

Cylindrical Battery Grooving Machine Automatic And Manual Benchtop Cylindrical Cell Groover

Item Number: GC01



Introduction

Engineered for cylindrical battery research and pilot-scale assembly, this precision grooving machine provides stepless speed regulation, exact pneumatic depth control, interchangeable tooling, and seamless glovebox integration for consistent, defect-free cell casing fabrication.

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Application	Description	Key Benefit
Lithium-Ion Battery Prototyping	Precision grooving of 18650, 21700, and 26650 nickel-plated steel cans for research cells.	Guarantees exact gasket seat height and depth to prevent electrolyte leakage during high-pressure cycling.
Supercapacitor Shell Grooving	Forming circumferential support beads on thin-walled aluminum canisters for high-power EDLCs.	Prevents casing fracture through smooth, stepless rotational speed and controlled radial force.
Solid-State Cell Assembly	Mechanical pre-crimping and bead formation on specialized cylindrical shells under inert glovebox conditions.	Sealed, anti-rust architecture operates safely inside anhydrous argon atmospheres without outgassing.
Small-Batch Pilot Production	Continuous foot-switch-actuated processing of cylindrical cells at throughputs up to 8 units per minute.	Maximizes batch output consistency while minimizing operator fatigue through automatic pneumatic actuation.
Electrolyte Filling Optimization	Processing precision grooves to hold internal top insulators in place prior to precision automated electrolyte injection.	Maintains strict internal clearance tolerances for automated needle insertion and seal placement.
Academic Materials Validation	Comparative testing of experimental casing alloys, plating thicknesses, and structural wall variations.	Wide adjustment range (0-10 mm depth, 0-20 mm height) accommodates diverse experimental canister geometries.

Specification Parameter	Technical Detail / Value (GC01)
Product Identifier	GC01
Machining Precision	±0.1 mm
Groove Depth Adjustment Range	0 – 10 mm (Continuously Adjustable)
Groove Blade Position Adjustment Range	0 – 20 mm (Axial Position Adjustable)
Grooving Blade Width	1.1 – 1.6 mm (Standard tooling; matched to blade thickness)
Spindle Rotational Speed	Continuously adjustable up to ~300 r/s (Stepless)
Operational Throughput	6 – 8 pieces/min (Operator skill and canister material dependent)
Operating Modes	Dual Mode: Manual Setup Calibration / Automatic Foot-Pedal Cycling
Feed Control Mechanism	Dual Pneumatic Cylinder System (Independent Clamp & Forming Actuation)
Compressed Air Supply Requirement	0.45 – 0.6 MPa (Clean, Dry, Non-Lubricated Compressed Air)
Electrical Power Rating	Single Phase 220V AC ±10%, 50 Hz, 140 W
Chassis & Structural Materials	High-Strength Alloy Chrome Steel with Eco-Friendly Plating & Protective Spray Finish
Atmospheric Compatibility	Standard Ambient Air Cleanroom or Inert Atmosphere Glovebox (Argon/Nitrogen)

Specification Parameter	Technical Detail / Value (GC01)
External Dimensions (L × W × H)	740 mm × 220 mm × 470 mm