power was turned off (if the lid is open or incorrectly closed, it indicates : LID UNLOCKED).

The stand-by values appear on 3 displays in an automatic sequence:

1<sup>st</sup> screen:

|                |                  |                        |             |
|----------------|------------------|------------------------|-------------|
| <b>02</b>      | <b>4400 rpm.</b> | <b>15 : 30</b>         | <b>4 °C</b> |
| Program number | Speed (or RCF)   | Duration (or integral) | Temperature |

2<sup>nd</sup> screen:

|                |                   |               |                          |
|----------------|-------------------|---------------|--------------------------|
| <b>02</b>      | <b>Acc : 9</b>    | <b>Br : 7</b> | <b>T C : -3 °C</b>       |
| Program number | Acceleration rate | Braking rate  | Temperature compensation |

3<sup>rd</sup> screen:

|                |                          |
|----------------|--------------------------|
| <b>02</b>      | <b>R : 185 mm</b>        |
| Program number | Radius of centrifugation |

**Standard Use**

2. If the program, which is automatically displayed, is the one desired, press the START key to run the programmed cycle.
3. Otherwise, the recall of a memorized program among the 50 (numbered 0 to 49) is obtained as follows:  
-Press the RCL key:



**RECALL PROG NO. : X**

Either accept the number offered or:

-Enter a different program number and press the ENTER key.

If this program number does not exist in the memory it is automatically cancelled.

Pressing the RCL key successively makes the numbers of existing programs appear. When the required program number is displayed, press the ENTER key.

The parameters are then loaded and displayed as after a switching on operation.

Pressing the START key will run the cycle.

### **Programming of parameters**

Programming must be done when the centrifuge is in stand-by mode but it is possible to modify parameters during the centrifugation.

-Press the PROG key:

**PROGRAM NUMBER : - -**

Successive action on the RCL key indicates the numbers of the programs which are still free. You can also enter a specific number or an existing number. In the latter case the display will indicate that the program already exists. If you want to overwrite the existing program press ENTER otherwise press F to be able to enter another number.

**CAUTION:** The centrifuge is delivered without any password. If an access code has already been programmed, the first display will be :

**PASSWORD : - - -**

If the password is known, enter it and validate by the "ENTER" key. The message following will be as described before.

If the operator does not know the password, he can have access to a manual program (M program) by using the code 000. This program will not be memorised in the non-volatile memory. This procedure prevents the modification of memorized programs without forbidding the programming of a test.

If an incorrect password is entered, the centrifuge skips back to the stand-by mode.

-Press the ENTER key:

The display messages ask you to enter in sequence the values of the different parameters. Enter the values and validate them by using the "ENTER" key.

**NOTE :** Digits appear at the right of the display and shift to the left as more are entered.

**CAUTION :** Check the values on the display before pressing the "ENTER" key. The "CE" key is used to correct the values. If a wrong value has been entered, and the "ENER" key pressed, the modification of this value if possible by pressing the "F" key to go back to the previous step.



Equipment Operation Procedure

The sequence of the values to enter is the following:

- Radius
- Time or integral selection – Enter 1 for time, 0 for integral
- Time- (for “hold” enter “0”) or integral value
- Temperature
- Temperature compensation
- Acceleration rate
- Braking rate
- Choice between r.p.m and RCF- Enter 1 for r.p.m, 0 for RCF
- R.p.m or RCF value according to the choice

At any step, pressing the “F” key skips back to the previous step and pressing the PROG key escapes from the programming mode.

If no program has existed in the memory then storage will be automatic otherwise the last display will be:

SAVED PROG NUMBER : - X

Where X is the number of the memory selected at the start of programming

At this stage a new program will overwrite an old program. However the user might simply want to make a slight program change and compare results over several runs. In this case, a different memory number should be entered. (The next free memory can be selected by pressing the RCL [recall] key). Both programs will then be available in the memory.

- Enter the value or accept the proposed memory
- Press the “ENTER” key

The program is stored in the non-volatile memory and in the work-memory.

As after a switch on operation, the parameters successively appear on the display.

-When reprogramming during centrifugation the new value of a parameter is effective as soon as the “ENTER” key is pressed. However, all modifications of the values programmed during the centrifugation do not modify the values of the program in the memory.

-After completing of the programming, actual values will again be displayed. Press the “START” key to run the centrifugation cycle.

### **Precautions**

- Never try to bypass the lid lock safety while the rotor is spinning.
- Do not try to open the lid until display returns to the stand-by mode shown when machine is switched on.
- Only use correctly grounded mains source.

### **Cleaning**

- No daily cleaning is required, except for accidental glass breakage, or a large amount of spillage in the rotor chamber.
- Clean the rotor chamber and the accessories with a cotton wool pad dipped in 70% alcohol.

NOTE: Never use metallic implements to clean anodised buckets.



- After cleaning the accessories, always rinse them with clean water and dry.
- Store unused buckets upside down on a non-metallic grid to allow free passage of air.

### 5.0 Troubleshooting –

Online manual is available :

[http://www.severnsaleslabequip.com/manual-](http://www.severnsaleslabequip.com/manual-PDFs/C%20Centrifuges/Jouan/Jouan%20C,%20CT,%20CR4-22%20etc.pdf)

[PDFs/C%20Centrifuges/Jouan/Jouan%20C,%20CT,%20CR4-22%20etc.pdf](http://www.severnsaleslabequip.com/manual-PDFs/C%20Centrifuges/Jouan/Jouan%20C,%20CT,%20CR4-22%20etc.pdf)

### 6.0 Personal protection –

Howie coat and gloves must be worn at all times.

### 7.0 Training –

All users have to be trained before using the Instrument by a designated person.

### 7.0 Related documents –

### 8.0 Approval and sign off –

#### Author:

Name: In Hwa Um

Position: Research Technician

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

#### Management Approval:

Name: Mary Wilson

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Signature: \_\_\_\_\_ Date: \_\_\_\_\_

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Name: Alex MacLellan

Position: QA Manager

Signature: \_\_\_\_\_ Date: \_\_\_\_\_