

Semi Automatic Cylindrical Battery Winding Machine For Lithium Ion Cell Production

Item Number: JR07



Introduction

Semi automatic cylindrical battery winding machine delivers precision electrode alignment, automated separator tension control, and integrated termination taping for high yield lithium ion cell assembly across pilot scale and industrial production lines.

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Application	Description	Key Benefit
Next-Generation 46-Series Cylindrical Cells	Pilot winding of large-format 4680, 4695, and 46120 cylindrical power cells with thick electrodes.	Accommodates cell diameters up to 60 mm and heavy coating loadings without core deformation.
Standard Commercial Cell Prototyping	Assembly of 18650, 21700, 26650, and 32140 format lithium-ion energy storage cells.	Rapid tooling changeovers for quick switching between diverse dimensional standards.
Sodium-Ion Battery Development	Specialized winding of emerging sodium-ion cathode and anode ribbon materials with ultra-sensitive tension profiles.	Smooth, low-impact tension regulation eliminates foil tearing and edge cracking.
Solid-State / Semi-Solid Cell Assembly	Precision layer winding combining advanced ceramic-coated polymer separators with thin lithium metal or composite foils.	Precise alignment within ±0.5 mm prevents internal edge-to-edge shorting.
Supercapacitor Core Fabrication	High-speed cylindrical winding of activated carbon electrode sheets and porous dielectric separators.	Supports electrode lengths up to 7000 mm with uniform compaction and low equivalent series resistance (ESR).
Academic and Industrial Battery R&D	Iterative validation of novel slurry formulations, current collector foil thicknesses, and binder chemistries.	High-yield manual insertion workflow reduces raw material waste during small batch trials.

Specification Parameter	Technical Detail (Item: JR07)
Equipment Item Number	JR07
Applicable Finished Cell Outer Diameter (OD)	Φ28 mm – Φ60 mm
Winding Needle Pin Diameter Specification	Φ8.0 mm – Φ15.0 mm (Customized per client requirements; 1 set included)
Positive Electrode (Cathode) Length Range	600 mm – 7000 mm
Positive Electrode (Cathode) Width Range	178 mm – 318 mm
Positive Electrode (Cathode) Thickness Range	0.100 mm – 0.200 mm
Negative Electrode (Anode) Length Range	600 mm – 7000 mm
Negative Electrode (Anode) Width Range	178 mm – 318 mm
Negative Electrode (Anode) Thickness Range	0.100 mm – 0.200 mm
Separator Supply Material Width Range	180 mm – 320 mm
Separator Material Thickness Range	0.016 mm – 0.045 mm
Separator Supply Reel Inner Diameter (ID)	76.2 mm (3.0 inches)
Separator Supply Reel Maximum Outer Diameter (OD)	250 mm

Specification Parameter	Technical Detail (Item: JR07)
Termination Tape Width Range	10 mm - 90 mm
Termination Tape Thickness Range	0.010 mm - 0.035 mm
Termination Tape Reel Inner Diameter (ID)	76.2 mm (3.0 inches)
Termination Tape Reel Maximum Outer Diameter (OD)	150 mm
Electrode Width Tolerance Requirement	< ± 0.2 mm
Electrode Camber ("S" Curve) Tolerance	< ± 1.0 mm / 500 mm
Separator Reel Telescoping Error Limit	< ± 0.2 mm
Separator-to-Separator Alignment Precision	< ± 0.5 mm
Electrode-to-Electrode Alignment Precision	< ± 0.5 mm
Finished Cell End-Face Cross-Section Alignment	± 0.5 mm (Guaranteed anode wraps cathode, separator wraps anode)
Production Qualification Yield Rate	$\geq 98\%$ (Excluding raw material defects)
Input Electrical Power Supply	AC 220V $\pm 10\%$, Single-Phase, 3 kVA, 50 Hz
Compressed Air Supply Requirement	≥ 0.40 MPa (Dry, filtered pneumatic supply)
Equipment Overall Dimensions (L $\times$ W $\times$ H)	1850 mm $\times$ 1750 mm $\times$ 1650 mm (Excluding extended electrode feed guides)
Equipment Net Weight	Approx. 1000 kg