

Semi Automatic Battery Bottom Welding And Grooving Machine 2 In 1 Cylindrical Cell Grooving And Spot Welder

Item Number: GC04



Introduction

Optimize cylindrical cell assembly with this semi automatic bottom welding and grooving machine delivering high precision shoulder height control automated infeed outfeed and reliable 20 to 30 PPM output for battery pilot lines and commercial manufacturing facilities worldwide.

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Application	Description	Key Benefit
18650 Battery Cell Assembly	High-speed bottom tab spot welding and can opening roll-grooving for standard 18650 lithium-ion energy cells.	Maintains uniform ± 0.05 mm shoulder height consistency, maximizing seal reliability during downstream electrolyte filling and crimping.
21700 Power Cell Manufacturing	Precision forming and high-reliability welding for high-capacity 21700 cylindrical battery formats used in mobility and storage packs.	Ensures robust mechanical tab bonding and precise groove depth under adjustable pneumatic pressures tailored for thicker cell casings.
Battery R&D and Prototyping Lines	Flexible pilot-scale assembly of custom cylindrical cells with frequent adjustments to casing alloy chemistry, wall thickness, and tab materials.	Allows rapid parameter tuning for weld current, pulse duration, and grooving cutter stroke on an interactive digital touchscreen interface.
Pilot Pre-Production Validation	Turnkey fabrication station for testing new cell designs, internal current collectors, and safety vent groove geometries prior to high-volume tooling release.	Provides integrated pull-force testing, short-circuit pre-checks, and comprehensive cycle counting to validate process capability metrics.
Supercapacitor and Custom Cell Fabrication	Tab attachment and precision grooving of heavy-duty cylindrical housings for hybrid energy storage devices and specialized capacitor cans.	Delivers up to 4 kg spring-loaded welding pressure and highly repeatable dimensional accuracy across non-standard casing profiles.

Specification Category	Parameter	GC04 Technical Value
Model Identification	Item Code	GC04
Core Capabilities	Primary Functions	Semi-automatic bottom spot welding and roll-grooving (2-in-1 integrated configuration or standalone operation)
	Applicable Cell Types	18650 and 21700 Cylindrical Steel Casing Batteries
	Production Throughput	20 to 30 PPM (PPM varies depending on operator handling speed)
Forming & Grooving Precision	Grooving Inner Diameter Precision	± 0.05 mm
	Shoulder Height Precision	± 0.05 mm
	Total Height Precision	± 0.1 mm
	Casing Mouth Precision	± 0.1 mm
Welding System & Controls	Spot Welding Pressure (Spring)	4 kg (Optional, optimized for pointed needle spot welding)
	Programmable Welding Parameters	Voltage, Current, Pulse Duration, Interval Time, Power, Resistance Verification
	Welding Quality Control	Pull-force testing capability, Current alarm, Resistance validation, Pin maintenance diagnostics

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Mechanical & Process Tuning	Grooving Adjustments	Main head down-stroke distance, cutter advance distance, groove depth, shoulder height
	Pneumatic Grooving Tuning	Adjustable forming air pressure adapted to varying casing alloys and thicknesses
	Auxiliary Process Functions	Automatic oiling/lubrication, Short-circuit detection, Fixture in-place auto-sensing
Electrical Specifications	Input Power Supply	Single-phase / 3-phase, 220V - 380V AC, 50 Hz (32A industrial connector)
	Total Machine Power	4500 W
Pneumatic Requirements	Required Operating Air Pressure	0.5 to 0.6 MPa (Clean, dry compressed air source)
	Air Inlet Pipe Dimensions	Outer Diameter $\Phi 10$ mm $\times$ Inner Diameter $\Phi 8$ mm
	Air Exhaust / Consumption Flow	0.113 L/s
Physical & Safety Characteristics	External Dimensions (Docked Overall)	L 2280 mm $\times$ W 850 mm $\times$ H 1520 mm
	Equipment Weight	200 kg
	Safety Systems	Protective exterior enclosure, optical safety light curtain, alarm diagnostics
	User Interface	Touchscreen HMI with manual debugging, automatic operation, and real-time cycle counting