

Precision Plunger Pump Liquid Injection And Dispensing System For Battery Electrolyte And Chemical Metering

Item Number: JZ03



Introduction

Discover high precision liquid injection systems engineered with valveless industrial ceramic plunger pumps for battery electrolyte filling pharmaceutical dispensing and corrosive chemical metering with superior repeatability and low maintenance.

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Application	Description	Key Benefit
Lithium Battery Electrolyte Injection	Micro-volume precision filling of aggressive organic electrolytes into cylindrical cells, pouch cells, and battery pilot lines.	Zero corrosion, air bubble elimination, and tight volumetric tolerance preventing under-filling or over-filling.
Pharmaceutical & Reagent Dosing	High-accuracy batch dispensing, filling, and aliquot transfer of active pharmaceutical solutions, diagnostic reagents, and sterile vaccines.	Contactless valveless operation preventing particulate shedding, biological contamination, and cross-batch fluid carryover.
Acid & Solvent Metering	Continuous or pulsed dosing of aggressive inorganic acids, alkaline solutions, and organic solvents in chemical synthesis reactors.	High-grade ceramic fluid path prevents chemical degradation, seal swelling, and internal fluid leakage across wide pH ranges.
Precision Gluing & Underfill Dispensing	Controlled dispensing of optical adhesives, UV curable glues, potting compounds, and sealants on microelectronic assemblies.	Programmable reverse draw-back completely eliminates nozzle stringing, dripping, and irregular line deposition.
High-Precision Spraying & Coating	Constant-rate liquid delivery to automated spray nozzles for thin-film coating, membrane fabrication, and surface functionalization.	Pulsation-free fluid delivery ensures uniform wet-film thickness and consistent layer deposition without pressure spikes.
Dairy & Flavoring Micro-Injection	Quantitative micro-addition of concentrated flavorings, enzymes, food-grade additives, and vitamins in automated packaging lines.	Food-safe wetted materials, rapid cleaning-in-place readiness, and repeatable micro-volume precision per packaging cycle.
Acidic Etchant & Electroplating Metering	Accurate replenishment of corrosive chemical additives and brighteners in semiconductor and PCB plating baths.	High mechanical hardness and chemical resilience against abrasive additives, ensuring extended mean time between maintenance.

Parameter Category	Specification Details (Model Identifier: JZ03)
Product Type	Single-head 1-in 1-out reciprocating rotary positive displacement ceramic plunger metering pump
Item Identifier	JZ03
Pump Core Materials	High-purity Zirconia (ZrO ₂) and Alumina (Al ₂ O ₃) ceramics
Core Performance Attributes	Wear resistant, acid/alkali corrosion proof, high-temperature capable, ultra-high hardness, low friction coefficient
Plunger-to-Sleeve Pairing Clearance	2 μm precision fit
Drive Mechanism	Imported precision servo motor / industrial stepper motor
Rotational Speed Range	1 to 1200 rpm (bidirectional, forward and reverse rotation supported)
Speed Control Method	Pulse signal control
Display and Control Interface	4.3-inch color touchscreen HMI with dedicated programmable controller
Recipe & Parameter Memory	Non-volatile internal memory supporting up to 100 process parameter recipes
Single Stroke Metering Volume	0 μL to 10,000 μL (Maximum 10,000 μL per single stroke)

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Total Dispensing Calculation Formula	$Q_{total} = Q_{stroke} \times N_{strokes}$
Metering Volumetric Accuracy	Within $\pm 0.3\%$ to $\pm 0.5\%$ ($\pm 3\text{‰}$ to $\pm 5\text{‰}$)
Applicable Fluid Medium Temperature	Standard operating range up to $\leq 250^{\circ}\text{C}$ (specify fluid profile during configuration)
Fluid Tubing Specifications	PE / PTFE / PFA options; Inlet ID $\Phi 6\text{ mm}$ $\times$ OD $\Phi 8\text{ mm}$; Outlet ID $\Phi 6\text{ mm}$ $\times$ OD $\Phi 8\text{ mm}$
Dispensing Needles & Nozzles	$\Phi 2.5\text{ mm}$, $\Phi 4.0\text{ mm}$, $\Phi 6.0\text{ mm}$ (custom nozzle diameters and lengths available)
Programmable Operating Modes	Positive draw, reverse suction (draw-back), delay metering, standby wash, batch capacity counting
Communication Interface	Standard industrial interface for PLC / IPC host computer automated networking
Pump Unit Dimensions (L $\times$ W $\times$ H)	201 mm $\times$ 125 mm $\times$ 147 mm
Controller Dimensions (L $\times$ W $\times$ H)	295 mm $\times$ 215 mm $\times$ 157 mm
Power Supply Requirements	Standard: AC 220V $\pm 10\%$, 50Hz/60Hz; Optional: AC 110V $\pm 10\%$, 50Hz/60Hz
Operating Ambient Conditions	Ambient temperature 0°C to 40°C ; Relative humidity $< 80\%$ RH (non-condensing)
Ingress Protection Level	IP31 industrial enclosure protection
Security & System Safety	Multi-level password access control and one-touch factory reset restoration