

User's Guide



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SKR Series SHAKERS



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The information contained in this document is believed to be correct, but OMEGA accepts no liability for any errors it contains, and reserves the right to alter specifications without notice.

WARNING: These products are not designed for use in, and should not be used for, human applications.

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!

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 SKR series (orbital); MS series and vortex mixers (refrained orbital). The SKR 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. The SKR is also widely used in liquid culture. However, the SKR is 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.

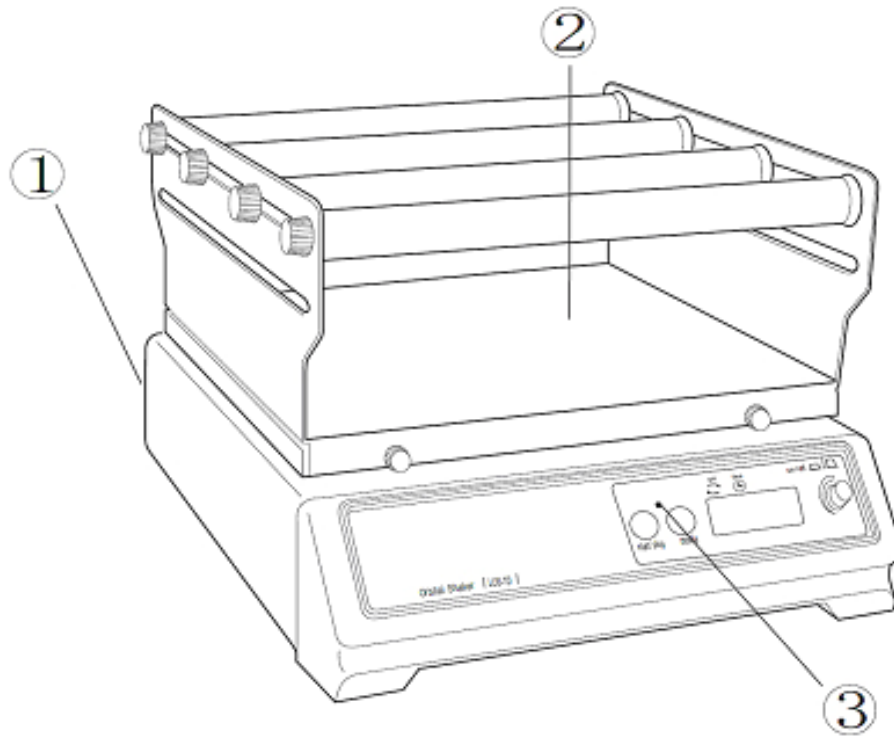


Figure 1: Overview of the lab scale orbital shaker (SKR-202, Digital). 1 Electrical socket; 2 Carriage platform; 3 Main LED on Digital front panel

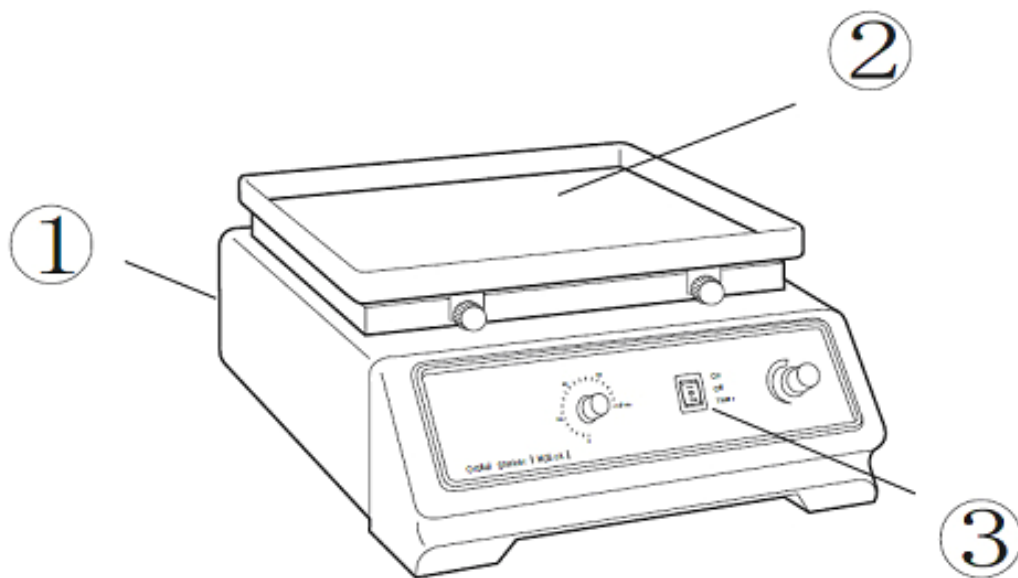


Figure 2: Overview of the mini microplate shaker (SKR-13, Analog). 1 Electrical socket; 2 Slip-proof platform; 3 Main Switch on Analog front panel

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.

For SKR series, 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

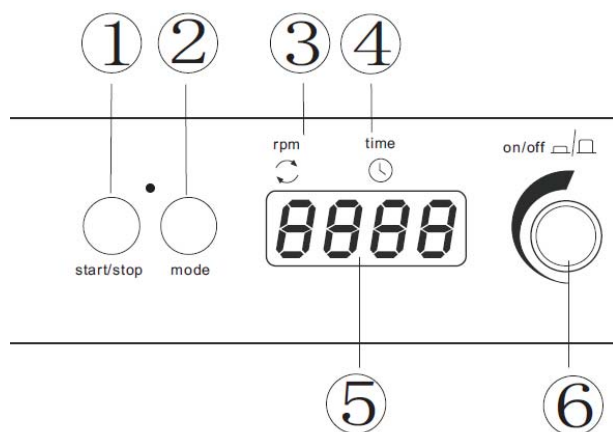


Figure 14: Overview of the front panel of the digital control mode. 1 Start/stop button; 2 Mode button; 3 Indicator beneath “rpm”; 4 Indicator beneath “time”; 5 Digital Read out; 6 On/Off switch and Adjustment for Time and Speed

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.

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

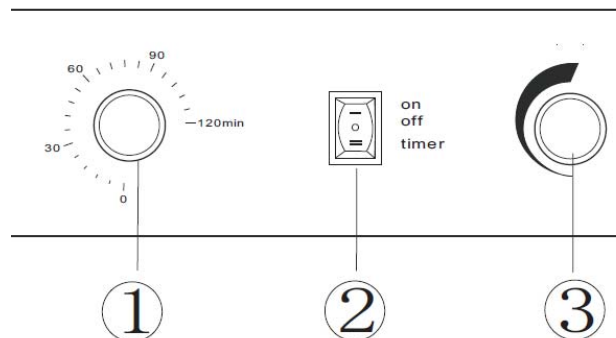


Figure 15: Overview of the front panel of the analog control mode. 1 Timer knob; 2 Main switch; 3 Speed knob

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

	SKR-202	SKR-204	SKR-12	SKR-14
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

WARRANTY/DISCLAIMER

OMEGA ENGINEERING, INC. warrants this unit to be free of defects in materials and workmanship for a period of **36 months** from date of purchase. OMEGA's WARRANTY adds an additional one (1) month grace period to normal **three (3) year product warranty** to cover handling and shipping time. This ensures that OMEGA's customers receive maximum coverage on each product.

If the unit malfunctions, it must be returned to the factory for evaluation. OMEGA's Customer Service Department will issue an Authorized Return (AR) number immediately upon phone or written request. Upon examination by OMEGA, if the unit is found to be defective, it will be repaired or replaced at no charge. OMEGA's WARRANTY does not apply to defects resulting from any action of the purchaser, including but not limited to mishandling, improper interfacing, operation outside of design limits, improper repair, or unauthorized modification. This WARRANTY is VOID if the unit shows evidence of having been tampered with or shows evidence of having been damaged as a result of excessive corrosion; or current, heat, moisture or vibration; improper specification; misapplication; misuse or other operating conditions outside of OMEGA's control. Components in which wear is not warranted, include but are not limited to contact points, fuses, and triacs.

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RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

The purchaser is responsible for shipping charges, freight, insurance and proper packaging to prevent breakage in transit.

FOR **WARRANTY** RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED,
2. Model and serial number of the product under warranty, and
3. Repair instructions and/or specific problems relative to the product.

FOR **NON-WARRANTY** REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair,
2. Model and serial number of the product, and
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

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