All Electric Servo Automatic Hot Press 1 Ton Precision Force Closed Loop Control 150X150 Mm Platens Oil Free Cleanroom Compatible

Item Number: XP84

Introduction

High-precision all-electric servo automatic hot press delivering 1-ton force with ±1 kg closed-loop control, 150x150mm heated platens up to 300°C, programmable temperature and pressure ramping, and 100% oil-free operation ideal for cleanroom environments, semiconductor, microfluidics, and advanced polymer film research.

Learn More

Application	Description	Key Benefit
Flexible & Printed Electronics	Lamination of flexible displays, organic photovoltaics, and sensor arrays on polymer substrates.	Oil-free, uniform pressure prevents defects and ensures high-yield roll-to-sheet processes.
Semiconductor Die Bonding	Cleanroom-compatible die attach and eutectic bonding for microchips and MEMS devices.	±1 kg force accuracy prevents die fracture and ensures consistent bond line thickness.
Polymer Micro-Molding	Hot embossing of microfluidic channels and optical elements into thermoplastic and thermoset films.	Programmable temperature/pressure ramps replicate nanostructures with high fidelity.
Biomedical Device Assembly	Lamination and bonding of bio-compatible films, membranes, and microfluidic cartridges for diagnostics.	Contamination-free operation meets ISO Class 5 cleanroom standards for medical devices.
Battery Research	Compression of solid-state electrolytes, electrode lamination, and stack assembly for Li-ion and next-gen batteries.	Precise force and temperature control optimizes interfacial contact without damaging thin foils.
Composite Material Curing	Heat and pressure curing of carbon-fiber prepregs, adhesive films, and layered composites for aerospace testing.	Even heat distribution and steady force prevent delamination and void formation.
Thin-Film Polymer Processing	Melting and pressing of polymer pellets into uniform thin films for spectroscopy and material testing.	Programmable ramps prevent thermal degradation while achieving target thicknesses.
MEMS & Nanotechnology	Hot embossing of nanoimprint lithography templates and micro-scale features.	High parallelism and force accuracy enable replication of sub-micron features.
Adhesive Bonding & Peel Testing	Simulation of bonding processes and measurement of peel strength for quality control in packaging and assembly.	Bidirectional load cell enables both compression and tension protocols on a single platform.

Parameter	Specification	Notes
Model	XP84	Site-specific identifier for this all-electric servo hot press configuration.
Drive Method	All-Electric Precision Servo Motor	100% oil-free, ultra-quiet operation; replaces hydraulic pump and cylinder with a responsive servo drive and ball screw.
Force Range	0 – 1 Ton (0 – 10 KN)	Continuous adjustment from zero to maximum; ideal for delicate low-force applications.
Force Accuracy	±1 kg (approx. ±10 N)	Closed-loop load cell feedback; automatically compensates for thermal expansion, material creep, and relaxation.
Platen Size	150×150 mm (5.9×5.9 inch)	Surface-finished to high flatness and parallelism; optional coatings and custom shapes available.

Parameter	Specification	Notes
Max Daylight	50 mm	Allows loading of thick tooling or multi-layer stacks; full closure (0 mm) possible for thin-film pressing.
Temperature Range	Room Temperature to 300°C	Each platen independently controlled via PID with ±1°C stability; ramp rates programmable from 0.1 to 20°C/min.
Control Software	7-inch PID touchscreen interface	Intuitive recipe creation with graphical temperature/force profiles; stores up to 20 programs; real-time data display.
Heating Power	1500 W (1.5 kW)	Fast heat-up to 300°C in under 15 minutes; power regulated for precise ramping without overshoot.
Cooling Method	Integrated circulating water cooling channels in platens	Rapid cool-down (e.g., 300°C to 50°C in ~10 minutes with chiller); protects tooling and increases throughput.
Power Supply	AC 220V, 50Hz/60Hz, Single Phase	Standard laboratory outlet; internally fused and protected against voltage fluctuations.
Certification	CE Safety Certified	Includes emergency stop, overload protection, and safety interlocks for operator protection.