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Stacking Machine Catalog

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KINTEK SOLUTION

COMPANY PROFILE

>>> About Us

KINTEK Solution is a technology-driven innovator specializing in comprehensive laboratory equipment for battery R&D and advanced materials research. Our portfolio spans the entire cell fabrication workflow—from mixing, coating, and precision pressing (automatic, heated, isostatic) to cell assembly and testing. Also essential in ceramics and powder metallurgy, our systems prioritize precision, safety, and repeatability, empowering researchers and industrial labs to achieve groundbreaking results.



Semi Automatic Z Fold Stacking Machine For Sodium Ion And Advanced Battery Cell Prototyping

Item Number: DP01



Introduction

Optimize pouch cell prototyping with this semi-automatic Z-fold stacking machine, engineered for sodium-ion and lithium battery research with precision pneumatic controls, digital counting, and adaptable electrode sheet tooling for consistent laboratory fabrication.

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Application	Description	Key Benefit
Sodium-Ion Battery Research	Precision stacking of thick, brittle hard-carbon anodes and sodium transition-metal oxide cathodes with specialized polymer separators.	Minimizes mechanical stress and edge cracking on fragile sodium-ion active material coatings during layer interleaving.
Lithium-Ion Pouch Cell Prototyping	Assembly of multilayer NCM, LFP, and silicon-anode pouch cells for electrochemical testing and rate-capability evaluation.	Ensures micron-level stacking alignment to prevent edge overhang, edge-induced lithium plating, and premature short circuits.
Solid-State & Hybrid Electrolyte R&D	Interleaving composite solid electrolyte films or coated ceramic separators with high-capacity electrode pairings under uniform tension.	Prevents separator tearing and preserves fragile ceramic/polymer interfacial coatings through smooth swing-arm motion.
Supercapacitor Stack Assembly	Rapid Z-folding of high-surface-area activated carbon electrodes with porous cellulose or synthetic separators.	Delivers consistent stack parallelism and precise compression tolerance across ultra-thin electrode laminates.
Battery Material Screening Laboratories	Pilot validation of novel binders, conductive additives, and current collector foils across varying sheet thicknesses.	Facilitates rapid dimension adjustments without requiring custom tooling sets, accelerating experimental turnaround times.
Academic & Industrial Pilot Lines	Educational training and small-scale pilot cell manufacturing for pre-commercial verification and qualification runs.	Combines high stacking repeatability, low operational complexity, and robust safety protocols in a space-efficient format.

Specification Parameter	Technical Detail (DP01)
Stacking Method	Semi-Automatic Z-Shape Interleaving (Z-Fold)
Separator Roll Compatibility	Continuous roll separator, 3.0-inch (76 mm) core
Maximum Separator Roll Diameter	φ200 mm
Applicable Electrode Length	20 mm to 200 mm
Applicable Electrode Width	20 mm to 200 mm
Maximum Stack Thickness	Up to 18 mm
Swing Roller Stroke	300 mm
Operating Control Method	Pneumatic foot-switch actuation with digital counter
Pneumatic Supply Requirement	0.4 MPa to 0.7 MPa clean, dry compressed air
Power Supply	AC 220V ±10%, 50 Hz, Single Phase
Rated Power Consumption	200 W
Main Equipment Dimensions	650 mm (L) × 400 mm (W) × 700 mm (H)
Control Box Dimensions	200 mm (L) × 300 mm (W) × 380 mm (H)

Specification Parameter	Technical Detail (DP01)
Net Equipment Weight	30 kg

Laboratory Semi Automatic Stacking Machine For Lithium Battery Cell Assembly

Item Number: DP07



Introduction

Designed for advanced battery research, this laboratory semi-automatic stacking machine delivers precise Z-fold cell assembly with servo-driven constant tension control, automated robotic vacuum pickup, and compact glovebox compatibility, ensuring superior layer alignment and repeatable pouch cell prototyping performance.

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Application	Description	Key Benefit
Lithium-ion Pouch Cell Prototyping	Assembly of multilayer pouch cells using standard transition metal oxide cathodes and graphite anodes.	Delivers repeatable layer alignment ($\leq \pm 0.3$ mm) to prevent short circuits and ensure uniform current distribution.
Lithium Metal & Solid-State Cell Assembly	Stacking ultra-thin, delicate lithium foil anodes and solid-state separator interfaces within an argon-purified environment.	Gentle robotic vacuum manipulation prevents foil deformation, tearing, and surface oxidation during placement.
Novel Battery Chemistries R&D	Fabricating experimental sodium-ion, potassium-ion, and multivalent battery coin/pouch hybrid cells.	Rapidly adjustable tooling accommodates custom electrode geometries without costly changeover tooling.
Separator Material Evaluation	Evaluating ultra-thin ceramic-coated, polymer, and composite separator membranes under controlled mechanical tension.	Closed-loop tension control prevents membrane stretching, pinhole formation, and uneven separator tensioning.
Supercapacitor Stack Fabrication	Interleaving activated carbon electric double-layer capacitor (EDLC) or pseudo-capacitive electrodes with porous membranes.	Rapid cycle indexing and high layer counts (up to 100 layers) enable consistent fabrication of thick capacitive stacks.
Electrode Coating Quality Benchmarking	Fabricating baseline multi-layer cells to validate pilot-scale slot-die and doctor-blade slurry coating formulations.	Eliminates manual assembly variances, ensuring electrochemical metrics directly reflect slurry and coating quality.

Specification Parameter	Value / Range (DP07)
Stacking Method	Continuous Z-fold stacking with roll separator interleave
Operating Method	Manual electrode staging; automated robotic vacuum pickup, automated separator feed with constant tension control
Suction Vacuum Degree	Better than -65 kPa
Stacking Alignment Accuracy	Stacking neatness $\leq \pm 0.3$ mm (relative electrode positioning across 25 layers)
Electrode Sheet Width	40 mm to 90 mm
Electrode Sheet Length	40 mm to 100 mm (in tab direction, excluding tab length)
Maximum Tab Length	Up to 15 mm
Maximum Stacking Thickness	Up to 15 mm (programmable up to 100 layers maximum)
Separator Roll Outer Diameter	Maximum $\varnothing$ 200 mm
Separator Roll Core Size	3.0-inch (76 mm) inner diameter, air expansion shaft clamping
Stacking Speed (Standard Electrodes)	4 to 6 seconds per sheet (excluding initial cell setup time)
Stacking Speed (Lithium Metal Foils)	6 to 8 seconds per sheet (excluding initial cell setup time)

Specification Parameter	Value / Range (DP07)
Electrical Power Requirements	Single-phase AC 220V $\pm 10\%$, 50Hz/60Hz, 0.4 kW (110VAC customizable)
Pneumatic Supply Requirements	0.5 MPa to 0.8 MPa clean dry compressed air / inert gas
Overall Equipment Dimensions	L800 mm $\times$ W600 mm $\times$ H720 mm
Total Equipment Weight	120 kg

Semi Automatic Z Fold Stacking Machine For Prismatic Power Lithium Ion Battery Cells

Item Number: DP04



Introduction

Engineered for prismatic power lithium battery manufacturing, this high-precision semi-automatic Z-fold stacking machine delivers 1.3 to 1.6 second cycle speeds, active tension web guiding, and ± 0.2 mm electrode alignment accuracy for demanding pilot production and battery research workflows.

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Application	Description	Key Benefit
Prismatic EV Power Cell Pilot Lines	Assembling multi-layer prismatic lithium-ion pouch and can cores for automotive powertrain prototyping and validation.	Delivers production-grade stacking alignment of ± 0.2 mm to maximize energy density and prevent edge short-circuits.
Commercial Energy Storage Systems (ESS)	Fabricating high-capacity prismatic cell stacks requiring uniform separator tension and thick electrode pairings.	High stacking throughput of 1.3–1.6 s/sheet accelerates assembly while maintaining a 99% machine-level qualification yield.
Solid-State & Advanced Battery R&D	Stacking novel solid electrolyte separators with brittle or customized composite cathode/anode sheets.	Gentle vacuum suction and secondary mechanical positioning minimize mechanical stress on experimental electrode coatings.
Defense & High-Reliability Battery Packs	Small-batch manufacturing of specialized high-drain power cells requiring stringent zero-defect quality control.	Rigorous quad-knife clamping ensures exact internal registration and eliminate micro-shorts from separator displacement.
University & Materials Science Research	Prototyping varied cell chemistries, alternative binders, and ultra-thin separators across diverse research grants.	Highly configurable layer counts and parameter sets allow rapid switching between experimental chemistries.
Contract Battery Manufacturing & QC	Validating pre-production battery batches and verifying electrode die-cutting accuracy prior to multi-million-dollar line investments.	High operational uptime of 98% ensures continuous shift testing with highly dependable and repeatable core metrics.

Specification Parameter	Technical Value / Standard (DP04)
Stacking Method	Semi-Automatic Continuous Z-Fold (Zigzag) Stacking
Stacking Speed	1.3 – 1.6 s/pcs (per electrode sheet)
Auxiliary Cycle Time	15 – 20 s (cell transfer, reload preparation)
Adjacent Electrode Alignment Accuracy	± 0.2 mm
Overall Electrode Stack Alignment Accuracy	± 0.3 mm
Separator End-Face Alignment Accuracy	± 0.3 mm
Electrode-to-Separator Center Deviation	± 0.4 mm
Stacking Layer Capacity	Fully programmable / configurable within machine thickness limits
Outer Separator Finishing	Automated reserve blank stacking, manual tail winding, manual tape sealing
Equipment Yield Rate	$\geq 99\%$ (qualified rate for defects caused solely by the machine)
Operational Availability (Uptime)	$\geq 98\%$ (uptime rate for faults caused solely by the machine)
Rated Power Consumption	2.0 kW
Electrical Power Supply	208V AC, 60Hz (Live + Neutral); Voltage Fluctuation Tolerance $\pm 10\%$

Specification Parameter	Technical Value / Standard (DP04)
Compressed Air Requirement	0.5 ~ 0.7 MPa (5 ~ 7 kgf/cm ²); Consumption: 100 L/min
Equipment Dimensions	W1550 mm x L1250 mm x H1850 mm
Equipment Mass & Floor Load	Approx. 1000 kg; Floor Bearing Capacity requirement > 450 kg/m ²
Structural Machine Color	Industrial Computer Grey (Custom color standards available upon request)
Operating Ambient Temperature	5 ~ 35 °C
Operating Relative Humidity	5 ~ 55% RH (Non-condensing)
Air Quality Requirements	Free of salt spray, toxic gases, corrosive agents, and conductive dust
Environmental Dynamics	Free of external electromagnetic interference; isolated from mechanical impact and vibration

Lithium Ion Battery Z Fold Semi Automatic Stacking Machine

For Pouch Cell Fabrication And Battery Research

Item Number: DP02



Introduction

Streamline lithium ion battery cell assembly with this precision semi automatic Z fold stacking machine. Engineered with active constant tension control, foot switch pneumatic actuation, and tight alignment accuracy, it delivers dependable, repeatable pouch cell fabrication for laboratory research and pilot production.

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Application	Description	Key Benefit
Lithium-Ion Pouch Cell Prototyping	Precision layer-by-layer stacking of cathode, anode, and continuous separator rolls for standard lithium-ion chemistries (NMC, LFP, LCO).	Achieves stacking alignment accuracy within ± 0.5 mm, preventing edge short circuits and inconsistent capacity distribution.
Solid-State Battery R&D	Stacking novel composite cathode sheets, solid electrolyte membranes, and metallic lithium foils in research environments.	Gentle pneumatic clamping and precise tensioning prevent micro-cracks or mechanical fracture on brittle solid electrolyte layers.
Sodium-Ion Battery Development	Assembly of emerging sodium-ion pouch cells using thick electrode coatings and specialized porous separator substrates.	Flexible thickness tolerance up to 12 mm accommodates high-mass-loading electrode formulations without tooling distortion.
Academic & Industrial Battery Labs	Rapid fabrication of customized multi-layer pouch cells for material validation, electrochemical impedance spectroscopy, and cycle-life testing.	Fast changeover between varying cell dimensions reduces prototyping downtime across multi-user research facilities.
Pilot-Line Pre-Production Screening	Small-batch assembly of commercial-grade pouch cell designs prior to large-scale roll-to-roll automated stacking investment.	Delivers production-level stacking neatness and repeatable interfacial compression at a fraction of full-scale capital equipment cost.
Advanced Capacitor & Supercapacitor Fabrication	Z-folding non-woven or polymeric separators between high-surface-area activated carbon electrode sheets.	Constant web tension prevents separator stretching, preserving low equivalent series resistance (ESR) across the stack.

Parameter	Value / Specification
Item Number	DP02
Stacking Accuracy (Alignment Neatness)	Better than ± 0.5 mm
Minimum Stacking Dimension (L x W)	44 mm x 44 mm (including tab length; smaller sizes require custom pressing plate)
Maximum Stacking Dimension (L x W)	200 mm x 150 mm (including tab length; tabs oriented on long side)
Maximum Stacking Thickness	Up to 12 mm (thicker cell stacks require modified adjustment plates)
Separator Roll Outer Diameter	Maximum 220 mm
Stacking Mode	Semi-automatic Z-fold (pneumatic drive with manual electrode sheet placement)
Tension Management	Continuous mechanical constant-tension regulation system
Operation Control	Ergonomic foot-pedal switch with auxiliary panel push-buttons
Display & Timer	Digital counter with cycle timer and one-touch zero-reset

Parameter	Value / Specification
Memory Function	Automatic state and parameter retention after power-off / idle
Required Compressed Air Supply	0.4 MPa to 0.6 MPa (clean, dry compressed air)
Electrical Power Supply	Single-Phase 220 VAC $\pm 10\%$, 50 Hz / 60 Hz (110 VAC single-phase customizable)
Rated Power Consumption	200 W
Equipment Dimensions (L $\times$ W $\times$ H)	512 mm $\times$ 820 mm $\times$ 580 mm
Equipment Net Weight	Approximately 50 kg

Semi Automatic Lithium Ion Battery Z Fold Stacking Machine

For Prismatic And Pouch Cell Stacking

Item Number: DP06



Introduction

Accelerate lithium-ion battery cell development with this high-precision semi-automatic Z-fold stacking machine. Featuring active separator tension control, secondary positioning, multi-sheet prevention, and micro-lift buffering, it delivers consistent alignment accuracy and high yield for advanced R&D pilot lines.

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Application	Description	Key Benefit
Prismatic Lithium-Ion Battery R&D	Precision Z-folding of alternating cathode and anode sheets for high-energy-density prismatic power cells.	Eliminates internal short risks through ± 0.2 mm adjacent electrode alignment and micro-lift knife buffering.
Pouch Cell Pilot Line Manufacturing	Semi-automated batch stacking for electric vehicle (EV) and energy storage system (ESS) pouch cell prototyping.	Delivers high cycle throughput (1.3-1.6 s/pcs) with minimal tooling changeover time between cell dimensions.
Solid-State and Advanced Cell Development	Stacking of brittle or ultra-thin ceramic-coated separators and advanced dry-process or wet-coated electrodes.	Gentle vacuum manipulation and dancer-controlled web tension preserve fragile experimental active layers.
Sodium-Ion Battery Assembly	Assembly of alternative chemistry cells requiring precise tension control and strict particulate-free processing.	Multi-point dust extraction modules prevent cross-contamination and conductive debris build-up.
Academic & Industrial Battery Labs	Flexible small-to-medium batch cell assembly across varied electrode dimensions (80-200 mm length).	User-friendly PLC interface allows rapid layer reconfiguration and material testing without hardware modifications.

Specification Parameter	Value / Detail
Product Item Number	DP06
Stacking Technology	Semi-Automatic Z-Fold Continuous Separator Stacking
Stacking Speed	1.3 – 1.6 seconds per piece (electrode sheet)
Auxiliary Handling Time	15 – 20 seconds (cell transfer and reset)
Equipment Pass Rate	99% (defects attributable strictly to machine operation)
Equipment Operating Rate (Uptime)	98% (faults attributable strictly to machine operation)
Total Rated Power	2.0 kW
Control Architecture	Industrial PLC with Full-Color Touchscreen HMI

Alignment Metric	Tolerance Specification
Electrode-to-Separator Center Deviation	± 0.4 mm
Separator End-Face Alignment Accuracy	± 0.3 mm
Adjacent Electrode Sheet Alignment Accuracy	± 0.2 mm
Overall Finished Electrode Stacking Accuracy	± 0.3 mm

Alignment Metric	Tolerance Specification
Separator Serpentine Web Error	< 1.0 mm / 1000 mm
Electrode Die-Cutting Tolerance Requirement	< 0.2 mm

Material Type	Length (mm)	Width (mm)	Thickness (mm)	Core / Roll Dimensions
Cathode & Anode Sheets	80 - 200 mm	80 - 150 mm	0.07 - 0.25 mm	Sheet material (die-cut, flat)
Electrode Tabs	8 - 20 mm (Tab extension)	8 - 20 mm (Tab width)	—	Same-side tab orientation
Separator Web	Continuous roll	80 - 155 mm	0.02 - 0.04 mm	Inner: ϕ 76.2 mm (3"), Max Outer: ϕ 300 mm

Cell Parameter	Dimension Range / Specification
Finished Cell Thickness (H)	5 - 20 mm
Finished Cell Width (W)	80 - 150 mm
Finished Cell Length (L)	80 - 200 mm (excluding tab extension)
Tab Length Extension (Q)	$\leq$ 20 mm
Tab Width	$\leq$ 20 mm
Outer Separator Wrapping	Automated blank fold reserve; manual tail wrap and tape application
Stacking Layer Capacity	Programmable within the 5-20 mm cell thickness envelope

Subsystem Module	Quantity	Engineering Functionality & Features
Stacking Platform Mechanism	1 Set	Four sets of presser knives with crossing action and micro-lift buffering.
Robotic Manipulator Assembly	1 Set	Servo motor and ground ball screw driving a 4-gripper pick-and-place transfer head.
Separator Payoff & Web Guiding	1 Set	Active motor unwinding, floating dancer roller tension control, and dynamic EPC edge tracking.
Secondary Positioning Stations	2 Sets	Pneumatic push-gauge alignment blocks with integrated dust collection nozzles.
Electrode Magazine Cassettes	2 Sets	Magazine-style auto-elevating cartridges with constant height tracking, air knives, and separation brushes.
Separator Cutting Unit	1 Set	Controlled electric resistance heating wire for clean thermal cut-off.
Cell Unloading Mechanism	1 Set	Pneumatic clamp manipulator transferring stacked cores to the manual taping station.
Chassis & Structural Frame	4 Units	Heavy-duty dual main frame and precision ground sub-baseplates for vibration isolation.
Enclosure & Safety System	1 Set	Industrial aluminum profile safety canopy with interlocked transparent access panels.
Vacuum System	1 Set	High-flow compressed air-driven vacuum ejector network for multi-cup pick heads.

Utility / Environmental Parameter	Operating Standard
Input Electrical Supply	AC 220V Single-Phase, 50/60 Hz (Voltage fluctuation within $\pm$ 10%)
Pneumatic Supply Pressure	0.5 - 0.7 MPa (5 - 7 kgf/cm ²)
Compressed Air Consumption	100 L/min
Physical Dimensions	1550 mm (W) x 1250 mm (L) x 1850 mm (H)
Net Machine Weight / Floor Load	Approx. 800 kg / Floor load capacity > 450 kg/m ²
Ambient Operating Temperature	5 - 35 °C
Operating Relative Humidity	5 - 55% RH (Non-condensing)
Atmospheric Cleanliness	Free from conductive dust, corrosive chemicals, toxic vapors, and salt-laden air
Vibration & Magnetic Interference	Isolation from external high-magnitude magnetic fields and structural shock/vibration

Automatic Z-Fold Stacking Machine For Prismatic Lithium Ion Battery Cells

Item Number: DP05



Introduction

Discover our high precision automatic Z fold stacking machine for prismatic lithium ion battery cells featuring active tension unwinding multi sheet detection and automated taping to optimize cell assembly consistency throughput and manufacturing yield across pilot and production lines.

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Application	Description	Key Benefit
Prismatic EV Battery Manufacturing	Automated high-speed Z-folding of high-capacity cathode and anode sheets for automotive-grade prismatic lithium-ion power cells.	Maximizes volumetric energy density and ensures strict geometric alignment tolerances across high-volume production.
Energy Storage System (ESS) Cell Assembly	Continuous stacking of large-format prismatic battery cells designed for grid-scale, commercial, and industrial energy storage modules.	Delivers layer-to-layer repeatability and consistent interface contact to extend cell life and improve thermal stability.
High-Rate Industrial Cell Fabrication	Production of specialty prismatic cells for heavy industrial machinery, marine propulsion, and aerospace backup power systems.	Protects heavy-gauge current collector tabs from bending while maintaining uniform interfacial pressure throughout the stack.
Battery R&D and Pilot Line Prototyping	Fast-turnaround cell prototyping for new cathode/anode formulations, solid-state separators, and advanced electrolyte configurations.	Offers fully programmable layer counts and flexible parameter tuning without requiring mechanical tooling changeovers.
Consumer Electronics Cell Production	Precision Z-fold fabrication of medium-capacity prismatic cells for high-end power tools, robotics, and commercial electronics.	Prevents active material contamination and corner chipping, maximizing first-pass production yields to 99%.

Parameter Category	Specification Details (Item Number: DP05)
Stacking Speed	Single station: 1.0 - 1.2 s/pcs
Auxiliary Handling Time	10 - 15 s per finished cell core
Electrode-to-Separator Alignment	Center deviation: ± 0.3 mm
Separator End Face Alignment	± 0.3 mm
Adjacent Electrode Alignment	± 0.2 mm
Overall Electrode Alignment	± 0.3 mm
Stacking Layer Configuration	Fully programmable within allowable thickness envelope
Outer Separator Wrapping	Single-layer outer wrap, no tail roll
First-Pass Product Yield	$\geq 99\%$ (equipment-induced defects only)
Equipment Operating Rate (Uptime)	$\geq 98\%$ (equipment-induced downtime only)
Supply Power Requirements	Single-Phase AC 220V $\pm 10\%$, 50 Hz, 4 kW (UK standard plug configuration)
Compressed Air Supply	0.5 - 0.7 MPa (5 - 7 kgf/cm ²), Flow Rate: 200 L/min
Operating Environment Temperature	5 - 35 °C
Operating Relative Humidity	5 - 55% RH

Parameter Category	Specification Details (Item Number: DP05)
Ambient Air Quality Standards	Free of conductive dust, corrosive chemicals, toxic vapors, and salt-laden air
Vibration & Magnetic Interference	Free of external magnetic fields, mechanical impacts, or perceptible floor vibration
Floor Loading Capacity	> 650 kg/m²
Machine Physical Dimensions	Approx. W 2350 mm × L 1800 mm × H 2200 mm (subject to final engineering drawing)
Total Equipment Weight	Approx. 2500 kg
Chassis Finish and Exterior	Industrial Computer Gray

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



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