Manual Heated Laboratory Hydraulic Hot Press For Materials And Battery Research

Item Number: KT-XP1



Introduction

Engineered for demanding battery and materials research, this compact manual hot press delivers ten tons of precision clamping force, dual programmable heated platens reaching 300°C, and integrated water cooling inside an ultra-slim chassis designed specifically for standard glovebox antechambers.

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Application	Description	Key Benefit
Solid-State Battery Film Prep	Formulating and compacting uniform 100 µm solid electrolyte films using high-precision square film dies under controlled heat and high mechanical pressure.	Guarantees void-free thin-film consolidation, consistent layer thickness, and optimal ionic conductivity essential for high-performance battery prototypes.
Polymer Barrier Membranes	Hot pressing and thermo-molding variable-thickness polymer and fluoropolymer barrier sheets using gap-adjustable precision molds.	Delivers tailored membrane thickness, uniform density, and exceptional surface finish required for advanced packaging, filtration, and gas separation barriers.
Thermoplastic Composite Lamination	Consolidating multi-layered thermoplastic matrix composites and fiber-reinforced sheets under sustained compressive force and exact temperature profiling.	Produces ultra-strong, void-free interlaminar bonds with superior mechanical integrity for aerospace and lightweight automotive material research.
Material Sintering & Curing	Executing multi-segment thermal and pressure curves for advanced functional ceramics, metal-matrix composites, and thermoset resin formulations.	Provides semi-automated profile repeatability, eliminating user-to-user variation and accelerating synthesis discovery cycles in materials science laboratories.
Glovebox-Integrated Pressing	Executing thermal compression protocols inside inert argon or nitrogen gloveboxes thanks to the ultra-narrow 260 mm frame that passes through standard airlocks.	Eliminates environmental contamination, moisture degradation, and oxidation during the thermal processing of sensitive next-generation battery chemistries.
Microelectronic Die Bonding	Applying uniform contact pressure and elevated thermal energy to bond substrate assemblies, thermal interface materials, and electronic packaging components.	Yields planar, defect-free thermal joints with minimized thermal contact resistance and high mechanical shear strength across micro-assemblies.
General R&D Hot Pressing	Conducting rapid prototyping, sample preparation, and exploratory material synthesis across academic, industrial, and government analytical laboratories.	Delivers a versatile, space-efficient testing platform adaptable to custom tooling, variable die geometries, and diverse experimental constraints.

Specification Category	Parameter	KT-XP1 Specification Value
Model Identifier	Product Item Code	KT-XP1
Pressing Force	Maximum Clamping Force	10 Metric Tons (100 kN)
Platen Specifications	Platen Dimensions (W × D)	150 mm × 150 mm (5.9 in × 5.9 in)
Platen Material & Finish	Heating Surface Construction	Ground high-strength alloy steel with planar finish
Thermal Capabilities	Maximum Operating Temperature	300°C (572°F) continuous
Temperature Regulation	Heating Architecture	Dual-platen independent digital control loops
Temperature Uniformity	Surface Thermal Deviation	±1.5°C across active platen working surface
Heating Control System	Controller Hardware & Display	7-inch programmable full-color touchscreen interface

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Process Automation	Programming Profile Capability	Multi-segment ramp, dwell, and pressure hold sequences
Data Visualization	Real-Time Monitoring	Live temperature-force graphic curve display
Cooling Configuration	Hydraulic & Platen Cooling	Built-in water cooling channels with quick-disconnect ports
Mechanical Design	Frame Architecture	Monolithic high-rigidity steel frame (FEA-optimized)
Machine Dimensions	Chassis Footprint (W × D × H)	260 mm × 380 mm × 540 mm (Ultra-narrow profile)
Glovebox Airlock Compatibility	Minimum Airlock Diameter Requirement	Fits through standard 300 mm glovebox antechambers
Equipment Mass	Net System Weight	130 kg (Reinforced structural mass)
Hydraulic System	Actuation & Force Management	Manual hydraulic pump with calibrated fine-adjustment release
Safety Certifications	Compliance & Directives	CE Certified (Electrical, Mechanical, and Thermal Safety)
Safety Protections	Operator & System Protection	Over-temperature cutoffs, thermal shielding, emergency stop