



# SHAKER SELECTION BASICS

*Find the right shaker  
for your application!*





## ***Shaker Selection Basics***

There are so many laboratory shakers on the market it can be overwhelming to select the right one for your workflow – but we're here to help!

**Four important considerations when selecting a shaker:**

**Motion**

**Speed**

**To Batch or Scale-Up**

**Open-Air, Incubating, Refrigerated**



# Motion

*It's all about the right movement!*

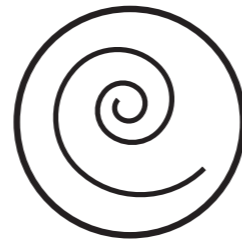
**Orbital** – Moves samples in a flat circular motion and is ideal for applications such as cell culture, mixing, solubility studies, extractions and emulsifications.

**Reciprocating** – Moves samples in a flat side-to-side motion and are most suitable for applications like extractions, resuspensions or mixing of separatory funnels.

For more gentle, low speed mixing which is ideal for applications such as Western Blots and gels, Electrophoresis, Tissue Cultures or Mixing of T-Flasks consider one of the following motions:

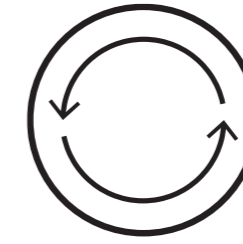
**Rocking** – Moves samples back and forth like a see-saw.

**Waving** – Moves samples in a 3D waving motion both side-to-side and front-to-back.



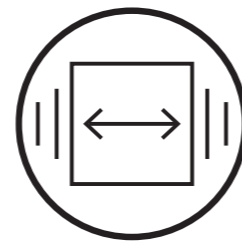
## Vortex

The cup generates a “whirlpool” vortex action



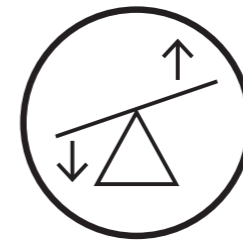
## Orbital

The platform moves in a circular orbit



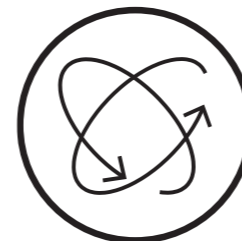
## Reciprocating

The platform moves back and forth horizontally



## Rocking (See-saw action)

The platform rocks on a central pivot



## Rocking (3D-Tumbling motion)

The platform moves in a three-dimensional motion

# The Need for Speed

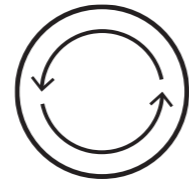
— or not!

The velocity and type of motion upon the shaker determine the intensity of the mixing.

**Orbital Motion** – As a rule of thumb, the smaller the vessel, the more speed is required to get a good swirl or mix with your sample.

*Some applications require a more gentle touch, which is where Rockers and Wavers play a key role.*

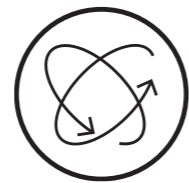
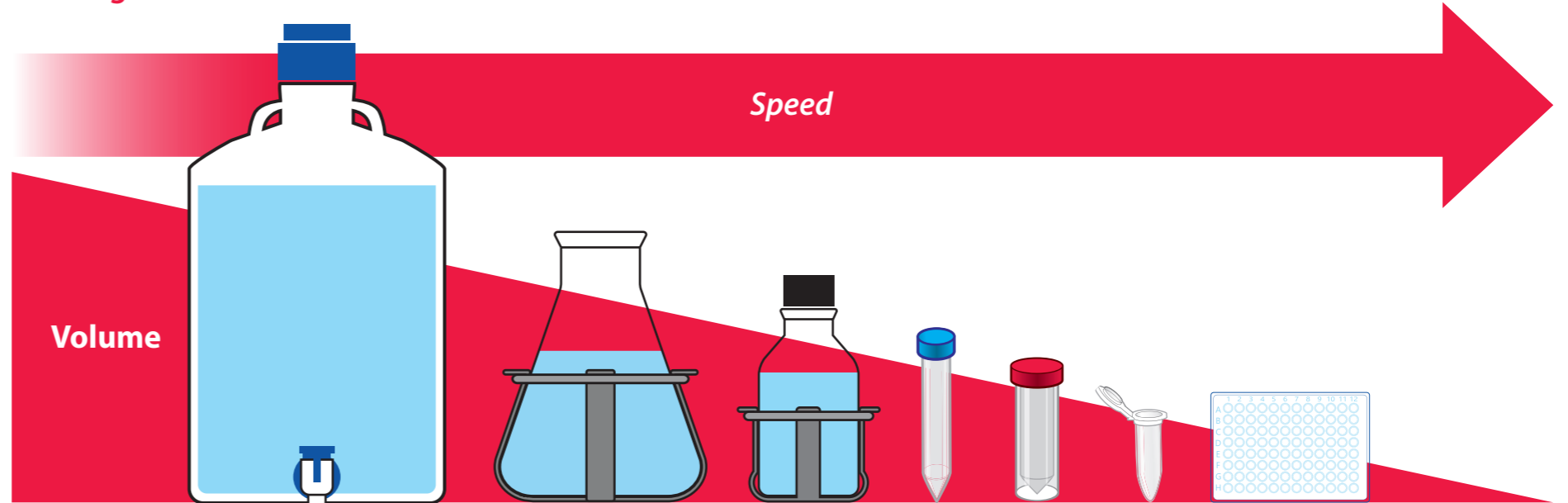
**Rocking & Waving Motion** – Thorough mixing of your small volume samples require less speed.



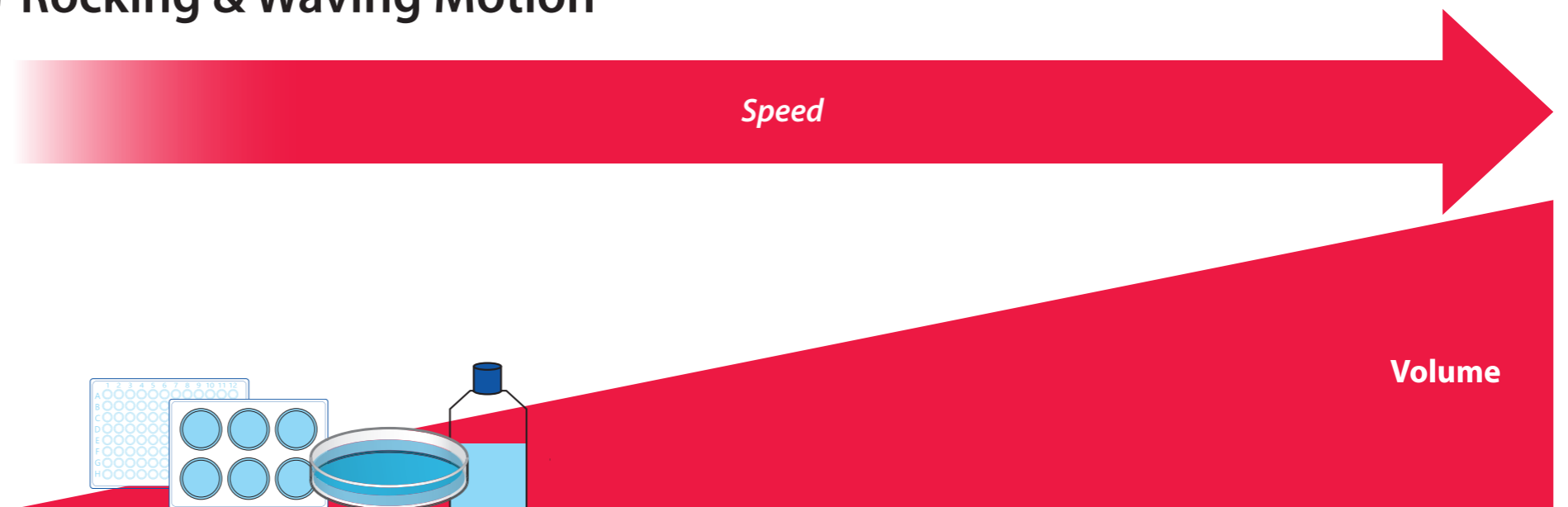
## Orbital Motion

Large Orbit

Small Orbit



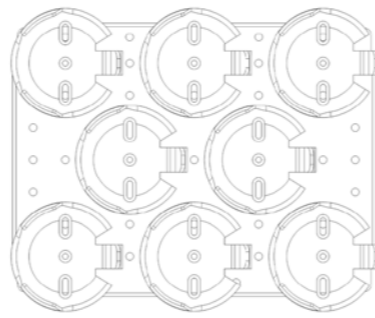
## Rocking & Waving Motion



# To Batch or Scale-Up

— what's the maximum capacity required?

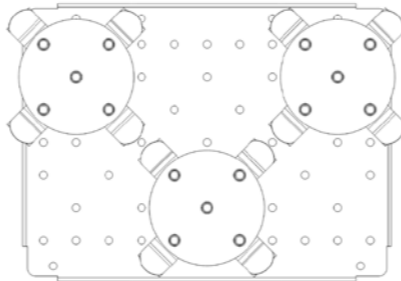
Researchers need to consider whether the experiment calls for small batch, large batch or scale-up work and verify the platform capacity based on common flask sizes. The larger the vessels, the larger the platform and capacity that the shaker requires.



**Platform Dimensions**  
30 × 22 cm  
**8 × 250 ml**  
Erlenmeyer PVC Flask Clamps



**Platform Dimensions**  
61 × 91,4 cm  
**64 × 250 ml**  
Erlenmeyer PVC Flask Clamps



**Platform Dimensions**  
30 × 22 cm  
**3 × 1 l**  
Erlenmeyer Flask Clamps

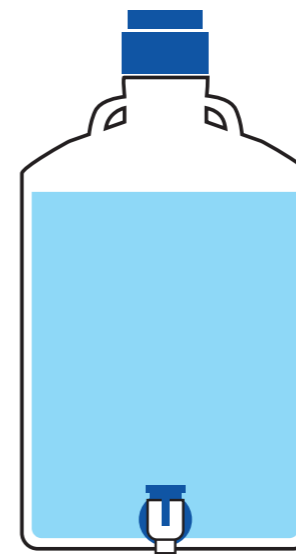


**Platform Dimensions**  
61 × 91,4 cm  
**24 × 1 l**  
Erlenmeyer Flask Clamps



Light Duty

**Platform Dimensions**  
30 × 22 cm  
**Larger Vessels up to**  
7,5 kg



Heavy Duty



**Platform Dimensions**  
61 × 91,4 cm  
**Up to 7 × 6 l**  
or large vessels with carrier

# Open-Air, Incubating, Refrigerated

— or both...

Most shakers are “Open-Air” models but, depending on your application, you may require better temperature control for your samples.

**Open Air** – Shake and mix things in the open air of the environment without any temperature controlling functions. However, these models are extremely versatile and can be a great fit for:

- 1.) Incubators from 0–30 °C with < 80 % relative humidity non-condensing environments
- 2.) CO<sub>2</sub> Incubators
- 3.) Brought into Cold Rooms that are 0–30 °C with < 80 % relative humidity non-condensing\*

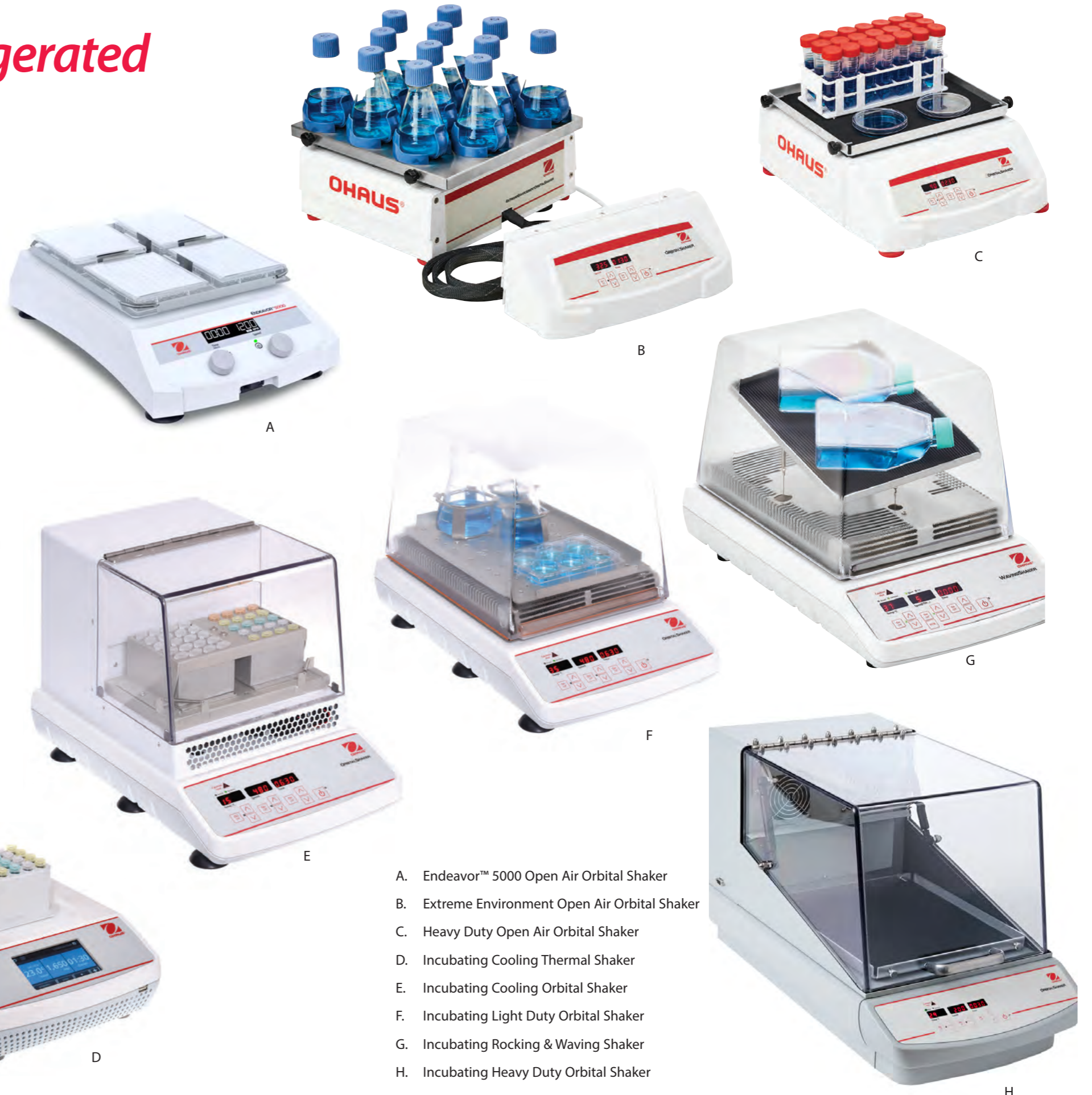
**Incubating** – Can be used to control temperatures above room temperature to replicate the environmental conditions for optimal sample growth.

**Cooling** – Can be used to better control sample reactions or growth when temperatures at, or close to, room temperature or below are needed. Depending on the model, you can cool samples with a Peltier system through temperature transfer. If you need even tighter temperature control, some models include a refrigeration system.

**Heating** – If your application requires temperature control above ambient, you may want to consider using a Thermal Shaker that can handle temperatures as high as 100 °C.

**Combination** – Depending on capacity requirements and temperature ranges there may be a shaker that can do a combination of heating, and cooling.

\*Avoid cold starts. Shakers should never be left unused in cold rooms.



- A. Endeavor™ 5000 Open Air Orbital Shaker
- B. Extreme Environment Open Air Orbital Shaker
- C. Heavy Duty Open Air Orbital Shaker
- D. Incubating Cooling Thermal Shaker
- E. Incubating Cooling Orbital Shaker
- F. Incubating Light Duty Orbital Shaker
- G. Incubating Rocking & Waving Shaker
- H. Incubating Heavy Duty Orbital Shaker