SERVICE MANUAL

Microplate Mixer

MX-M

VERSION20170204

CONTENTS

Chapter 1: Working Principle

1.1 Introduction

Compact and universal Microplate Mixer can hold one or two microplates, used in life science field including microbiology, cell and molecular biology, immunology and biotechnology.

FIG.2

Fig.1 is a structure figure of MX-M, it shows Speed adjustment knob on the Control Panel、ON/OFF button on the left side of instrument、Power plug on the back of instrument.
Before using, microplate clamp (or double microplate clamp, universal top plate and tube adapter) should be already set on the loading plate. Plug the power adapter, turn on the ON/OFF button, set the rated speed regulation and the device begins to work.

- ✓ Supply ： Power adapter→main board→system control power supply
- ✓ Movement modes：contact to power adapter→turn on power switch→setting target speed→start-up motor→Eccentric Bearing synchronously rotated→bearing inner race and eccentric sleeve Eccentric synchronous rotation→bearing outer ring and shake frame synchronous movement，Under the restriction of shrapnel, in the radius of eccentric sleeve for amplitude oscillatory motion.

Chapter 2: Removal and Installation of Instrument

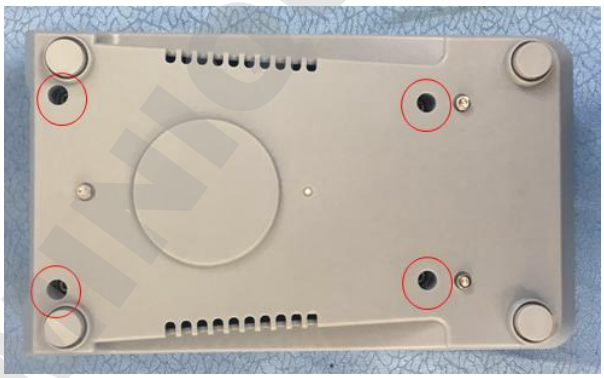
When instrument failure occurs, first, you should conduct a failure analysis; if the failure is caused by the damage of instrument hardware, the related component must be repaired or replaced. Here are the relevant contents of the replacement and disassembly of instrument.

2.1 Removal

Tool：Cross screwdriver

Step.1：
As shown in the left figure, remove the screw marked by red circle with M2.5 allendriver, then take off the Microplate clamp;

Step 2:
As shown in the left figure, remove the screw marked by red circle with M2.5 allendriver, then take off the Loading plate;

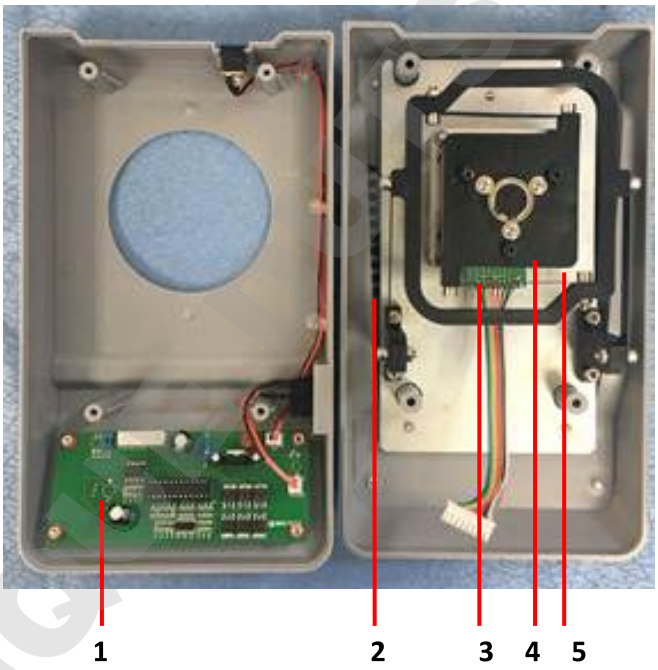


Step 3:
As shown in the left figure, turn the instrument, remove the crew marked by red circle with M3 allendriver, then take off the Base module.

Step.4：

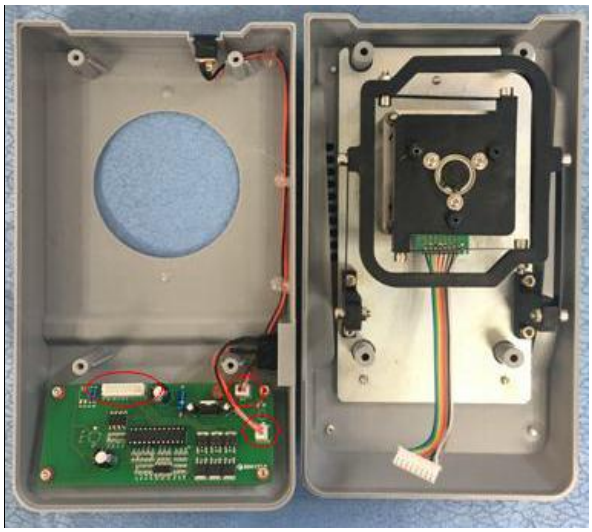
As shown in the left figure, turn the instrument, lift the Top module gently, unplug the line terminal marked by red circle, then take off the Top module;

2.2 Main parts illustration



Item	Spare part	Part number
1	Main Board	18100042
2	Shrapnel(Outer)	18200132
3	Shrapnel(Inter)	18200066
4	Sway frame	18200044
5	Motor	18100304

2.3 Circuit Connections

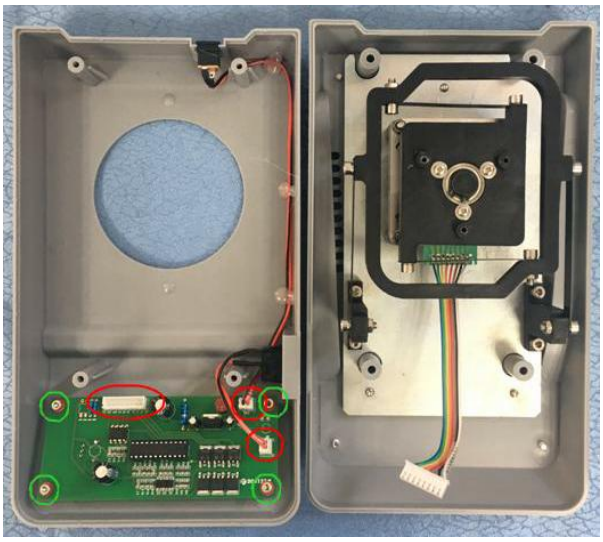


Step.1：
As shown in Fig.8, check the line connection marked by red circle is reliable;

2.4 Replacement of drive board

Tools：Phillips screwdriver

Step.1：
As shown in left figure, turn the top module, unplug the speed adjustment knob
gently；

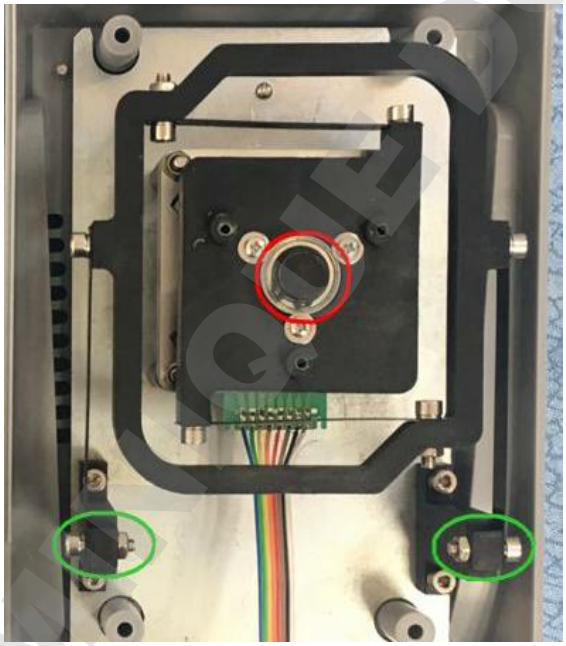


Step.2：

As shown in left fig., unplug the cable terminal marked by red circle gently, remove the screw marked by green circle with Phillips screwdriver;

2.5 Replacement of Shaking frame

Tools：Circlip plier, M3 allendriver



Step.1：

As shown in left fig., remove the bearing retainer ring marked by red circle with circlip plier, remove the screw marked by red circle with M3 allendriver, then you can take off the haking frame；

Chapter 3: trouble shooting

FAULT CODE	PROBLEM	CAUSE	SOLUTION
E01	No operation response (LED off)	No power supply	Check and connect the power supply, then power on again
		The power switch put off	Put on the power switch
		Some cable Connection is failure	As shown in the chapter 2.1 open the instrument and check all the connection, re-connect.
E02	Does not shaking	No set a target speed	Turn the knob to set the speed;
		The main board is failure	Replace a new main board
E03	Vibration isn't smooth and noise	Shaking frame has some problem	Adjust shaking frame or replace a new one.

Chapter 4: Test method

4.1 Check the shaking frame

As shown in Fig.13, turn off the instrument and cut off the power. Disassemble the instrument as the Chapter.2 shown, lift the Top module gently and keep it off the Motor module. Plug the power adapter, turn on the ON/OFF button, and spin the Speed adjustment knob slowly. Check the shaking frame's working, if it not working at one plane, remove the Shaking frame; the Shaking frame working well off the Top module, then install the Top module, check whether the Shaking frame has any friction shaking with the Top module. It does, change the Shaking frame.