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LARGE-CAPACITY, STACKABLE INCUBATOR SHAKERS

Models 4400 & Refrigerated 4430 For Space-Restricted Labs

Innova 4400 Series are large-capacity, stackable shakers for growing numerous cultures in space-restricted labs. Up to three independently-controlled shakers may be stacked one upon another in about the same floor space as normally occupied by a single shaker. A unique, front-opening door lifts up out of the way, further minimizing space requirements, while providing easy access to all glassware in the chamber. Model 4400 offers incubation; 4430 adds refrigeration.



Two Innova 4400 Series shakers are shown with 250 mL accessory platforms, a stacking kit to ensure stability, and a base extension to add height for easier access to each chamber's interior.

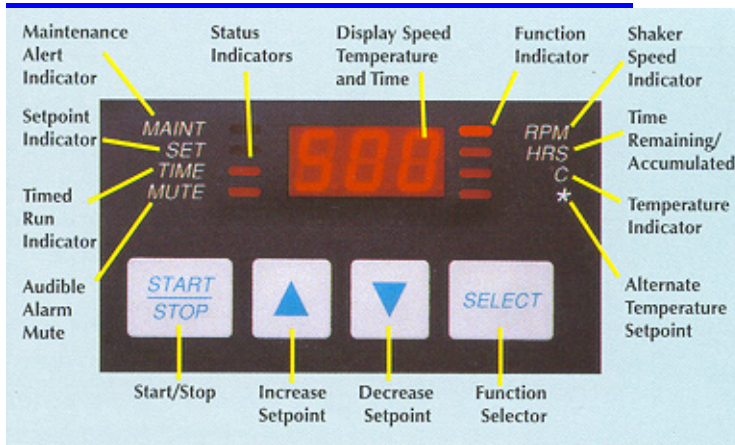
Unique Advantages

- **Temperature Range:** 5°C above ambient to 80°C in Model 4400, and from 15°C below ambient in Model 4430. (Minimum setpoint is 4°C)
- **Agitation** 25 - 400 rpm with 1" (2.5 cm) stroke. 25 to 300 rpm with 2" (5.1 cm) stroke or when stacking 2 units. 25 to 300 rpm when stacking 3 units. ♦1 rpm
- **Stackable Console with Doors that Lift Up, Not Out,** save valuable floor space (see photo at right)
- **Independent Speed and Temperature Controls on Each Shaker** enable separate protocols to be carried out
- **Powerful Heater and Fan Provide Rapid Heat-Up** (3°C to 9°C/minute, depending on chamber load)
- **Optional Programmable Temperature & Agitation Timer on Model 4430.** 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
- **Optional Photosynthetic Light Bank With Programmable Temperature & Light Timer on Model 4430** available for culturing plant cells. Timer automates turning lights on in the morning while incubating at a higher temperature, then turning lights off and lowering temperature in the evening, mimicking diurnal conditions



- **Gas Manifold Option for Anaerobic Cultures** permits direct gassing into flasks
- **Choice of Interchangeable Lift-Out or Bolt-On Accessory Platforms** accommodate test tubes and flasks up to 4 L
- **Extremely Rugged Construction** ensures units can be safely stacked without vibration. Direct drive (versus a magnetic drive) compensates instantly for unbalanced loading and changes in workload. Will not de-couple under heavy loads

More Design Advantages Inherent In Innova Shakers.



- [Microprocessor Controls With Self-Correcting PI Feedback](#) precisely regulate speed, running time and, when applicable, incubation, refrigeration and humidity
- [Wide Speed Range Provides Versatility for Culturing Shear-Sensitive Mammalian Cells as well as Robust Bacterial Cultures.](#) Speed controlled within \diamond 1 rpm
- [Incubated Models Precisely Regulated Within \$\diamond\$ 0.1°C](#) in the 30° - 40°C range. See [spec charts for added details](#)
- [Timed Studies \(0.1 to 99.9 Hours\) Can Be Programmed for Automatic Agitation Shut-Off.](#) End-of-study alarm and status light can be deactivated for continuous operation
- [Audible and Visible Alarms](#) additionally alert the user to setpoint deviations. Audible alarm can be muted

- [**User-Friendly Membrane Keypad with Large 3/8" \(0.95 cm \) LED Character Display** facilitates entering setpoints and viewing current status. Display is clearly visible from all angles, across the room, and in the dark](#)
- [**NBS Shakers Are the Quietest-Running Shakers In the Industry** providing a more favorable work environment](#)
- [**Electronics & Mechanical Components Are Enclosed, Protected From Accidental Spills**](#)
- [**0-5 Volt Output Signal Enables Recording Temperature and Speed** on an external chart recorder !\[\]\(effbd7993c63c039a58fd3395789cf3f_img.jpg\)](#)
- [**Cool-Running Brushless Motor** never requires lubrication; and provides years of long life](#)
- [**Comprehensive Warranty - Two-years or 10,000 hours, whichever comes later, covering on-site labor, and parts for the entire machine****](#)

(*) Temperature-controlled models only

(◆) Optional RTD Temperature Kit required for tracking/recording temperature in non-incubated, models 2000, 2100 & 2300 Series shakers

(**) Glassware and their contents are not covered. See actual warranty for details.

Safety Features

- [**Unique 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](#)
- [**Speed-limiting sensor** slows agitation to a safe speed when overloaded or unbalanced](#)
- [**Unique vibration sensor** stops agitation when excess vibration is detected \(Models 4900 and 5000 only\)](#)
- [**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, day in and day out operation is due in large part to the unique **NBS Triple Eccentric Gyrotory® Drive**. The broad-based cast-iron support proven 50-year record of dependability. Precisely fitted with nine ball-bearings, it's counterbalanced to impart smooth, uniform motion to the culture medium, even when operated at speeds up to 500 rpm.

[Of course there are many other design advantages inherent in all Innova shakers that ensure your shaker will last for many years to come. Cool-running heavy-duty motors; welded, not screwed or riveted cabinetry; and circuitry that's individually fused, to name just a few.](#)



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