

Service Manual

Centrifuge PX



VERSION020220421

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Chapter I Introduction

Centrifuge PXV is applied for the separation of sample mixture in clinical laboratories.



Figure 1 Front View



Figure 2 Rear View



Figure 3 Automobile Power Adapter

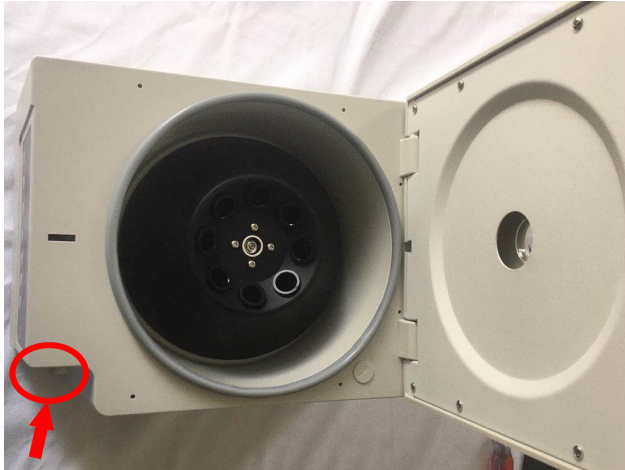
Figure 1 and Figure 2 show the major interfaces of Centrifuge PX. Figure 3 shows the automobile power adapter (12V 3A) of Centrifuge PX. On the front control panel there are command buttons, time control buttons, a start button and an LED display. On the rear of the instrument there is a power switch and a power socket. Connect the power cable and switch power ON. Users can set the experimental conditions using command buttons on the control panel.

Chapter II Disassembly and installation

If the instrument does not work, analyze the cause first. Replace/ repair the failed components if the failure is due to hardware problem. Follow the instructions below to disassemble the instrument and replace components.

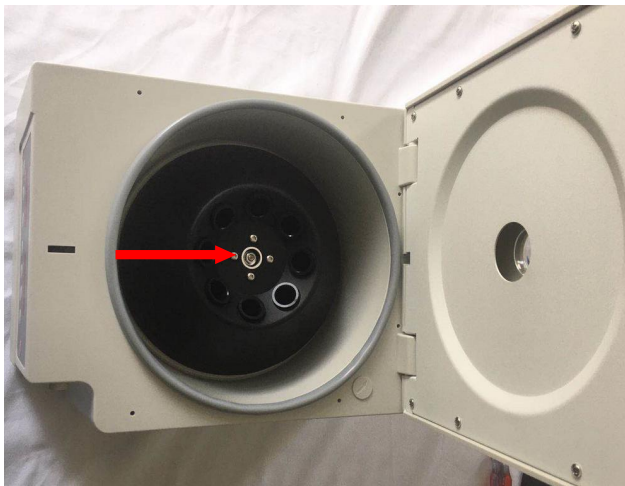
2.1 Disassembly

Tool: slotted screwdriver, cross screwdriver, M6 socket wrench, M10 socket wrench



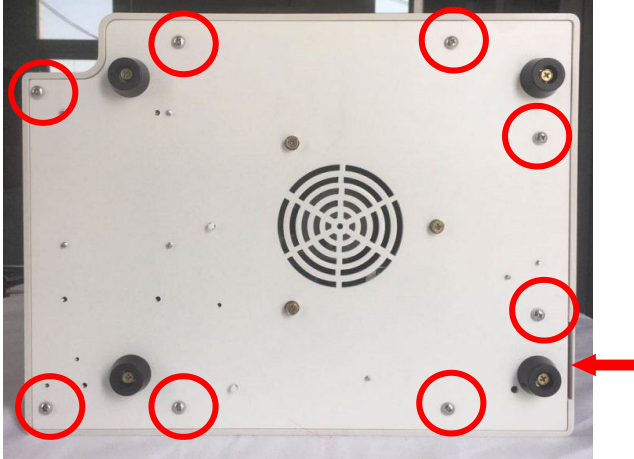
Step 1:

Press the button on the right side of the instrument to open the chamber.



Step 2:

Remove the nut (pointed by the red arrow in the figure left) at the center of the rotor with M10 socket wrench.



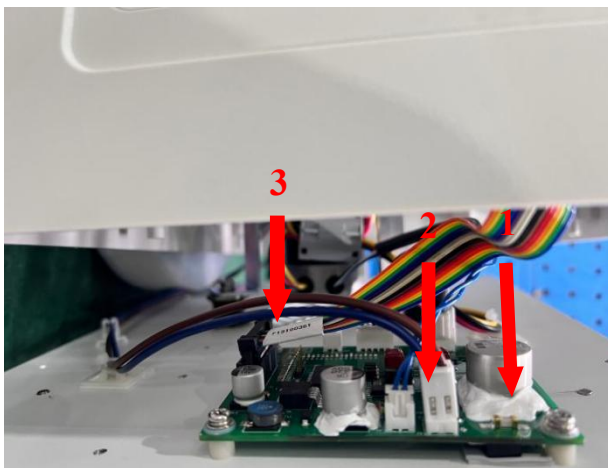
Step 3:

Turn the instrument upside down or sideways and then remove the 8 screws (in red circles as depicted in the figure left) with a cross screwdriver to remove the bottom plate.

Note:

(1) Use a small slotted screwdriver to gently pry at the position pointed by the red arrow in the figure left if the bottom plate is too tight.

(2) Please make sure you do not break internal cables when removing the bottom plate.



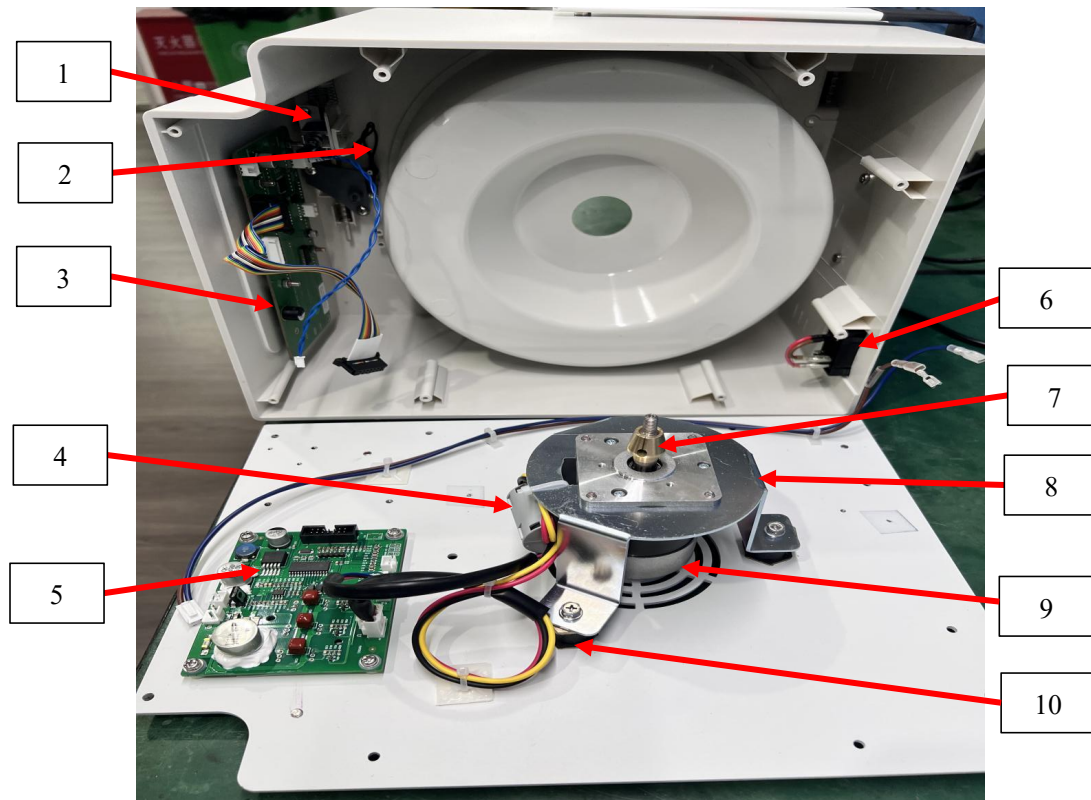
Step 4:

- 1) Remove the white plug of coupler cable (pointed by the red arrow 1 in the figure left) by hand from the drive circuits.
- 2) Remove the white plug of magnet control cable (pointed by the red arrow 2 in the figure left) by hand from the drive circuits.
- 3) Remove the flat cable (pointed by the red arrow 3 in the figure left) by hand from the drive circuits.



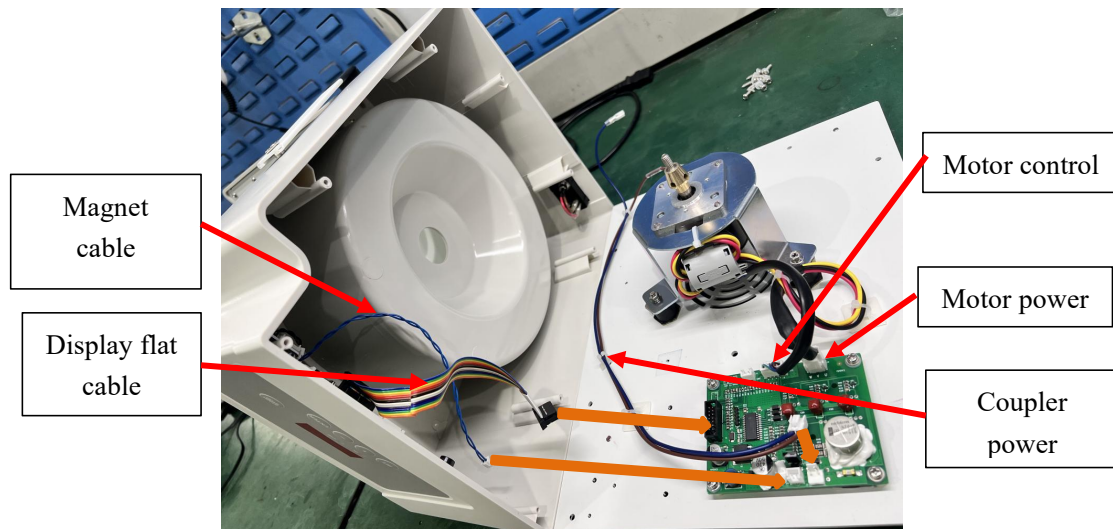
Step 5:
Remove the coupler cables L(brown) & N(blue) in the red circle as depicted in the figure left. The plug is self-locking. Please make sure the cables are connected to the correct position.

2.2 Description of key components

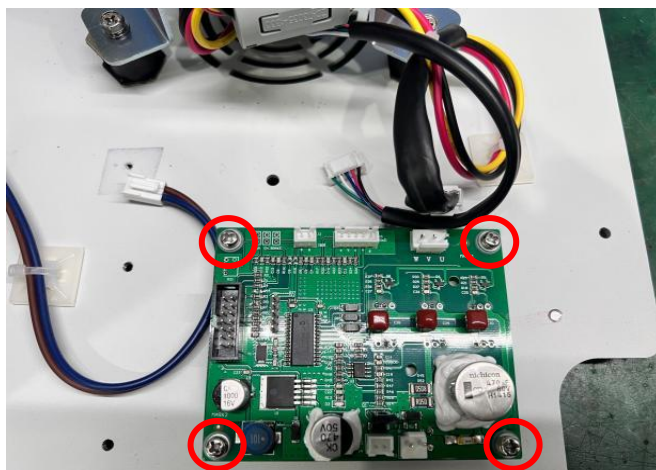


No.	Component	Part No.	No.	Component	Part No.
1	Magnet	19201081	6	Switching mode power supply (SMPS)	19100216
2	Door lock signal cable	19100356	7	Motor shaft taper	19200854
3	Main circuits	19100387	8	Motor bracket	19100359
4	Magnet ring	19200403	9	Motor	19100381
5	Driver circuits	19100364	10	Vibration damper	19200871

2.3 Cable layout and connections



2.4 Replace the driver circuits



Step 1:

Disconnect cables from the driver circuits, including flat cable, magnet cable, motor control cable, motor power cable and coupler power cable.

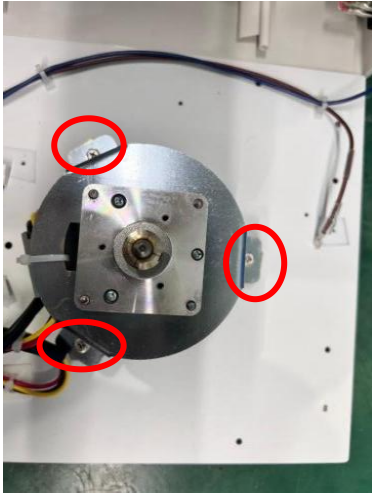
Step2:

Remove the 4 fixing screws (in red circles depicted in the figure left) with cross screwdriver, and then remove the driver circuits.

Step 3:

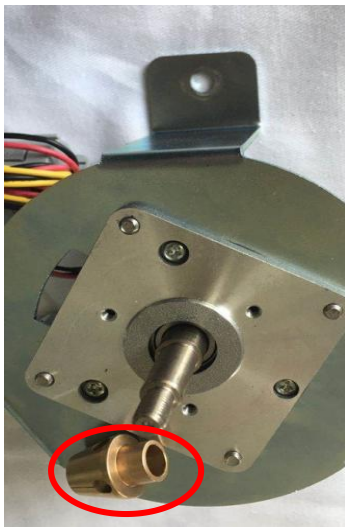
Replace the driver circuits with a new one and mount it back in position in reversed order. For details, please refer to 2.3 Cable layout and connections.

2.5 Replace the motor

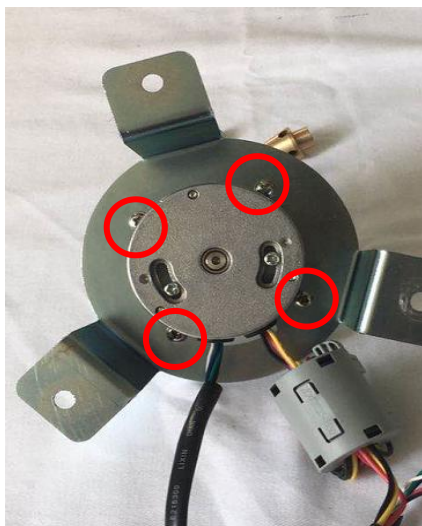


Step 1: Remove the motor bracket

Remove the 3 fixing screws (in red circles depicted in the figure left) with a cross screwdriver, and then remove the motor together with the motor bracket.

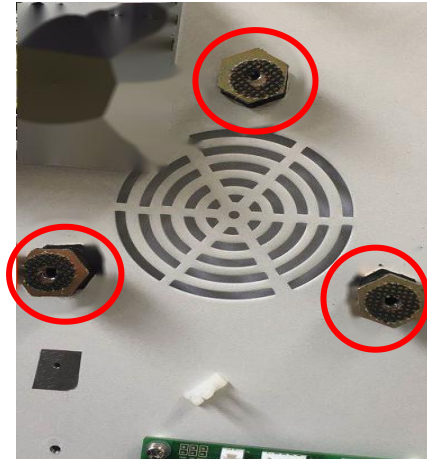


Step 2: Remove the motor shaft taper
Lift and take out the motor shaft taper by hand.



Step 3: Take the motor off the bracket
Remove the 4 fixing screws in red circles with a cross screwdriver, and then take the motor off the bracket.

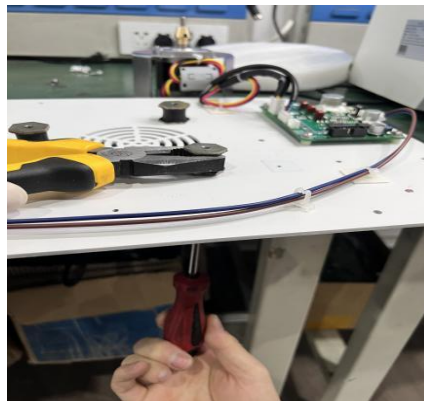
2.6 Replace the vibration damper



Step 1:

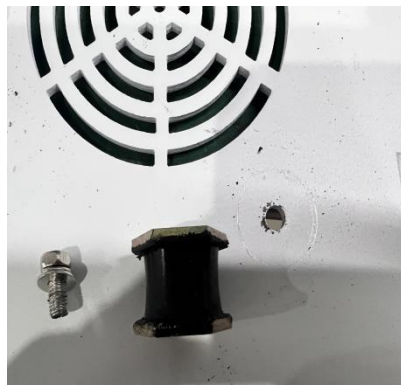
After the motor is removed following the instructions in 2.5, you will notice that the vibration damper is secured on the bottom plate with three screws.

Remove the three mesh gaskets first.



Step 2:

Use a plier to immobilize the vibration damper on one side with one hand. Use a cross screwdriver to rotate the screw counter-clockwise on the other side and remove it.



Step 3:

Replace the vibration damper with a new one. Mount it back in position in reversed order. Please make sure the cross screw is screwed into the threaded hole of the vibration damper.

2.7 Replace the main circuits



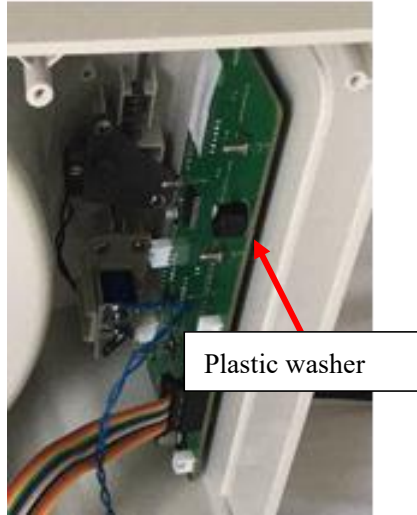
Step 1: Peel off the film on the front panel.



Step 2:
Remove the 4 fixing screws (in red circles depicted in the figure left) with a cross screwdriver.
Please use long nose pliers to fix the nuts inside if necessary.



Step 3:
Disconnect the flat cable and door lock signal cable from the main circuits, and then remove the main circuits.

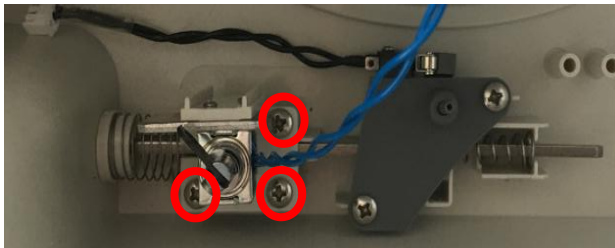


Step 4:

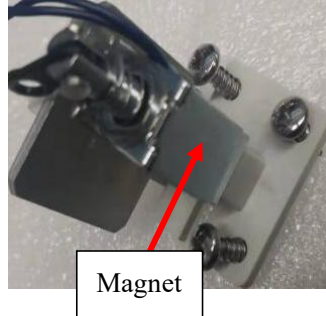
Replace the main circuits with a new one. Mount it back to position in reversed order.

Please make sure the 4 plastic washers are installed between the main circuits board and the chassis of instrument. Plug the flat cable and door lock signal cable to correct position. For details, please refer to 2.3 Cable layout and connections.

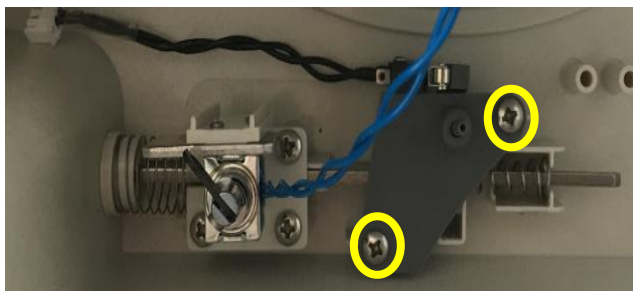
2.8 Replace the magnet



Remove the 3 fixing screws (in red circles depicted in the figure left) with a cross screwdriver, then replace the magnet.

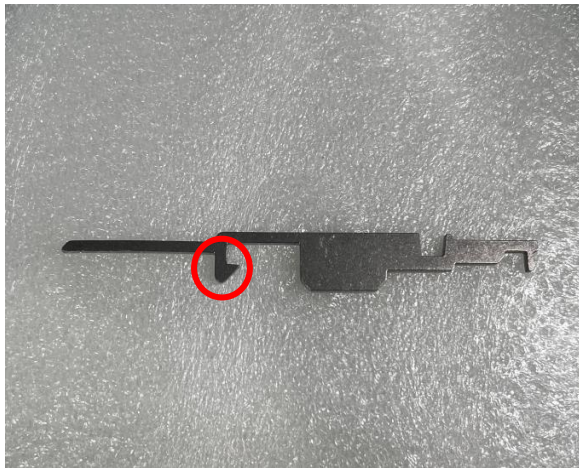
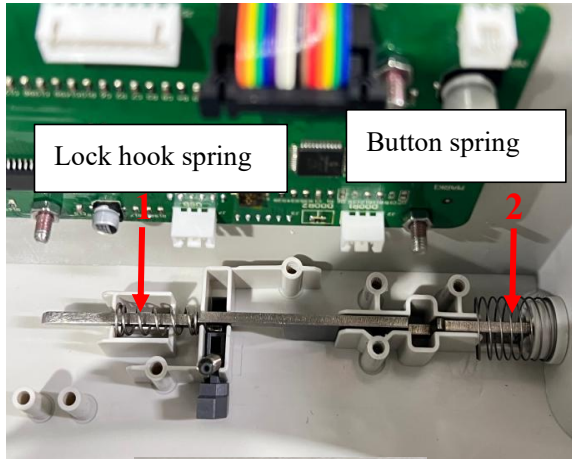


2.9 Replace the door lock control components



Remove the 2 fixing screws (in yellow circles depicted in the figure left) with a cross screwdriver, then replace the door lock control components.

2.10 Replace the lock hook



Step 1:

After removing the door lock control components and the magnet, we can see the lock hook and two springs next to the lock hook. Replace the lock hook with a new one. Mount it back in position in reversed order. Please make sure the springs are connected to the correct position.

Step 2:

If the upper cover of the centrifuge cannot be opened smoothly, remove the lock hook and observe whether there are burrs. If there are, use a metal file to eliminate them. Please refer to the step 1 to install the lock hook again.

Chapter III Analysis on FAQs

An error code will appear in the time section on the LED display when the instrument malfunctions. Check the following table to locate the problem. Contact the manufacturer or certified distributor for more detail.

Error Code	Possible Causes	Solutions
E02 Door Lock	1. The door is open during running.	Power off the centrifuge immediately.
	2. The door lock component is not installed correctly.	Adjust or reinstall the door lock component.
	3. The door lock component failure.	Check and replace the door lock component.
E05 Driver Circuits Overload	1. Overloaded. 2. Driver bridge damaged. 3. Driver control signal abnormal.	1. Power off the centrifuge immediately. 2. Check if the rotor is compatible. 3. Check if the rotor is overloaded.
E09 Imbalanced Rotor	1. The rotor is not balanced.	Rebalance the rotor with the scale and insert the tubes symmetrically into the rotor.
	2. The rotor does not fit onto the motor shaft.	Reinstall the rotor onto the motor shaft.
	3. Altered dynamic balance position.	Adjust the dynamic balance position.
	4. Vibration damper damaged.	Replace the vibration damper.
E11 Motor No Work	1. Unstable connection between the main circuits and the driver circuits.	Reconnect the circuits.
	2. Speed sensor malfunction.	Replace the speed sensor (motor).
	3. Driver circuits malfunction.	Check and replace the driver circuits.
E17 Shaft Taper (No Magnet)	1. Shaft taper mis-installation.	No magnet on the shaft cone.
	2. Incorrect shaft taper magnet polarity.	Check the magnet polarity.
	3. Unstable connection of HALL signal cable.	Reconnect the HALL signal cable.
	4. HALL component damaged.	Check if HALL component is damaged.
E20 Overspeed	The runtime speed is 1000rpm higher than the speed setting due to unstable speed control signals.	Replace the speed sensor component or main circuits.