

Semi Automatic Stacking Machine Laboratory Stacking Machine For Lithium Pouch Cell Assembly

Item Number: DP03



Introduction

Accelerate pouch cell development with this semi automatic laboratory stacking machine. Engineered for Z fold electrode assembly, it combines servo tension control, photoelectric edge alignment, and robotic vacuum transfer to deliver precise stacking accuracy within 0.3 mm tolerance today.

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Application	Description	Key Benefit
Lithium-Ion Pouch Cell R&D	Fabricating baseline and high-energy-density pouch cell prototypes with Z-folded separators and alternating cathode/anode sheets.	Eliminates manual alignment errors, ensuring tight ± 0.3 mm stacking tolerance for dependable electrochemical characterization.
Solid-State & Advanced Battery Prototyping	Stacking fragile solid electrolyte membranes, composite films, and delicate lithium metal or silicon-based electrodes.	Constant-tension feed and soft vacuum manipulation protect delicate, brittle materials from micro-fractures during assembly.
Pilot-Line Cell Sampling & Pre-Production	Assembling small-batch validation runs and commercial sample batches for qualification testing by third-party automotive or consumer clients.	High stacking throughput with automated layer counting ensures production-level batch uniformity before full-scale manufacturing.
Sodium-Ion & Alternative Chemistries	Investigating thick-electrode coatings, high-porosity separators, and custom-formulated non-lithium energy storage devices.	Broad dimension adjustability (35×35 mm to 200×200 mm) enables rapid dimensional changes without requiring custom modular dies.
Separator Material & Coating Research	Validating ultra-thin polymeric webs, ceramic-coated films, and functionalized separators under continuous tension and folding stress.	Closed-loop edge guide and servo tension prevent roll-tracking errors, web creasing, and thermal-mechanical distortion.
Academic & Industrial Materials Screening	Conducting standardized cell assembly for benchmark comparisons across new binders, active materials, and current collector foils.	Programmable layer presets (up to 500 layers) provide strict experimental control and eliminate human handling variability.

Specification Parameter	Value / Range (DP03)
Model Identifier	DP03
Stacking Method	Z-Fold (Continuous Separator Zig-Zag Stacking)
Operation Mode	Manual loading, automatic positioning, robotic vacuum transfer, automatic separator feed, auto edge correction, servo constant tension
Stacking Alignment Accuracy	Neatness $\leq \pm 0.3$ mm
Applicable Cell Dimensions	Min. 35 mm (L) × 35 mm (W) to Max. 200 mm (L) × 200 mm (W) (including electrode tabs)
Maximum Stacking Thickness	Max. 30 mm
Maximum Layer Count	Max. 500 layers (fully programmable/settable)
Separator Roll Outer Diameter (OD)	Max. Ø250 mm
Separator Core Specifications	3.0-inch core, clamped via integrated pneumatic expansion shaft
Separator Tension Control	Automatic closed-loop servo-driven constant tension system
Separator Web Alignment	Automatic photoelectric edge detection and guide correction system
Lateral Drive Mechanism	Pulse motor controlled left/right travel with precision micro-adjustment

Specification Parameter	Value / Range (DP03)
Control & Interface System	Industrial PLC controller with color HMI touchscreen operation
Power Supply Requirements	Single-Phase AC 220V $\pm 10\%$ (110VAC customizable), 50Hz / 60Hz
Rated Power Consumption	0.6 kW
Pneumatic Supply Requirement	0.5 to 0.8 MPa dry compressed air
Equipment Dimensions (L x W x H)	1000 mm x 780 mm x 1050 mm
Packaging Dimensions (L x W x H)	1200 mm x 1180 mm x 1300 mm
Net Weight	285 kg
Gross Weight	356 kg
Recommended Operating Environment	Ambient temperature: $25 \pm 3^{\circ}\text{C}$; Humidity: 30% to 90% RH; Free of structural vibration and electromagnetic interference
Maintenance Protocols	Routine wiping of swing rollers and stacking platform; periodic lubrication of bearing slide rails; inspection of structural fasteners and hardware