CRP-18X

USER MANUAL

CONTENTS

1.	Introduction	1
2.	Intended Use	1
3.	Features	1
4.	Accessories	1
5.	Technical Specification	1
6.	Types of Clamps	2
7.	Installation	2
8.	Installing Plate using O - Ring	4
9.	Installing Foam	5
10.	Operation	6
11.	Tips for efficient Operation	6
12.	Safety Precautions	7
13.	Warranty Statement	8
14.	Product Disposal	9

1. INTRODUCTION

This is a compact personal microplate shaker designed for accurate & even mixing of samples in a microplate. It is optimized to accept all standard plates and its 2.0 mm orbital motion allows thorough mixing across each well. The speed can be set from 300 to 1800 RPM.

2. INTENDED USE

This Personal Microplate Shaker is used for mixing liquids in a microtube. It can be used in areas of biochemistry, medicine, biotechnology and microbiology laboratories research.

3. FEATURE

- Exceptionally small footprint
- Shakes the microplate uniformly
- Accepts all standard microplates
- Replaceable clamps to hold different microplates
- Simple tool free clamp replacement
- Adjustable speed from 300 to 1800 RPM
- Anti-spill operation even at higher speeds
- Rubber suction cups for firm grip & stable operation
- Adjustable time from 1 to 99 minutes & continuous mode

Note: *This user guide is intended to assist with the operation and care of the unit only and not for its repair. The customer should not attempt to service or repair the unit. If repairs are required, please contact the supplier.*

4. ACCESSORIES

1. Power adaptor: Input Voltage - 100 - 240 VAC, 50 / 60 Hz

Output Voltage: 9V ⎓ 1.5A

2. Replaceable clamps and O - Rings, 3. Alternate clamps & extra adjustable clamp,
4. Product user manual & warranty card, 5. Foam attachment,

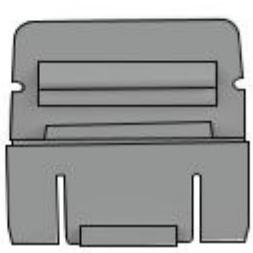
5. TECHNICAL SPECIFICATION

Motor Type	BLDC motor
Orbital Motion	2.0 mm Diameter Orbital motion
Number of microtiter plates	1
Maximum Volume	384 x 60 µl

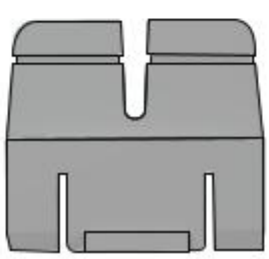
Variable Speed	300 RPM to 1800 RPM
Run Time	1 min to 99 mins & infinite mode
Digital Display	Yes
Recommended plate size (LxW)	127.76 mm x 85.48 mm
Dimensions (W x D x H)	127 x 86 x 85 mm
Permissible ambient Temp.	5°C to 40°C
Permissible relative moisture	<80%
Weight	1.4 Kg
Noise Level	<60 dB
Input Voltage	9V ⎓ 0.85A
Power Consumption	9 W

6. TYPES OF CLAMPS

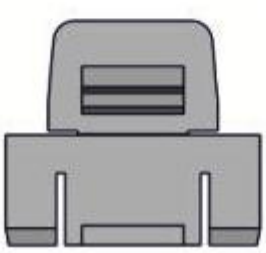
Three types of clamps are provided with personal microplate shaker. Type - A clamp (Universal Clamp), Type - B clamp & Adjustable clamp as shown in the figure below. Type - A clamps & Adjustable clamp are pre-installed and Type - B clamps are with accessories.



Type - A
(Fix Universal Clamp)



Type - B
(Fix Clamp)



Adjustable
Clamp

USING DIFFERENT TYPES OF CLAMPS

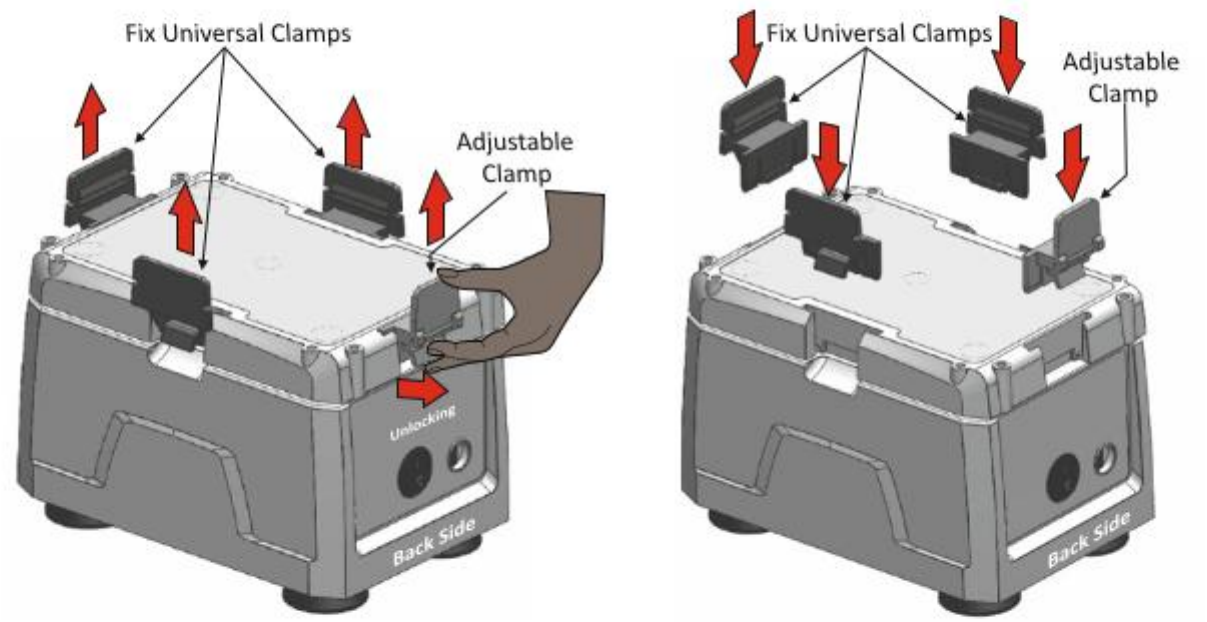
1. Type - A Clamps are universal clamps and are used for most standard plates.
2. Type - B Clamps are used for larger microplates which contain outside ribs.
3. Adjustable Clamp are used to place microplate easily on the shaker and lock it after placing it.

7. INSTALLATION

Gently take the shaker out of the packaging box and place it on the flat, stable, clean and non slippery surface. Keep 2 inches clearance from all 4 sides of the

shaker so that it can be operated easily and safely. Do not lift the shaker by the shaking platform. Check that the rubber suction cups are well attached to the table. Plug in the power adaptor pin before connecting to the power source. The instruction manual and the accessories should be kept with the device and please keep all the packaging in safe storage for at least 2 years for warranty purposes.

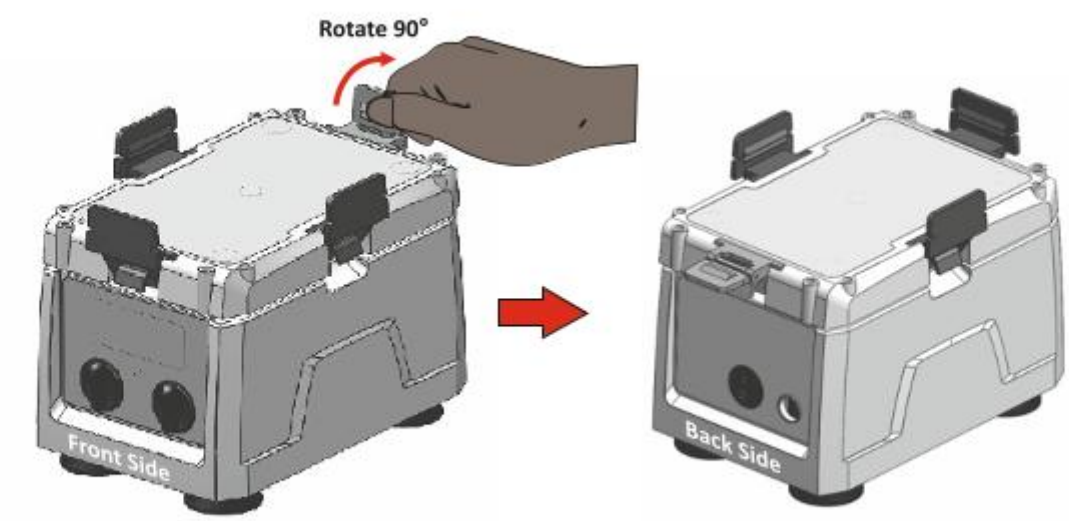
The standard clamps are pre-installed and a set of alternate clamps is supplied with the unit. In case you need to remove or replace the clamps, gently pull the clamps up after unlocking and push down in the grooves to fix it again.



Removing Clamps **Installing Clamps**

Note: *The front side of the shaker contains speed & time knobs and back side contains power switch & power ports.*

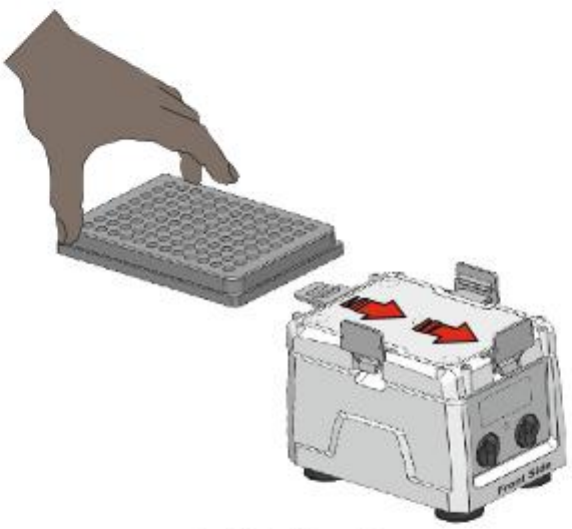
Now place the microplate on the shaking platform between 4 clamps, gently open the adjustable clamp to 90° as shown in the below figure. Microplate cannot be placed/attached properly to shaker if clamps are not fitted to it. Recommended microplate size (LxW) is 127.76mm x 85.48mm & height from 14.2mm to 22mm.



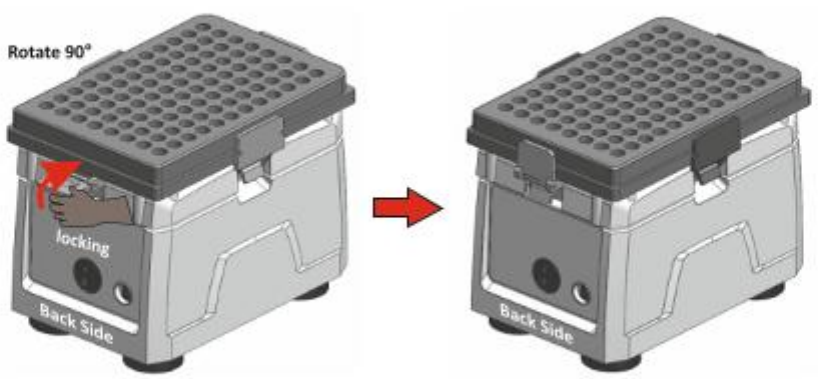
Opening Adjustable Clamp

After opening the adjustable clamp to 90°, place the microplate as shown in the next figure. Gently slide the microplate inside and lock the clamp by turning 90° to firmly tight the microplate on shaking platform.

Note: *The front side of the shaker contain speed & time knobs and back side contains power switch & power ports.*



Installing Microplate

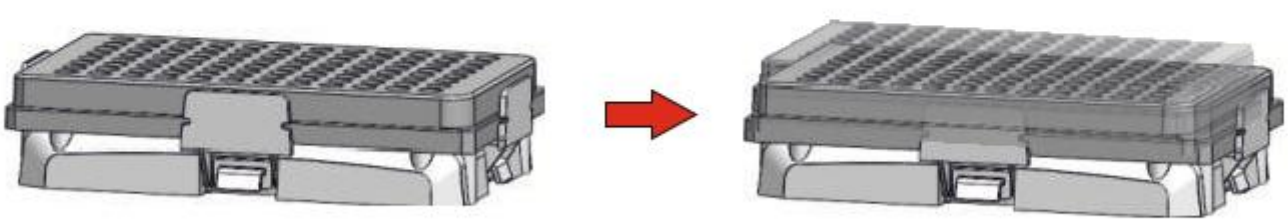


Locking Clamp to firmly tight microplate

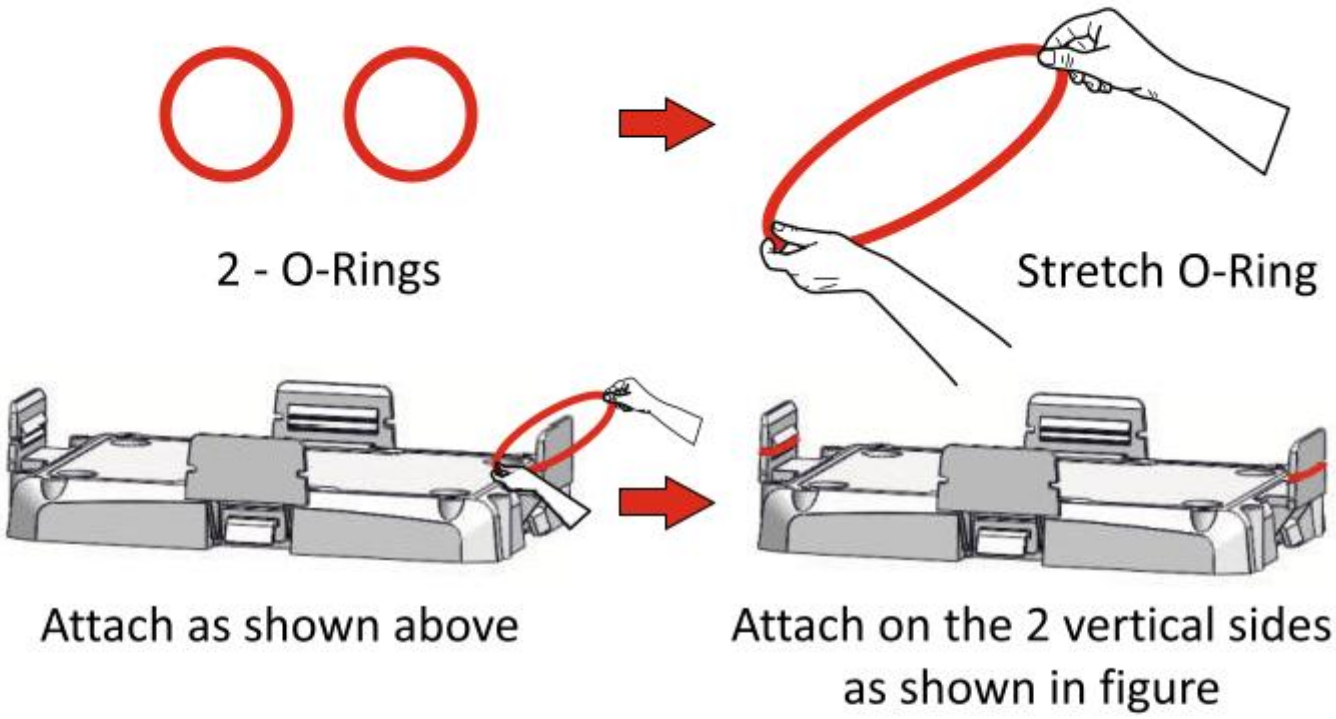
Note: *We recommend to place the adjustable clamp on the back side of shaker.*

8. INSTALLING PLATE USING O - RING

After placing or attaching the microplate between the 4 clamps, if microplate is not attached firmly or it moves on the shaking platform during operation, then you need to attach microplate firmly, O-Rings need to be attached first. The figure below shows when microplate is not attached firmly.



Now take out the O-Rings from the packaging box and attach it on the clamps as shown in below figure.



9. INSTALLING FOAM

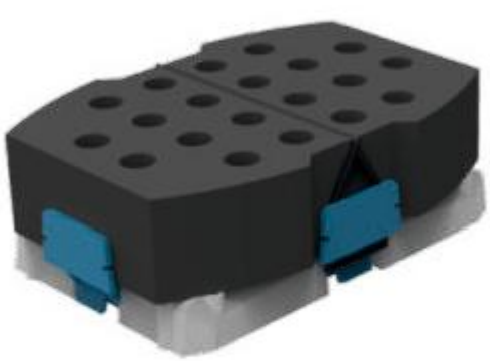
Shaker Foam is used to shake samples using microtubes. It supports all standard microtubes and has a capacity of 20 microtubes.

Tips for efficient operation

The basic requirement to ensure a fast and efficient mixing result is the generation of vortex which allows to produce a flow of the total sample volume.

Based on the density of the samples, speed of the shaker and volume should be maintained. Hence, larger volume should ideally be mixed with a higher orbit and low speed. Smaller volume requires a lower orbit, but a much higher speed.

Please see the image below to learn how to attach the shaker foam in the shaker platform.



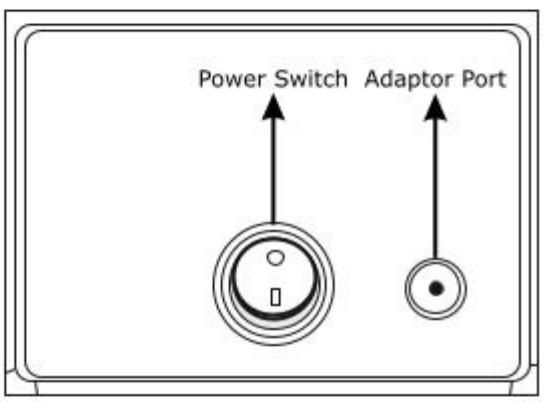
Placing foam on shaking platform

Place this Foam on the shaking platform and use O-Ring to attach the foam. Tight the Foam by pushing the O-Ring on the back side of the clamps as shown in the figure above. Once the Foam is attached, place the microtubes inside for shaking.

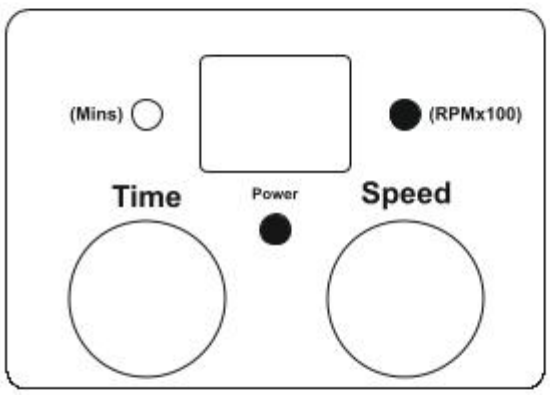
Note: *Filling microtubes more than 60 % and shaking it at max speed can lead to spillage.*

10. OPERATION

To start the operation, connect the power adaptor to the adaptor port on the back side of the shaker.



Back Side



Front Side

Before starting the shaker, set speed and time from the control panel on the front side of the shaker. Rotate speed knob to set speed and rotate time knob to set time. Speed value is shown in multiple of hundred (x100) & Time value in Minutes (Mins). For Example, speed display with 18 digit means 1800 RPM & Time display with 18 digit means 18 minutes. Speed value varies from 300 RPM to 1800 RPM and time value varies from 1 minute to 99 minutes plus continuous mode. Continuous mode is shown with the symbol "][". After setting the required speed and time, start operation by turning ON the power switch on the back side. The power LED in front will glow as an indication that the shaker is started.

NOTE: *One can change time & speed during operation. Operation starts with slow speed & steadily rises to the level set.*

To stop operation turns OFF the power switch from back side.

11. TIPS FOR EFFICIENT OPERATION

Orbital shaking is undoubtedly a simple way for mixing of assay components but simply putting the samples on a microplate doesn't guarantee complete blending is reached after the mixing process.

A wide variety of well microplates are commercially available. The basic requirement to ensure a fast and efficient mixing result is the generation of vortex which allows to produce a flow of the total sample volume.

The adjustment of the optimal mixing speed for microplates is dependent on the size of the well and the filling volume. The table below is a short summary of recommended mixing speeds for different microplates.

Mixing speeds (rpm) for different microplates depend on filling volume/well (%)			
Filling Volume in %	96 Standard well	96 Deep well	384 Standard well
50 %	1400 - 1800 RPM	800 - 1200 RPM	1800 RPM
75 %	1200 - 1600 RPM	600 - 1000 RPM	1600 - 1800 RPM

Hence, larger volume should ideally be mixed with a higher orbit and low speed. Smaller volume requires a lower orbit, but a much higher speed.

Note: *Overfilling of wells can lead to spillage.*

12. SAFETY PRECAUTION

1. Do not lift the shaker by holding the microplate or shaking platform.
2. Unplug the power adaptor before cleaning.
3. Always operate the unit on a leveled & stable surface to avoid any kind of accident.
4. If a spillage occurs, it should be removed promptly. Do not immerse the unit in liquid for cleaning.
5. The whole unit should be cleaned regularly with a moist cloth.
6. Ensure that while cleaning the unit is not plugged in.
7. Always keep the Shaker clean. Whole unit should be wiped out periodically with a soft cloth. Excessive amount of liquid should be avoided. Motor should not come into contact with the liquid.
8. After cleaning, ensure that all parts are dry.
9. Shaker should be used for the specified applications only. It must not be operated in a hazardous or flammable environment and must not be used to mix explosive or highly reactive material.
10. Do not use shaker in hazardous atmosphere or with hazardous material for which the unit is not designed.
11. Do not operate the unit if it shows signs of electrical or mechanical damage. If any of these damages is found, contact supplier.
12. Always use the supplied and recommended accessories for best result and product safety.
13. The equipment will restart, both in case of main interruptions and in case of any fault or mechanical interruption. So while caring for the shaker the sample used for mixing should be taken into account.

13. WARRANTY STATEMENT

This product is warranted to be free from defects in material and workmanship for a period of two (2) years from date of purchase. Your product will be duly repaired upon prompt notification in compliance with the following conditions :

This warranty is valid only if the product is used for its intended purpose and within the guidelines specified in this instruction manual. This warranty does not cover damage caused by accident, neglect, misuse, improper service, natural forces or other causes not arising from defects in original material or workmanship. This warranty does not cover any incidental or consequential damages, commercial loss or any other damages from the use of this product.

The warranty is invalidated by any non-factory modification, which will immediately terminate all liabilities on us for the products or damages caused by its use. The buyer and its customer shall be responsible for the product or use of products as well as any supervision required for safety. If requested the products must be returned to the distributor in well packed and insured manner and all shipping charges must be paid.

Some states do not allow limitation on the length of implied warranties or the exclusion or limitation of incidental or consequential damages. This warranty gives you specific legal rights. This warranty is given expressly in lieu of all other warranties, expressed or implied.

The purchaser agrees that there is no warranty of merchantability or of fitness for any intended purpose and that there are no other remedies or warranties, expressed or implied, which extend beyond the description on the face of the agreement. This warranty is only applicable to the original purchaser.

Products received without proper authorization will not be entertained. All items returned for service should be sent postage prepaid in the original packaging or other suitable carton, padded to avoid damage. We will not be responsible for damage incurred by improper packaging.

All items returned for service should be set postage prepaid in the original packaging or other suitable carton, added to avoid damage.

This warranty is valid only if the warranty is registered with the supplier within 30 days from the date of purchase.

14. PRODUCT DISPOSAL

In case the product is to be disposed of, the relevant legal regulations are to be observed.

Information on the disposal of electrical and electronic devices in the European Community

The disposal of electrical devices is regulated within the European Community by national regulations based on EU Directive 2012/19/EU on waste electrical and electronic equipment (WEEE). According to these regulations, any devices supplied after 13.06.05 in the business to business sphere, to which this product is assigned, may no longer be disposed off in municipal or domestic waste. They are marked with the following symbol to indicate this.

As disposal regulations within the EU may vary from country to country, please contact your supplier if necessary.

For your reference, make a note of the serial number, date of purchase and supplier here.	
Serial No.	Purchase Date
Supplier	

AHN Biotechnologie GmbH
Uthleber Weg 14
D-99734 Nordhausen
Germany

Phone: +49(0)3631/65242-0
Fax: +49(0)3631/65242-90

E-Mail: info@cappahn.com
www.capp.dk

0213-01-0000-02-003-R2