

SERVICE MANUAL

Shaker

SK-D3309-Pro LCD Digital 3D Shaker



VERSION20170329

CONTENTS

Chapter 1: Working Principle	1
1.1 Introduction	1
Chapter 2: Removal and Installation of Instrument	2
2.1 Removal	2
2.2 Main parts illustration.....	4
2.3 Replacement of master control board.....	5
2.4 Replacement of motor component and photo electronic switch.....	5
2.5 Replacement of power board component.....	6
2.6 Replacement of motor drive board	7
Chapter 3: Trouble shooting.....	7

Chapter 1: Working Principle

1.1 Introduction



FIG.1

Item	1	2	3	4	5	6
Function	Power Switch	Rocker Plate	Speed Display	Time Display	Speed Control Knob	Timer Control Knob

Shaker carries an object to conduct linear or circular motion at different speeds, and then mix the material.

Fig. 1 is the schematic diagram of Shaker SK-D3309-Pro. There are Speed display, Time display, speed control knob, and timer knob on instrument control panel; power switch, on the side of instrument; After properly connect the power cord and turn on power switch, users set experimental conditions on the control panel by speed control knob and timer knob, and real-time observe parameters setting values and actual values on screen.

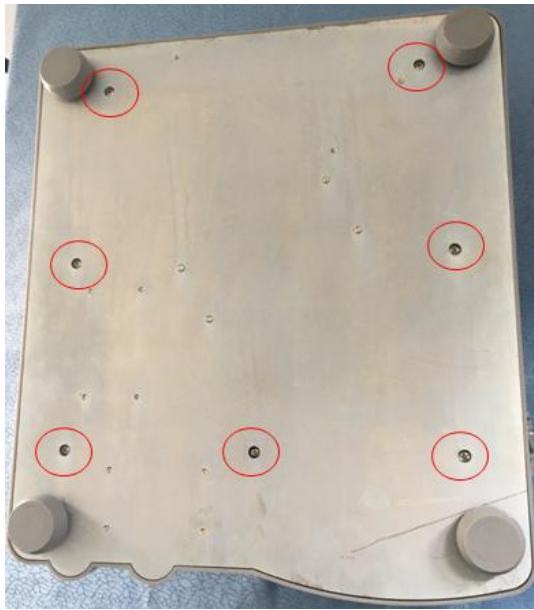
- ✓ Power supply: 220/110V → power outlets → PCB → system control power supply
- ✓ Movement: motor drives Movement Module to rotate. According to a different lock screw location on Rocker Plate, the movement pattern of shaker is different.
- ✓ Speed feedback: the motor speed is accurately measured by the Shaft Encoder fixed on the motor along with photoelectric switch and a feedback is given.
- ✓ LCD display: LCD PCB is connected to Master Control Board and displays user's settings and current equipment operation information.

Chapter 2: Removal and Installation of Instrument

When instrument failure occurs, first, you should conduct a failure analysis; if the failure is caused by the damage of instrument hardware, the related component must be repaired or replaced. Here are the relevant contents of the replacement and disassembly of instrument.

2.1 Removal

Tool: Cross screwdriver, Diagonal Pliers, Allen key, socket spanner



Step 1:

Turn the instrument upside down, remove the 7 screws marked by red circles;



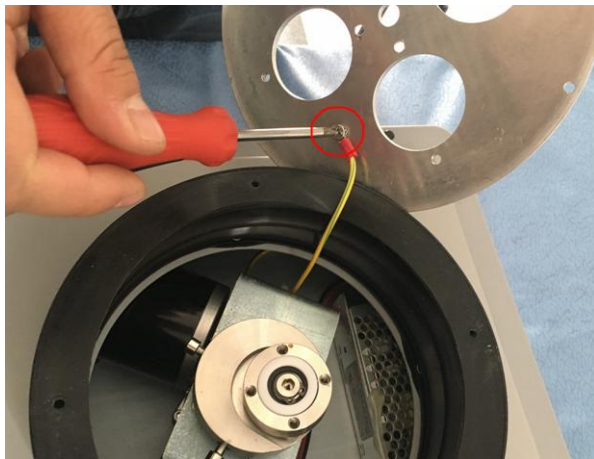
Step 2:

Remove the 4 screws marked by red circles and keep them well;



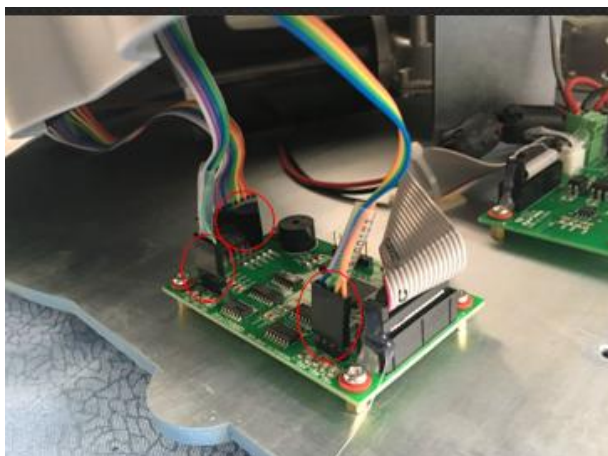
Step 3:

Remove the 4 screws marked by red circles and keep them well;



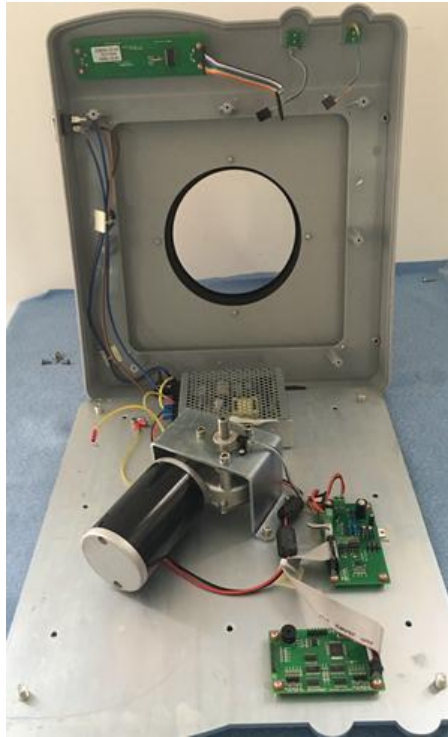
Step 4:

Remove the screw marked by red circle, separate ground wire and metal plate;



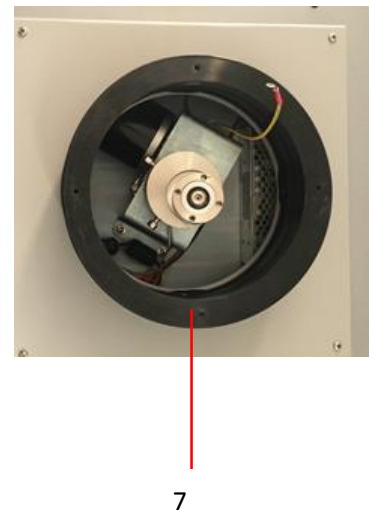
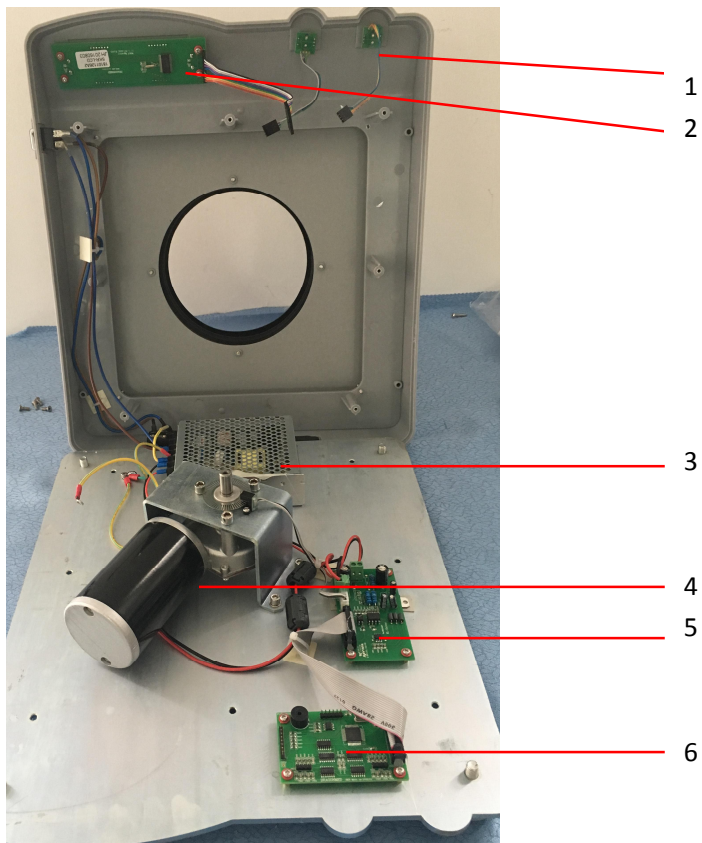
Step 5:

Lift the Upper Guard, and pull out 3 ribbon cables marked by red circles;



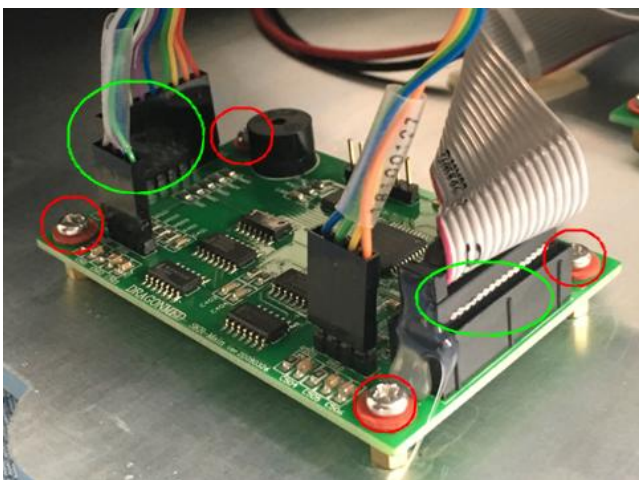
Step 4:
Lift up the Upper Guard upside as
shown in the Figure, and place it on
the clean desktop.

2.2 Main parts illustration



Item	Spare Parts	Part number
1	Encoder	18100127
2	LCD Board	18101126
3	Power board	18100839
4	motor	18100830
5	Motor board	18800016
6	Master Control Board	18100197
7	Locking Hose	18200845

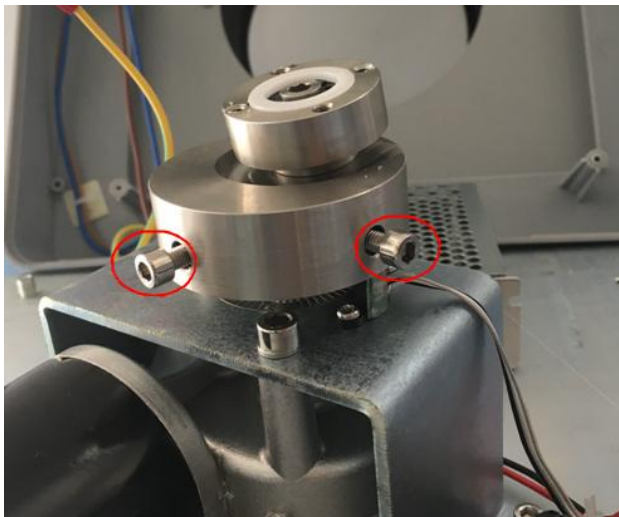
2.3 Replacement of master control board



Step 1:

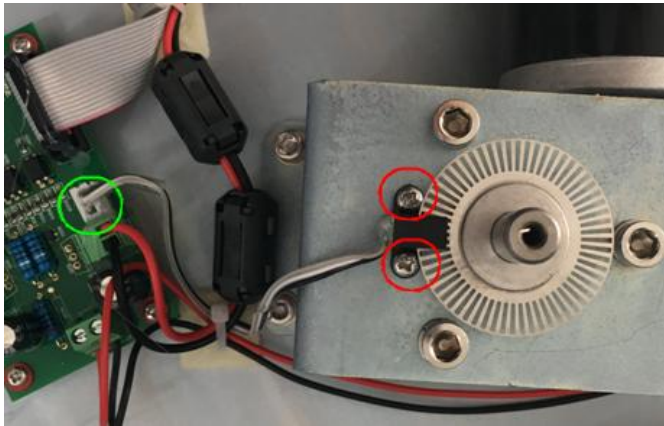
As shown in the left figure, remove the 4 screws and keep them well, unplug the connectors then replace a new master control board, assemble in sequence.

2.4 Replacement of motor component and photo electronic switch



Step 1:

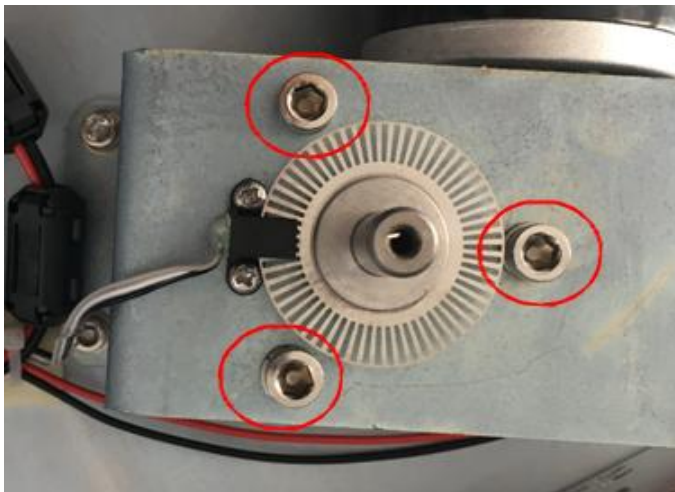
As shown in the left figure, loosen the 2 screws marked by red circles, then remove eccentric component;



Step 2:

Remove the 2 screws marked by red circles and keep them well, unplug the connector marked by green circle, then replace photo electronic switch;

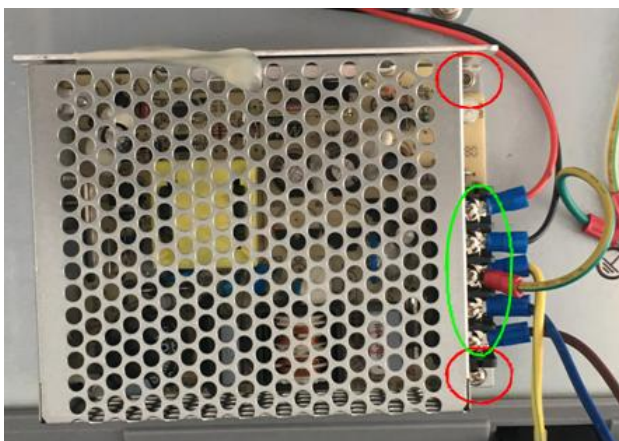
Note: When you replaced new photoelectric switch, the Shaft Encoder on the motor must match with photoelectric switch. When motor is turning, Shaft Encoder cannot be frictional contact with Photoelectric. After Shaft Encoder is in place, lock it with screws.



Step 3:

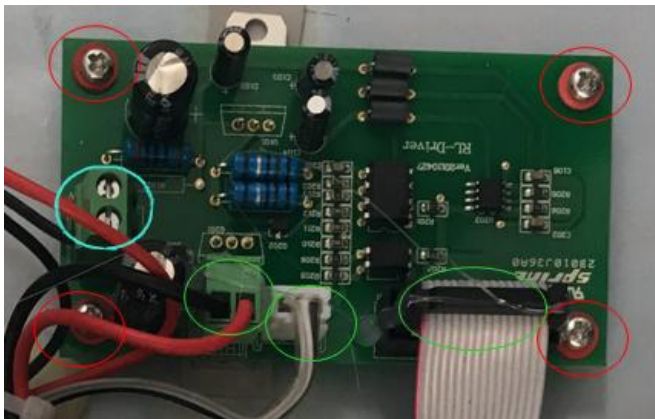
Remove the 3 screws marked by red circles, take down the motor and replace it.

2.5 Replacement of power board component



As shown in the left figure, remove the 5 screws marked by green circle, take down the cables, remove the 2 screws marked by red circle, then replace power board, assemble cables in sequence.

2.6 Replacement of motor drive board



As shown in the left figure, unplug connectors marked by green circle, loosen the 2 screws marked by blue circle and unplug 2 cables, remove 4 screws marked by red circle, then replace motor drive board, then assemble it in sequence.

Chapter 3: Trouble shooting

FAULT CODE	PROBLEM	CAUSE	SOLUTION
E01	Instruments can't be power on	The power line is unplugged	Check whether the power line is unplugged, an power on it again
		The power switch put off	Put on the power switch
		The fuse is broken	Replace the fuse
		Power board is failure	Replace power board
		Main board is failure	Replace mainbaord
		The display screen is broken	Replace display screen
E02	Instrument movement doesn't	No setting target speed	Set a target speed, the speed indicator is on.
		The drive board is failure	Replace the drive board, please reference chapter 2.5
		power board is failure	Replace power board component
		Motor is failure	Replace motor
E03	LCD display garbled characters	Display board is failure	Replace display board
E04	Instrument speed is not accurate	Photo electronic switch is failure	Replace photo electronic switch
		The position of photo electronic switch goes failure	Adjust the position of photo electronic switch