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DLAB SK-O330-PRO SERVICE MANUAL



Table of Contents

Table of Contents

Introduction

Composition

Removal

Main parts illustration

Replacement of master control board

Other ManualsLib Projects

SERVICE MANUAL

Shakers

SK-O330-Pro LCD Digital Orbital Shaker
SK-L330-Pro LCD Digital Linear Shaker



VERSION20170311

CONTENTS

Chapter 1: Working Principle 1
1.1 Introduction 1
1.2 Composition 2
Chapter 2: Removal and Installation of Instrument 3
2.1 Removal 3
2.2 Main parts illustration 5
2.3 Replacement of master control board 5
Chapter 3: Trouble shooting 8
Chapter 4: Test Method 9

Chapter 1: Working Principle

1.1 Introduction



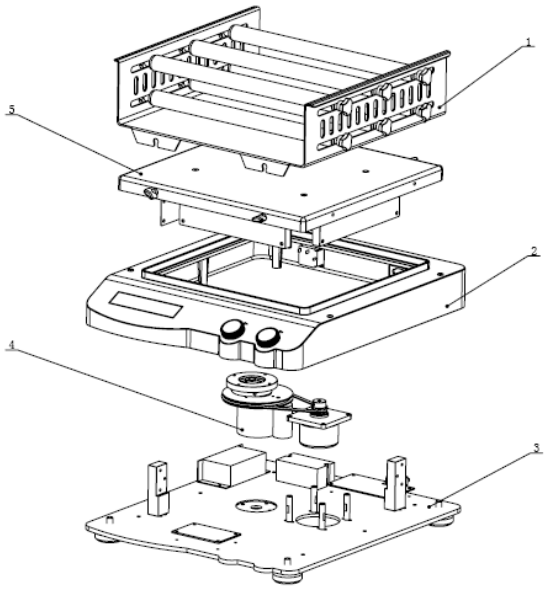
FIG.1

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.

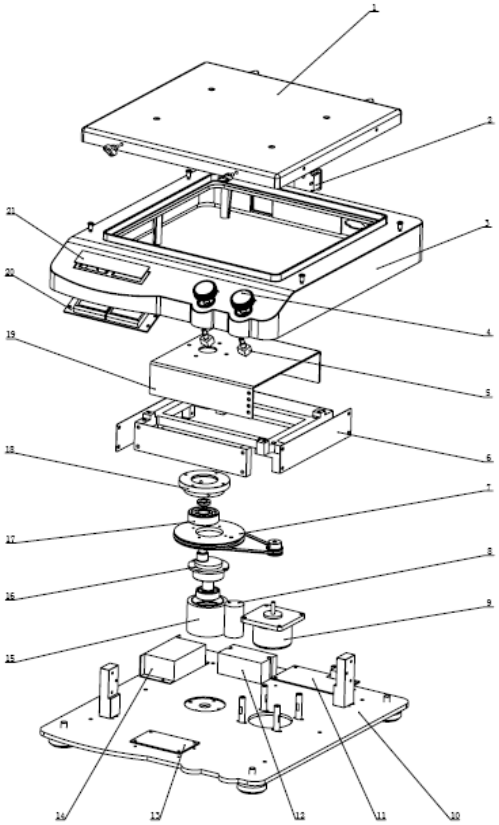
Fig. 1 is the schematic diagram of Shaker SK-O/L330-Pro. There are Speed display, Time display, speed control knob, and timer knob on instrument control panel; power switch, on the side of instrument; After properly connect the power cord and turn on power switch, users set experimental conditions on the control panel by speed control knob and timer knob, and real-time observe parameters setting values and actual values on screen.

1.2 Composition



1	Holding Bracket
2	Upper Guard Module
3	Base Module
4	Motor Module
5	Rocker Module

FIG.2



21	Window
20	LCD board
19	Rocker Panel
18	Turnplate
17	Bearing
16	Eccentric Axis
15	Support
14	Power Board
13	Master Control Board
12	Power Board
11	Motor Board
10	Base
9	Motor
8	Counterweight
7	Pulley
6	Shrapnel
5	Encoder
4	Knob
3	Upper Guard
2	Switch
1	Rocker Plate

FIG.3

Fig. 2 illustrates the separated structural components of SK-O330-Pro, and Fig. 3 is the Exploded View of SK-O330-Pro. Base Modules include Base, Power Board, Master Control Board, Driver

PCB etc.; Motor Modules: motor, Counterweight, Support, Eccentric Axis, Bearing, Turnplate etc.; Rocker Module: Rocker Plate, Rocker Panel, Shrapnel, Bracket etc.; Upper Guard Module: Upper Guard, LCD PCB, Knob etc.

✓ 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.

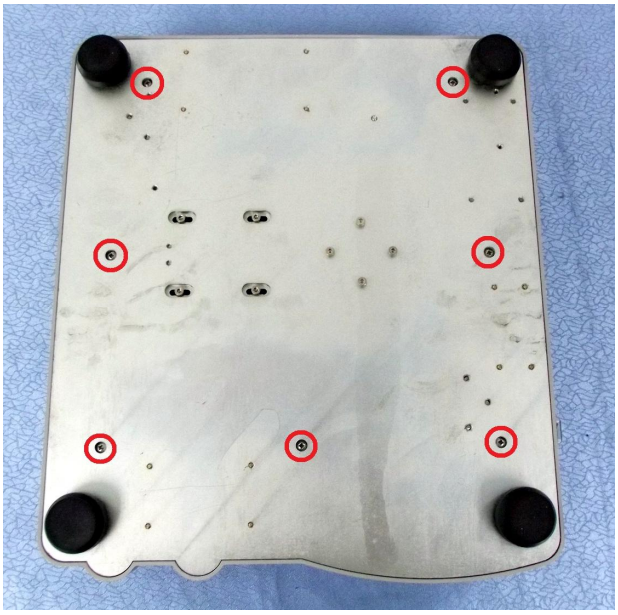
✓ LCD display: LCD PCB is connected to Master Control Board and displays user's settings and current equipment operation information.

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

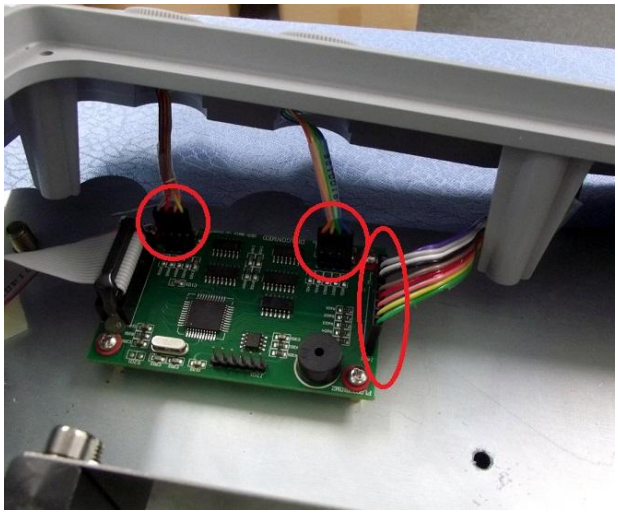
Tool：Cross screwdriver, Diagonal Pliers, Allen key, socket spanner



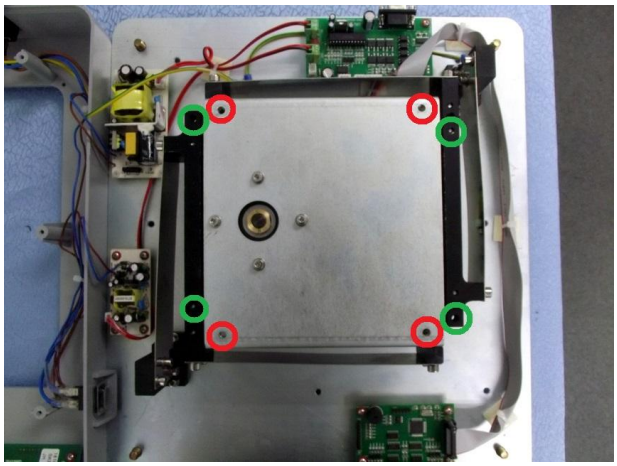
Step 1:
Turn the instrument upside down, remove the screws at the red circle icon;



Step 2:
Remove the screws marked by red circles for retention (SK-O330-Pro). For linear shaker (SK-L330-Pro), remove the screws marked by green circles for retention;

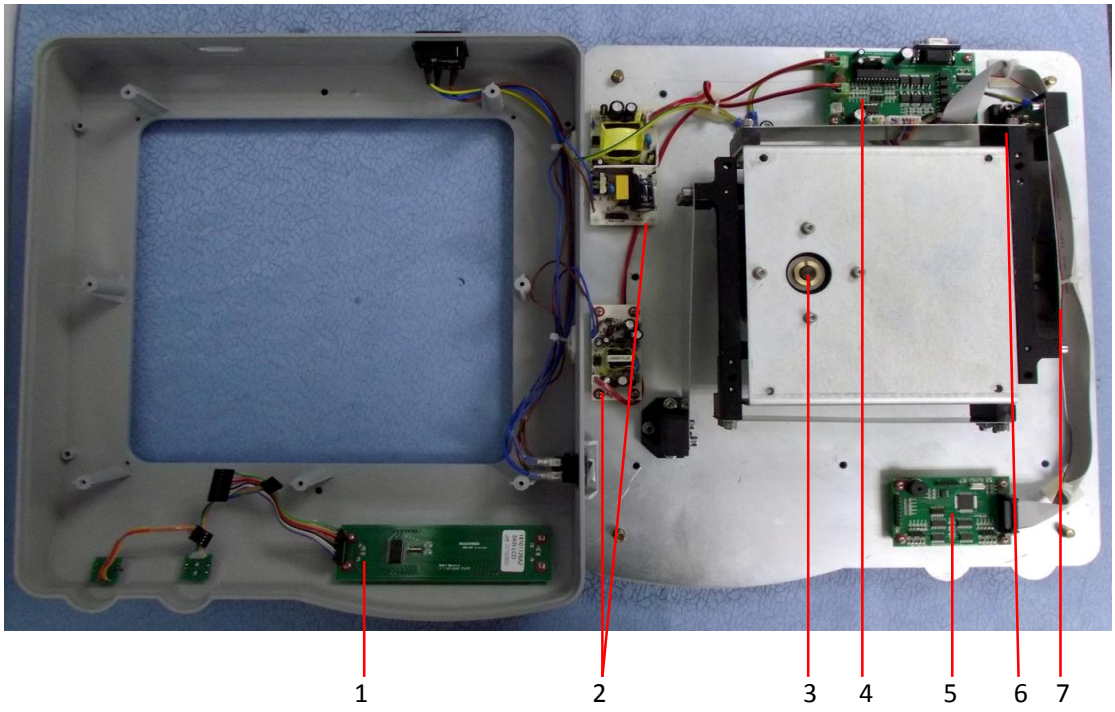


Step 3:
Lift the Upper Guard from the right, and pull out 3 ribbon cables at the red ellipse icon;



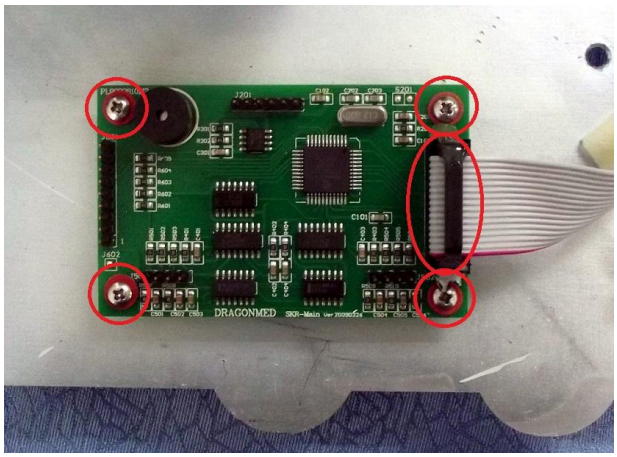
Step 4:
Turn the Upper Guard upside down as shown in the Figure, and place it on the clean desktop. The places marked by the red circles are the positions of pillar cushion of circular shaker (SK-O330-Pro); The places marked by the green circles are the positions of pillar cushion of linear shaker (SK-O330-Pro);

2.2 Main parts illustration



Item	Spare Parts	Part number
1	Display board	18101126
2	Power board	18101661
3	motor	18100311
4	Drive board	18100313
5	Master control board	18101717
6	Shrapnel 2	18201095
7	Shrapnel 1	18201096

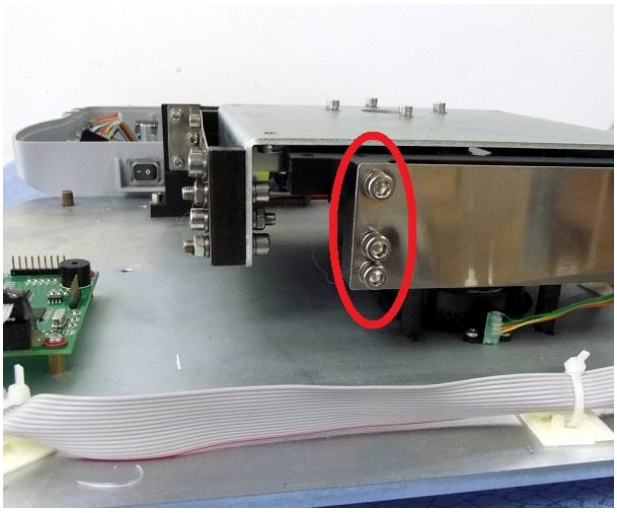
2.3 Replacement of master control board



Step 1:

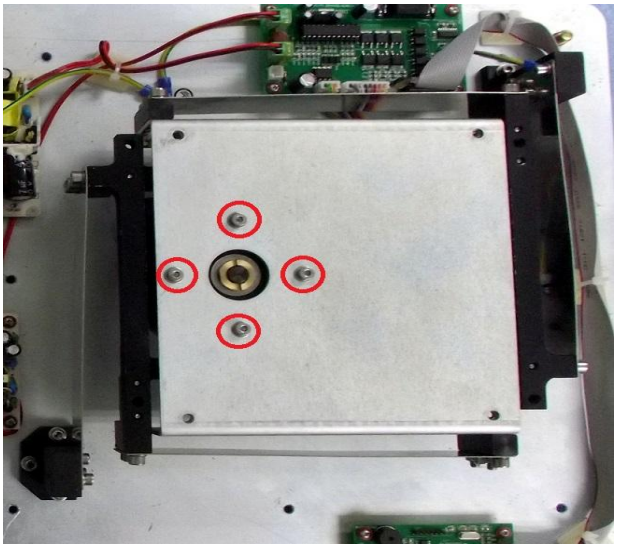
As shown in the left figure, remove the 4 screws and keep them well, unplug the connector, then replace a new master control board, assemble in sequence.

2.4 Replacement of motor component



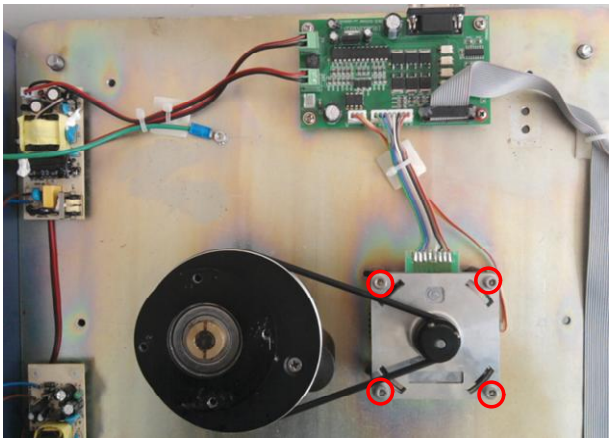
Step 1:

As shown in the left figure, remove the 3 screws marked by red circle, remove 3 screws in the symmetrical side and keep them well.



Step 2:

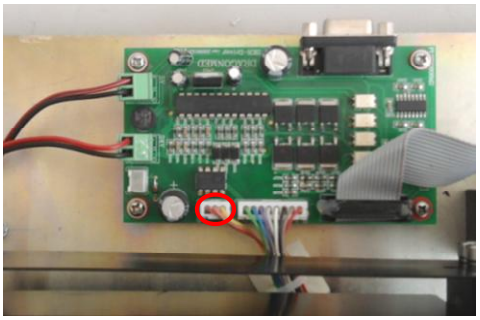
Remove the 4 screws marked by red circles and keep them well, take down shaker frame.



Step 3:

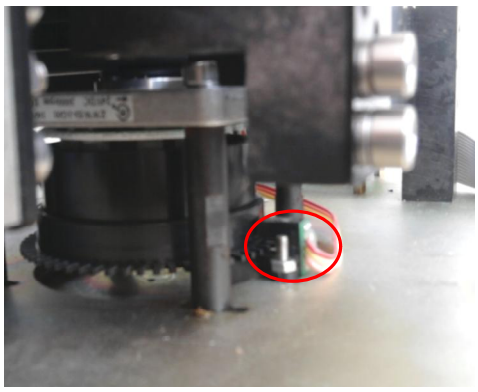
Take down belt, as shown in the left figure, remove the 4 screws marked by red circle, then replace motor component.

2.5 Replacement of photoelectronic switch



Step 1:

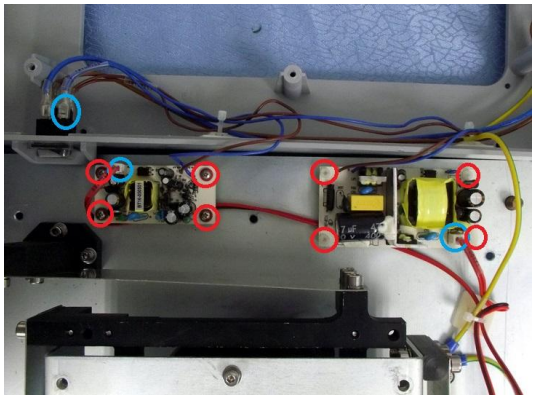
Unplug the cable marked by red circles on MS-Motro Board, as shown in figure;



Step 2:

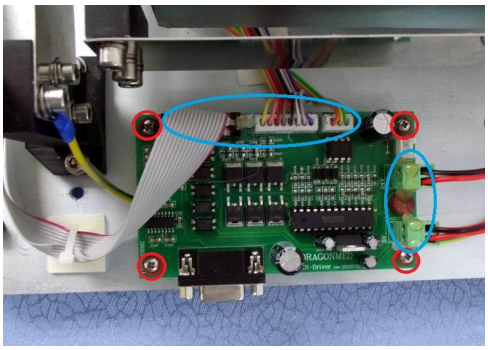
When you replaced new photoelectronic switch, the Shaft Encoder on the motor must match with photoelectronic switch. When motor is turning, Shaft Encoder cannot be frictional contact with Photoelectronic. After Shaft Encoder is in place, lock it with screws.

2.6 Replacement of power board component



As shown in the left figure, unplug the connector marked by blue circles, remove the 8 screws marked by red circle and keep them well, then replace new power board component.

2.7 Replacement of motor drive board



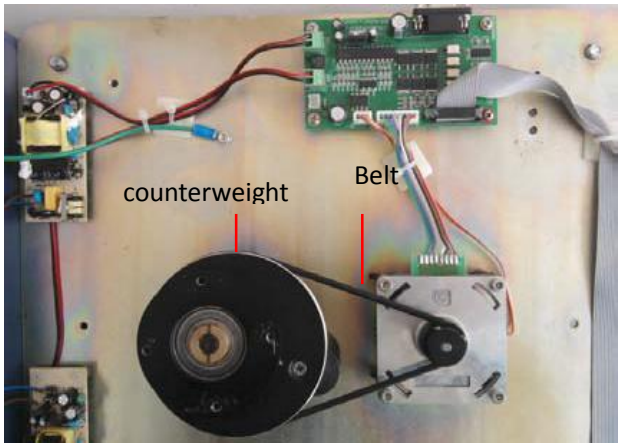
As shown in the left figure, unplug connectors marked by blue circles, remove the 4 screws marked by red circles and keep them well, then replace a new motor drive board.

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 doesn't movement	No setting target temperature	Set a target temperature, and the temperature indicator is on.
		The drive board is failure	Replace the drive board, please reference chapter 2.5
		24V power board is failure	Replace power board component
		Motor is failure	Replace motor
		Check whether shrapnel is broken	Replace shrapnel.
		Belt is loosen or broken	Replace belt
E03	LCD display garbled characters	Display board is failure	Replace display board
E04	Instrument speed is not accurate Self-test, TE1 Ref,TE2 Ref, TE3 Ref--error	Photosensor is failure	Replace heated lid
		The position of photosensor goes failure	Adjust the position of photosensor

Chapter 4: Test Method

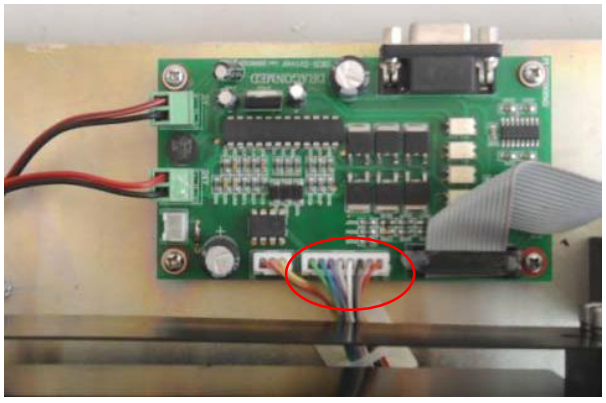
4.1 The instruments does not move



Step 2: Detection of moving parts

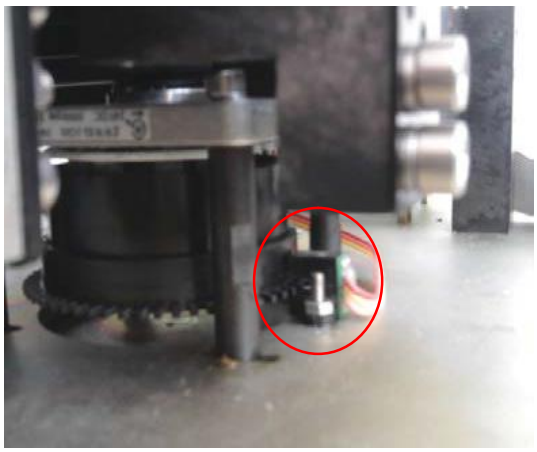
Visually inspect if the steel strip of Bracket Module is broken. If no problem, remove the Bracket Module and visually inspect if the belt is loose or out of position. After the motor is powered on, examine whether it is running, and the belt drives counterweight to rotate. If Bracket Module, belt, and counterweight has no problem after visual inspection, you need to replace the motor and MS-Motor Board.

4.2 Instrument speed is not accurate



Step 1: Check Photosensor connections

Check if Photosensor is reliable connection with and MS-



Step 2: Check Photosensor position

Check if Photosensor plate welding wire is open circuit, and check whether the fixed screws of Photosensor are loose. Adjust Photosensor position and fix Photosensor. If the problem remains unresolved, replace Photosensor.

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