

User's Manual



Model: SPRINT 6H

Centrifuge with Microprocessor Control and Digital Display.

Benchmark
Scientific



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WARNING: This centrifuge not to be used with Flammable, explosive or toxic chemicals. It is intended for research only.

Biohazardous Material:

In case of breakage or leakage of tubes containing bio-hazard material please follow – Bio-Hazard safety manual for decontamination process approved by your institution. Use only our suggested cleaning agents in this manual, page 11

Introduction of Centrifuge Model : SPRINT 6H

SPRINT 6H model is a brushless centrifuge designed for safe operation in a clinical laboratory. The Sprint 6H is designed with an electronic safety lock, adjustable timer, and a fixed speed of 3,400rpm. The Sprint 6H also comes with 6 tube buckets for 10ml [16mm x 100 mm] sample tubes. The same buckets can be used for smaller 5ml [13mm x 75mm] and 7ml [13mm x 100mm] sample tubes by inserting the optional C5000-ADP adapters.

Package Contents:

Sr.	Description	Part No.	Qty.
1	Centrifuge model SPRINT 6H with rotor	C5000-6H	1
2	Outer Bucket Tubes	S6H-037	6
3	Operator's Manual / SPRINT 6H	S6H-036	1

Features :

- Unique motor designed for overheat protection
- Brushless split capacitor AC motor
- Horizontal rotor for better separation
- Electronic Digital control panel
- Digital Programmable Timer – 30 Min. Max
- Indicator LEDs:
 - “RUN” Red
 - “LOCKED” Yellow
 - “OPEN” Green
- The start button will operate only when Lid close and Locked.
- The Lid cannot be opened while in “RUN” state.

Specifications :

Sr. No.	Specifications	Centrifuge 115V/60Hz Operative	Centrifuge 220V/50Hz Operative
1	RPM	3350 [+/- 100] RPM	2800 [+/- 100] RPM
2	RCF	1600 [+/- 100] g	1200 [+/- 100] g
3	Rotor Type	Swing out-horizontal Separation	Swing out-horizontal Separation
4	Maximum Capacity	6 Tubes of 10ml [17mm Ø x 100mm]	6 Tubes of 10ml [17mm Ø x 100mm]
5	Timer	Microprocessor Controlled-Digital 1 to 30 minute timer	Microprocessor Controlled-Digital 1 to 30 minute timer
6	Motor	40 Watt – Brushless: P.S.C Motor	40 Watt – Brushless: P.S.C Motor
7	Circuit Breaker	4 Amps. Resettable MCB	4 Amps. Resettable MCB
8	Dimensions Size	325 [W] x 293 [D] x 230 [H] mm	325 [W] x 293 [D] x 230 [H] mm
9	Operating Voltage	~ 115V [+/- 10V] / 60 Hz (AC)	~ 220V [+/- 10V] / 50 Hz (AC)
10	Weight	9 Kg.	9 Kg.
11	Maximum Current	AC – 1.3 Amp	AC – 0.7 Amp
12	Working Temp. Range	Up to 40°C	Up to 40°C

We reserve our right to modify specification for technical upgrade.

❖ **Environmental Rating :**

Altitude: - Up to 2000 Ft.

Humidity: - 40 to 85 %

Pollution Degree: - 2

Over Voltage Category: - 2

❖ **Intended Use :**

This Centrifuge is intended to use in clinical laboratory for separation of serum from blood sample and sediment from urine sample.

❖ **General Safety Instruction: Must be followed by users**

- 1) **WARNING** – Misuse of electrical equipment can cause electrocution, burns, fire and other hazards. Basic safety precautions always should be taken, including all those listed below.

- 2) Close supervision is necessary when equipment is used by or near children, or persons with disabilities.
- 3) Check that the voltage setting matches the supply voltage.
- 4) Plug the equipment into a supply outlet which has a ground connection.
- 5) Switch off the MAINS supply, immediately after use.
- 6) Do not place the equipment in liquid, nor put it where it could fall into liquid. If the equipment becomes significantly wet, unplug it before touching.
- 7) Use the equipment only for the purpose described in the instructions for use / intended use.
- 8) Do not use accessories which are not supplied or recommended by the manufacturer.
- 9) Do not use the equipment if it is not working properly or if it has suffered any damage. Note Examples of typical defects include.
 - a. Damage to the flexible supply cord or its plug.
 - b. Damage caused by dropping the equipment.
 - c. Damage caused by dropping the equipment into water or splashing water onto it.
- 10) Do not let the equipment or its power cord come into contact with surfaces which are too hot.
- 11) Do not block air vents nor place equipment on a soft surface which might block them, and keep air vents free from lint, hair, fluff, etc.
- 12) Do not place anything on top of the equipment.
- 13) Unless specifically instructed to do so, do not drop or put anything into any opening in the equipment, nor into any hose, coupling or vessel.
- 14) Do not use the equipment where aerosol sprays are being used: or where oxygen is being administered.
- 15) Do not use the equipment out of doors.
- 16) It is essential safety requirement that, electrical supply line must have ELCB / RCCB and proper grounding connection at socket.
- 17) It is recommended to not obstruct the path between the unit and power supply socket and switch.
- 18) This centrifuge is designed to use with maximum 6 tubes of 10ml [17mm DIA x 100 mm long tube] capacity. Do not use with more or larger size of tubes.
- 19) It is recommended to have table/platform minimum space of 60cm x 60cm and clearance height of 90cm.
- 20) After opening machine from carton, check for 2 warranty labels pasted on the back of machine. These labels should be intact, and not be broken, torn or damaged. If any defects are found, contact distributor.

❖ Installation Procedures :

It is essential to follow the procedure for Installation, setup, and initial testing of device before use.

- a. Put device carton in upright position. Open from top to unpack the device. Verify that all item insert listed on page 2 are in the package.
- b. Inspect the device for damage
- c. If damaged, Notify freight carrier and distributor immediately.
- d. **Select the place to install the device by considering the following criteria.**
 1. Install on flat, leveled, strong stationary surface free of vibration.
 2. It is recommended to provide 36'' x 24'' x 24'' [H x W x D] space for centrifuge on rigid platform.
 3. It is essential to allow enough ventilation, at least 10-20 cm, around the unit to maximize it's lifespan
 4. Power source: 115v (+/- 10V) / 60 Hz or 220V (+/- 10V) / 50 Hz [As ordered – check supply Label], Properly ground power outlet with easy access in case of emergency it desirable.
 5. Device is equipped with suction cup feet to avoid sliding on surface. Mounting is not necessary.
- e. **Set-Up Procedure**
 1. Connect the device to power outlet.
 2. Turn power switch "ON".
 3. The display will power on and display set time.
 4. The unit is in locked condition when dispatched.
 5. Locked LED will indicate. If it does not, then gently rotate top locking knob clock wise until it does.
 6. Press "OPEN" switch on front panel. The electronic lock will open and "OPEN" LED will light. Rotate top knob in a counter clockwise direction, to open mechanical lock. The electronics lock will remain open for 60 seconds, open lid or press "OPEN" again after 60 second when needed.
 7. Set the 6 tubes holder in slots of rotor as indicated in following photograph.

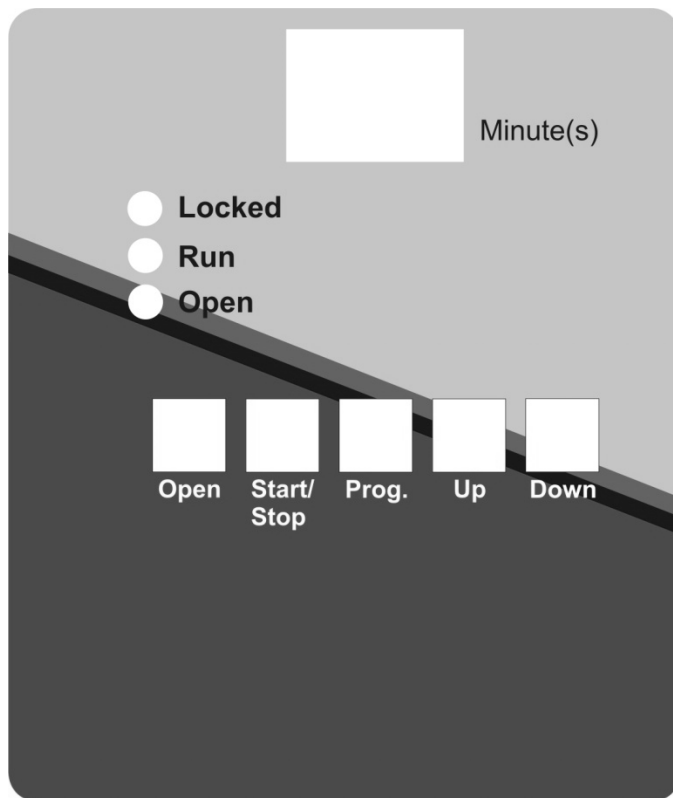


CAUTION:-

- i. The slant cut of tube holder must be toward outer side [rotor slot side].
- ii. The pivot pins must be properly set down in rotor pivot guide recess.
- iii. Check the free movement of all 6 tube holder in rotor. It must move Horizontal & Vertical easily by little fingers pressure. If not moving freely than check for proper position and reset.

This is essential to avoid damage to centrifuge.

Front Control Panel :



- Consists of the following operating and displaying consoles.

1. LED's console
2. Keypad console
3. Display

1. LED console:

Consist of the following three different LED's

Locked: - LED will turn **"ON"** and glow **YELLOW** when transparent top cover is closed and locked.

Run: - LED will turn **"ON"** and glow **RED** when motor is rotating. And process is **"ON"**

Open: - LED will turn **"ON"** and glow **GREEN** when transparent top cover can be open.

This will allow the lid lock to open.

2. Keypad Console:

Consists of following five switches used for operating

I. *OPEN* – The lid lock can be opened by pressing this switch when rotor is stopped, or in a stationary condition.

II. *START/STOP* – This is a dual function switch.

In normal mode this switch will work as “***START***” command to start the spinning process.

In Run mode this switch will work as “***STOP***” or “***EMERGENCY STOP***”. It will stop the spinning process. The device will automatically stop power supply to motor but the lid lock will not open for next few seconds to allow device to reduce its speed. After few seconds the door lock will open automatically and remain open for next 60 seconds

III. *PROG* – If user is in program mode than the display digit will blink.
The user can now set the run time as required.

IV. *UP* – In program mode this switch will work as “***UP***” command to increase time.

V. *DOWN* – In program mode this switch will work as “***DOWN***” command to reduce time

3. Display

Two-digit digital display indicates time or remaining time in run in units of minutes.

❖ The testing before use :

The device is ready for testing. Please follow the testing procedure:

- a. Check the rotor chamber, it must be clean and nothing should be left inside.
- b. All the six tubes holder must be in proper position.
- c. Rotate rotor by hand push to check free movement. It must rotate freely.
- d. Rotate rotor by hand push and check that none of tube holder is striking with chamber vessel.
- e. Without putting any sample tubes perform and observe the functions of control panel and operating procedure as explain below. If any problem then refer trouble shooting on page 12. If no solution found then contact distributor.

If no problem is noticed, device is ready for safe operation

❖ Operating Procedure :

1. Device must be placed on flat, level, and strong stationary surface.
2. Connect the power cord to electric supply plug. Ensure that device is connected to appropriate power source i.e. 115V/60Hz or 220V/50Hz. Then switch **"ON"**
3. Set Processing Time:
 - a] Press **"PROG"** switch to enter in program mode. The display digit will start blinking as indication of program mode.
 - b] To increase time, press **"UP"** switch.
 - c] To reduce time, press **"DOWN"** switch.
 - d] Press **"PROG or START"** switch to save data and go to normal mode or Run mode.
4. Press **"OPEN"** switch to unlock the door.
5. Open the top cover and place sample tubes in buckets. **Please make sure that the sample tubes are balanced by both weight and position. See below "Pre-cautions for Balancing"**
6. Close the top cover and rotate top knob to lock the door until the yellow LED **"LOCKED"** lights.
7. Press **"START"** switch to start run/spin process.
8. If required to stop in case of emergency press **"STOP"** switch. The device will automatically stop power to motor but door lock will not open for few seconds to allow device to reduce its speed. After few seconds the door lock will open automatically and remain open for next 60 seconds.
9. Device will stop power to motor when time is over and the door will unlock after few seconds.

❖ Emergency Stop :

Press **"STOP"** switch button on front panel in any emergency, or switch **"OFF"** the main power.

❖ Pre-cautions for Balancing :

1. Always load the opposite tubes in balance with equally weighted samples. The unbalanced loads will generate vibrations and may damage device.
2. If samples are in odd number than use water filled tube of the same size to balance the load in opposite tube.
3. Always load the same types of tubes when balancing.
4. Well balanced loads result in better product life span, better results, and prevents accident.

❖ Rotor removal and Installation :

➤ Removal Procedure :

- a. Press **“OPEN”** to open the lid lock
- b. Open the lid
- c. Switch **“OFF”** supply and disconnect the main cord.
- d. Remove the tube holders.
- e. Open the fixing nut from center top side of rotor. Please use appropriate tool to open rotor nut (Not Supplied).
- f. Pull the rotor up to remove from shaft.

➤ Installation procedure :

- a. Slide the rotor back on motor shaft.
- b. Rotate rotor to get it fixed properly on “Cone and Slot” type adaptor. If approximately 6 to 8 threads of motor shaft [i.e. 6 to 8 mm] is projected out from rotor top than the rotor is set properly in its Guide.
- c. Once the rotors fixed properly on cone, tighten the nut with appropriate tool.
- d. Replace all 6 tubes in rotor’s slot as indicated in installation procedures. At the time of tube insert – keep slanted step of tube toward outside periphery of rotor. Set tubes pin in rotor recess properly Refer page No.06 Photograph.

e. CAUTION:-

- i. The slant cut of tube holder must be toward outer side [rotor slot side].
- ii. The pivot pins must be properly set down in rotor pivot guide recess.
- iii. Check the free movement of all 6 tube holder in rotor. It must move Horizontal & Vertical easily by little fingers pressure. If not moving freely than check for proper position and reset.

❖ Selection of Tube Holder :

- a. To spin 10ml tubes (17mm x 100mm), use tube holder without insert.
- b. To spin vacutainer / EDTA tube (12mm x 75mm, and 12mm x 100mm), use optional adapter.

❖ Lifting, shifting or carrying centrifuge after installation: If required to lift the device, lift it with both hands from the bottom.

❖ Intermittent Operation Limit: It is advised to allow 5 minutes of cooling time (unit turned off) after every 30 Minutes use of centrifuge.

❖ Explanation of Symbols marked on Equipment:

- 1  : **“Caution”** symbol. The user must follow it.
- 2 ~ : Indication that the power supply is **“AC Supply”**
- 3 | : Indicated **“ON”** position of switch.
- 4 ○ : Indicates **“OFF”** position of switch.
- 5  : Indicates Biohazard risk.



**CAUTION :- READ AND FOLLOW THE
USER'S MANUAL INSTRUCTIONS**

It is not convenient to print all instruction on device. Hence it is essential for safety and utility purpose to read, understand and follow this user's manual.

❖ Transport and storage Instruction :

- 1) Preferably, keep device in upright position during transport and storage..
- 2) It can be stored in 5°C to 50°C
- 3) The device must be protected from excess moisture.

❖ Procedure of cleaning and decontamination.

In case of sample leakage during operation :

- 1) Press “STOP” button.
- 2) Wait until unit has come to a stop, and open lid when indicated to do so.
- 3) Remove power supply cable from socket. Do not connect plug if device is wet.
- 4) Use safety gloves, in case of broken glass and contamination.
- 5) Remove sample tubes, outer bucket tubes for cleaning and decontamination.
- 6) Centrifuge, rotor, bucket tube and chamber can be cleaned with **soap and water, gentle bleach or Isopropyl Alcohol. Use of any other disinfectant may damage the device and parts.**
- 7) Clean the device and parts using the above mentioned agents.
- 8) Inspect chamber, if required to clean then remove rotor.
- 9) Re-install the rotor and bucket tubes, as explained in rotor removal and installation process.
- 10)  **Caution:** “Before using any cleaning or decontamination methods not recommended by the manufacturer, users should check with the manufacturer that the proposed method will not damage the equipment

❖ **Necessary safe guards for personnel :**

- 1) Do not to lean on the centrifuge.
- 2) Do not to stay within the clearance envelope longer than necessary for operational reasons.
- 3) Do not to deposit any potentially hazardous material within the clearance envelope.

❖ **Care and preventive Maintenance :**

- a) **Spin balanced samples:** As explained on Page 9, spin balanced samples to get best benefits from centrifuge.
- b) **Cleaning of Spillage:** it is essential to clean rotor chamber, rotor and tube holder when breakage of sample tube occurs. Remove and install rotor to clean **rotor** chamber as explained in Rotor removal and Installation. Refer '**Procedure of cleaning and decontamination**'.
ALWAYS USE PROPER BIO-HAZARD SAFETY PROCEDURE WHEN CLEANING OF THIS DEVICE.
- c) **Routine cleaning:** It is recommended to clean rotor chamber, rotor and tube holders every six months.
 **Caution:** Always remove power cord from source plug before **PERFORMING** any type of service or cleaning to device.
- d) **Replacement of outer bucket tube and Rotor:** It is recommended to replace Outer bucket tube after use of 24 month & rotor after 48 month of use.
- e) **Electrical components and motor:** Do not need any routine or preventive maintenance.
- f) **Rotor and Tube Holder :** It is recommended to do visual inspection by user of rotor and tube holder once every 3 month for any damages.
On inspection or during routine use if any mechanical damage observed in rotor or tube holder than refer to distributor or contact us.
- g) If device needs to be sent for service, then it must be cleaned and decontaminated for safety.
- h) It is advised to get check RPM Speed, ground continuity after 12 months.

 **Caution:** If the centrifuge housing is opened for any reason then ensure that the both ground connections are done properly. Also check grounding continuity after reassembly.

❖ Troubleshooting :

- a. **Problem :** The display is not appearing
Solution: - Check the electric outlet.
 - Make sure that power switch is **"ON"**.
 - Check the MCB at bottom, if it is tripped than contact distributor
- b. **Problem:** The rotor is spinning with less RPM.
Solution: - Check the rotor chamber, remove if any obstructions inside.
- c. **Problem :** The rotor is not spinning
Solution: - Check the electric outlet.
 - Make sure that power switch and display is **"ON"**.
 - Make sure that top latch is rotated completely clockwise and yellow LED of LATCH is **"ON"**
 - Press **"START"** button again.
- d. **Problem:** Centrifuge is making more noise.
Solution: - Check and balance the load
 - Check the chamber and remove any objects inside
 - Make sure that rotor nut is tightening properly.
- e. **Problem:** Centrifuge does not indicate **"UNLOCKED"** after process complete.
Solution: - Wait for 60 seconds and see if **"UNLOCKED"** appears Automatically. If not then follow "Emergency Lid Opening Procedure"

❖ Emergency Lid Opening Procedure :

In the situation of power failure or **"UNLOCK"** failure

- a. Lift the display side end of **"Lid Lock Label"** to access emergency release.
- b. Insert pen or pointed article in hole and move lever toward display side, and hold.
- c. Rotate top latch knob counterclockwise to open the lid lock.
- d. Lift lid to open it.



❖ Caution :

- 1 If the equipment is used in a manner not specified by the manufacturer, the warranty will be voided.
- 2 It is recommended to enter in extended warranty contract after initial warranty.
- 3 User must not open the device as there is no service component inside device. Warranty Stickers are fixed on back side it must remain intact. If warranty stickers are broken, torn or removed than protection provided by the equipment may be impaired, and warranty will be void. The manufacturer will not be responsible for any accidental damage.

In the event that service or technical support is required, please contact Benchmark Scientific by phone at 1-908-769-5555 or by email at info@benchmarkscientific.com.