

ADVANCED VERTICAL SHAKER INCUBATOR



Advanced Vertical Shaker Incubator - ToronShake™ VS-A

ToronShake™ VS-A is an advanced intelligent vertical laboratory shaker incubator designed for research environments that demand a high-capacity, feature-rich orbital agitation platform with full programmability, data traceability, and contamination management. Available in three chamber volumes 324 L, 510 L, and 737 L this shaker incubator combines the BRIGHT I intelligent control system, a touch full-color operation screen, 30-segment/99-cycle programmable profiles, Gregorian calendar scheduling, 150,000-record USB data storage, UV germicidal sterilization, intelligent frost-free operation, and a slow-start brushless DC motor. For pharmaceutical, biotechnology, and academic institutions that require a vertical lab shaker incubator with audit-ready data management and long-duration unattended operation capability, the ToronShake™ VS-A delivers on every front.

The ToronShake™ VS-A is a large-format vertical incubator shaker engineered for research institutions and industrial laboratories that require high-capacity, intelligent, and precisely controlled orbital agitation alongside comprehensive data documentation. Three chamber volumes 324 L, 510 L, and 737 L serve a range of high-throughput needs, from mid-scale biochemical culture through large-volume fermentation and pharmaceutical bioprocess research workflows.

The BRIGHT I intelligent control system automatically compensates control parameter values in response to real-time environmental changes, maintaining set-point accuracy without manual recalibration when ambient conditions fluctuate. The touch full-color operation screen provides independent control of temperature, time, speed, operating mode, cycle count, segment count, and all other shaker incubator operating conditions with Gregorian calendar time and real-time parameter values displayed continuously on screen throughout the run. A Gregorian calendar reservation function allows the instrument to start automatically at a programmed date and time, enabling scheduled overnight and weekend shaker incubation protocols without requiring operator presence at start time.

The 150,000-record large-capacity USB storage system retains operational data in exportable format, with support for USB drive data export. Curve data view, real-time curve visualization, and historical curve search with time-jump navigation allow researchers to review and compare run data directly on the touch screen. The control system timestamps all device alarm events automatically, providing a traceable event log for post-run review and backtracking. Screen lock, screen saver, and

password unlock functions prevent unauthorized parameter modification during active laboratory shaker incubator runs in multi-user environments.

The side-pull door features multilateral magnetic sealing to maintain consistent chamber closure across the full temperature operating range of 4–60 °C. The inner cavity uses an all-stainless steel waterproof large R-angle design with an internal diversion through channeling spilled liquid away from the chamber base to prevent bacteria contamination from affecting subsequent experiments during oscillation. Double-layer tempered glass provides clear interior observation without opening the door. The outer shell uses high-temperature electrostatic spray coating, and the overall foam insulation material provides uniform thermal insulation with flame-retardant properties throughout the cabinet structure.

APPLICATIONS

Advanced Vertical Shaker Incubator – ToronShake™ VS-A Applications

The ToronShake™ VS-A serves demanding B2B laboratory and regulated research environments where vertical large-format shaker incubation is required alongside intelligent control, programmable profiles, and audit-ready data management.

- Large-Scale Microbial Culture: high-throughput aerobic bacterial, yeast, and fungal culture in multi-flask configurations requiring sustained orbital agitation, controlled temperature, and unattended overnight operation.
- Pharmaceutical Bioprocess: upstream biologics development, fermentation scale-up, and cell-based assay platforms requiring 150,000-record USB export and multi-level access control for GMP-adjacent documentation.
- Biochemical & Enzyme Research: multi-phase enzyme production, protein expression, and substrate reaction studies using programmable 30-segment profiles to define precise temperature and agitation sequences automatically.
- Cell Biology: suspension cell culture and hybridoma production in shake flasks requiring gentle slow-start orbital agitation to protect shear-sensitive mammalian cells from mechanical damage during acceleration.
- Environmental & Food Testing: BOD incubation with orbital agitation, fermentation quality control, and microbiological safety testing where Gregorian calendar scheduling reduces manual setup time on recurring protocols.

- Regulated & Audited Environments: GLP- and ISO 17025-adjacent laboratory shaker incubator workflows requiring timestamped event logs, curve data backtracking, USB audit trail export, and password-protected parameter access.





FEATURES

Advanced Vertical Shaker Incubator - ToronShake™ VS-A Key Features

Intelligent Control and Data Management

- BRIGHT I intelligent control system with automatic environmental compensation for sustained set-point accuracy across long-duration runs
- Touch full-color operation screen for independent control of temperature, time, speed, mode, cycle, segments, and other shaker incubator parameters
- Programmable design: 5 programs each supporting up to 30 segments and 99 repeatable cycles for complex multi-phase incubation protocols
- Two timing modes: running timing from start or constant temperature timing from set-point arrival selectable per protocol
- Gregorian calendar reservation function for automated scheduled-start operation without operator attendance
- Screen lock, screen saver, and password unlock to prevent unauthorized parameter changes in shared laboratory environments
- 150,000-record USB storage system with U-disk data export; real-time and historical curve viewing with time-jump search directly on screen
- Control system automatically timestamps all alarm events for complete post-run traceability and backtracking

Motor, Refrigeration and Amplitude

- High-quality brushless DC motor with intelligent slow-start and slow-stop functions to protect motor and prevent liquid spatter during acceleration and deceleration
- Imported compressor with more than 50% noise reduction; intelligent frost-free operation with adjustable defrost temperature, interval, and duration
- Compressor delayed-start function extends service life and protects against rapid restart stress after power events

- Standard vibration amplitude $\Phi 26$ mm; $\Phi 50$ mm amplitude available as a customizable option across all three models
- Verification hole (30 mm inner diameter) on the left side of the unit for sensor wiring during measurement or calibration procedures
- Direct alarm information viewing: door-stop alarm, power recovery, fault self-diagnosis, door delay alarm, and temperature abnormality alarm

Chamber Design and Construction

- Side-pull door with multilateral magnetic sealing to maintain consistent chamber closure and thermal integrity across the full operating range
- All-stainless steel inner cavity with large R-angle waterproof dead-corner-free design and internal diversion trough for easy cleaning and spill containment
- Double-layer tempered glass observation window bright, clean, and directly observable inside without opening the chamber door
- High-temperature electrostatic spray outer shell for a clean, durable exterior with low maintenance requirements
- Overall foam insulation material providing uniform thermal insulation and flame-retardant properties throughout the cabinet
- Standard integrated plastic flask fixture with high strength and consistent positioning; other fixtures available as options
- Sterilization and Safety
- Internal standard lighting and UV germicidal lamp with programmable timed sterilization for automated decontamination between sequential shaker incubation runs
- Power-off recovery function automatically restores all operating parameters and resumes the active program when power is reinstated

Safety Protection

- Door-stop alarm: audible and visual alert triggers when the chamber door is left open beyond the defined threshold, prompting the user to restore closure status.

- Power recovery alarm: the system generates a notification when power is reinstated following an interruption, confirming that parameter restoration has occurred and the run has resumed.
- Fault self-diagnosis: the control system continuously monitors internal operating conditions and generates a fault alarm with exact timestamp when a system anomaly is detected.
- Door delay alarm: if the door is opened and not closed within the defined delay threshold, an alarm activates to alert the operator and prevent extended thermal and atmospheric disruption to the chamber.
- Temperature abnormality alarm: audible and visual alert activates when the measured temperature exceeds or falls below the defined deviation threshold, protecting culture samples from undetected thermal excursions.

THEORY & METHOD

Theory and Method

BRIGHT I Intelligent Environmental Compensation

The BRIGHT I control platform continuously monitors ambient conditions and automatically adjusts temperature and agitation control parameters to maintain set-point accuracy without operator recalibration. This adaptive compensation is particularly important for large-format vertical shaker incubators where the thermal mass of a 324–737 L chamber responds more slowly to ambient changes than benchtop units, and where a single uncorrected environmental fluctuation could affect hundreds of simultaneous flask cultures. All compensation events are timestamped and stored within the 150,000-record USB data system.

30-Segment / 99-Cycle Programmable Profiles

The VS-A supports 5 independent programs each with up to 30 configurable segments and 99 repeatable cycles. Each segment defines target temperature, oscillation speed, and duration enabling fully automated multi-phase incubation protocols that run sequentially without operator intervention between steps. Two timing options are available: running

timing (elapsed from start) and constant temperature timing (elapsed only after set-point is reached), giving researchers flexibility in how incubation duration is measured. The Gregorian calendar reservation function adds scheduled delayed-start capability, completing the unattended operation workflow for overnight and weekend laboratory shaker incubation campaigns.

Brushless DC Motor with Slow-Start and Slow-Stop

The high-quality brushless DC motor uses an intelligent slow-start function that gradually ramps oscillation speed from zero to the set-point at the beginning of each run, and a slow-stop function that decelerates gradually at run end. This protects the motor from start-up torque stress while simultaneously preventing the sudden acceleration liquid spatter that can contaminate flask stoppers and caps during shaker incubator operation a meaningful risk in bacterial, fungal, and cell culture workflows where contamination between flasks or to the chamber interior must be minimized.

Intelligent Frost-Free Refrigeration

The imported compressor unit rated for more than 50% noise reduction versus standard designs operates with intelligent frost-free control. Defrost temperature, defrost interval, and defrost duration are all user-adjustable, preventing ice buildup during sustained low-temperature incubation shaker operation. The compressor delayed-start function further protects the unit from rapid restart stress after power events. These combined features extend compressor service life across the long-duration continuous campaigns typical of large-format vertical laboratory shaker incubator use.

UV Sterilization and R-Angle Waterproof Interior

The chamber is fitted with both standard interior lighting and a UV germicidal lamp with programmable timed sterilization, enabling automated decontamination cycles before or after incubation runs without manual intervention. The all-stainless steel inner cavity uses a large R-angle dead-corner-free waterproof design with an internal diversion trough that channels spilled liquid toward a drainage path during oscillation, preventing contaminated liquid from spreading across the chamber floor and affecting subsequent cultures. The standard integrated plastic flask fixture provides high-strength, consistent positioning across all supported vessel configurations.

Customizable Vibration Amplitude Up to $\Phi 50$ mm

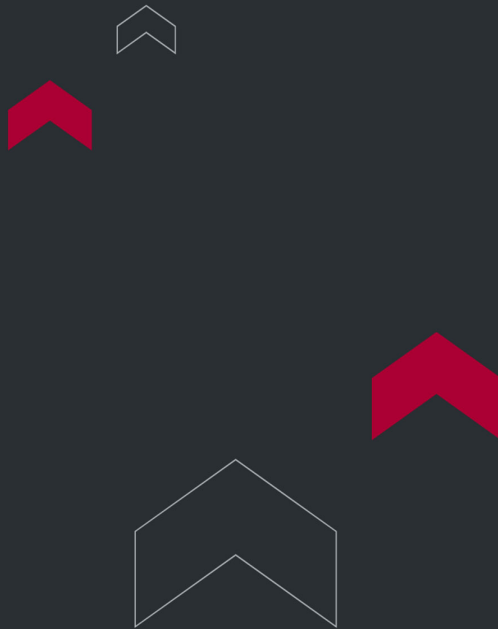
All three VS-A models ship with a standard vibration amplitude of $\Phi 26$ mm, with a $\Phi 50$ mm customizable amplitude option available across the full model range. The larger $\Phi 50$ mm orbital radius generates a more vigorous mixing action increasing oxygen transfer rates and nutrient distribution in larger-format flasks while still maintaining the smooth orbital motion that protects biological samples from the shear forces of linear reciprocating agitation. Users can select the amplitude appropriate for their flask size, culture type, and aeration requirement when configuring their order.

TECHNICAL SPECIFICATIONS

Advanced Vertical Shaker Incubator - ToronShake™ VS-A Technical Specifications

Parameter	ToronShake™ VS-324A	ToronShake™ VS-510A	ToronShake™ VS-737A
Chamber Volume	324 L	510 L	737 L
Temperature Range at 25 °C	4-60 °C		
Temperature Resolution	0.1 °C		
Temp. Fluctuation at 37 °C	±0.5 °C		
Temp. Uniformity at 37 °C	±1.0 °C		
Rotation Rate	0-300 rpm		
Rotation Accuracy	±1 rpm		
Vibration Amplitude	$\Phi 26$ mm standard; $\Phi 50$ mm customizable option		
Timer Range	0-999.9 h		
Programmable Profiles	5 programs × 30 segments × 99 cycles		

Parameter	ToronShake™ VS-324A	ToronShake™ VS-510A	ToronShake™ VS-737A
Data Storage	150,000 records (USB drive export supported)		
Control System	BRIGHT I intelligent, automatic environmental compensation		
Display	Touch full-color operation screen		
Driving Motor	High-quality brushless DC motor with slow-start / slow-stop		
Sterilization	UV germicidal lamp (programmable timed sterilization) + standard interior lighting		
Frost-Free Operation	Intelligent adjustable defrost temperature, interval, and duration; compressor delayed start		
Compressor	Imported >50% noise reduction vs. standard		
Door Type	Side-pull door with multilateral magnetic sealing		
Inner Cavity	All stainless steel, large R-angle waterproof, internal diversion trough		
Observation Window	Double-layer tempered glass		
Tray Size W×D	485×485 mm	786×484 mm	1000×580 mm
Housing Dimensions W×D×H	720×800×1300 mm	1020×760×1400 mm	1235×855×1400 mm
Full Load Config. Double layers	250×50 / 500×32 / 1000×18	250×40 or 500×24 per layer × 2 layers	250×60 / 500×40 / 1000×28 per layer × 2 layers
Full Load Config. Single layer	2000×6 / 3000×5 / 5000×4	1000×15 or 2000×11 per layer × 2 layers	2000×15 per layer × 2 layers
Voltage	AC 220V ±22V, 50Hz (110V is also available)		
Rated Power	800 W	1000 W	1000 W
Verification Hole	Ø30 mm (left side) for sensor wiring during measurement or calibration		
Alarm System	Door-stop, power recovery, fault self-diagnosis, door delay, temperature abnormality		
Power-Off Recovery	Yes automatic program resume on power reinstatement		



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