



INSTRUCTION MANUAL



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OPERATION & MAINTENANCE MANUAL
FOR
SCEN-206

LED & MULTI-FUNCTION TYPE CENTRIFUGE



PLEASE READ THIS MANUAL CAREFULLY BEFORE OPERATION.

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(I) SPECIFICATION

Speed (rpm)	0~6,000 LED display
Max. centrifugal Force	3,980 x g
Max. Capacity	300 ml
Electronic Control	Microprocessor control system
	10 memory programs available
Safety Device	Imbalance and cut off power system
	Motor at over heat protective device
	Triple balance system
	Automatic Lid lock, lift cover and power cut off
	Glass fuse 6A
Timer	1 ~ 99 min. digital time setting
Weight (kg)	10
Dimension (cm)	29 x 32 x 24.5
Brake System	Automatically brake system
Power	110 / 220V , 50 / 60Hz
Power Consumption	150W

(II) ROTOR AND ACCESSORY

1. Centrifugal force calculation: Use its speed and radius to calculate force as following formula.

$$RCF = (\text{rpm})^2 \times 0.0001118 \times R$$

R: radius (cm)

RCF: Relative Centrifugal Force (x g)

2. Acceptable speed and load:






Please refer to the form (II -4) to see the max. speed each model of rotor and tube carrier can be load. The load weight including: rotor, tube carrier, washer, samples, and so on.

3. Sterilizing and cleaning rotor:

Rotor is made of stainless steel or steel or aluminum with high density coating and highly resistant to corrosion, but not fit to alkaline and strong acid substance.

Note: Don't heat the rotor to a high temperature (100°C) to clean or sterilize it.

4. Rotor Specifications:

Rotor		Capacity (ml x pcs)	Max. RCF (x g)	Tube size (φ x l) mm		Cat. No.
				Max.	Min.	
RA-1508		15 x 8	3,940	16.5 x 122	15 x 90	2-5052-11
RA-1512S		15 x 12	3,940	16.5 x 122	15 x 90	2-5052-21
RA-5004		50 x 4	3,980	29.5 x 115	27.5 x 90	2-5052-12
RA-5006		50 x 6	3,980	29.5 x 115	27.5 x 90	2-5052-22
REA-1520		1.5 x 20	3,140	11 x 48	10 x 40	2-5052-13

** Tubes are not attachable. **

Before using the centrifuge, please must refer to the rotor's max. speed setting value.

(III) INSTALLATION

1. When you take out centrifuge from carton, please check if there is any scratch, press trace and damage on knob or not. If yes, please contact local dealer immediately.
2. Please install the centrifuge on a horizontal and stable table or bench. If not, it will affect anti-vibration efficiency.
3. Please use power voltage as following range. To avoid electric shock please make sure to connect ground wire to the ground terminal.

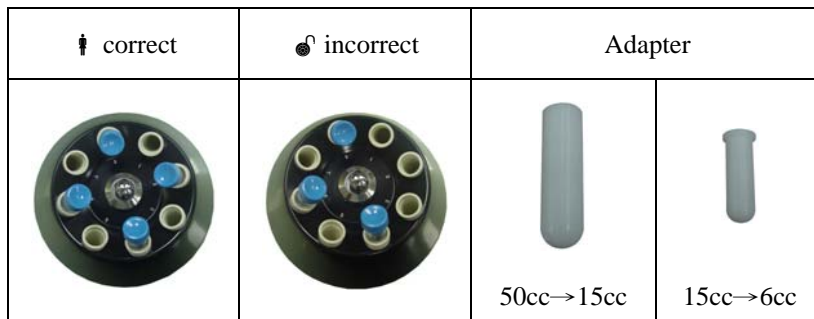
Power voltage	Acceptable voltage range
100V / 110V	90V ~ 110V / 99V ~ 121V
220V / 240V	198V ~ 242V / 216V ~ 264V

4. Keep it away from dusty and moist working place.
5. Avoid the same power source with the large electric consumption machine at same time.
6. As less as better to use brake system, it will last more motor's life.
7. After dismantle or clean rotor, please must screw it tightly.

(IV) OPERATION

1. Tube & Sample Setting

- (1) The tubes in use must be placed in even number such as 2, 4, 6, 8. Glass tube must be placed in carrier completely which are positioned symmetrically toward rotor center. When you use tubes in odd number, it is necessary to put same volume of water in a separate tube and then place such tubes into carrier for dummy use.
- (2) Please consider the speed and centrifugal force the tubes can bear or not, or it will cause the tubes easy broken from rotation.
- (3) Please note tube length, if it is too long than the top of tube will hit the rotor and break. If you have to put longer tubes in angle rotor, please place an interval between tubes.
- (4) Adapter is available for tube's diameter much smaller than carrier's, it can prevent tube broken from rotation.



Caution:

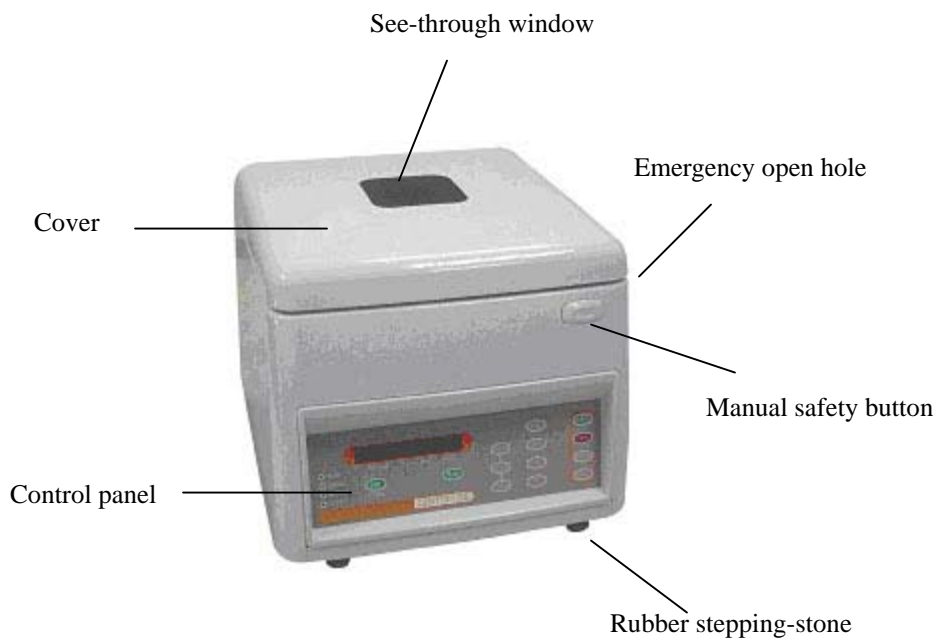
- Adapter should be placed into tube carrier properly, if it is slanted, then tube is difficult to take out from carrier. If glass tube is broken or if rotor elapsed over one year, then rotor needs to be renewed. Damaged rotor or rotor containing broken glass will cause glass tube broken easily.
- Carrier should be placed onto rotor properly, if not, it will be imbalanced and destroy centrifuge, meanwhile to check if carriers swing normally by hand first.
- Stainless steel tube carrier can be used for acidity and alkalinity tube samples. (please purchase separately)



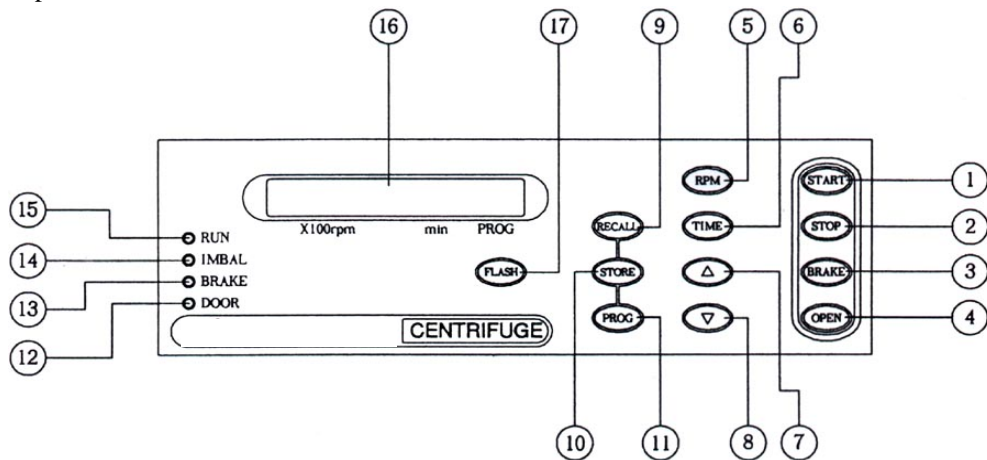
2. Door Lock & Cover

- (1) Please close cover tightly, otherwise rotor can not rotate, cover can not be opened during rotation.
- (2) Plug in the socket and switch it on, then press **【OPEN】** button and **【Manual safe button】** to open cover.
- (3) If power cut off and cover can't be opened, then use a small rod in more than 5 cm length to put into the hole at the right side of centrifuge and press manual safe button at the same time, then cover can be opened.

3. Outline:



4. Operation Panel:



- (01) START: After setting time and speed, press it and rotor rotates immediately. .
- (02) STOP: For emergency stop.
- (03) BRAKE: It is with auto-braking function, when presetting time is due.
- (04) OPEN: It is used at speed under 100rpm.
- (05) RPM: Press **【RPM】** (flash), adjust ▲ or ▼ then press “RPM” to finish it.
- (06) TIME: Press **【TIME】** (flash), adjust ▲ or ▼ then press “TIME” to finish it.
- (07) ▲ INCREASE: to add speed or time.
- (08) ▼ DECREASE: to reduce speed or time.
- (09) RECALL: to display settled speed and time.
- (10) STORE: to remember settled speed and time.
After setting speed and time, press **【STORE】** twice. If you need presetting function, press **【STORE】** first then press **【PROG】** to select demand figure then press **【STORE】**.
- (11) PROG: to display speed and time.
Press **【RECALL】** (flash) then press “PROG” to select demand figure, then press **【RECALL】** again to confirm.
- (12) DOOR LAMP: when cover is open, it lights up.
- (13) BRAKE LAMP: when it lights up, it will decrease speed automatically.
- (14) IMBAL: when it lights up, it is imbalanced on rotor and stop running. You have to press **【OPEN】** to open cover and check problem.
- (15) RUN: it lights up during rotation.
- (16) DISPLAY: to show speed, time and settled figure.
- (17) Transient centrifugal function: it can reach specified speed in transient time without speed and time limited.

5. Operation Procedure

- (01) Insert power plug and switch power to “ON” at the right back side of centrifuge °
- (02) Choose operation parameter and press **【START】** to begin operating. Meanwhile, the light of **【RUN】** lighted up automatically.
- (03) When there is a balance error, the light of **【IMBAL】** lighted up and stop operating. Then press **【OPEN】** to check the rotor.
- (04) Press **【BRAKE】** to set the time of brake.
- (05) When operating time is up, the buzzer will sound automatically.
- (06) During rotation, the **【OPEN】** button can not work.
- (07) When the cover is open, the light of **【DOOR】** will light up and the **【START】** can not work.
- (08) Speed and time can be changed during operation, but it will not re-countdown.
- (09) LED display time, speed and signal of breakdown.
- (10) Emergency open hole can be used when electric power cut.
- (11) The last setting parameter will be stored and display next time.
- (12) Parameters will not be removed from memory storage when power cut off.
- (13) To set speed, please refer to the form (II -4).

Caution:

1. Please refer to operation panel, there are 10 sets of program available to store the desired rpm and time. When you start to run the centrifuge next time, it will perform the last running program. These programs don't disappear at power off and on.
2. During rotation, if you want to change speed or time, then press **【RPM】** or **【TIME】** and adjust ▲ or ▼ then press **【RPM】** or **【TIME】** to finish it separately.
3. During rotation, please don't exceed the max. speed (refer page 2) of the centrifuge and place substandard rotor or carrier. The centrifuge is without anti-explosion, so please don't use explosive material.

(V) REPAIR

1. Checking before and after operation

- * Check to see if there is any material or water inside chamber and keep it clean.
- * Check to see if the rotor is loose or not; if yes, after screw it then use it again.
- * Check if carriers can swing smoothly, if not, please clean the rotor.
- * Check if carrier is hung well, if not, then stop it and contact with local distributor.
- * Check if cover is properly close and screws fixed or not; if not, then stop it and contact with local distributor.
- * Check if the ground wire is connected well, lamps and switch are available.

2. Daily checking:

Clean stain in chamber, check if there is any scratch, deformation, and corrosion on rotor or carrier.

If yes, please contact local dealer for further checking.

3. Yearly checking:

Check if “rotor fixing nut” is loose or not; and the indication value of speed meter can match real value or not, if not , please contact local dealer.

4. Cleaning:

When sample is split over rotor or carrier, please use cloth with little detergent to wipe and dry it. When sterilization is made on rotor or carrier, do not heat it to a temperature exceeding 100°C .

5. Trouble shooting:

reason symptom	Power	Electrical Circuit	Cover problem	Motor problem	Imbalance
Main lamp is not light up	*	*	*		
Fuse blows very often	*	*		*	
Motor does not drive	*	*	*	*	*
Set rpm can not be attained	*	*		*	
Big vibration			*		*
Unusual noise				*	*

Repair methods:

Cause	Details of cause	Repairing way
Power	a. Power cord is not connected. b. Power voltage is not proper.	Checking power plug, replace fuse
Lid problem	Lid can not be closed	Contact local dealer
PC board	Parts can not connect well	Contact local dealer
Motor problem	Over- heat, carbon brush use out	Stop using it and wait for cool, replace carbon brush or contact local dealer.
Imbalance	Carrier or tube is put improperly.	Please refer operation description

6. Signal of display:

Signal	Status	Description	Repairing
Err-1	Motor can not drive	Carbon brush connect badly. Wire matched badly. The outlet of controller is out of order.	1. check carbon brush 2. check wiring 3. check the outlet of controller 4. replace controller
	Motor stops during operation	Carbon brush connect badly. Wire matched badly. The outlet of controller is out of order.	1. check carbon brush 2. check wiring 3. check the outlet of controller 4. replace controller
	Sensor can not detect well	Sensor is out of order Wire matched badly. The outlet of controller is out of order.	1. check sensor or replace new one 2. check wiring 3. check the outlet of controller 4. replace controller
Hot	Motor is over-heat	Temp. switch skips away.	After temp. is cooler then operate it again.
	Motor stops running	Temp. switch is out of order. Wire matched badly.	1. check temp. switch or replace new one. 2. check wiring.

7. Machine Check:

- a. Check motor brush and PC board: please open cover then dismantle rotor and loosen 5 screws at the baseboard and take apart the body and baseboard. Then you can check both easily.
- b. Fuse is under the power plug, please take off power cord and use “—” type of screw driver to open it then check if fuse burnt or not. There is one reserved fuse available attached inside .



Fuse position



Reserved fuse

Fuse in use

(VI) PARTS LIST

ITEMS	QUANTITY
MOTOR	1
ROTOR	1
SPEED SENSOR	1
CARBON BRUSH	2
PC BOARD	1
KEY BOARD	1
FILTER CAPACITY	1
BRAKE RESISTANCE	1
POWER SWITCH	1
SOLENOID	1
FUSE 6A	2
LID MICRO SWITCH	1
TRANSFORMER	1

(VII) CIRCUIT DIAGRAM

