

Supercapacitor Automatic Winding Machine Electrode Sheet Winder

Item Number: JR04



Introduction

Discover high precision automatic supercapacitor electrode winding solutions engineered for continuous tension control web alignment integrated short circuit inspection and reliable cell assembly in demanding energy storage pilot lines and commercial battery manufacturing environments worldwide.

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Application	Description	Key Benefit
Electric Double-Layer Supercapacitors (EDLC)	Automated winding of high-surface-area activated carbon electrodes and porous separators into cylindrical cores.	Delivers uniform interlayer contact and ultra-low internal equivalent series resistance (ESR).
Lithium-Ion Hybrid Supercapacitors (LiC)	Precision layer assembly combining lithium-doped battery electrodes with capacitor-grade counter electrodes.	Prevents mechanical damage to pre-lithiated foil coatings through non-destructive tension control.
High-Power Automotive Start-Stop Modules	High-throughput fabrication of large-diameter cylindrical cells designed for rapid regenerative energy capture.	Guarantees tight outer diameter tolerance (± 0.1 mm) for automated insertion into metal can housings.
Renewable Energy Grid Smoothing Capacitors	Assembly of long-sheet electrode groups (up to 6000 mm length) for heavy-duty stationary storage cells.	High-precision web length tracking prevents volumetric energy variance across production batches.
Industrial Pulse Power Systems	Fabrication of compact, high-reliability wound energy storage units utilized in medical pulse and aerospace devices.	100% inline short-circuit testing guarantees zero dielectric breakdown under extreme discharge rates.
Advanced Pilot Line Cell Development	Flexible parameter configuration for rapid testing of novel slurry coatings, dry electrodes, and ultra-thin separators.	Tool-less adjustment accommodates broad electrode width (80-160 mm) and thickness (100-320 μ m) ranges.

Parameter Category	Specification Parameter	Technical Value / Description
Product Identifier	Equipment Model	JR04
Process Flow Architecture	Automated Process Sequence	Separator Loading → Termination & Protective Tape Feeding → Cathode/Anode Feeding → Tape Splicing Detection → Electrode Core Winding → Length Control → Termination & Protective Tape Application → Short-Circuit Dielectric Test → Defect Discrimination & Output
Cathode (Positive) Sheet	Feeding Method	Continuous Roll Unwinding
	Single Sheet Length Range	600 mm – 6000 mm
	Width Range	80 mm – 160 mm
	Width Tolerance	± 0.1 mm
	Thickness Range	100 μ m – 320 μ m
	Thickness Tolerance	± 10 μ m
	Maximum Supply Reel Outer Diameter	Ø 400 mm

Parameter Category	Specification Parameter	Technical Value / Description
Anode (Negative) Sheet	Supply Reel Core Inner Diameter	Ø 75.8 mm
	Feeding Method	Continuous Roll Unwinding
	Single Sheet Length Range	600 mm – 6000 mm
	Width Range	80 mm – 160 mm
	Width Tolerance	±0.1 mm
	Thickness Range	100 µm – 320 µm
	Thickness Tolerance	±10 µm
Separator Web	Maximum Supply Reel Outer Diameter	Ø 400 mm
	Supply Reel Core Inner Diameter	Ø 75.8 mm
	Feeding Method	Continuous Roll Unwinding
	Width Range	80 mm – 160 mm
	Width Tolerance	±0.1 mm
	Thickness Range	16 µm – 50 µm
	Thickness Tolerance	±4 µm
Tape Subsystem	Maximum Supply Reel Outer Diameter	Ø 350 mm
	Supply Reel Core Inner Diameter	Ø 75.8 mm
Functional Modules	Tape Compatibility	Termination Tape & Protective Outer Wrap Tape
	Application Mode	Fully Automated Precision Dispensing and Cutting
Electrical Specifications	Inspection & Quality Control	Length Tracking, Auto Tension Regulation, Dynamic Edge Rectification, Hi-Pot Short-Circuit Test, Foil Joint Detection
	Power Supply Requirements	Single Phase AC 220V, 50/60 Hz, 10 kW
Pneumatic Requirements	Allowable Voltage Fluctuation	±10%
	Compressed Air Supply Pressure	0.45 MPa – 0.6 MPa
Environmental Conditions	Air Consumption Rate	10 L/min
	Operating Ambient Temperature	20°C – 35°C
	Operating Relative Humidity	30% – 55% RH
Physical Dimensions	Ambient Air Quality Standard	Cleanroom or Dry Room; Free of Corrosive Gases, Flammable Vapors, and Conductive Dust
	Overall Equipment Footprint (L x W x H)	2500 mm x 1700 mm (including dust canopy) x 2000 mm
	Total Machine Net Weight	3000 kg