



WATER BATH ORBITAL SHAKER

Water Bath Orbital Shaker — ToronShake™ WB-S Series

ToronShake™ WB-S Series is a water bath orbital shaker designed for laboratory applications requiring precise temperature control combined with continuous orbital or reciprocating agitation in a heated aqueous environment. Available in three models — WB-SA, WB-SB, and WB-SC — this lab shaker incubator series covers orbital, dual-mode (orbital and reciprocating), and reciprocating-only shaking configurations across a temperature range of RT+5 to 100 °C, making it a versatile and reliable platform for microbiology, biochemistry, molecular biology, and general life science research workflows where water bath heating provides more uniform, stable thermal contact with culture vessels than air-heated incubator shaker designs.

The water bath heating principle is the defining characteristic of the ToronShake™ WB-S Series relative to the air bath shaker incubator platforms in the ToronShake™ lineup. Water's significantly higher thermal conductivity and heat capacity compared to air means that culture vessels immersed in or placed over a heated water bath receive more consistent, rapid, and uniform heat transfer — reducing the temperature gradients between vessels that are common in forced-air shaker incubator designs, and maintaining more stable thermal conditions when the lid is opened for sampling. This makes the ToronShake™ WB-S the preferred laboratory shaker incubator choice for temperature-sensitive assays where thermal consistency across all vessels directly affects result reproducibility.

All three models share the same microcomputer temperature and frequency control system, LCD display interface, stainless steel chamber construction, universal spring fixture, power recovery and parameter memory function, and 0-9,999 min/h timer — differing only in their available oscillation modes to match the specific agitation requirement of each protocol.

Model Selection Guide

If your protocol requires...	Choose...
Gentle circular agitation only — cell culture, hybridization, gentle biochemical mixing	ToronShake™ WB-SA
Both orbital and reciprocating agitation modes on a single water bath shaker incubator	ToronShake™ WB-SB
Directional, higher-velocity reciprocating agitation only	ToronShake™ WB-SC

APPLICATIONS

Water Bath Orbital Shaker — ToronShake™ WB-S Series Applications

The ToronShake™ WB-S Series water bath shaker incubator is suited to laboratory applications where controlled-temperature aqueous heating combined with continuous orbital or reciprocating agitation are both required for the protocol.

- **Microbiology & Bacterial Culture:** Bacterial culture incubation, microbial growth studies, and fermentation trials requiring stable temperature control at or near physiological temperatures with consistent orbital agitation for dissolved oxygen transfer and nutrient distribution. The RT+5 to 100 °C operating range of this water bath shaker incubator accommodates both standard 37 °C microbiological protocols and elevated-temperature incubation requirements on a single instrument platform.
- **Biochemical Assays & Enzyme Kinetics:** Enzyme activity assays, substrate-enzyme reaction incubation, protein solubilization studies, and temperature-sensitive biochemical protocols requiring precise, stable heating combined with defined agitation intensity. The water bath heating principle of the ToronShake™ WB-S provides tighter temperature control around reaction vessels than equivalent air bath lab shaker incubator designs — directly relevant to kinetic assays where temperature deviation affects measured reaction rates.
- **Hybridization Assays:** Southern blotting, Northern blotting, in situ hybridization, and nucleic acid hybridization protocols requiring precise temperature control combined with continuous gentle agitation to ensure uniform probe distribution and consistent hybridization conditions across all vessels simultaneously.
- **Cell & Tissue Research:** Cell viability studies, tissue digestion incubation, receptor binding assays, and cell-based biochemical research requiring stable physiological temperature combined with gentle-to-moderate orbital agitation — supported by the WB-SA and WB-SB orbital mode configurations of this laboratory shaker incubator series.
- **Molecular Biology:** Restriction enzyme digestion, ligation reactions, DNA/RNA precipitation, and other molecular biology protocols requiring defined temperature and agitation conditions across precise incubation durations — managed by the 0–9,999 min/h timer function of the ToronShake™ WB-S.
- **Pharmaceutical Research & QC:** Dissolution testing support, biological sample conditioning, drug solubility screening, and in-process quality control incubation at defined temperatures and agitation rates. The power recovery and

parameter memory function protects active protocol runs in this shaker incubator from power interruption events in pharmaceutical laboratory environments.

- Food Science & Safety: Microbiological shelf-life testing, fermentation trials, spoilage organism incubation, and food safety microbiological testing requiring reproducible combined water bath heating and agitation conditions over defined incubation periods.
- General Laboratory Use: General-purpose heated agitation for any laboratory protocol requiring controlled-temperature water bath shaking — including extraction procedures, reagent dissolution, sample equilibration, and multi-vessel incubation workflows where uniform thermal contact across all vessels is the primary requirement.



FEATURES

Water Bath Orbital Shaker — ToronShake™ WB-S Series Key Features

Water Bath Heating

- Heated water bath chamber providing more uniform and stable thermal contact with culture vessels than equivalent air bath lab shaker incubator designs — the primary operational advantage of the ToronShake™ WB-S for temperature-sensitive protocols
- Temperature operating range of RT+5 to 100 °C — covering standard physiological incubation through elevated-temperature biochemical assay conditions
- Water's high thermal conductivity and heat capacity acts as a thermal buffer against lid-opening disturbances and ambient fluctuations

Oscillation Modes — Three Model Configurations

- WB-SA: Orbital mode only — 0–220 rpm, 20 mm amplitude — for gentle-to-vigorous circular fluid agitation
- WB-SB: Dual orbital and reciprocating mode — orbital 0–220 rpm / 20 mm; reciprocating 0–300 rpm / 30 mm — the most versatile configuration in the series
- WB-SC: Reciprocating mode only — 0–300 rpm, 30 mm amplitude — for directional, higher-velocity fluid agitation protocols

Control System

- Microcomputer temperature and frequency controller with LCD display for straightforward temperature setpoint and agitation speed management
- Integrated timer function supporting 0–9,999 min/h for precise, unattended incubation cycle scheduling
- Power recovery and parameter memory function automatically restores all programmed settings following any power interruption — protecting active water bath shaker incubator runs from data loss

Chamber & Physical Design

- Stainless steel working chamber for corrosion resistance, easy cleaning, and long-term durability in heated water bath operating conditions
- Universal spring fixture accommodating a wide range of flask and vessel sizes across multiple loading configurations
- Compact benchtop footprint suitable for standard laboratory bench installations

THEORY & METHOD

Theory and Method

Water Bath Heating Principle The defining operational principle of the ToronShake™ WB-S Series is its water bath heating architecture. The working chamber is a stainless steel water-filled bath in which culture vessels are placed on a spring-fixture tray platform. Electric resistance heating elements warm the water to the programmed setpoint temperature. Because water has a thermal conductivity approximately 25 times higher than air and a substantially greater heat capacity, the water bath delivers significantly more uniform and stable heat transfer to culture vessels than equivalent forced-air or air bath shaker incubator designs — particularly relevant for multi-vessel protocols where inter-vessel temperature consistency directly affects result reproducibility.

The water bath also acts as a thermal buffer — absorbing the minor temperature disturbances caused by lid-opening events, ambient fluctuations, and varying vessel loads — and recovering setpoint conditions faster than air-heated chambers of equivalent volume. This thermal stability advantage is the primary reason water bath shaker incubators remain the preferred lab shaker incubator platform for temperature-sensitive enzymatic, hybridization, and molecular biology protocols where air bath designs introduce unacceptable temperature variability.

Orbital Shaking Mode (ToronShake™ WB-SA and ToronShake™ WB-SB) In orbital mode, the tray platform moves in a circular, fixed-radius orbit of 20 mm diameter. This motion generates consistent rotational fluid movement within submerged or

surface-placed culture vessels — promoting dissolved oxygen transfer, nutrient distribution, and homogeneous mixing without the directional flow bias of reciprocating motion. Orbital agitation at 0–220 rpm covers gentle mixing through vigorous aeration, making the ToronShake™ WB-SA and ToronShake™ WB-SB configurations of this water bath shaker incubator suitable for a wide range of cell culture, microbiology, and biochemical agitation requirements.

Reciprocating Shaking Mode (ToronShake™ WB-SC and ToronShake™ WB-SB) In reciprocating mode, the tray platform moves back and forth in a linear oscillation pattern with a 30 mm stroke amplitude at speeds of 0–300 rpm. Reciprocating agitation generates a directional flow pattern within culture vessels — producing higher fluid velocity along the vessel walls and more vigorous mixing per unit speed than orbital motion at the same rpm setting. This makes the WB-SC reciprocating configuration of this laboratory shaker incubator well suited to protocols requiring more aggressive agitation, higher dissolved oxygen transfer rates, or directional flow-dependent mixing patterns.

Dual-Mode Operation (ToronShake™ WB-SB) The ToronShake™ WB-SB configuration provides both orbital and reciprocating oscillation modes selectable by the operator — making it the most versatile model in the ToronShake™ WB-S water bath shaker incubator series. A single WB-SB can serve both gentle orbital culture protocols and more vigorous reciprocating agitation requirements without requiring a separate instrument for each mode.

Microcomputer Temperature and Frequency Control Temperature is governed by a microcomputer temperature and frequency controller with LCD display interface. The controller maintains the programmed temperature setpoint across the RT+5 to 100 °C operating range, with power recovery and parameter memory functionality that automatically restores all programmed settings — temperature setpoint, agitation speed, and timer — following any power interruption, protecting active incubation runs from data loss and parameter reset.

The integrated timer function supports run durations from 0 to 9,999 minutes or hours, enabling precise, unattended incubation cycle management for timed biochemical assays, culture cycles, and quality control incubation protocols without manual monitoring.

TECHNICAL SPECIFICATIONS

Water Bath Orbital Shaker — ToronShake™ WB-S Series Technical Specifications

Parameter	ToronShake™ WB-SA	ToronShake™ WB-SB	ToronShake™ WB-SC
Type	Water Bath		
Temperature Range (°F / °C)	RT+9 to 212 °F (RT+5 to 100 °C)		
Oscillation Mode	Orbital	Orbital or Reciprocating	Reciprocating
Rotation Rate — Orbital (rpm)	0-220	0-220	—
Rotation Rate — Reciprocating (rpm)	—	0-300	0-300
Vibration Amplitude — Orbital (in / mm)	0.79 in (20 mm)	0.79 in (20 mm)	—
Vibration Amplitude — Reciprocating (in / mm)	—	1.18 in (30 mm)	1.18 in (30 mm)
Rated Power (W)	1,600		
Timer Range (min/h)	0-9,999		
Internal Dimensions W×D×H (in)	18.9×15.4×6.7		
Housing Dimensions W×D×H (in)	27.8×20.3×18.5		
Tray Size W×D×H (in)	15.0×11.8×6.7		
Full Load Configuration (mL×flasks)	500×6 or 1000×3		
Net Weight / Gross Weight (lb)	99 / 134	110 / 150	99 / 134
Package Size (in)	31.9×23.6×23.6	31.9×23.6×23.6	31.8×23.6×23.6
Voltage	220V, 50 Hz (110V is also available)		

All internal, housing, tray, and package dimensions converted from mm to inches. Net and gross weights converted from kg to lb. Full load configuration format: flask volume (mL) × number of flasks



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