

Laboratory machines for the processing of polymers

Laboratory Roll Mills Type W 110 E / W 150 E
Testing Roll Mills Type 110 P / W 150 P
Automated Testing Roll Mills Type W 110 AP / W 150 AP

*Multi-purpose testing equipment for thermoplastic and elastomer material (Type G)
High process safety to EN 1417 – high accuracy – maximum reproducibility*



Laboratory Roll Mill Type „E“

The compact machine for routine tasks

Structural Design

The drive and roll units are mounted on a welded frame. The control cabinets with all electric switchgear are installed laterally for easy access.

Drives

The two rolls are powered by two independent frequency-controlled AC drives to ensure the optimum control of

- variable speed and
- friction

Torque is transmitted to the roll by means of a downstream spur gear speed reduction mechanism and a multiple chain drive.

Nip width adjustment

The front rolls are adjusted with the help of manually operated spindles. Graduated scales indicate the nip width. In case of an emergency stop or during cleaning, the nip is opened hydraulically.

Rolls

The rolls are made of steel with a hardened and chrome-plated surface. They have central bores.

Bearings

Roller bearings deliver a high degree of concentricity, minimum play and a long service life. High-temperature grease is used for lubrication.

Heating

There are 3 options for heating the rolls:

- Electric heating via 3-zone heaters
- Heating by means of heat transfer fluids and external temperature control units
- Steam heating, if a steam system can be provided by the user

Safety Stop

In compliance with EN 1417, the safety stop is triggered by means of pivoted rockers located above the rolls or by touching the emergency stop button installed at the front or the rear. The signal triggers an emergency stop of both rolls and subsequent hydraulic opening of the nip to leave a 50 mm safety gap.



Laboratory Roll Mill Type W 110 E with pivoting safety rockers installed above the rolls

Testing Roll Mill Type „P“

Testing roll mill with data recording for more accurate reproducibility

Special features

- Automated hydraulic roll nip adjustment for nip settings
- Automated speed setting
- Automated test sequence
- Hydraulic quick-action safety opening up to 50mm
- Logging of set and actual values

Nip width adjustment

There are two ways of setting the nip width:

1. Closed loop control to a set value including measurement, digital display as well as control of the nip width
2. Hydraulic quick-action opening (50 mm) of the rear roll as a safety measure

Drives and bearing

Roll movement, bearing and drives are identical to type W 110 E.

Electronic Control

The power unit is installed in the lateral section of the machine base for easy access. The swing-out control unit with SCD-RM microprocessor and operator panel and display is installed at eye level on the right machine side. Set values and current values such as roll temperature, roll speed and nip width are entered into the operator panel and shown on the digital display. The ergonomic SCD-RM control allows changes to the settings even during active machine operation.

Sequence control SCD-RM

The microprocessor control allows the integration of a short program with four phases for adjusting the

- nip width and
 - roll speed
- according to pre-selected values. This significantly facilitates standard test procedures and improves their reproducibility.

Optional feature

Optionally, the machine can be fitted with the W 110 AP's sequence control and touch-screen. This system supports the definition of up to eight phases. Standard test procedures can therefore be made visible in more details.



Testing Roll Mill Type W 110 P with SCD-RM sequence control

Automated Testing Roll Mill Type „AP“

Highly accurate reproducibility with automated machine sequences

Dr. Collin's automation equipment for measuring roll mills has been proven intensively for more than 25 years. Now, some of these elements have been adapted for integration into testing roll mills. The automation devices include the following:

- Reversing units
- Take-off rolls
- Motor-driven nip guide adjustment
- Automated control function with ergonomic 10" touch-screen

The devices provide a semi-automated operation without intervention of the operator. The operator can use the time for preparing the next sample to be tested. This operation mode guarantees a high reproducibility as both the set parameters and the cycle sequence are determined by the control program.

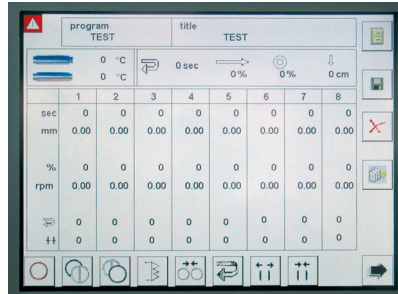
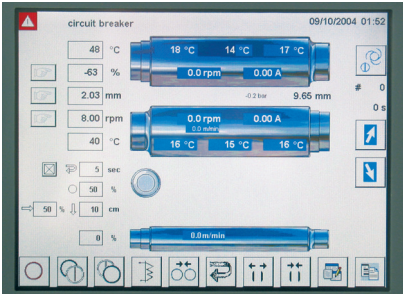
This method eliminates the risk of input errors and allows a comparison of results obtained from different machines or in different locations.



Automated Testing Roll Mill Type W 110 AP with 10" touch-screen control

Process control of the Automated Roll Mill Type „AP“

Higher reproducibility by automated control.



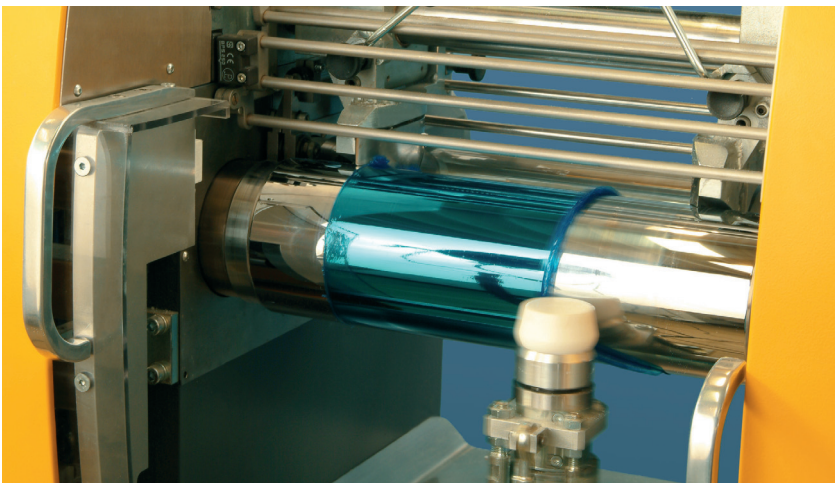
A fast, high-quality control system is the cornerstone of all automation tasks. A 10" touch screen with graphical user interface facilitates and visualises setting and monitoring of all parameters.

An additional potentiometric option for adjusting the nip width, speed and friction allows for intuitive parameter tracking during tests and fast optimisation.

Complete programs with up to eight phases can be stored to guarantee maximum reproducibility. Different phases can be changed, repeated, skipped or stopped during active machine operation.

The RS 485 interface supports the transmission of data from PC to the network. Test data can be stored or printed to a protocol.

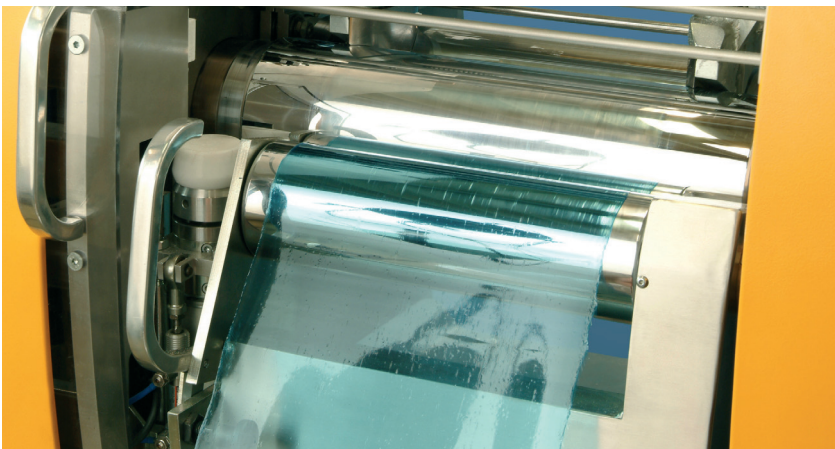
Automation Devices



Reversing unit of a Testing Roll Mill Type W 110 AP

Reversing unit

Cutting, reversing or axial rolling of the sheet ensures a good mixing. This process is carried out by a driven traversing Teflon roll located in front of the front roll. All parameters such as the feed speed, roll speed, duration of the reversing phase and processing sequence are determined by the control system.

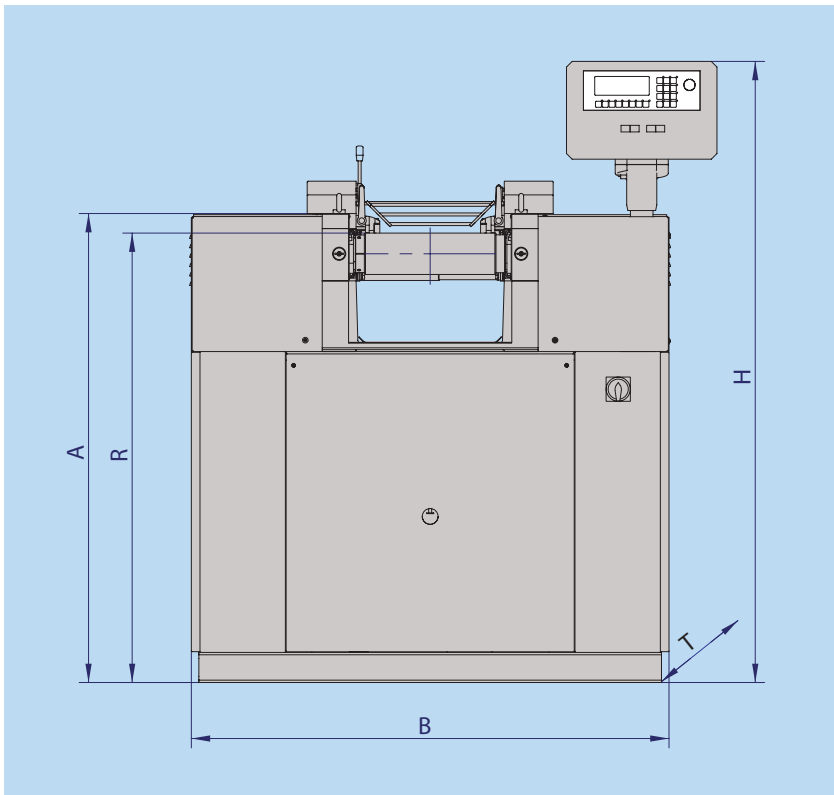


Taking off the sheet with a take-off roll

Take-off roll

Manual take-off of the sheet leads to stretching of the sheet both in longitudinal and transverse direction. In an arrangement that simulates a calender take-off, a motor-driven, temperature-controlled take-off roll removes and cools the sheet to ensure a dimensionally stable product. Moreover, much like a calendar take-off, the take-off roll can, if required, additionally draw the sheet to produce a product thickness of less than 50 micron.

Dimensions



	W 110 E/P/G	W 110 AP
B	1280	1560
H	1655	1810
T	565	565
A	1247	1247
R	1195	1195

	W 150 E/P/G	W 150 AP
B	1700	1700
H	1655	1820
T	815	815
A	1265	1265
R	1210	1210

Technical Data

Model		110 E/P	110 AP	110 G	150 E/P	150 AP	150 G
Roll diameter	mm	110	110	110	150	150	150
Roll face width	mm	350	350	350	400	400	400
Operating width	mm	265	265	220	315	315	270
Drive load	kW	1,50	1,50	2,00	2,20	2,20	2,90
Speed	1/min	3 – 36	3 – 36	3 – 20	3 – 30	3 – 30	3 – 20
Nip width adjustment type „E/P“	mm	0,1 – 5	0,1 – 5	0,2 – 10	0,1 – 5	0,1 – 5	0,2 – 10
Roll temperature	°C	20 – 270	20 – 270	150	20 – 270	20 – 270	150
Dimension W/D/H	m	1,3 x 0,6 x 1,7	1,5 x 0,6 x 1,8	1,3 x 0,6 x 1,7	1,7 x 0,8 x 1,7	1,7 x 0,8 x 1,8	1,7 x 0,8 x 1,7
Weight	kg	550	570	580	940	980	1000

Subject to change

Version 12E1500

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