

Laboratory-Platen-Presses Types P / M



Collin[®] laboratory platen presses offer

- **Uniform temperature distribution over the platen surface**
- **Maximum heating/cooling rates**
- **Freely programmable programs for pressure and temperature via touch screen**
- **Graphical representation of all test parameters**
- **Maximum pressure consistency**

The Product Line

Type P 200 P/M, P 300 P/M, P 400 P/M, P 500 P/M

Selected parameters are accurately maintained, especially thickness and temperatures. In combination with intelligent sequencing, reproducible test specimens are assured.

Vacuum Presses

Many materials are sensitive to oxidation processes. The situation may become critical at elevated temperatures or during longer molding cycles, causing material degradation. It is also frequently necessary to avoid gas pockets in the test specimen. In such cases, use of a vacuum press is required. This means that the entire molding compartment must be installed in a vacuum chamber.

Presses for Micro Structures

As an option, high-precision hydraulics can provide very sensitive closing in the range of 10 mm/s to 1 μ m/s. This is necessary when forming micro-structures.

High-Temperature Presses

There is a definite trend toward materials that can withstand high temperatures (PEEK, PI) in materials research today. It goes without saying that these require very high temperature for processing. For this reason, Collin® has developed presses that can operate in a temperature range of 450° C to 750° C.

Multi-Daylight Presses

Multi-daylight presses complete the range of laboratory presses from Collin®.



Application of Collin® Laboratory-Platen-Presses Type P / M

For processing all polymeric materials, ceramic formulations etc. over a temperature range of 20 – 450° C

Preparation of test specimens: Film or sheet ranging in thickness from about 0.1 to 10 mm prepared for testing of surfaces and color, or preparation of test specimens for the determination of mechanical, physical, chemical or optical properties

Laminating: For production of test specimens or for simulation of production processes, polymeric materials are laminated with other products such as films, metals or fiber-based substances

Thermoforming: Special versions permit heating of film and thermoforming in special tooling.

Embossing and micro-embossing: With appropriate tooling, surfaces can be embossed on one or both sides. Microstructures are produced on a product-specific basis through use of highly accurate temperature, pressure or position control

Sintering: Prototypes or short product runs are produced from mixtures of polymer or ceramic powders by means of uniaxial or isostatic pressing.

Cleanroom technology: Collin® presses can be manufactured in cleanroom versions for production of medical or pharmaceutical products

Design elements of the presses

Machine design

The press design starts with four solid columns. The large column spacing makes loading easy. The massive end platens ensure minimal deflection even at high pressing forces.



Hydraulic system

The simpler version employs a 2-stage hydraulic system. A system with proportional hydraulics offering fast pressure build-up and good pressure consistency is available for high pressure control ranges.

In combination with a pneumatic low-pressure system, an additional pressure control range (1:1000) becomes available. The maximum system pressure is 250 bar.

Heating/cooling platens

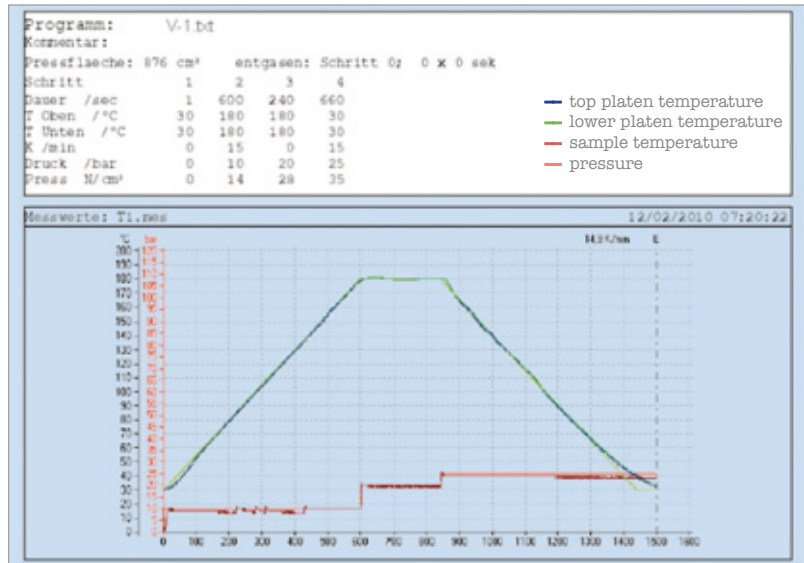
Collin® heating/cooling platens are characterized by a uniform temperature distribution over the platen surface ($\pm 1^\circ \text{C}$). Heating/cooling rates up to 30 K/min are readily achieved.



Logging of press programs

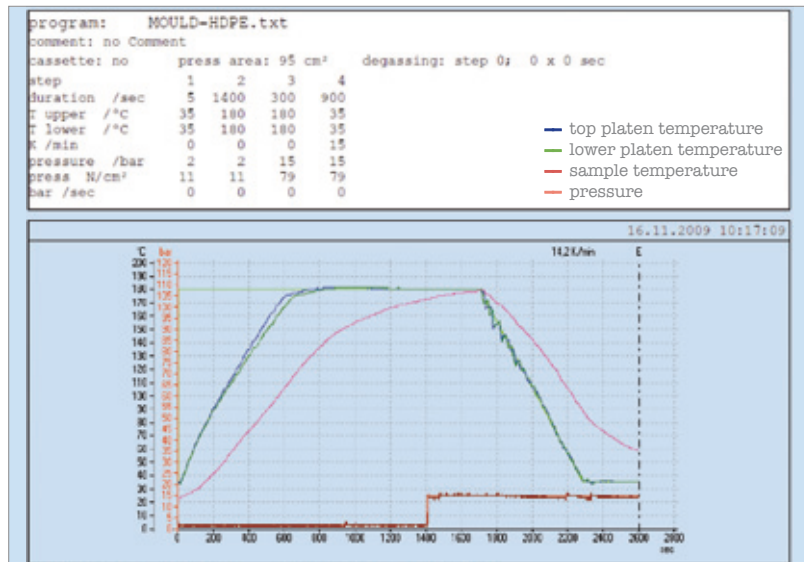
Heating / cooling ramps

The first figure show heating and cooling at a ramp rate of 15 K/min. The accuracy with which the actual value curve follows the setpoint curve over the entire range is noteworthy. The tolerance of $\pm 2^\circ\text{C}$ required by ASTM 1928 is easily maintained.



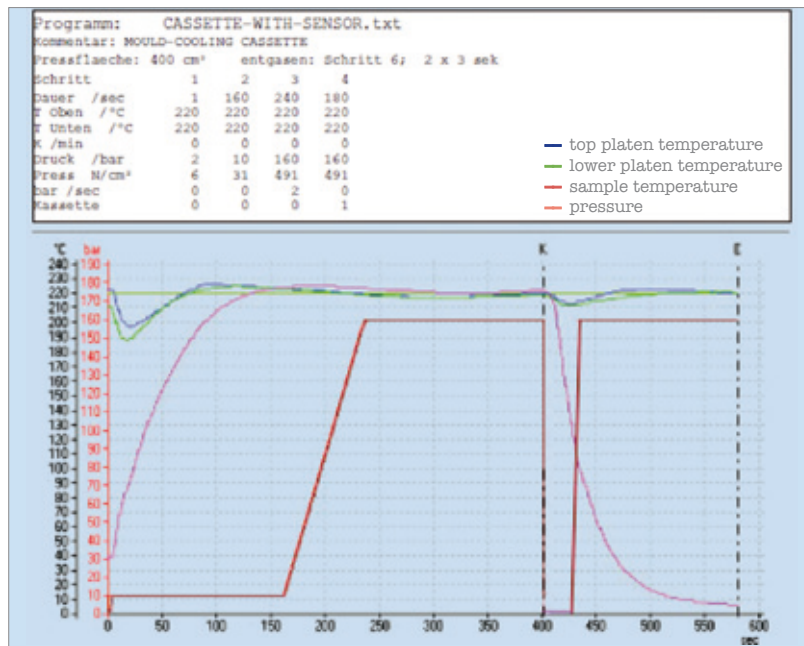
Shear-edge mould

Here, a shear-edge tool is heated and cooled at 30 K/min. The precise temperature control is obvious at even these high heating and cooling rates.



Heating presses with cassette cooling

After heating to 230 °C, the pressure is increased to 160 bar. In phase 4 (decreasing pressure), the lower heating plate moves down and the cooling cassettes move into position. The lower heating plate moves up again. The sample is now between the directly cooled cassettes. With a chilled water temperature of 10° C, a cooling rate of more than 100 K/min is achieved. How quickly the press platens settle at the setpoint with almost no overshoot can also be seen.

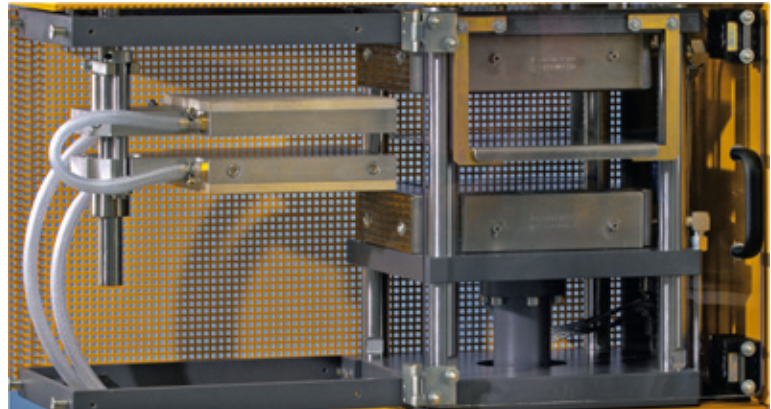


Cooling cassettes

Cooling cassettes boost

- the cooling rate to as high as 100 K/min
- the economic benefits from an up to 70% time savings as well as energy savings.

From their home position, the cassettes move into the press areas above and below the tooling, where they are pressed against the test specimen by the platens.



Press control system

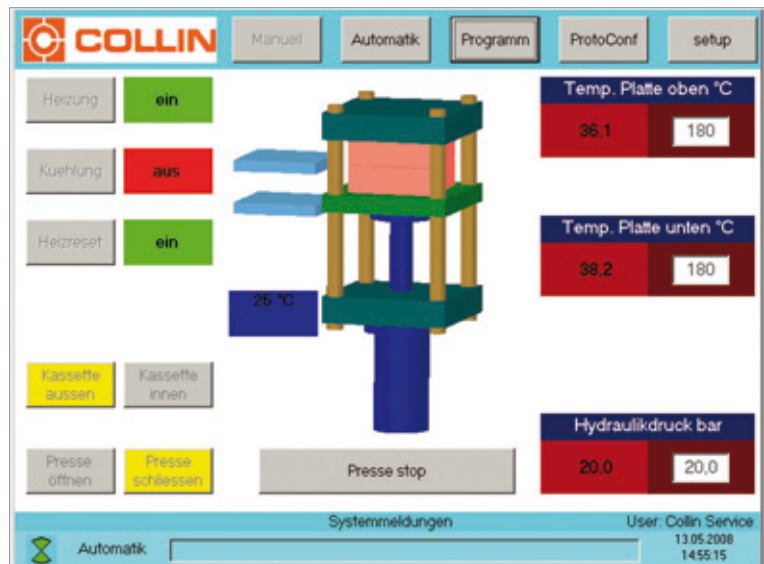
Touch Screen

The P 200 P/M to P 500 P/M presses feature two control components.

- An SCR 15 for pressure and temperature control
- A PC for visualization and evaluation
- The automatic sequencing incorporates a maximum of 1000 phases defined by
- Press pressure and force
- Times
- Platen temperatures
- Temperature ramps
- Pressure ramps
- Tool breathing

The PC supports the functions

- Touch screen for operation and display
- Graphical representation of the programmed sequence (pressure, temperature)
- Monitoring of press movements
- Malfunction and fault messages



Optional Equipment

A wide range of optional equipment is also available for these presses:

- Roller tables for loading
- Press platens, frames and tooling
- Mold temperature control
- Descaling systems
- Closed-loop cooling systems
- Increased column spacing
- Special hydraulics for high-speed operation
- Pneumatic low-pressure stages for operating in a range of 0,1 to 2 bar



Technical Data

		Typ P / M			
Nominale size		200	300	400	500
Usable surface	mm	196x196	296x296	396x396	496x496
Net daylight	mm	100	200	250	300
Pressing force					
	a (kN)	125	300	500	785
	b (kN)	200	500	785	1250
	c (kN)	300	785	1250	1810
Specific pressure					
	a (N/cm ²)	327	350	320	319
	b (N/cm ²)	511	574	500	498
	c (N/cm ²)	798	896	783	735
Total power	kW	7 (10)	26	40	85
Heating power (300° C)	kW	2,5	11,6	12,7	35,7
Width (with cassette)	mm	1190	1510	1756	2190
Width (without cassette)	mm	1190	1510	1756	2190
Depth	mm	500	580	720	960
Height	mm	970 (1620)	1620	1680	1836
Weight	kg	300 (750)	1000	1700	3200

Design modifications reserved

Represented by

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