Isobaric High Precision Aluminum Shell Battery Liquid Injection Machine

Item Number: YY05

Introduction

Isobaric aluminum shell battery liquid injection machine for lithium battery production, supporting primary and secondary filling, vacuum pressure cycling, sealed positive pressure glovebox operation, accurate dosing, weighing, and stable high yield for demanding laboratory manufacturing workflows and advanced materials research.

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Application	Description	Key Benefit
Aluminum Shell Lithium Battery Production	Injects electrolyte into compatible aluminum shell cells through injection holes measuring 1.2 to 2.0 mm in diameter.	Provides controlled liquid filling across a broad range of cell sizes.
Battery Research and Development	Supports experimental primary and secondary injection procedures for new cell designs, electrolyte studies, and process development.	Allows researchers to adjust resting duration and filling sequences without changing the basic equipment platform.
Pilot-Scale Cell Fabrication	Provides a repeatable workflow from manual barcode scanning and weighing through automatic injection and final weighing.	Connects operator handling with measurable process checkpoints before scale-up.
Secondary Electrolyte Filling	Performs a second injection stage when the cell process requires additional electrolyte after initial filling and conditioning.	Supports more flexible cell conditioning and electrolyte management.
Moisture-Sensitive Battery Processing	Operates inside a sealed glovebox-style enclosure supplied with dry gas and maintained at positive pressure.	Limits entry of external atmosphere during injection operations.
Academic and Advanced Materials Research	Serves laboratories investigating battery materials, cell construction, and related electrochemical manufacturing processes.	Offers a defined, instrumented process for repeatable research batches.
Multi-Format Cell Development	Handles cells across the specified width, height, thickness, injection-hole edge distance, and hole-diameter ranges.	Reduces the need for separate equipment when compatible cell formats vary.

Parameter	Specification
Product Item Number	YY05
Injection method	Isobaric liquid injection
Compatible battery width L	50 to 180 mm
Compatible battery height H	80 to 210 mm
Compatible battery thickness W	25 to 75 mm
Injection hole edge distance D	Greater than or equal to 5 mm
Injection hole diameter	1.2 to 2.0 mm
Fixture configuration	One fixture included
Supported injection sequence	Primary injection and secondary injection

Parameter	Specification
Injection accuracy	Less than or equal to 8 per mille g
Injection pump type	Electronic ceramic variable pump
Number of injection pumps	One
Maximum single-stroke injection volume	Less than or equal to 15 g
Single-stroke injection quantity accuracy	15 g plus or minus 0.05 g
Resting method	Multiple resting stages with vacuum extraction and pressurization
Maximum vacuum degree during resting	Minus 0.09 MPa
Resting time	Any setting from 1 to 99 seconds
Resting and pressurization effect	Resting and pressurization time directly affects equipment efficiency
Electronic scale accuracy	Plus or minus 0.1 g
Electronic scale capacity	8000 g
Changeover time	No more than 30 minutes for an experienced operator
Equipment uptime	Greater than 98 percent
Uptime calculation note	Refers to equipment-caused failure rate; scheduled maintenance, pre-production preparation, and raw material changes are excluded
First-pass product qualification rate	Greater than or equal to 99.5 percent

Parameter	Specification
Power supply	AC 220 V plus or minus 10 percent, 50 Hz
Rated power	3 kW
Compressed air pressure	0.5 to 0.7 MPa, equivalent to 5 to 7 kgf/cm2
Compressed air consumption	10 L/s
Compressed air preparation	Drying, filtration, and pressure stabilization required
Vacuum source	Less than or equal to minus 0.098 MPa, 20 L/s
Environmental dew point	Less than minus 50 degrees C
Dehumidification equipment	To be provided by the customer
Installation floor load requirement	Greater than 500 kg/m2
Equipment weight	Approximately 2.0 T
Overall dimensions	1500 L x 1600 W x 2050 H; actual dimensions may vary

Item	Specification
Loading method	Operator manually scans and weighs the unfilled battery, then places it into the fixture
Filling operation	Automatic liquid injection with automatic high-pressure and low-pressure cycling
Unloading method	Operator manually removes the battery from the fixture
Post-process verification	Battery is scanned and weighed after injection
Enclosure design	Glovebox-style sealed cover
Internal atmosphere	Dry gas supplied inside the sealed chamber
Pressure condition	Positive pressure during operation; internal gas may escape while external gas cannot enter