Lithium Battery Washing Test Machine

GB 31241 Battery Washing Test Chamber | KP-BW Series

Standard Support: GB 31241 (Washing Test for Portable Lithium Battery Packs)
Manufacturer: KingPo Test Equipment Co., Ltd. www.dgkingpo.com Tel: +86-769-81627526

Product Overview

The KingPo KP-BW Series Lithium Battery Washing Test Machine is a professional environmental and mechanical stress test system designed to simulate washing, soaking, agitation, spinning, and dehydration conditions on portable lithium battery packs. It supports test requirements from GB 31241 for evaluating the safety and structural integrity of lithium-ion batteries and battery packs used in portable electronic equipment after accidental exposure to washing processes.

The system performs programmable washing cycles including water filling, solution heating, soaking, mechanical agitation via rotating turntable, drainage, and high-speed spin dehydration. It is widely used by battery manufacturers, OEMs, quality control departments, and testing laboratories to verify sealing performance, electrolyte leakage resistance, insulation integrity, and overall structural durability under simulated washing abuse conditions.

Key Advantages

- **Comprehensive Washing Cycle Simulation**
  Engineering: Fully programmable cycle including water filling, temperature control (up to 80°C), soaking, mechanical agitation (1–850 rpm), drainage, and high-speed spin dehydration with customizable duration and sequence.
  Benefit: Accurately replicates real-world accidental washing scenarios to evaluate critical safety aspects such as sealing integrity, electrolyte leakage, insulation failure, and short-circuit risks.
- **Precise Servo-Driven Rotation Control**
  Engineering: Servo motor drive system provides stable and precisely adjustable rotation speed (1–850 rpm) on a Ø500 mm turntable for repeatable mechanical agitation.
  Benefit: Ensures consistent and reproducible test conditions across multiple samples and test runs, improving data reliability for quality control and regulatory submissions.
- **Flexible Configuration for Various Battery Packs**
  Engineering: Customizable inner barrel (Ø650 mm), depth (550–600 mm), and sample fixtures to accommodate different portable battery pack sizes, shapes, and weights.
  Benefit: Provides excellent adaptability for testing a wide range of lithium battery packs used in smartphones, wearables, power banks, and other portable electronics without requiring multiple dedicated machines.
- **Safety-Focused Design for Battery Testing**
  Engineering: Equipped with safety interlock, alarm system, protective door lock, and explosion-proof design considerations specifically for lithium battery testing environments.
  Benefit: Enhances operator safety and reduces risk when testing potentially hazardous lithium battery packs under abusive washing conditions.
- **PLC + Touchscreen Control with Data Export**
  Engineering: PLC + touchscreen interface allows easy programming of temperature, rotation speed, test duration, and full washing sequence, with USB data export for traceability.
  Benefit: Simplifies operation and provides complete test data recording for quality management systems, audits, and process improvement.

Technical Specifications

3.1 General System Parameters

Parameter	Specification	Remark / Notes
Inner Barrel Diameter	Ø650 mm	Customizable
Inner Barrel Depth	550–600 mm	Customizable
Turntable Diameter	500 ± 10 mm	With customizable fixtures
Rotation Speed	1–850 rpm (adjustable)	Servo motor drive for stable control

Solution Temperature	RT +10°C ~ 80°C	PID control, ±1°C typical accuracy
Control System	PLC + Touch Screen	Remote control optional
Inner Chamber Material	SUS304 Stainless Steel	SUS316 optional for higher corrosion resistance
Power Supply	AC 380V / 220V (Customizable)	As per customer requirement
Safety Features	Safety interlock, alarm, protective door lock	Designed for lithium battery testing safety

Testing Principle

The Lithium Battery Washing Test Machine simulates the mechanical and thermal stresses that portable lithium battery packs may experience during accidental washing. The battery pack is securely fixed on a rotating turntable inside the chamber.

The system executes a fully programmable washing cycle that includes: water filling, solution heating to the set temperature, soaking for a defined duration, mechanical agitation through controlled rotation of the turntable, drainage, and high-speed spin dehydration. This process evaluates the battery pack's sealing integrity, resistance to electrolyte leakage, structural durability, insulation performance, and potential for internal short circuits or other safety hazards after exposure to moisture and mechanical stress.

The entire sequence is controlled via PLC and touchscreen, with precise temperature and speed regulation, ensuring repeatable and traceable test conditions for quality control and safety evaluation.

Typical Applications

- Lithium battery manufacturers — Washing durability and safety testing for portable battery packs used in consumer electronics
- OEMs and device manufacturers — Safety verification for battery packs in smartphones, wearables, Bluetooth devices, and power banks
- Testing laboratories — GB 31241 compliance testing and internal safety evaluation of lithium battery packs
- Quality control departments — Incoming inspection and routine reliability testing of battery packs
- R&D teams — Validation of new battery pack sealing designs, structural improvements, and abuse tolerance

Compliance & Manufacturer

This equipment is designed to support washing test requirements for lithium-ion batteries and battery packs in portable electronic equipment as specified in GB 31241. It enables manufacturers and laboratories to evaluate the safety and durability of battery packs under simulated washing abuse conditions.

Factory inspection, functional verification, and temperature calibration are performed before delivery. Regular verification of temperature accuracy and rotation stability is recommended. Customization of chamber size, fixtures, control programs, and safety configurations is available. Manufactured under ISO 9001, ISO 14001, and ISO 45001 quality management systems.

KingPo Technology Development Limited

Factory Address: No.9 University Road, Songshan Lake,

Dongguan City, Guangdong Province 523770, China

Tel: +86-769-81627526 | Email: sales@kingpo.hk | Website: www.dgkingpo.com

Precision Metrology • Regulatory Compliance • Engineering Reliability