

Revision: ----	Document Code: WI- ML-6120	Document Title: Operating Instructions for Vortex Mixer	 دانشگاه علوم پزشکی و خدمات بهداشتی و درمانی استان تهران دانشکده پزشکی
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Standard Operating Procedure: Vortex-Mixer

Manufacturer: Made in Iran

Max Speed: 2500 RPM

1. Purpose

To provide standardized instructions for the operation, safety, and maintenance of the **Vortex-Mixer** to ensure efficient mixing of small-volume samples (vials or tubes) while preventing sample degradation and equipment damage.

2. Scope of Operation

This procedure applies to the mixing of small volumes of liquids, buffers, and reagents within microcentrifuge tubes, vials, or similar laboratory containers.

3. Responsibility

Compliance with this protocol is the responsibility of the trained laboratory personnel.

4. Operating Procedure

A. Vortex Mode (Pulse/Touch Mode)

- Mode Selection:** Set the control button on the front panel to the “**Touch**” position.
- Sample Loading:** Place the tube or vial firmly onto the rubber mixing cup/platform.
- Operation:** Apply light downward pressure on the tube to initiate the high-speed vortexing action. Release the pressure to stop.

B. Shaking Mode (Continuous Mode)

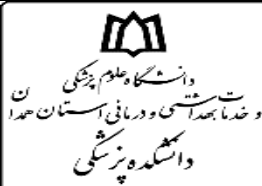
- Mode Selection:** Set the control button on the front panel to the “**On**” position for continuous orbital/reciprocal shaking.
- Intensity Adjustment:** Use the **Volume/Intensity Dial** to adjust the shaking amplitude/speed to the desired level.

C. Shutdown

- Power Off:** To turn off the device, move the control button on the front panel to the “**Off**” position.

5. Safety Precautions

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تاریخ بازنگری:	سمت:	سمت: مدیر گروه میکروبیشناسی	سمت: کارشناس آزمایشگاه
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1. **Mechanical Integrity:** Before each use, inspect the device to ensure that the rotating/vibrating assembly is securely fastened and stable.
2. **Counterbalancing (Critical):** Whenever possible, use the device in a **balanced manner**. For example, when using the shaking function, do not shake a single vial alone; place an empty vial of similar weight opposite to it to ensure stability and prevent machine drift.
3. **Sample Integrity Warning:** Use vortexing only for specific applications such as mixing buffers. **DO NOT use vortexing for DNA samples**, as the high shear forces can cause mechanical degradation of DNA strands.
4. **Containment & Leakage:** Ensure all vials and tubes are tightly sealed and leak-proof before mixing. **NEVER** shake flammable, volatile, or highly hazardous substances.
5. **Personal Protective Equipment (PPE):** Always wear **eye protection (safety goggles)** during the shaking process to protect against accidental splashing.
6. **Hazardous Samples:** Any high-risk or infectious samples must be mixed within appropriate, secondary containment vessels.

6. Maintenance and Care

1. **Surface Protection:** Do not allow chemical reagents to spill onto the rubber mixing platform. Chemical exposure can cause **degradation and corrosion** of the rubber material.
2. **Immediate Decontamination:** In the event of a spill, clean the rubber platform immediately using an appropriate, non-corrosive cleaning agent to maintain the integrity of the surface.

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