BENCHTOP GYROTORY® INCUBATOR SHAKERS
Models 4200 & Refrigerated 4230

Our most versatile benchtop shaker, Model 4230 can agitate, incubate, refrigerate and illuminate. When refrigeration is not needed, Model 4200 does the job. These multi-purpose instruments have the same size shaker platform as Models 4000/4080, but accept flasks to 6 Liters, and have two stationary shelves for added incubating or storing capability. With a front-opening door, they can be used on the bench, or floor-stacked two high for space savings.

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Innova 4200/4230 shakers include two stationery shelves. Shown with dedicated 250 mL accessory platform.

UNIQUE ADVANTAGES

- **Wide Temperature Range:** 5°C above ambient to 80°C in 60 Hz models, and to 75°C in 50 Hz models. In refrigerated Model 4230, from 20°C below ambient. (Minimum setpoint is 4°C)."
- **Agitation 25 to 400 rpm;** 25 to 300 rpm when stacking two units; ±1 rpm
- **Two Adjustable-Height, Stationary Shelves** provide added storage for incubating plates and other samples
- **Units Can Be Used On the Bench or Stacked* Two High** on the floor for space-savings
- **Optional Dual-Temperature Programming Timer Automates Switching Between Two Temperatures, and Cycling Agitation On or Off.** Limits metabolic activity in studies that end overnight, saving a return trip to the lab; and facilitates heat inductions (Model 4230 only)
- **Large Viewing Window & Internal Light Provide Clear Chamber Visibility,** minimizing the need to open the door. Rapid air circulation produces quick temperature equilibration and recovery, when needed

Two Innova 4200/4230 shakers can be stacked using the optional stacking kit.

- **In-Chamber, Moisture-Proof Receptacle Provides Power for an Accessory Instrument** such as rocker, roller, or second shaker
- **Large-Capacity Accessory Platforms Accept Glassware Up to 6 L;** Snap in place without tools, using optional Quick Change Platform Kit
- **Optional 5-Port Gassing Manifold** permits direct gassing into flasks for anaerobic cultures

- **Optional Photosynthetic Light Bank** with external on-off switch is available for culturing plant cells (Model 4230 only)

* Requires Stacking Kit

More information is available on Innova design advantages and safety features.

Shaker Capacity Chart

Flask Size (mL)	Dedicated Platform	Universal Platform
10	N/A	109
25	N/A	64
50	64	45
125	34	21
250	25	18
500	16	14
1000	9	8
2000	5	5
2800	4	4
4000	4	4
5000	N/A	4
6000	2	2

More Design Advantages Inherent In Innova Shakers.

- **Precise Regulation of Speed, Running Time, Incubation, Refrigeration and Humidity** is provided by microprocessor control with self-correcting PI feedback.
- **Additionally, Innova 40, 43 & 44 Series Models Feature Programmable Changes to Multiple Parameters on a Timed Basis.** Programs may be stored for repeat

usage. An RS-232 interface allows remote changes to setpoints using standard laboratory software.

- **NBS Shakers Are the Quietest Running In the Industry,** providing a more favorable work environment.
- **Temperature is Precisely Regulated ± 0.1°C** from 30° - 40°C in incubated models.
- **Wide Speed Range Provides Versatility for Culturing Shear-Sensitive Mammalian Cells as well as Robust Bacterial Cultures.** Speed controlled within ± 1 rpm.
- **Timed Studies Can Be Programmed for Automatic Agitation Shut-Off.** End-of-study alarm and status light can be deactivated for continuous operation.
- **A Wide Range of Interchangeable Accessory Platforms** accommodate all your glassware. When using a single flask size, **Dedicated Platforms** provide maximum capacity, and come with clamps installed. **Universal Platforms** let you mix different-sized clamps and test tube racks for added versatility.
- **User-Friendly Controls** simplify entering setpoints and viewing current status. Display is clearly visible from all angles, across the room, and in the dark.
- **Audible and Visible Alarms** indicate setpoint deviations. Audible alarm can be muted.
- **Output Signal for Data Logging.** RS-232 port in Innova 40, 43 & 44 Series models allows data logging using standard laboratory software. 0 - 5 V output signal in Innova 4200, 4230 and 3100 is provided for recording temperature and speed.
- **Cool-Running Brushless Motors Never Require Lubrication,** and provide years of long life.
- **Electronics & Mechanical Components Are Enclosed, Protected From Accidental Spills.**
- **Comprehensive Warranty** - Three years on parts and two years on labor for the entire machine. (Glassware and their contents are not covered. Accessories, such as photosynthetic light banks, carry a one year warranty. See actual warranty for details.)

Safety Features

- **Acceleration - deceleration circuit** prevents sudden starts and stops. Minimizes mechanical damage for longer shaker life; and eliminates wetting of flask closures which would otherwise interfere with oxygen transfer
- **Unique Out-of-Balance Sensor Stops Agitation** when excess vibration is detected. Models 44, 44R and 4900.
- **Open door or open lid cutout switch** stops agitation when chamber is open*

- **Thermostat fail-safe** shuts off heaters if high limit is exceeded*
- **Automatic restart after power interrupt with non-volatile memory** keeps studies running smoothly

* Temperature-controlled models only

Why are Innova Shakers So Reliable?

Dependable operation is due in large part to the **NBS Triple-Eccentric Counterbalanced Drive.**

Other shaker manufacturers may offer triple-eccentric drives in their shakers. But only NBS offers a broad-based cast-iron support mechanism - the most stable in the industry - **properly sized to each shaker, and specifically designed to support high-speed applications and heavy workloads.**

- Components are fabricated to exacting specifications. Drive shafts, for example, are machined to tolerances of .0002", ensuring stable, vibration-free operation, even when operated at speeds up to 500 rpm.
- With the highest-quality materials, superior design and precision fabrication, we guarantee our shakers will provide worry-free operation for many years to come.

NBS' often-imitated but never duplicated heavy-duty, counterbalanced Triple-Eccentric Drive ensures uniform motion is imparted to every flask, regardless of position on the platform. Heavy-duty construction allows us to guarantee that our shakers will perform to our specifications, even when fully loaded and operating at top speed.