Dynalab Corp
Supplying Science and Education

Shakers

DMSL-01-01, DMSL-01-02, DMSM-01-01, DMSM-01-02, DOSL-01-01, DOSL-01-02, D0SM-01-01, DOSM-01-02

OPERATING MANUAL

VERSION 1.12

Dynalab Corp.
November 2017

BEFORE USE:

Please read the following instructions:

Read the Manual first before operating the instrument

For indoor use only

Ambient temperature range +5°C to +40°C

Use in a well-ventilated area.

Relative humidity not exceeding 80%

Mains supply fluctuation not exceeding 10%

Warning

ALL UNITS MUST BE GROUNDED

Check the line supply is sufficient to meet the power requirement of the unit!

Warranty

Dynalab Corp. provides a 90 day warranty for the units in this series.

This warranty does NOT apply if damage is caused by fire, accident, misuse, neglect, incorrect adjustment or repair, damage caused by incorrect installation, adaptation, modification, fitting of non-approved parts or repair by unauthorized personnel. When returned the defective products, customers should be responsible for the shipping and insurance costs

LIMITATION OF LIABILITY

NOTWITHSTANDING ANY OTHER PROVISIONS HEREIN, UNDER NO CIRCUMSTANCES IS EITHER PARTY LIABLE FOR ANYCONSEQUENTIAL, SPECIAL, INCIDENTAL, INDIRECT, MULTIPLE, ADMINISTRATIVE, OR PUNITIVE DAMAGES, OR ANY DAMAGE OF AN INDIRECT OR CONSEQUENTIAL NATURE ARISING OUT OF OR RELATED TO ITS PERFORMANCE, WHETNER BASED UPON BREACH OF AGREEMENT, WARRANTY, OR NEGLIGENCE AND WHETHER GROUNDED IN TORT, CONTRACT, CIVIL LAW, OR OTHER THEORIES OF LIABILITY, INCLUDING STRICT LIABILITY, EVEN IF ADVISED IN ADVANCE OF THE POSSIBILITY OF SUCH DAMAGES. THE COMPANY'S TOTAL LIABILITY INCLUDING, BUT NOT LIMITED TO, LIABILITY FOR INDEMNITY, DEFENSE, AND HOLD HARMLESS OBLIGATIONS IS LIMITED TO NO MORE THAN THE AMOUNT PAID TO THE COMPANY UNDER THE CUSTOMER'S ORDER AND THE CUSTOMER AGREES TO INDEMNIFY THE COMPANY FOR ANY EXCESS AMOUNTS. TO THE EXTENT THAT THIS LIMITATION OF LIABILITY CONFLICTS WITH ANY OTHER PROVISION(S) OF THIS AGREEMENT, SUCH PROVISION(S) WILL BE REGARDED AS AMENDED TO WHATEVER EXTENT REQUIRED TO MAKE SUCH PROVISION(S) CONSISTENT WITH THIS PROVISION

Overview

Orbital Shakers are one type of mixers that the sample trays (platform) are moving horizontally (parallel to) the unit. There are several types of movement: orbital, reciprocating, and refrained orbital, such as shaker series (orbital); MS series and vortex mixers (refrained orbital). These mixers generate smooth orbital (circular) and turbulence effect on the liquid, creating good mix and aeration for the samples and suitable for mixing the samples in flask and other larger containers. These shakers are also widely used in liquid culture. However, these shakers are not suitable for small vials since more vigorous movement needed for mixing the liquid in small containers.

The Micro-plate shakers are developed for the mixing of small vials. The shakers generate agitation effect through refrained orbital movement.

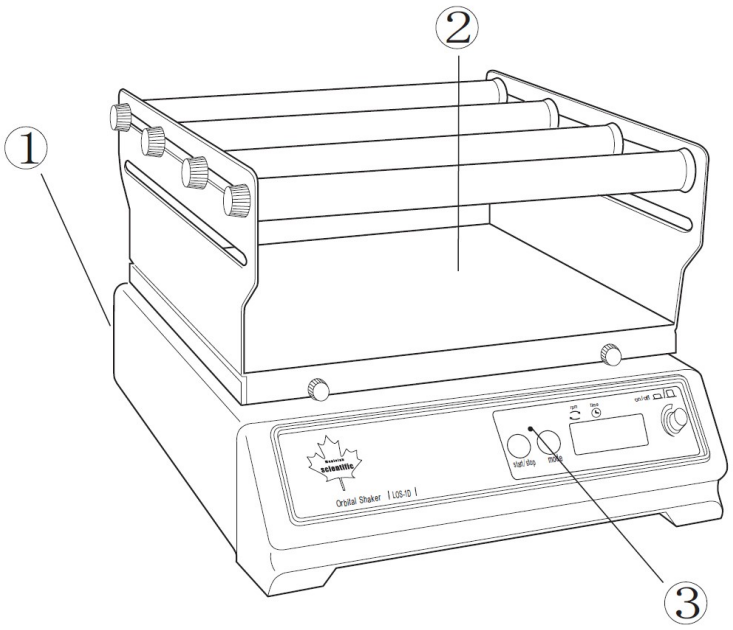


Figure 1: Overview of the lab scale orbital shaker (DOSL-01-02, Digital). ① Electrical socket; ② Carriage platform; ③ Main LED on Digital front panel

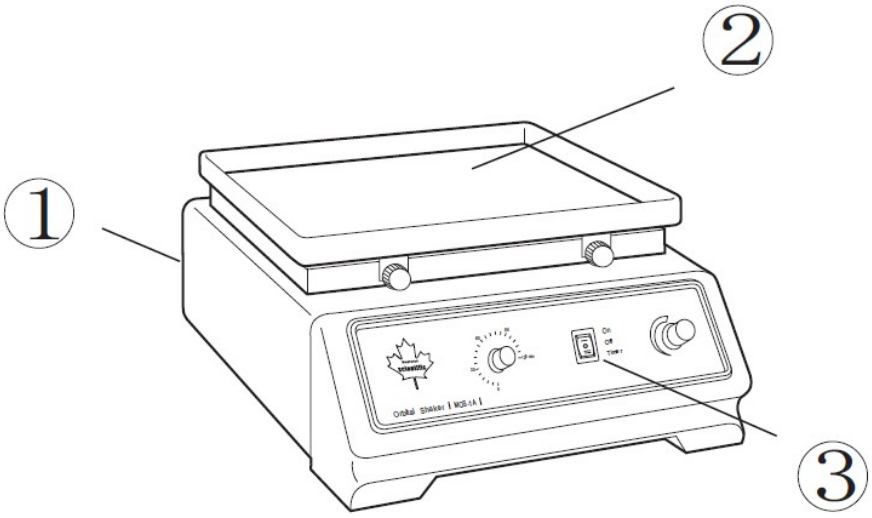


Figure 2: Overview of the mini microplate shaker (DMSM-01-01, Analog). ① Electrical socket; ② Slip-proof platform; ③Main Switch on Analog front panel

Operation

Always install the carrier or platform before turn on the machines. All platforms or carriers are shipped in pre-installed status. For safety reason, please check all the locking screw and tighten again if necessary. The locking screws might be loosened during transportation!

Place the machines on the flat and steady surface and keep away from other objects for safe operation.

Check the electrical safety status and the power switch must be in "OFF" position before plug into the power outlet. The machines come with IEC electrical socket and double fuses for safety operation.

Load the samples first before turning on the machine. Be aware of loading sample evenly and never overload the samples.

Always start with low speed and gradually adjust the speed, especially for the analog model.

Use 200 rpm maximum at the high loading.

There are two different types of control in the shakers: digital and analog. Both control modes can adjust the speed and timer of the shakers.

1. Digital Control of Speed and Timers

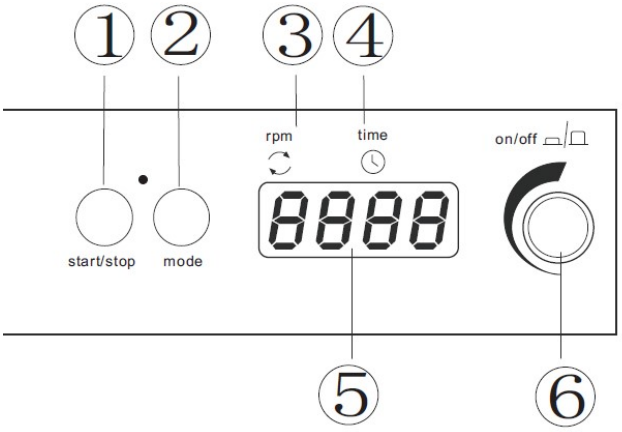


Figure 14: Overview of the front panel of the digital control mode. ①Start/stop button; ②Mode button; ③Indicator beneath "rpm"; ④ Indicator beneath "time"

There are two buttons and one knob on the digital panel: The **knob** is the main switch for turning on the machine and adjusting the speed and timer; the **mode** button has the selection function to either adjust the timer or the speed; the **start/stop** button is used to start or stop the mixing process. The panel has LED numeric display and red indicators. When starting the mixers, the red indicator between the **start/stop** and **mode** buttons

illuminate, and when pressing the **mode** button, the read indicators underneath the **rpm** and **minute** alternatively illuminate to show the status of display.

1.1 Press the **knob** to turn on the unit. The LED display the number of last saved rpm and timer setting. And the indicator underneath the **rpm** illuminate, adjust the rpm by the knob to desired value. And move the illuminated indicator from underneath **rpm** to **minute** by pressing the **mode** button, the display will show the set timer and change to the desired timing value, and finally press the **start/stop** button to start the machine. If using the **knob** to turn off the machine, the set timer and speed will automatically be saved, and carry on the next time operation.

1.2 Adjust the timer: press **mode** button until the indicator underneath of **min** illuminate, turn the **knob** to desired count-down minute. To disable the timer, just turn the **knob** to **---**, the unit will continuously operate until manually stopping the unit. When the timer reaches to zero, the unit stops and sounds an alert.

The default time unit is minute (displayed nn:nn), but when turning the knob over 99:99, it displays H:nn. The maximum set time is 9 hours, i.e. 540 min.

1.3 The speed and timer can be adjusted during operation without stopping the machine. Suggest users to use lower speed to start the machine and adjust the speed to optimum mixing status slowly to avoid the spill or safety problems during the operation.

2. Analog Control of Speed and Timers

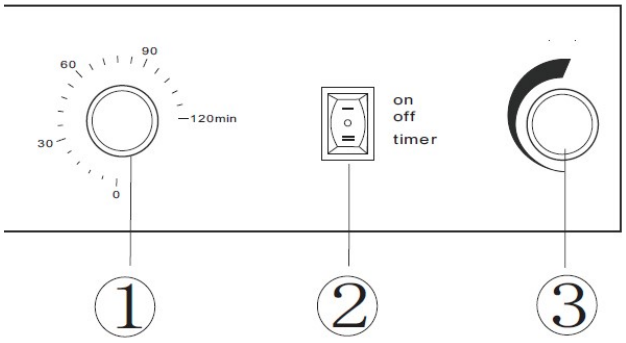


Figure 15: Overview of the front panel of the analog control mode. ①Timer knob; ②Main switch; ③Speed knob

There are two knobs and one main switch on the front panel of the analog types of the mixers. The main switch has three stages function: **ON, OFF and Timer**. For continuous operation, place the switch to the "**ON**" position, and turn the rpm knob (on the right hand side) to desired speed. When using timer, place the switch to "**Timer**" position, and adjust the speed using speed knob. **Before turning on the machine, please turn the speed knob all the way to the left hand side (minimum level)!** And adjust the speed gradually.

Maintenance and Service

This range of equipment only requires routine cleaning for the maintenance. Before cleaning, **Always unplug the equipment from the electrical outlet.** Use soft cloth with mild detergent to clean the surface of the equipment.

Technical Specification

	DOSL-01-02	**DOSM-01-02**	**DMSL-01-02**	**DMSM-01-02**
Speed range (rpm)	Digital, 30 to 300	Digital, 30 to 300	Digital, 250 to 1250	Digital, 250 to 1250
Motion	Orbital	Orbital	Orbital	Orbital
Timer (min)	Digital, 540	Digital, 540	Digital, 540	Digital, 540
Orbit (mm)	16	16	0.7	0.7
Maximum load (KG)	10	10	1	1
Platform (mm)	335X335	220X220	306X306	220X220
Dimensions, (mm, WXLXH)	360x420x270	240x300x160	360x420x160	240x300x160
Operational temperature (°C)	+4 to +40	+4 to +40	+4 to +40	+4 to +40
Maximum humidity	80%	80%	80%	80%
CO2 Environment Safe	yes	yes	yes	yes
Net weight (KG)	11	6	10	6
Power supply	120V, 60Hz, 50W	120V, 60Hz, 50W	120V, 60Hz, 50W	120V, 60Hz, 50W

Declaration of Conformity

These products listed in this manual comply with EN 61326-1: 2006 and fulfill EMC testing requirement of Medical Device Directive (2004/108/EC) listed in the report number CE2012-OTE8003E; and EN 61010-1 plus EN 61010-2-010: 2003 of the LVD directive2006/95/EC in the listed report numberCE2012-AVE8006S.

CE mark affixed'2012

Signed:

Date:

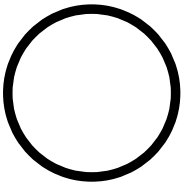
Inspection Report

Model _____

Serial Number _____

Safety		
	1. Integrity	√
	2. Packing status	√
	3. Correct warning label	√
	4. Electrical earth continuity	√
	5. Electrical Insulation	√
	6. Electrical Flash Test	√
Functional	**1. Visual acceptance**	√
	2. Appropriate control function	√
	3. Indicators	√

Quality Control Inspector



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