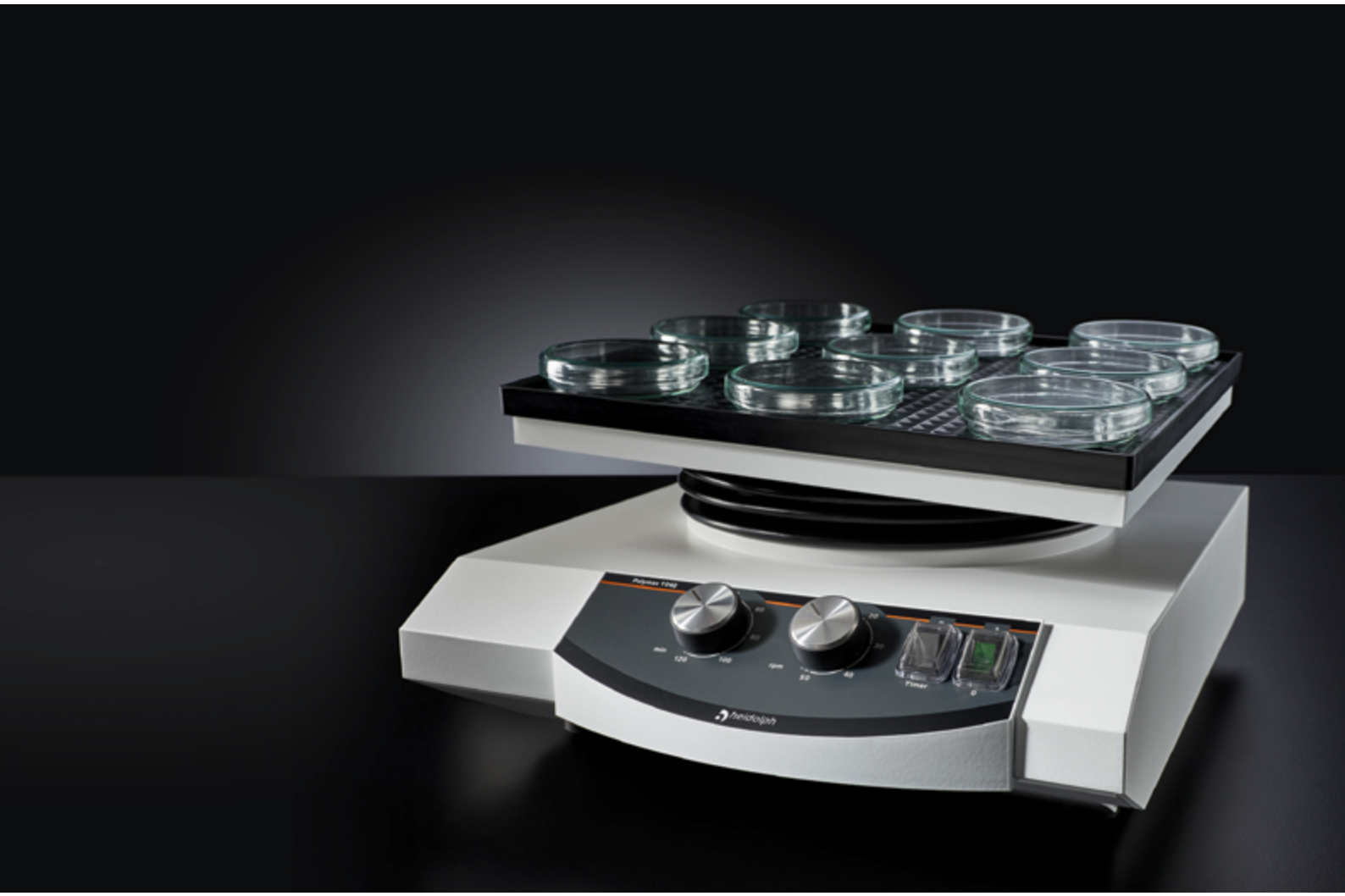
Premium Laboratory Equipment

Platform Shakers

Buyer's Guide



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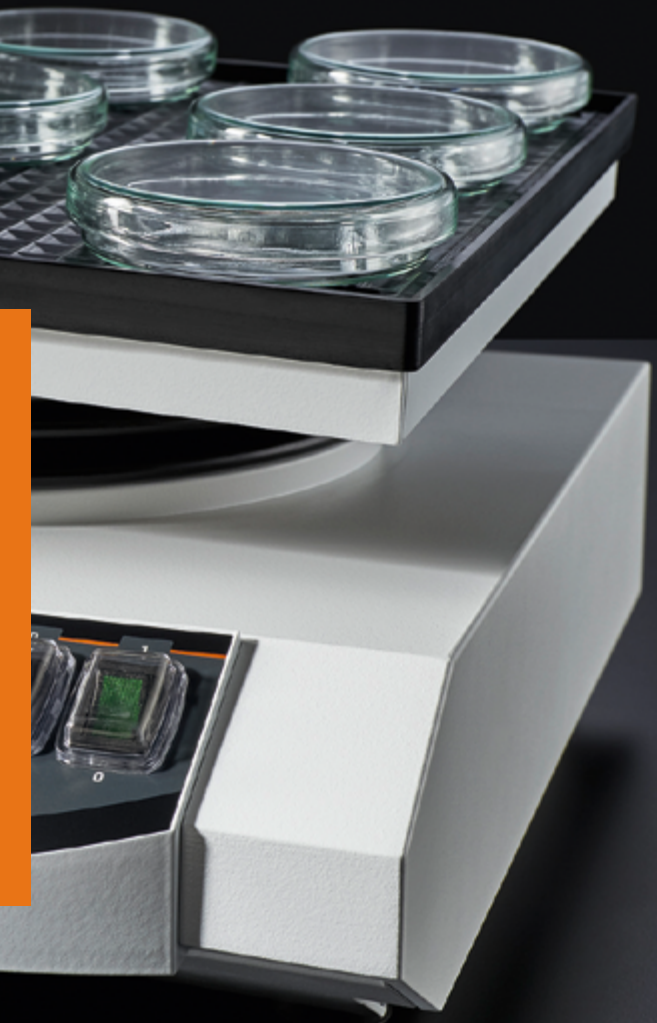
Platform Shakers

Whether homogenization, suspension or dispersion – a shaker is used during the course of an experiment in virtually every laboratory. A wide range of different shakers exists, which are also used with different accessories to become strong supporters of daily laboratory tasks.

Which shakers are used when depends on the tasks to be handled. A familiar example is the cultivation of bacteria. In most cases, orbital platform shakers are used to supply the culture with sufficient nutrients through movement.

With the "Platform Shaker Buyer's Guide", we help to provide answers to frequently asked questions and also help you to make the right decision when choosing a shaker.



Contents

① What is a platform shaker?

A platform shaker is laboratory equipment with a platform that oscillates in two or three directions. It is used to move and mix the mostly liquid contents of different vessels. The platform of a shaker is moved by appropriate motors. There are devices with an orbital (circular), circular vibrating (vortexing), reciprocating (back and forth), wave or rocking movement pattern.
In most cases, different attachments and clamps can be fixed on the platform to enable the use of different vessels. The tasks that the platform shakers undertake in detail with the different movement patterns and where these are used are presented in the following chapters.

② What is the task of platform shakers in laboratory processes?

The functional sequence of an experiment, starting with an educt through to the required product can be roughly divided into three phase:

Phase 1: **Preparing the educt samples, e.g. preparation of media for cell cultures**

Phase 2: **Carrying out the test series, SOPs**

Phase 3: **Product acquisition and performing analyses**

Platform shakers are frequently used in the second and third phase. After the foundation for the experiment has been laid in the first phase, the corresponding existing samples are processed. But which movement form is the right one for carrying out the planned experiments? The different movement patterns of the platform shakers are presented in the following, together with an explanation of the area of use for they are suitable.

3 Focus on movement forms

Whether orbital, reciprocating or vibrating: the bandwidth of platform shakers is enormous. The possibilities and the right areas of use are explained in greater detail in the following points, so the choice of suitable work equipment is easier.

3.1 Orbital

The **circular shaker** is the classic among platform shakers. With a large stroke and number of revolutions between 20–500 rpm, a smooth movement pattern results. This combination is generally suitable for suspension solutions. The orbital movement is used by many microbiology laboratories to supply organisms with sufficient nutrients. Bacteria are better held in suspension and higher growth yields are achieved. Outside of microbiological laboratories, the orbital movement of shakers is most frequently used in the cosmetic industry, quality assurance and pharmaceuticals.

Several models can be integrated into an incubator system, which allows particularly flexible working.

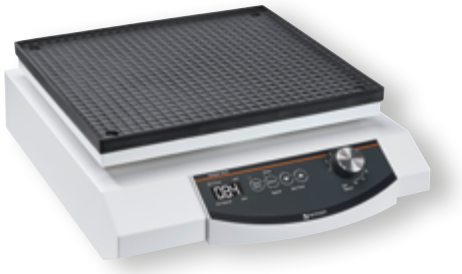


Fig. 1: Example of an orbital shaker: Unimax 1010 by Heidolph Instruments

3.2 Vibrating

The **vortexer** is the most known among the vibrating shakers. It can be found in practically every laboratory and assists with fast mixing tasks. Alongside the vortexers, there are also platform shakers with a vibrating movement function. The small rotational radius and the high rotational speed generate a vortex (eddy) in the applied samples. This combination is mainly popular in the manufacture of emulsions or for different bioassays.

Since, with these devices, the vortex can also be generated in the small cavities of multi-well plates, a vibrating platform shaker is suitable for the washing steps in enzyme-linked immuno assays. Here, the force of the shaker is used to completely remove antibodies/antigens from loosely bonded probes and to avoid false signals in the subsequent analysis.

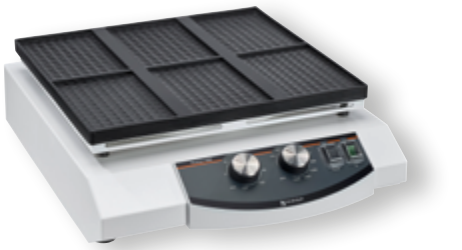


Fig. 2: Example of a vibration shaker for multi-well plates: Titramax 1000 by Heidolph Instruments

3.3 Reciprocating

Due to their type of movement, **reciprocating platform shakers** are suitable for all types of extractions, e.g. Babcock analysis or for the determination of pesticide residues. Particularly where an increased number of samples have to be handled during a liquid-liquid extraction or in case of poor phase separation, used with suitable holding clamps for separatory funnels, the workflow can be facilitated.

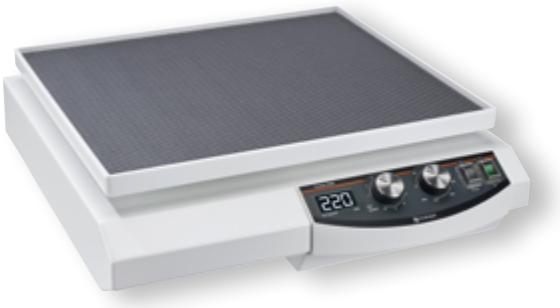


Fig. 3: Example of a reciprocating shaker: Promax 2020 by Heidolph Instruments

3.4 Wave and rocking

The particularly gentle movement of a 3D platform wave shaker is used, among other things, for staining membranes after blotting processes. The sensitive membranes are gently flushed during the incubation times and the bands are stained successfully.

Rocking platform shakers with a 2D movement are frequently used to move blood samples and to prevent coagulation.

Platform wave shakers are particularly useful when cell cultures have to be moved gently. This is to ensure that the cells are not stressed, and are nonetheless flushed by medium. This way the cells are supplied with important nutrients.

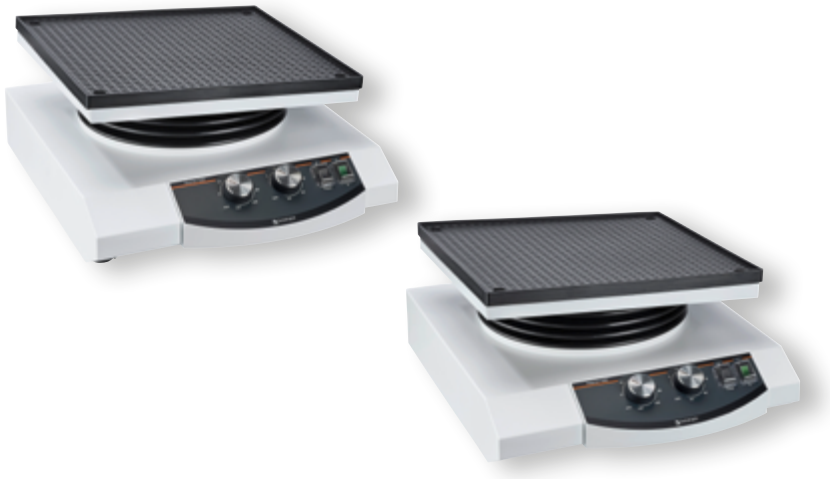


Fig. 4: Examples of a 2D and 3D shaker: Duomax 1030 (rocking platform shaker) and Polymax 1040 (platform wave shaker) by Heidolph Instruments

The following table gives an overview of the different movement forms of platform shakers and their most frequent areas of use:

Tab. 1: Overview of the platform shaker movement types and frequent areas of use

	orbital	vibrating	reciprocating	wave/rocking
Microbiology	■			
Quality assurance	■		■	
Cosmetics industry	■			
Pharmaceuticals	■	■	■	
Fermentation	■			
Immunology		■		
Manufacturing emulsions		■		
Extractions			■	
Organic synthesis chemistry			■	
Dying process membranes				■
Cell cultivation	■			■
Bioanalytics		■		■
Medicine				■

Noch Fragen?
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