

Semi Automatic Cylindrical Battery Winding Machine

Item Number: YZ04



Introduction

Semi automatic cylindrical battery winding machine for lithium ion cell production with precision alignment adjustable winding speed automatic termination tape application active diaphragm tension control dust removal and reliable unloading for consistent high yield performance in demanding research environments.

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Application	Description	Key Benefit
Cylindrical lithium ion cell R&D	Produces wound cylindrical cells from manually introduced positive and negative electrode sheets with separator layering.	Supports controlled evaluation of winding recipes and cell construction quality.
Battery pilot production	Provides a semi automatic winding sequence for development lines and low-volume cylindrical cell production.	Reduces repetitive manual operations while retaining flexible material loading.
University battery laboratories	Handles multiple electrode widths, separator widths, winding needle sizes, and cell diameters for experimental programs.	Enables practical format changes across research projects.
Electrode process validation	Evaluates how electrode width, thickness, separator tension, and winding speed influence wound-cell alignment.	Delivers measurable process control for engineering trials.
Cylindrical cell prototype fabrication	Forms prototype cells with controlled positive-electrode, negative-electrode, and separator relationships.	Helps teams move from material samples to repeatable cell prototypes.
Battery manufacturing process development	Supports development of winding, termination taping, separator wrapping, and unloading procedures before larger-scale automation.	Provides a defined process platform for scale-up decisions.
Advanced materials research	Accommodates electrode and separator materials used in experimental lithium ion cell programs within the stated dimensional limits.	Combines broad material compatibility with controlled winding accuracy.

Specification	Details
Equipment type	Semi automatic cylindrical battery winding machine
Primary function	Precision winding of cylindrical lithium ion battery cell electrodes and separators
Process sequence	Separator pre-winding; negative electrode insertion; positive electrode insertion; winding; station transfer; separator cutting; termination tape application; unloading
Winding structure	Two winding assemblies, each formed by a single-head through-type winding structure
Winding station transfer	One station-transfer assembly for switching between winding and tape-application stations
Separator unwinding	Two active separator unwinding assemblies with pneumatic adjustment control
Electrode guiding	Two electrode guiding assemblies with single-side adjustment
Tape application and unloading	One termination tape application and unloading assembly
Dust management	Electrode-sheet dust removal device
Separator finishing	Separator outer-wrap finishing

Material	Length	Width	Thickness	Core Inner Diameter	Roll Outer Diameter
Positive electrode sheet	600 to 7000 mm	178 to 318 mm	0.1 to 0.2 mm	Not specified	Not specified
Negative electrode sheet	600 to 7000 mm	178 to 318 mm	0.1 to 0.2 mm	Not specified	Not specified
Separator	Roll material	180 to 320 mm	0.016 to 0.045 mm	76.2 mm	250 mm
Termination tape	Roll material	10 to 90 mm	0.01 to 0.035 mm	76.2 mm	150 mm

Format Parameter	Specification
Separator width	180 to 320 mm
Electrode-sheet width	178 to 318 mm
Winding needle specification	Diameter 8.0 to 15 mm; customized according to customer requirements
Standard winding needle delivery	One set supplied; configuration according to customer requirements
Applicable finished-cell outer diameter	Diameter 28 to 60 mm

Performance Item	Requirement or Result
Electrode width error condition	Less than ± 0.2 mm
Electrode S-bend error condition	Less than ± 1 mm per 500 mm
Separator roll tower-shaped error condition	Less than ± 0.2 mm
Separator alignment accuracy	Less than ± 0.5 mm
Electrode alignment accuracy	Less than ± 0.5 mm
Finished-cell cross-section alignment	± 0.5 mm
Layer relationship	Negative electrode encloses positive electrode; separator encloses negative electrode
Qualified rate	$\geq 98\%$, excluding factors unrelated to the equipment
Wound-cell condition	No damage, core extraction, or electrode misalignment when material conditions are met

Specification	Details
Input power	AC220V, 3KVA, 50HZ
Compressed-air source	Greater than 0.4 MPa
Equipment dimensions	1850 mm $\times$ 1750 mm $\times$ 1650 mm, length $\times$ width $\times$ height; actual equipment shall prevail
Dimension note	Dimensions do not include the protruding length of the electrode-sheet material trough; unit: mm
Equipment weight	Approximately 1000 kg
Dimensional tolerance W	Less than 0.5 mm
Dimensional tolerance D	Less than 0.3 mm
Dimensional tolerance L	Less than 1000 mm