Huazheng®

HZDD5Y
Centrifuge

Huazheng Electric Manufacturing (Baoding) Co., Ltd

Contents

I 、Features and uses

HZDD5Y crude oil water content determination centrifuge is a conventional instrument for centrifugal precipitation in medicine and biology, with the maximum speed of 5000r / min, the maximum capacity of 4 × 100ml and the maximum centrifugal force of 4300xg.

The instrument is driven by variable-frequency motor, the rotating speed and time are all displayed on LCD screen, the electrical control system is controlled by microprocessor, the key programming, simple operation, the instrument design is humanized and beautiful, and the structure is simple.

The door cover of the instrument adopts electronic safe and reliable door lock. If the door cover is not covered (the door lock is not locked), the instrument cannot be started. Do not open the door cover when the instrument is running! The door cover can only be opened when the speed is zero. If the door cover is opened by mistake, the instrument will stop automatically and give an alarm to ensure the safety of the instrument in use.

The instrument adopts the optimized design scheme for the shock absorption system. The instrument operates stably with small vibration, low noise and good separation effect.

This instrument has the following main functions:

1.Automatic storage of all the running parameters, the next boot can be used directly;

2.When the maximum speed is over 500r / min, automatic speed reduction and shutdown protection will be provided;

3.Equipped with door cover, overspeed and other protection functions.

This instrument conforms to YY / T 0657-2017 medical centrifuge industry standard.

II、How it works

Centrifuges use the principle of centrifugal sedimentation to separate, concentrate or purify cells (particles) with different densities in the solution under the action of centrifugal force.

Place the centrifuge tube with the same amount of test solution symmetrically in the rotor tube hole. After starting the instrument, the relative centrifugal force (RCF) generated by the motor driving the rotor to rotate at a high speed will separate the cells (particles)

with different densities in the test solution. The relative centrifugal force depends on the horizontal distance from the position of the sample to the axis, i.e. the rotation radius R and the rotation speed n. The calculation formula is as follows:

RCF＝1.118×10-5n2r×g

N ---------- speed (RPM)

R ---------- radius of rotation (CM)

The time Ts required for particle separation and precipitation in the mixture is calculated by the following formula:

$$T_S = \frac{27.4\eta(\mathrm{Log}R_{max} - \mathrm{Log}R_{min})\mu}{n^2 r^2(\sigma - \rho)F}$$

Where:

Rmax -------- the radius of rotation of the test solution farthest from the axis

Rmin ------ radius of rotation of the test solution nearest to the axis

ρ -------- density of mixed liquid (g / cm3)

μ -------- viscosity of mixture (poise)

N ---------- speed (RPM)

R ---------- particle radius (CM)

σ -------- particle density (g / cm3)

III、Main technical parameters

Table 1

Maximum speed	3000r/min	Power Supply	AC220V 50HZ 15A
Maximum capacity	4×100ml（petroleum pipe）	Rated power	1.2KW
Maximum centrifugal force	1548×g	Noise of the whole machine	≤65dB（A）
Timing range	1～99min	Driving mode	Variable frequency motor drive
temperature control	20-90℃	Temp Accuracy	±2℃
Speed accuracy	±15rpm/min	Diameter of centrifugal chamber	500mm
External dimension	740×550×780（mm）	Weight	85kg

IV、Technical parameters of rotor

Main parameters of available rotors (see Table 2).

Table 2 (mark "√" in the remark column to indicate the rotor number currently used by the machine)

Please operate the rotor according to the highest speed of each rotor number!!!!

Rotor No	Rotor name	Rotor name (Number of tubes×ml）	Maximum speed （r/min）	Maximum relative centrifugal force （×g）	Remarks
					√

V、Shape and mechanism

As shown in the figure:

VI、 Installation

After the instrument arrives at your company, check whether the appearance of the packing box is severely damaged in the process of transportation before unpacking. Once it is found, inform the transportation company immediately, issue the damage certificate, and then inform the company.

If there is no sign of damage, unpack the packing case, take out the packing list, and check whether the attached accessories are consistent with the packing list. If there is any difference, please contact our sales department. After checking the attached accessories, remove the main engine from the bottom plate of the box and place it on a flat ground. The instrument installation shall meet the following requirements:

1. Environmental requirements

a. The ground shall be solid and flat concrete floor, without vibration source.

b. The highest altitude is 2000 meters.

c. This equipment is limited to indoor work. The centrifuge is suitable for constant temperature (about 20 ℃), the maximum relative humidity is 80% at 31 ℃ and 50% at 40 ℃. Therefore, the centrifuge should not be placed near the heat source (such as direct sunlight, heating pipe and radiator, etc.).

2. Installation space requirements:

The centrifuge should have enough space to ensure the air flow around the centrifuge, otherwise it may lead to overheating and poor effect.

3. Power requirements

The power supply shall be 220V 15A single-phase power supply with independent ground wire. It is not allowed to replace the ground wire with zero wire. The centrifuge must be properly grounded.

4. Installation requirements of the machine: ensure safety and centrifugal effect after being placed in place. The instrument must be placed on a solid, shockproof and horizontal platform, and ensure that four machine feet are evenly stressed.

5. Plug in the power cord (external power separator)

VII、Operation method

1. Power on the instrument

The upper right corner of the instrument is equipped with a power switch. Move the switch upward to the "on" end ("off" end is off), and the centrifuge is powered on.

2. Open the door cover

A "manual door opening" device is arranged at the groove on the right side of the

instrument door cover. Press and hold the door cover and pull it slightly, the door lock will be opened, push the door cover upward, and the steam spring will help to open the door cover.

be careful!

Check whether the locking screw on the rotor is loose. If it is loose, tighten the screw.

3) Put in the blood bag or adapter. If the instrument is equipped with multiple types of adapters, if you need to use both adapters at the same time, please place the two adapters symmetrically!

3. Place the test bottle or blood bag

1） The centrifuge tube is filled with the test solution (about 70% of the nominal capacity of the tube). After the tube is filled with the test solution, the height of the test solution is basically the same by visual inspection (if conditions permit, balance weight is recommended).

2) If the reagent is not enough, empty test tube shall be used for water injection instead of unbalanced operation.

3) Finish the work above and cover the back door.

4. Close the door cover

Close the door cover gently and press down hard. When you hear the sound of "pa", the door cover is locked.

5. Set parameters

Centrifuge operation control panel as follows

Panel introduction

Each time you press the select key, the cursor of the rotor, speed and time window will flash in turn. The window that is flashing is the window to enter the setting.

(1) Set rotor number: press the selection key, when the cursor in the rotor window flashes, enter the rotor number setting, and then press the plus or minus key to select the rotor number of this operation.

Special note: the set rotor number must be consistent with the configuration specification of the used rotor (different rotation

The maximum speed limit is not necessarily the same for different speed up curves of sub numbers). The corresponding relationship between rotor number and rotor configuration specification is shown in the column of "matching rotor" in the [technical index] of this manual.

(2) Set speed: press the selection key. When the cursor in the speed window flashes, you will enter the speed setting, and then press the plus or minus key to determine the speed of this operation.

Special reminder: when the horizontal rotor and adapter of this machine are of different configuration specifications, they all have the specified rotor number (and maximum speed limit). When setting the speed parameters, the user must strictly abide by the speed limit regulations in the column of "matching rotor" in the [technical indicators], and it is strictly prohibited to run over speed, so as to ensure the operation safety.

(3) Set time: press the selection key, when the cursor in the time window flashes, the time setting will be entered, and then press the plus or minus key to determine the running time.

(4) When the above steps are completed, press the "approval key" in time to confirm, otherwise the set value will be automatically eliminated and restored to the original value after flashing for 8 seconds.

After checking the above settings, press the "start" key to start the instrument.

(Note: if the pressure of the upper sealing ring of the centrifugal chamber on the door cover is too large, and the electronic door lock cannot be opened by itself relying on its own electromagnetic force to overcome the friction between the door cover latch and the door lock latch, the door cover can be opened by lightly pressing the door cover with one hand and pressing the [stop] key with the other hand). Take out the centrifugal tube with small heart to complete the whole separation process.

(5) Turn off the power switch and cut off the power supply of the centrifuge.

(6) In case of sudden power failure of the electronic door lock of this machine, just press the door cover lightly with one hand, and pull the small handle on the front upper part of

the left side of the instrument outwards slightly with the other hand to open the door cover.

(7) Up and down speed gear setting:

Warning!!! Do not open the door cover during operation!

VIII、Precautions

1 .Artificial overspeed is strictly prohibited

Manual overspeed operation is a serious violation of the operating procedures,

The danger is very easy to cause personal equipment accidents,

2. before each use, pay attention to check whether the rotor and hanging cup have fine cracks. If any crack is found, it shall be stopped immediately.

It is strictly prohibited to use cracked rotors, and use cracked rotors,

Danger of rotor rupture.

3. before starting the centrifuge, check whether the hanging cup is hung properly!!!

4. After starting the centrifuge, the operator cannot leave immediately. Wait until the centrifuge speed reaches the set value and there is no abnormal sound before leaving.

5. During the maintenance of the instrument, the power plug shall be removed, otherwise electric shock may occur easily.

Tips:

1) The hanging cup shall be placed on the rotor hanging pin according to the number;

2) After removing the rotor and cleaning the centrifugal cavity, when reinstalling the rotor, it is necessary to adjust the perpendicularity of the center of the locking screw. After locking the locking screw, move the rotor by hand and observe whether there is swing on the top of the locking screw. Otherwise, loosen the locking screw, turn a little washer on the locking screw, tighten the locking screw, and move the rotor by hand until there is no swing on the top of the locking screw Stop.

6 .it is strictly prohibited to run unbalanced operation, which will shorten the service life of the instrument or even directly lead to the scrapping of the instrument.

7. attention! After the separation of radioactive, toxic or viral substances, steam disinfection and purification shall be carried out for the rotating head, test tube, adapter,

etc. see Table 8 for the purification method.

Table 8 time -- temperature conditions

Absolutepressurekpa	Corresponding steam temperature		Minimum holding time min
	Rated temperature/℃	Range/℃	
225	136.0	134-138	3
150	127.5	126-129	10
115	122.5	121-124	15
75	116.5	115-118	30
Note: the minimum holding time is the purification time at temperature			

IX、Maintenance

1. After centrifugation, if it is no longer used on the same day, please dry the centrifugation chamber with a clean soft cloth

Dirt from rotors and centrifuges. Open the door cover to help evaporate the water in the centrifugal chamber.

2. Check the rotor and centrifugal pipe regularly for cracks.

3.When the instrument needs to stop using for more than one month, please take out the rotor from the centrifugal chamber, apply a thin layer of grease to the center hole of the rotor and the main shaft of the centrifuge, and keep the rotor in a dry place.

X、Common faults and troubleshooting

Some common troubleshooting methods of this machine are as follows:

Common faults	**Reason**	**Exclusion method**
The display doesn't light up when the power is plugged in	No 220V power supply	Check the power supply
	Fuse blown	Check and replace

	Loose communication	Check adjustment
Large vibration after startup	The centrifugal pipe in the rotor is not placed symmetrically	Check adjustment
	Rupture of centrifugal pipe	Inspection and replacement
	Rotor not tightened	Check adjustment
	Shock absorption part damaged	Check and replace
The display shows 0000, press the start key and the machine will not run	Circuit board or transformer damaged	Replace
	Loose connector of control system	Reinsert
	The key is damaged	Replace panel
	Motor damage or leakage	Replace
It can run but can't go up in speed. The machine has strange noise or peculiar smell	Control system or motor failure	Send to the manufacturer for maintenance
The actual speed is different from the set or displayed speed, out of control or unstable	Control system failure	Send to the manufacturer for maintenance
The temperature does not meet the set low temperature requirements	Without precooling or insufficient Precooling	Sufficient Precooling
	Compressor damaged	Check and replace
	amaged solenoid valve	Check and replace
	Insufficient refrigerant	Add proper amount of refrigerant

Note: the machine is equipped with a replaceable fuse f10al250v on the power socket of the rear cover plate. The fuse is a low-voltage (250V) fuse with a maximum fuse current of 10A. It is mainly used to protect the semiconductor elements of the instrument control system. The fuse is a closed glass tube structure and is connected by plug-in type. It has compact structure, safe use and convenient replacement.

Figure 1 is the fuse structure diagram, and Figure 2 is the fuse replacement diagram.

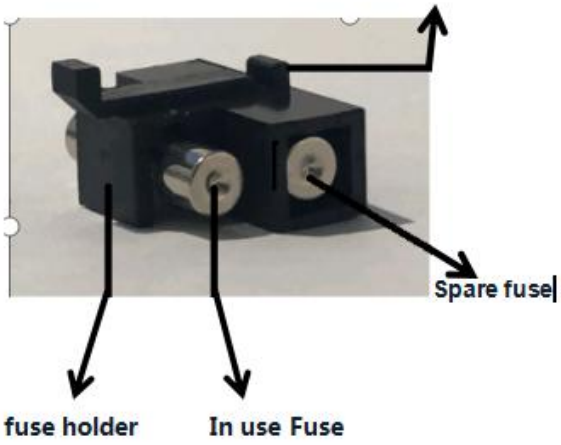
Figure 1

Front view of the fuse holder

Side view of the fuse holder

Figure 2

Pull out the fuse holder from the power socket on the back of the centrifuge with a flat-blade screwdriver at the position of the V-shaped groove.



XI、After sales service commitment

1. The main machine of the centrifuge is provided with a one-year warranty period. In case of non-human damage to the product, the company shall provide free maintenance service within one year from the date of purchase. In case of damage or failure within one year, the company will charge a certain cost for maintenance.

2. The company will not be responsible for any of the following situations of supporting rotors:

Use when the maximum speed of rotor is exceeded;

The rotor is scratched or bruised;

The rotor is seriously corroded by acid and alkali;

Repair by unauthorized professionals.

3. Unauthorized professionals are not allowed to open the machine without permission of the company; all repairs and adjustments must be carried out by professionals in accordance with the maintenance manual.

4. The company will not be responsible for the repair and adjustment of unauthorized personnel!

XII、Packing List

No	Item	Qty
1	Main engine	1
2	Power line	1
3	Special wrench	1
4	Horizontal rotor	1