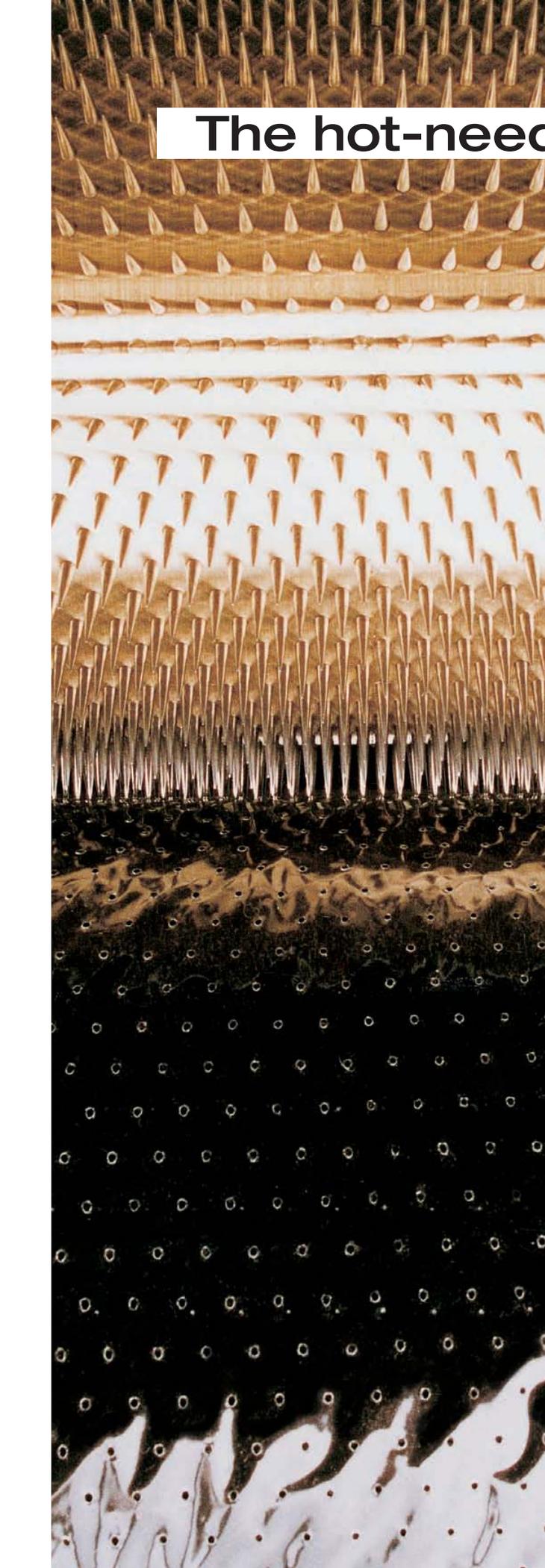


Hot-needle perforator PM5

The complete solution for perforating plastic films





The hot-needle perforator PM5

Integrates into every web path

The PM5 is AFS's solution for hot-needle perforation of plastomer films. The perforation machine places pores into packing films for the food and plant industry, and can be integrated into every continuous web path, up to a width of 2 m. The PM5 is fitted as a stand-alone unit, as an intelligent control system matches the speed of the perforating needles to the speed of the web.

Fast hole-pattern change

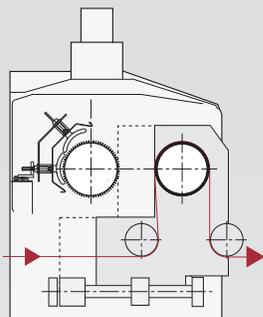
The simple fitting and removal of the needle-roller, combined with the modular construction of the needle-carrying segments, makes it possible to change the perforation pattern extremely quickly, and, if wished, combine several patterns onto one web. The needle depth is adjustable, and held constant, by means of an electronic control system, and a digital display indicates the exact depth of perforation.

Perfect hole quality at high production speeds

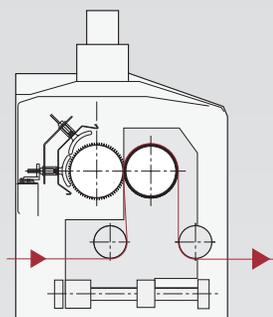
One of the prerequisites for perfect hole quality is an exact temperature distribution over the whole roller length, combined with the means for holding the temperature constant under all conditions. The combined outer/inner roller heating, combined with internal roller temperature monitoring and accurate temperature control ensures that this prerequisite is met, even at the highest web speeds. An optional second temperature sensor and an extended temperature control system ensure an even more uniformly distributed temperature profile, right up to the roller edge.

For Effective Web Perforation

The PM5 consists basically of two parts: the needle roller and heating chamber, and the web guiding system with the brush roller and guide rollers. To thread the web through the machine, the carriage holding the brush and guide rollers is driven away from the needle roller chamber, making threading extremely easy.



Web-threading position



Operating position

When the needle and brush rollers are brought together, the depth to which the needles puncture the web can be steplessly adjusted. The horizontal movement of the web guiding carriage ensures that the web length does not change when the machine is opened or closed.



Temperature sensor

Temperature monitoring

The temperature sensor is mounted in the needle roller, in the most critical area, to ensure accurate temperature control – an absolute necessity for perfect and reproducible perforation quality.





Quickly removable needle roller



Web speed tacho

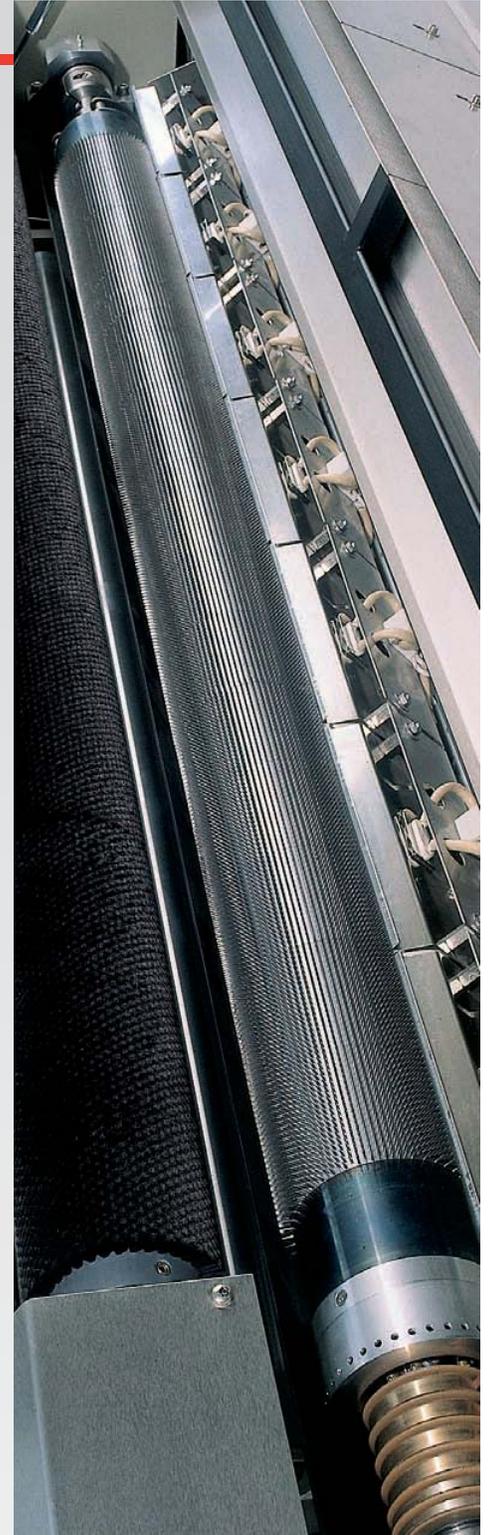
Fast hole pattern change

After removing 4 Allen-screws, the complete needle roller can be lifted out of the machine. The segment tensioning element is then slackened, so that the segments can be slid off. The changeover to a new pattern takes just a few minutes (after cooling down the needle roller).

Web status monitoring

A tachogenerator measures the web speed and synchronises the needles to the web. Hole ovality arising from a speed mismatch is completely eliminated.

The special photoelectric sensor (option) detects any possible breakage in the web, and withdraws the web guide carriage immediately, in order to prevent the broken web.



Opened perforator PM5



Low Power Consumption

Although the perforation process takes place at temperatures of up to 350°C, the energy consumption is surprisingly low. The heating and exhaust fume extraction chambers are kept separate, to keep the cooling effect from the fume extraction system to an absolute minimum.

Higher safety standard

If the web slows down below a adjustable speed, it is automatically withdrawn from the perforation chamber, in order to prevent undesirable melting of the web material. When the minimum working speed is again reached, the perforation process is automatically resumed. The fast-operating web tear detection system (option) stops the perforation process immediately should a web breakage occur. When the machine is switched off, the hot needle roller continues to rotate slowly until it has cooled down, in order to prevent it from distorting due to uneven temperature distribution when at a standstill.

User-friendly

The operation of the perforation machine consists basically of moving the web in and out of the perforation chamber, adjustment of the needle temperature, and adjustment of the perforation depth.

The graphic display and single control-knob operation ensure that the perforators are extremely easy to use. The process parameters are clearly displayed, and can be readily modified using a single control. All of the standard functions can be accessed from the display menu, and if wished password-protected, thereby preventing operator mistakes during production. Both status and diagnostic messages are shown on the display.



Hot Needle Perforator PM5

Perforation	600 ... 2.000 mm
Dimensions	Height: 745 mm + 290 mm for opening Width: Perforation width + 1140 mm Depth: 560 mm + 200 mm for opening
Electric connections	3 x 400 V / 50/60 Hz + neutral + ground
Pneumatic connections	6 ... 10 bar, dry, lightly oiled
Maximum working speed	200 m/min, depending on material other speeds on request
Heating power	External radiators: 8500 W/m Internal roller heaters: 8500 W/m
Needle segment width	50 / 100mm other widths on request
Brush segment width	100 mm, alternatively as continuous bristle roller
Motor drive	Servo drive
Perforation depth	0 ... 8 mm
Temperature control	PID regulator with PT100 sensor (optional second sensor)
Timeswitch	Automatic warm-up at pre-determined time
Dimensions of the control cabinet	Height: 1400 mm + 100 oder 200 mm Socket Width: 600 mm Depth: 500 mm

Acessories / Special options

Slideable base frame

Permits the complete perforation machine to be moved laterally to facilitate accurate positioning of the perforated area.

On-line production monitor (stroboscope)

Permits the perforation quality to be monitored during production.

Roller pre-heating / cooling stand

Pre-heats an additional needle roller, or cools-down a previously used roller.

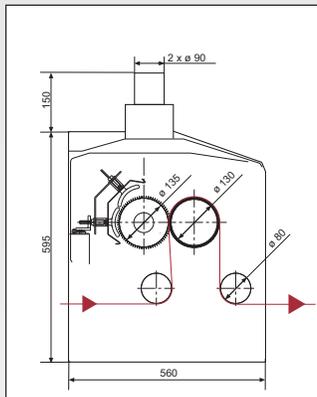
3-zone temperature regulation for the external heaters

For a self-adjusting, uniformly distributed temperature profile, right up to the roller edge

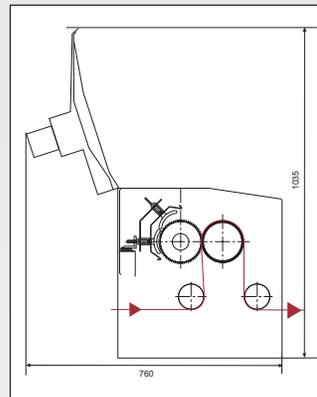
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Dimensions of the closed PM5



Dimensions of the opened PM5

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Further AFS products:

- Corona treatment systems for printing and laminating machines, blow-film and cast-film lines, continuous and cut-sheet processing equipment, and pipe extruders.