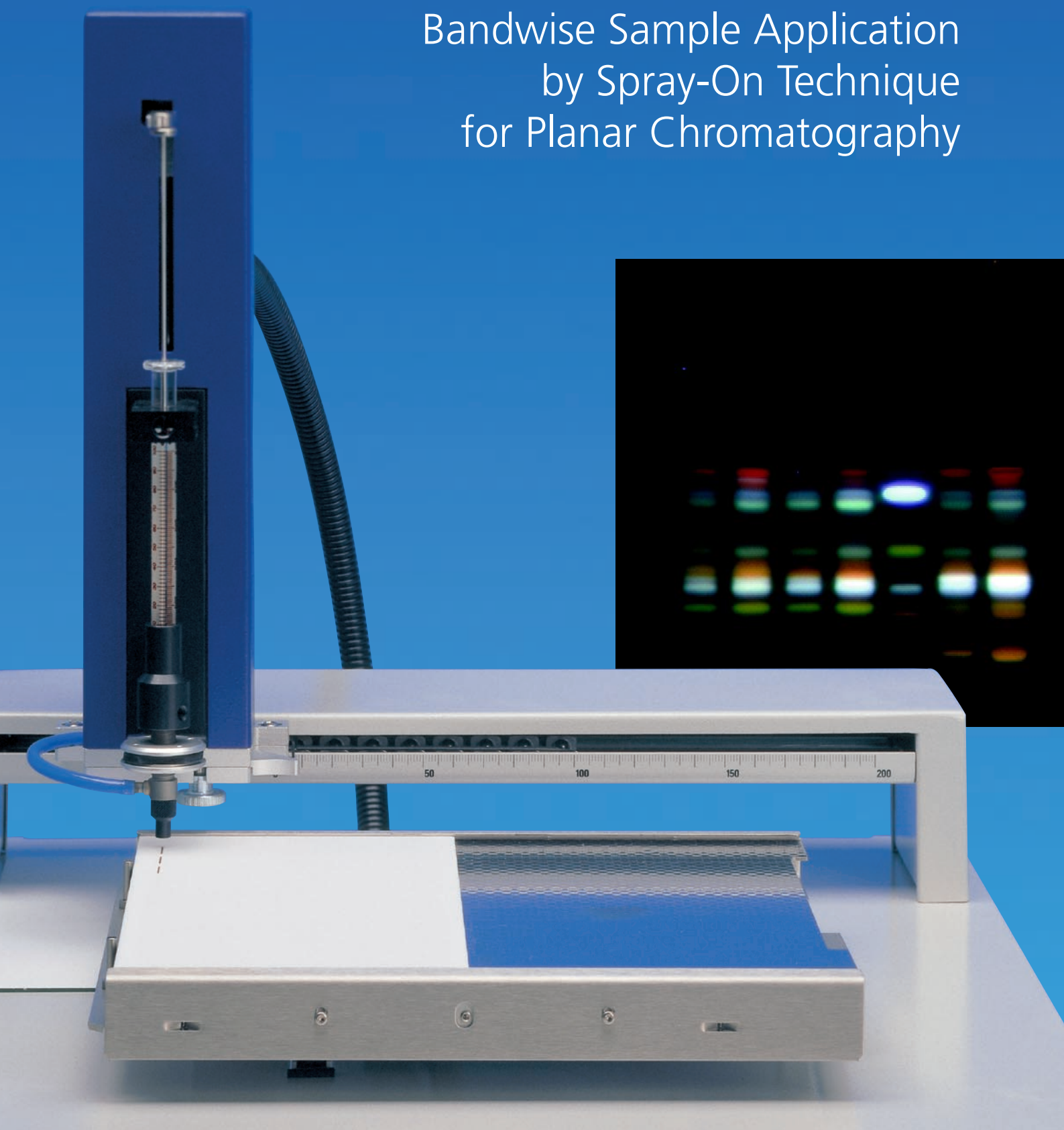
LINOMAT 5

Bandwise Sample Application by Spray-On Technique for Planar Chromatography



The LINOMAT Spray-On Technique

With the Linomat samples are sprayed onto the chromatographic layer in the form of narrow bands. This technique allows larger sample volumes to be applied than by contact transfer (spotting). While the solvent is almost completely evaporated in the process, the sample is concentrated on the layer surface into a narrow band of selectable length.
Even of samples dissolved in rather polar solvents such as methanol or water compact and narrow zones are formed.

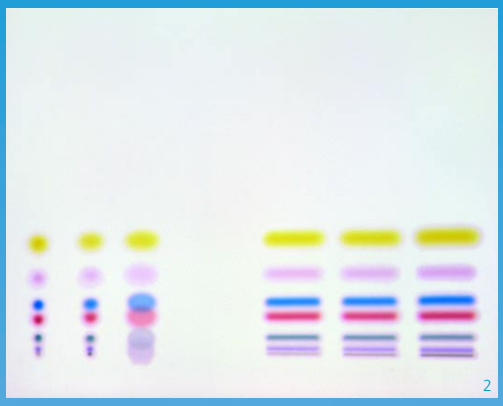
Starting zones sprayed on as narrow bands ensure the highest resolution attainable with any given planar chromatographic system.

All types of planar chromatography benefit from such optimized resolution: chromatography on conventional or HPTLC layers for qualitative or quantitative analyses, as well as preparative separations.

In quantitative planar chromatographic analysis sample application by the Linomat spray-on technique offers further advantages:

- Because the sample is distributed uniformly over the entire length of the band, densitometric evaluation can be done by aliquot scanning, i.e. by measuring only the center slice. This technique ensures best quantitative accuracy.
- For multilevel calibration different volumes of the same standard solution can be applied to generate different standard levels. Labour time usually required to prepare several solutions of different concentrations, can thus be dramatically reduced.The frequently used method of standard addition can be simplified by over-spraying the already applied sample with standard.
- In certain cases even pre-chromatographic derivatization can be performed by over-spraying samples with a reagent solution.

All over the world, the CAMAG Linomat spray-on technique has become a synonym for quality in planar chromatographic analysis. By the way, the same technique is also featured by the CAMAG Automatic TLC Sampler.



Separation of a test dye mixture on HPTLC silica gel; always CAMAG Test Dye III (from left) diluted 1:1 with hexane, toluene, or methanol respectively, contact spotting 2 µL each, bandwise spray-on application of 6 µL as 10 mm bands with Linomat 5; development with toluene. It is seen that the result for contact spotting is strongly dependent on the solvent of the sample, whereas for bandwise spray-on application this is not the case. Furthermore, the separation is significantly improved for the latter.

The Linomat 5

Operation under winCATS

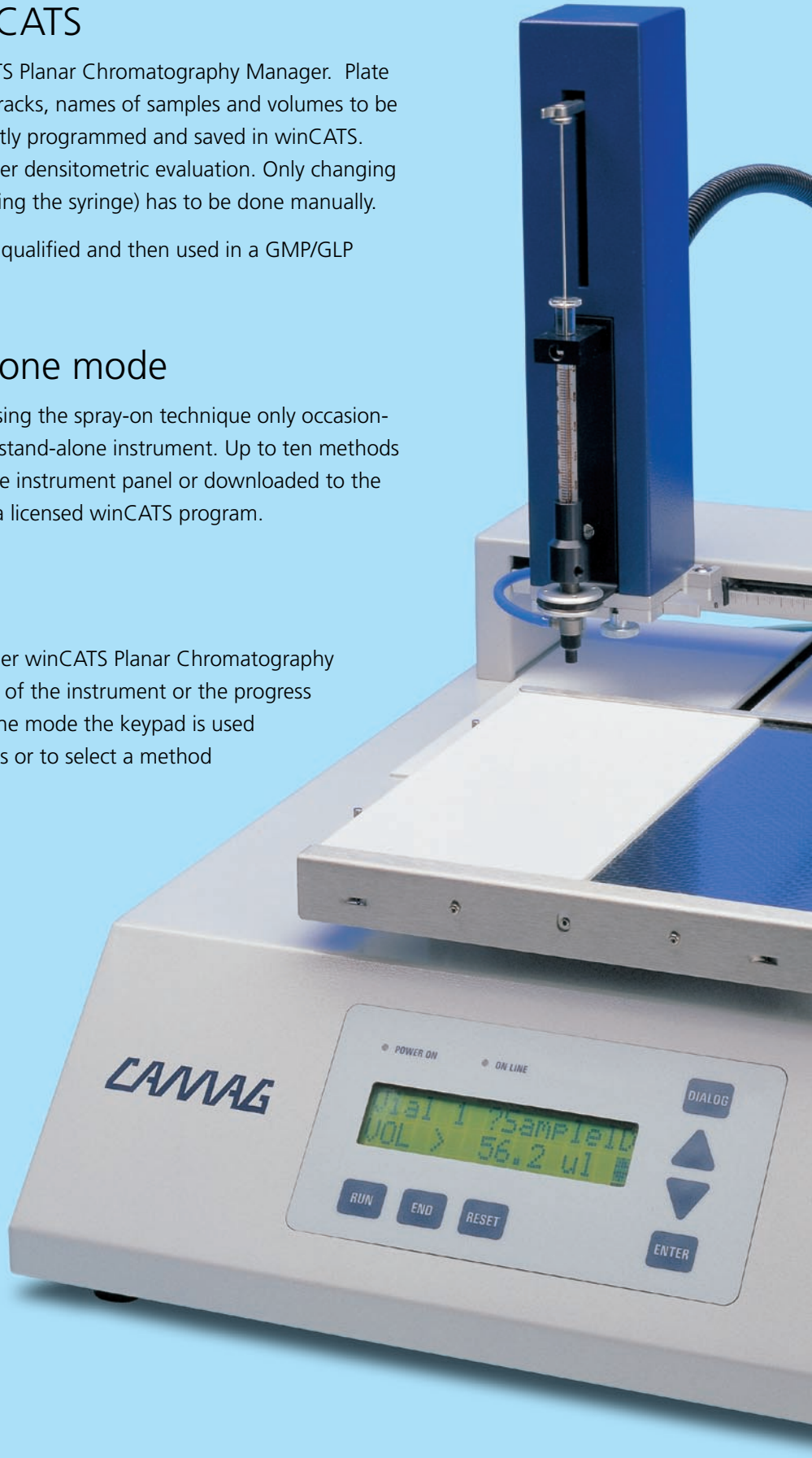
The Linomat 5 is controlled by winCATS Planar Chromatography Manager. Plate dimensions, number and distance of tracks, names of samples and volumes to be applied onto each track are conveniently programmed and saved in winCATS. All information is then available for later densitometric evaluation. Only changing the sample (cleaning, filling and inserting the syringe) has to be done manually.

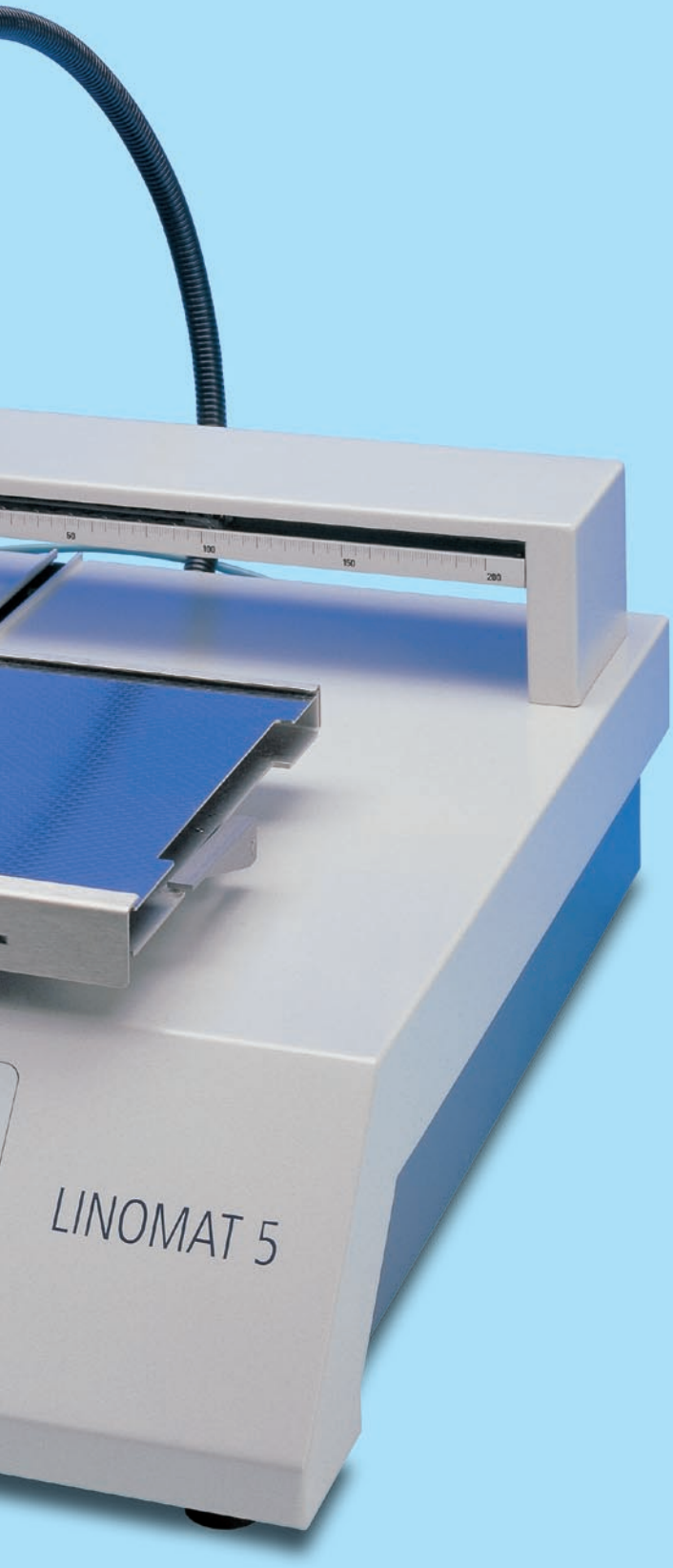
The CAMAG Linomat 5 can be IQ/OQ qualified and then used in a GMP/GLP environment.

Operation in stand-alone mode

To meet the needs of users who are using the spray-on technique only occasionally, the Linomat 5 is also offered as a stand-alone instrument. Up to ten methods can be entered from the keypad on the instrument panel or downloaded to the instrument from a computer running a licensed winCATS program.

When the instrument is operating under winCATS Planar Chromatography Manager, the display shows the status of the instrument or the progress of the current application In stand-alone mode the keypad is used to enter sample application parameters or to select a method already stored.





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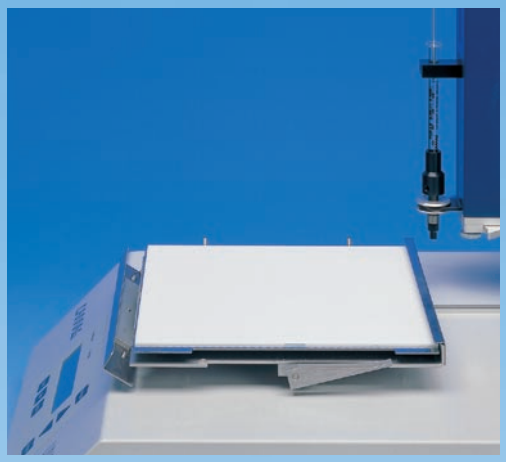
The sample liquid is sprayed onto the layer from the tip of the syringe needle.
The stage movement is controlled so that the sample is uniformly distributed over the entire length of the band.



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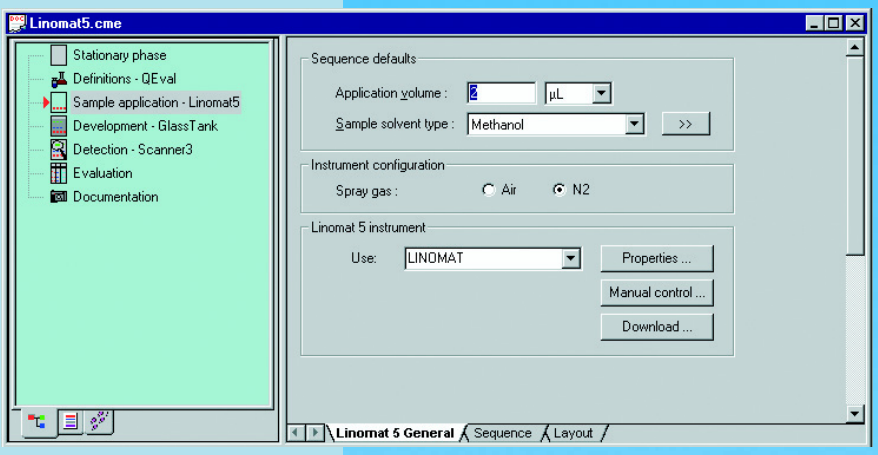
The self-adjusting object support enables application onto objects of variable thickness (up to 4 mm) without any adjustment to the spray nozzle. This makes changing between conventional TLC and HPTLC layers, on glass plates and sheets, preparative layers and very thin objects such as membranes easy. The support accommodates objects up to 20 × 20 cm.

LINOMAT 5 and winCATS

Using the Linomat 5 under winCATS – Planar Chromatography Manager

Like all other computer controlled CAMAG instruments the Linomat 5 communicates with winCATS via a software interface called "EquiLink".

From the tab "General" principal settings for the instrument are accessible as well as manual operation and method download to the instrument.



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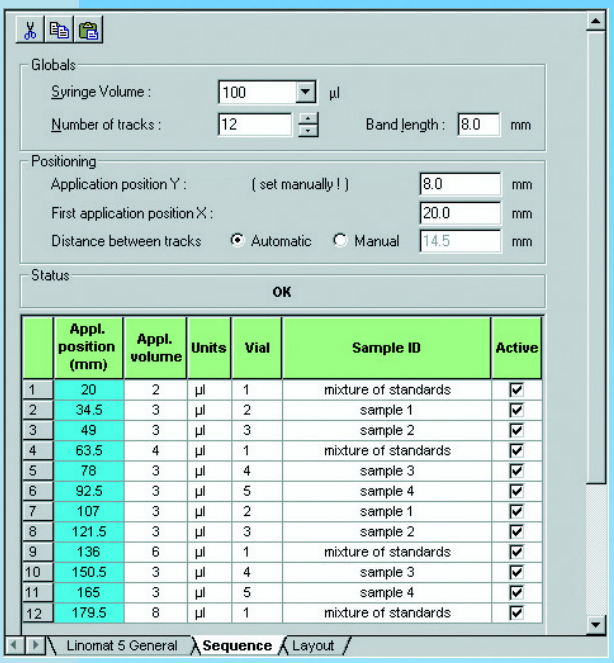
In the tab "Sequence" all parameters relevant to the actual sample application, such as designation, volume and position are entered.



	Appl. position (mm)	Appl. volume	Units	Vial	Sample ID	Active
1	20	2	µl	1	mixture of standards	☑
2	34.5	3	µl	2	sample 1	☑
3	49	3	µl	3	sample 2	☑
4	63.5	4	µl	1	mixture of standards	☑
5	78	3	µl	4	sample 3	☑
6	92.5	3	µl	5	sample 4	☑
7	107	3	µl	2	sample 1	☑
8	121.5	3	µl	3	sample 2	☑
9	136	6	µl	1	mixture of standards	☑
10	150.5	3	µl	4	sample 3	☑
11	165	3	µl	5	sample 4	☑
12	179.5	8	µl	1	mixture of standards	☑

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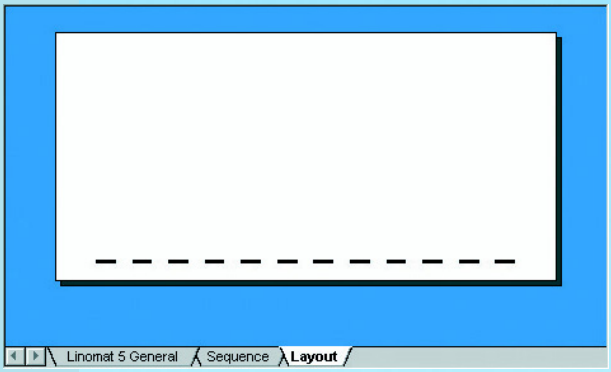
The system proposes a corresponding layout. Before sample application begins the user is prompted to confirm that the syringe contains the correct sample.



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Technical specifications

Object support	For objects up to 20 x 20 cm
Stage drive	Stepping motor 3200 steps/rotation, 8 steps = 0.1 mm Band length 0 (spot) – 190 mm in steps of 0.1 mm Speed approx. 10 mm/s; the speed is automatically adapted such that a whole number of passages is reached with the volume selected.
Dosage syringe drive	Stepping motor 1600 steps/ rotation 100 nL = 120 steps with 100 µL syringe 24 steps with 500 µL syringe
Sample dosage syringe	selectable 100 µL or 500 µL
Memory	10 methods, backup min. 10 years
LCD display	2 Lines of 16 characters ea.
Mains voltage	85–250 V / 47–63 Hz / 20 VA
Gas supply	4–6 bar (60–90 PSI) preferably nitrogen; consumption approx. 1.0 L/min
Dimensions	360 mm width, 510 mm length, 410 mm height
Weight	12.5 kg

Ordering Information

022.7808 **CAMAG LINOMAT 5** for bandwise spray-on sample application in planar chromatography, complete with one 100 µL sample dosage syringe, standard accessories and EquiLink for winCATS, yet without winCATS basic software.

Note: For operation the Linomat 5 requires external supply of compressed nitrogen (or air), which is not included.

027.6300 **Software "winCATS** – Planar Chromatography Manager" license including one year web update service.
Minimum PC configuration to operate winCATS: PC with CD-ROM, LPT printer port and 2 x RS-232 COM-ports. Operating System: Windows NT incl. Service Pack 4 or higher, Minimum 64 MB RAM. Graphic card should be configured True Color 32 bit

Note: Purchase of winCATS is not required if a registered winCATS license is already available on the PC workstation designated to run the Linomat or stand-alone operation is intended exclusively.

Spares, Accessories

695.0014 Sample dosage syringe 100 µL for Linomat

695.0015 Sample dosage syringe 500 µL for Linomat

Note: The sample dosage syringes 695.0014 and 695.0015 are compatible with the older CAMAG Linomat models III and IV

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