

durst

Number 1
in the lab





The Royal Photographic Society of Great Britain – picture of the darkroom

The eye

is seeing, the light is shining as never before, the perspective is right and the moment is exceptional. You pick up your camera. The picture you are about to take is unique – no-one else will ever take it again. You'd rather not entrust it to the amateur photo lab round the corner. You want to choose certain nuances, compose the picture carefully, emphasise particular details. And you want the best equipment on the market to do it.

Durst is a big name. It originally belonged to an inventor: even in childhood, Julius Durst designed hunting weapons, he worked on gliders, rocket-powered model cars, radio sets, toboggans and grass skis. Then, in 1929, he built his first photo enlarger. A friend of his – a chemist – took over the sales side, and just seven years later, the enlarger went into production in a former brewery. Further inventions followed: a giant enlarger (1942), a miniature camera (Duca, 1946/50), the first camera with automatic aperture (Automatica, 1956-63). On February 10, 1964, Julius Durst was killed in a car accident, but his name lives on. Many international patents have been registered in the company's name.



Shanghai, China 1997

The pioneering role remains. We were never content with something that was just about good enough. We researched the fields of optics, light control, colorimetry and precision engineering, developed our own hardware and software, co-operated closely with outside experts, placed high demands on quality and design, put our customers firmly into the foreground, exerted an influence on enlarging techniques worldwide. And we still do so today: "Lambda" is our most recent innovation, setting new standards internationally in the field of digital enlarging.



Large-format digital imager Durst Lambda 130

Graduate

An inexpensive start to a great hobby

The Graduate B/W enlarger offers you an easy, inexpensive way of taking your first steps into the exciting hobby of darkroom processing. And later, too, when you have become an experienced darkroom specialist, it will also be able to help you with your more demanding work.

The Graduate can handle the 35 mm format, and the baseboard allows print sizes up to 30.5 x 46 cm (12 x 18 in). You can, of course, produce even larger pictures by projecting on to the floor.

The enlarger is simple and straightforward to set up, and can be operated with ease by absolutely any beginner. If, for example, you want to change the magnification factor, you simply calculate the necessary exposure time from the reference scale on the column.

The rugged square column is made predominantly of heat-resistant cast aluminium to guarantee long life. The height is adjusted by a toothed rack and an easy-glide friction drive for smooth, jerk-free working.

The book-type film carrier of dimensionally stable, anti-static plastic ensures smooth, accurate film guidance, and prevents any scratches to the negatives. To extend the range of possible applications and make your work with the Graduate even more enjoyable, the following accessories are available:

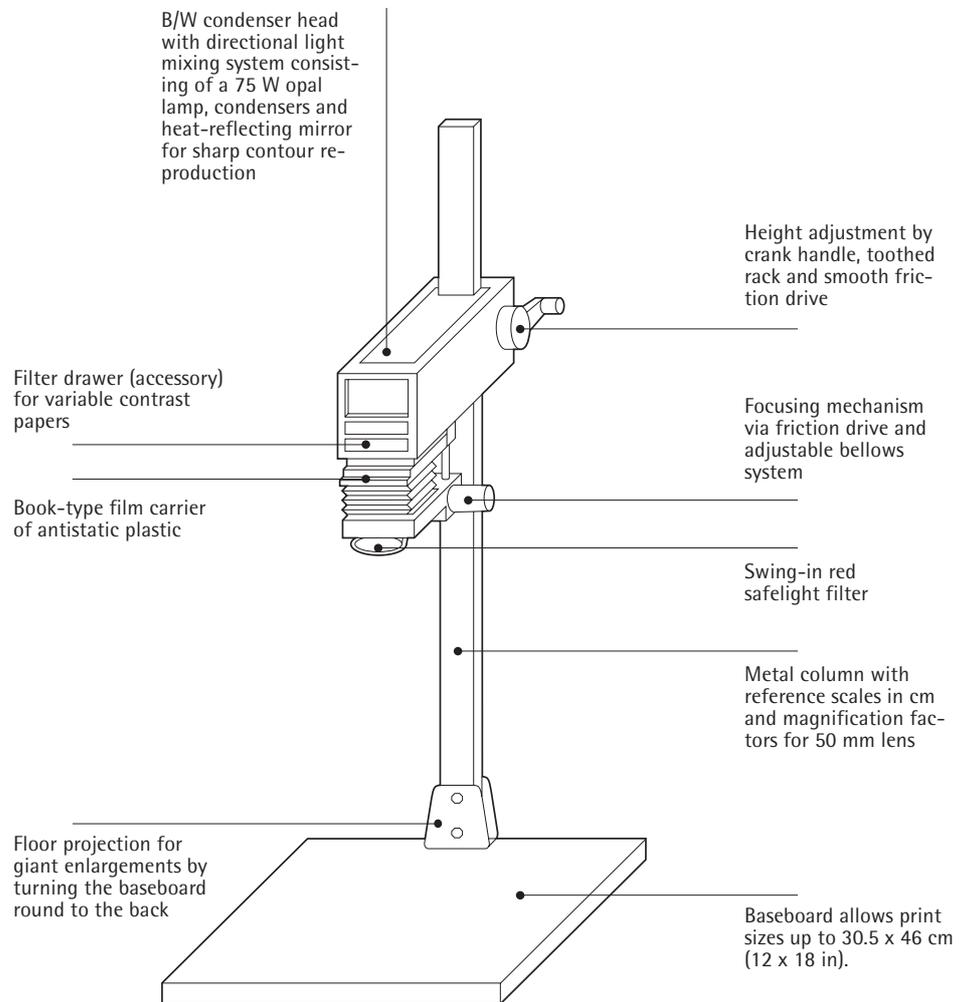
- Graduate filter set
For printing variable contrast paper, the Durst Graduate can be upgraded with a special filter set. This set consists of a filter drawer, a glass plate (75 x 75 mm) and six variable contrast filters with the grades 0-1-2-3-4-5 (74 x 74 mm).
- Dust cover
- Wall mount

- Graduate Accessories:**
- Graduate filter set
 - Dust cover (Siriocuf)
 - Wall mount (Vegawal)

Technical data

Graduate

Max. film format: 24 x 36 mm
 Light source:
 75 W opal lamp (Dulamp 75)
 Baseboard size: 46 x 50 cm
 (18 x 19 3/4 in)
 Max. print size (on baseboard):
 30.5 x 46 cm (12 x 18 in)
 Lens (optional): 50 mm
 Magnification factor:
 min. 2.4 x lin; max. 13.5 x lin
 Overall height: 100 cm (39 in)
 Weight: approx. 9.5 kg (21 lbs)
 Power consumption: approx. 75 W
 Power supply:
 115 V/60 Hz; 230 V/50 Hz





Labotim

Digital timer

Accurate digital timer with large display. Time range from 1.0 to 99 sec and interrupt function. Very simple operation with only four buttons. Switching power up to 500 W. Also available with additional foot switch for more demanding image manipulation (e.g. vignetting, double exposures).

Features

- Microprocessor control with precision digital display from 1.0 to 99 sec
- Large, easily legible, two-figure LED digital display
- Countdown display for trouble-free dodging
- Interrupt function for image manipulation. If the start button is pressed during exposure, the enlarger lamp is switched off and the remaining time is stored and flashes for recall.
- Simple operation with four buttons (continuous light, start/stop and time setting via step up/step down buttons)



- Time interrupt with direct return to set time
- Wall mounting possible



Also available with:
Pneumatic foot switch

Technical data:

Labotim

Time range:

- 1.0 - 9.9 sec in steps of 0.1 sec
 - 10 - 99 sec in steps of 1 sec
- Power consumption: approx. 500 W
Power supply:
115 V/60 Hz; 230 V/50 Hz



Laboset

The complete laboratory set for manual processing of B/W and colour films and paper. Made of high-grade, chemical-resistant plastic.

The set comprises:

- 1 developer tank
- 2 multi-format film reels
- 1 graduated cylinder 600 ml
- 1 graduated cylinder 50 ml
- 3 developing dishes
20 x 25 cm (8 x 10 in)
- 1 film squeegee
- 3 paper tongs
- 2 film clips
- 1 mixer for chemistry
- 1 thermometer

All the items in this set are also available separately.



Cofram

Stable metal masking frame, adjustable edge width and infinitely variable negative masking strips. Simple handling, particularly stable.

- Cofram 205: paper format up to max. 20 x 25 cm (8 x 10 in)
- Cofram 243: paper format up to max. 24 x 30 cm (10 x 12 in)
- Cofram 304: paper format up to max. 30 x 40 cm (12 x 16 in)

M 370

Colour and B/W for beginners

The M 370 model is available in two versions: the M 370 B/W for black-and-white printing and the M 370 Easycolor for colour printing and printing variable contrast paper.

The enlarger has particularly high light efficiency. The standard version can take the

24 x 36 mm film format, and you only need to make a few small adjustments if you want to change to 6 x 6 cm (2 1/4 x 2 1/4 in) and 6 x 7 cm (2 1/4 x 2 3/4 in) films. The height is adjusted by a crank handle and toothed rack. The stable square column and smooth

friction drive are standard features of the M 370 range, guaranteeing vibration-free projection on to the baseboard up to a size of 30.5 x 46 cm (12 x 18 in) with the 24 x 36 mm film format.

We have paid particular attention to the efficiency of

the lamp (light output/light wattage), illumination and the fall-off towards the edges. A wall mount is available as an optional extra, or the column can simply be changed round to allow floor projection.

M 370 Easycolor

The major innovation with the M 370 Easycolor is its new, easy-to-use colour correction system. The colour filter is set not from 0 to 170 D, but via a newly developed double filter wheel system: the filter wheels can be rotated in both directions from a pre-calibrated zero position. Consequently, corrections are made according to the colour casts when printing negatives.

If a picture is too yellow, the filter wheel is adjusted in such a way that less yellow is visible on the filter wheel, and the next print will be less yellow. If a picture is too red, the filter wheel is adjusted so that less red can be seen on the filter wheel etc.



The original filter setting (all settings at zero) is always known and does not have to be specifically noted when work-

ing. The required zero position can be adjusted at any time exactly to the paper being used.

There is now none of that time-consuming process of determining the basic filter settings, because each M 370 Easycolor has been pre-calibrated in line with the supplied halogen lamp (Colamp 100 S).

The colour head is also provided with a scale for variable-contrast paper. Additional adjustment marks for the Ilford Multigrade® IV variable contrast paper make the new Durst M 370 Easycolor a universal colour and black-and-white enlarger.

The M 370 Easycolor comes with a coated baseboard (46 x 50 cm, 18 x 19 3/4 in) and a rugged square column with

height measurements in cm. The height is adjusted by means of a crank and toothed rack. The diffusion-type lamp-house has a 100 W halogen lamp and coated reflector. Other features include the filter system with Y-M-C glass dichroic filters, a white light lever with indication of position, non-fading light mixing boxes, lens board with M 39 thread (so-called Leica thread), Lidineg 35 film carrier for 24 x 36 mm negatives, focusing mechanism via friction drive and adjustable bellows system, and a plug which complies with country-specific regulations.



M 370 B/W

The basic enlarger (baseboard and column) is the same as the 370 Easycolor.

The M 370 B/W for traditional B/W printing is equipped with a condenser lens, a directional light mixing system (75 W opal lamp) and a heat-reflecting mirror for the sharp reproduction of contours.

The lens boards (with M 39 thread for accommodating the enlarging lens) and the condensers can be adjusted to suit the lens focal length.



Lidiset 66/Lidiset 67

Lidiset 66 is a conversion set consisting of condenser, film carrier, anti-Newton glass and format mask for working with 6 x 6 cm (2 1/4 x 2 1/4 in) / 4.5 x 6 cm (1 3/4 x 2 1/4 in) negatives. Lidiset 67 is the equivalent kit for the 6 x 7 cm (2 1/4 x 2 3/4 in) film size.

Accessories for the M 370 series:

- Stabiliser, transformer (Est 305 N/Tra 305 N)
- Adapter ring with M 25 thread (Flaring)
- Contrast filter set (B/W Vario Filter Set)
- Dust cover (Sirioconf)
- Wall mounting (Vegawal)

Conversion kits see page 56

Technical data

M 370 Easycolor, B/W

Max. film format: up to 6 x 7 cm (2 1/4 x 2 3/4 in)

Light source:

- Easycolor – 100 W halogen lamp (Colamp 100 S)

- B/W – 75 W opal lamp (Dulamp 75)

Baseboard: 46 x 50 cm (18 x 19 3/4 in)
Max. image size (on baseboard):
30.5 x 46 cm (12 x 18 in)

Lens (optional): 35 – 105 mm

Magnification factor:

min. 2.4 x lin; max. 13.5 x lin

Overall height: 100 cm (39.4 in)

Weight: approx. 9.5 kg (21 lbs)

Power consumption: approx. 130 W

Power supply:

115 V/60 Hz; 230 V/50 Hz

M 670

For the more demanding beginner

The M 670 is available in three versions: the M 670 BW for black-and-white, the M 670 Color for colour processing, and the M 670 VC for processing variable-contrast paper. The basic unit can be converted to the required type of processing with conversion kits consisting of the lamp-house and filter system (for colour), or lamphouse and condensers (for black-and-white enlarging).

M 670 Color

The M 670 Color with its diffuse light source (100 W halogen lamp), non-fading dichroic filters (with settings up to 170 D (densitometric units) and light mixing boxes, is capable of enlarging colour negatives, colour positive films as well as B/W films when using variable contrast papers.

The standard enlarger unit is designed for printing 24 x 36 mm films, but can be easily converted for 4.5 x 6 cm (1³/₄ x

The M 670 is noted for its efficient lighting system with perfect illumination and colour mixing.

Stability is provided by the square cross-section column and an adjusting mechanism that works with a crank and toothed rack. The M 670 is an enlarger for particularly demanding darkroom work. The head can be tilted 90° and can be fitted up for copy work. The film carrier (with ad-

2¹/₄ in)/6 x 6 cm (2¹/₄ x 2¹/₄ in)/6 x 7 cm (2¹/₄ x 2³/₄ in) films by means of conversion kits (Vegacolset 66/67) with absolutely no loss of the optimum illumination and colour mixing quality.

The enlarger comprises a coated 46 x 50 cm (18 x 19³/₄ in) baseboard, square profile column with height/factor increments in cm and inches, height adjustment by crank and toothed rack, negative carrier of glass-reinforced plastic, fine focusing mechanism with bel-

low and adjustment knob on the left and right, lens board with an M 39 thread for holding enlarging lenses, diffusion-type lamp housing with 100 W halogen lamp and coated reflector.

Filter system with Y-M-C glass dichroic filters which are adjustable by means of sealed filter wheels (interior illumination) up to 170 densitometric units, white-light lever with indication of position, non-fading light mixing boxes, Unineg universal film carrier

to the particular lens focal length and the film. Through the optimum coordination of the lens and condenser / light-mixing boxes, illumination is maximised and the fall-off of light towards the edges is minimised – particularly important aspects for print quality.

and Sivopar 35 format masks for 24 x 36 mm originals.

Power supply by means of simple transformer (Tra 305 N) or stabilised mains supply system (Est 305 N), connection cord and plug comply with regional specifications.

M 670 BW

Enlarger comprises a coated 46 x 50 cm (18 x 19³/₄ in) baseboard, square profile column with height/factor increments in cm and inches, height adjustment by crank and toothed rack, negative carrier of glass-reinforced plastic, fine focusing mechanism with bellows and adjustment knob on the left and right, lens board with an M 39 thread for holding enlarging lenses, black-and-white condenser lamp housing with 150 W opal lamp, reflecting mirror system, Siriocon 50 condenser, Unineg universal film carrier for 24 x 36 mm films, filter drawer for insert-type filters (75 x 75 mm), power supply via connection cord with plug in compliance with regional specifications.



M 670 BW/head
The BW condenser lamphouse is available as a separate unit for conversion from colour to black-and-white. No tools are needed for the conversion.



Vegaset 66/Vegaset 67

Vegaset 66 is the conversion kit for processing 4.5 x 6 cm (1³/₄ x 2¹/₄ in) and 6 x 6 cm (2¹/₄ x 2¹/₄ in) negatives. It consists of a condenser, anti-Newton glass and format mask. The Vegaset 67 is an equivalent kit for 6 x 7 cm (2¹/₄ x 2¹/₄ in) films.



M 670 VC

Constant exposure time with any contrast

The M 670 VC black-and-white enlarger meets the highest quality requirements for enlargements on variable-contrast papers, and its simple operation provides maximum scope for creativity.

To set the contrast, a filter wheel moves the yellow and magenta filters into the path of the beam via two cam discs. Both filters are synchronised. Consequently, the exposure time remains constant even if the contrast is changed.

The standard version of the M 670 VC is designed for 6 x 6 cm (2 1/4 x 2 1/4 in) medium format, but it can also be upgraded for all formats from APS, 24 x 36 mm to medium 6 x 7 cm (2 1/4 x 2 3/4 in) format.



The efficient light control system guarantees short exposure times and permits precise focusing due to the even illumination.

The diffuse lighting of the M 670 VC also has the practical advantage that fine dust and slight negative imperfections are less visible in the final print.

The head can be tilted up to 90°, with the exact angle of inclination shown on a scale. Rectification of converging verticals and wall projection are possible.



Wall/floor projection

The head of the M 670 enlargers can be tilted 90° and locked in the horizontal position. Giant-size enlargements can thus be produced by projecting on to the floor or wall.

Optional accessories for the M 670 range:

- Stabiliser/transformer (Est 305 N/Tra 305 N)
- Dust cover (Siriocuf)
- Wall mount (Vegawal)

Conversion kits see page 58.

Technical data

M 670 Color/BW/VC

Max. film format: 6 x 7 cm (2 3/4 x 2 3/4 in)

Light source:

- Colour/VC - 100 W halogen lamp (Colamp 100 S)
- B/W - 150 W opal lamp (Dulamp 150)

Baseboard size: 46 x 50 cm (18 x 19 3/4 in)

Max. print size (on baseboard): 40 x 50 cm (15 3/4 x 19 3/4 in)

Lens (optional): 35 - 105 mm

Magnification factor:

min. 2.2 x lin; max. 19 x lin

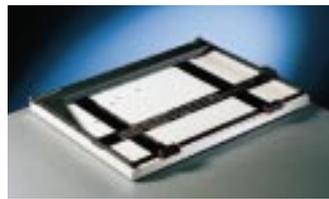
Overall height: 125 cm (49 in)

Weight: approx. 15 kg (33 lbs)

Power consumption: approx. 130 W

Power supply:

115 V/60 Hz; 230 V/50 Hz



Laboframe 34

Professional enlarging frame with three movable, click-in masking strips for paper formats up to 30 x 40 cm (12 x 16 in). Print border can be adjusted between 5 and 45 mm.

Rectification

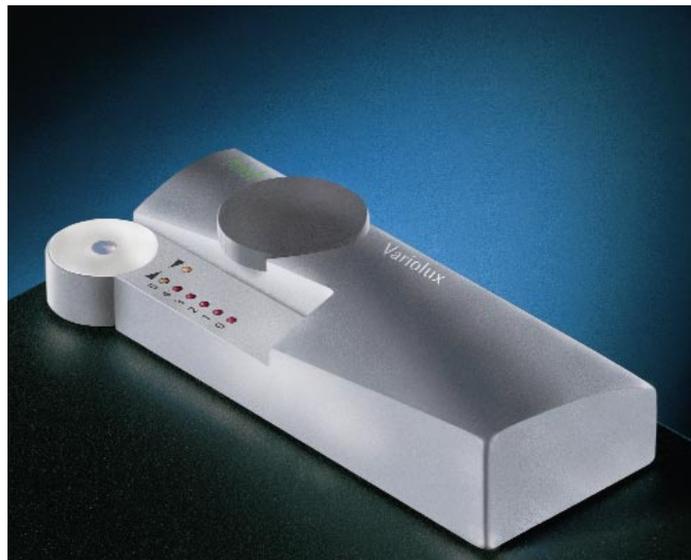
Converging verticals can be rectified with all models in the M 670 series by tilting the head.



Variolux

Satisfactory results from the very beginning

Variolux measures the amount of light needed for the exposure. The correct setting is displayed on an LED scale (0 - 5) by means of a light balance. Two tiny control lamps light up to enable accurate measurement of the lens aperture. At the same time, the Variolux measures the contrast range of the exposed negative directly on the projection area, and then recommends a suitable paper contrast. All this makes for effective working, because you get a respectable picture straight away and do not have to worry about producing trial strips, saving you time and money. Either integral or spot metering is possible. Variolux is suitable for measuring the



density of all black-and-white and colour negatives and transparencies. The measuring unit is powered by a 9 V battery.

Technical data Variolux

Speed range: 6.5 stops
 Contrast range: 0.5 - 1.6
 Functions: density and grade metering
 Measuring method: spot and integral
 Power source: 9 V battery block
 Measuring range:
 • spot metering
 approx. 0.20 to 19lux
 • integral metering
 approx. 0.023 to 2.66 lux
 Inertia: real time

Labolux

The right light for your darkroom

The Durst Labolux puts an end to all that waiting around. While conventional sodium darkroom lighting systems take up to ten minutes to warm up, Labolux is ready for work as soon as you switch it on. And it goes on and on! Unlike the conventional sodium vapour safelight lamps, which give up the ghost after only about 800 hours, the 100 selected LEDs in the Labolux supply optimum light for up to 10,000 hours. A special feature of the Labolux is its prismatic foil which eliminates the pinpoints of light usually caused by LEDs, and guarantees uniform light distribution over the entire



38 x 8.5 cm (15 x 3 3/4 in) surface, regardless of whether you attach your Labolux to the table, wall or ceiling. The steplessly variable dimmer enables you to get just the right amount of light in your darkroom - precisely as you want it.

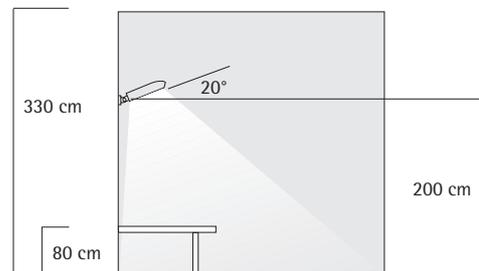
Technical data Labolux

Light source: 100 selected LEDs
 Light spectrum: from 585 to 590 nm (with barrier filter)
 Light intensity: approx. 0.59 lux with direct illumination at a distance of 1.2 m, setting 10 (without filter)
 Lamp life: > 10,000 hours
 Illuminated area: 38 x 8.5 cm (15 x 3 1/4 in)
 Cable length: 2.2 m (866 in)
 Dimensions (L x W x H): 40 x 14 x 4 cm (15 3/4 x 5 1/2 x 1 1/2 in)
 Weight: approx. 1.2 kg (2.6 lbs)
 Power consumption: approx. 18 W
 Power supply: 230 V/50-60 Hz

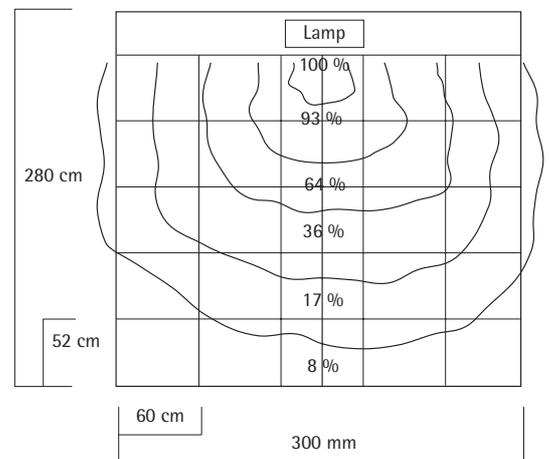
Labolux: light intensity distribution in lux and in percent with direct illumination

Room area: 280 x 300 cm (110 x 118 in)

Room height: 330 cm (130 in)



Lux
 0,05 0,10 0,21 0,37 0,54 0,54 0,37 0,21 0,10 0,05



Modular 70

Mobility in perfection

The Durst Modular 70 is a module-based enlarging system to meet the very highest standards. Depending on the particular requirements and printing method, the basic unit - the Modular 70 Start Pro - can be combined with the following modules:

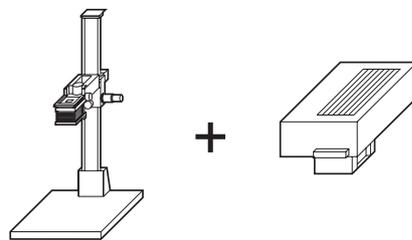
- **Modular 70 BW**
Condenser lighting system with opal light source
- **Modular 70 Lumo**
Condenser halogen light source with diffuse lighting system, integrated mixing boxes (35 mm to 6 x 7 cm / 2³/₄ x 2¹/₄ in) and power supply for Modular 70 Vario and Modular 70 Color
- **Modular 70 Vario**
Black-and-white filter module for variable-contrast paper
- **Modular 70 Color**
Colour filter module for colour negatives and slides

is the right piece of equipment for beginners who are looking for high quality straight away (it can always be adapted to suit individual requirements), and on the other, it also meets the requirements of professional users. The film format extends up to 6 x 7 cm (2¹/₄ x 2¹/₄ in), and its stability is incomparable.

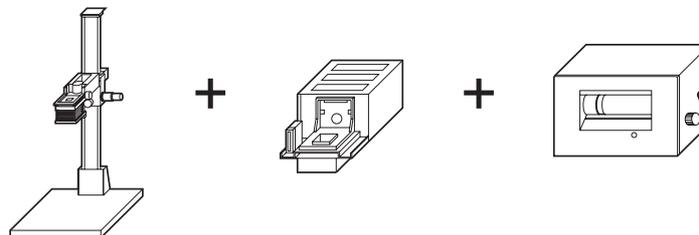
All the modules can be exchanged easily and quickly. On the one hand, the Modular 70

3 variations

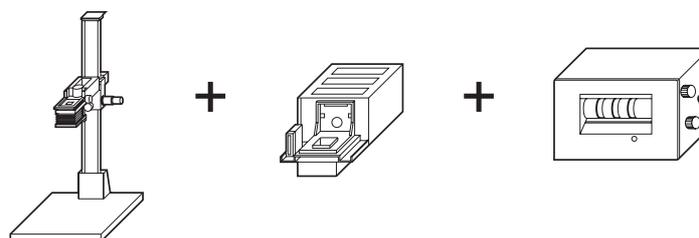
Modular 70 Start Pro basic unit +
Modular 70 BW



Modular 70 Start Pro basic unit +
Modular 70 Lumo +
Modular 70 Vario



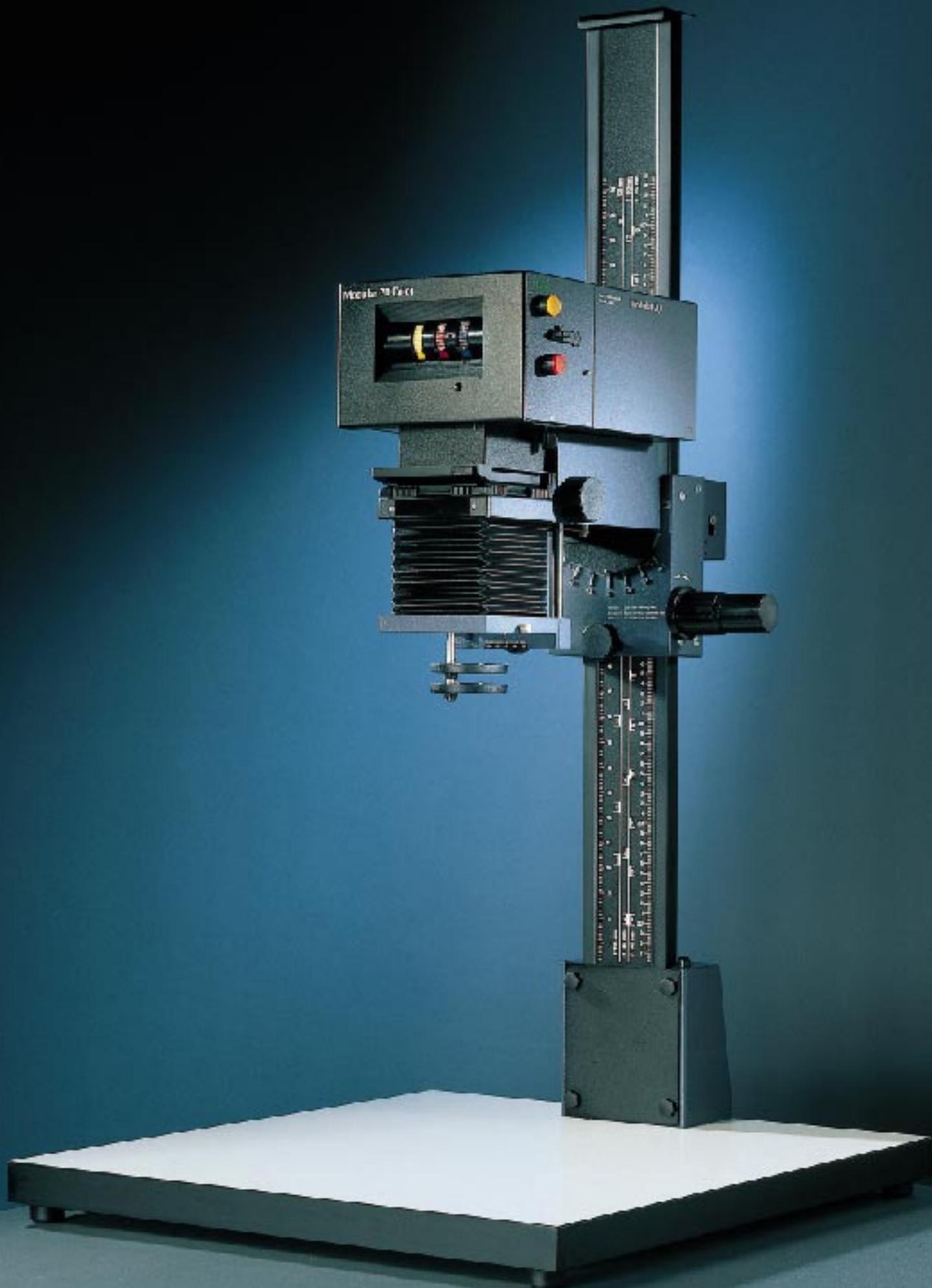
Modular 70 Start Pro base unit +
Modular 70 Lumo +
Modular 70 Color



The height can be adjusted quickly to millimetre accuracy by a handgrip with quick-release coupling. A counterweight spring balances the weight. The column is marked with centimetre and inch scales as well as magnification factors for rapidly resetting a particular print size.



The professional film carrier is made of diecast aluminium, and features adjustable masking strips, register pins and automatic centering. With the aid of interchangeable metal masks and glass plates, the film carrier can be used for formats up to 6 x 7 cm (2¹/₄ x 2¹/₄ in) and APS.



The basic unit
Modular 70 Start Pro

The Modular 70 Start Pro has been designed for film formats up to 6 x 7 cm (2 1/4 x 2 3/4 in), with the standard version intended for the 35 mm film format. The baseboard permits enlargements up to a maximum print size of 60 x 60 cm (23 1/2 x 23 3/4 in).



The base unit consists of a stable profiled column, a large, hard-wearing baseboard, the main body and a professional film carrier with a metal format mask for the 35 mm film format.

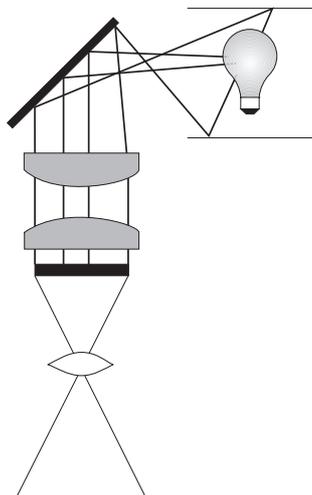


Modular 70 BW condenser BW head

The condenser unit on the Modular 70 BW generates directed light as opposed to diffuse light, permitting high-contrast rendition of the subjects. Even low-key negatives are reproduced well, which is a particular advantage with large magnifications. Optimum use is made of the light beam, allowing short exposure times.

The deflecting mirror in the lighting system ensures that the negative carrier is not exposed to excessive heat. The integrated filter drawer is used for printing variable contrast papers. A format change to

6 x 6 cm (2 1/4 x 2 1/4 in) or 6 x 7 cm (2 1/4 x 2 3/4 in) can be carried out without any problem. The appropriate condensers and format masks for the film carrier are available as optional accessories.



Modular 70 Lumo

Halogen lamp power supply for the Modular 70 Vario and Modular 70 Color

The lighting unit for diffuse light is a separate module in the Modular 70 enlarging system which is needed to print colour and variable contrast papers (filter modules Modular 70 Color and Modular 70 Vario).

The amount of light can be steplessly varied by up to two stops with a density diaphragm. This means that the optimum aperture for any enlarging lens can be set. The built-in mixing box can be changed from 35 mm to medium format (up to 6 x 7 cm / 2 1/4 x 2 3/4 in) by means of a sliding lever. This guarantees excellent lighting for each of these formats.

The Durst Colamp 100 W halogen lamps used in the Modular 70 Lumo are selected according to very precise criteria (high red content, narrow

tolerance range for the eccentricity of the lamp filament). Before they leave the warehouse, every single lamp is tested. This strict control procedure ensures that the illumination of the negative/transparency is uniform, that the decrease in brightness towards the edges is minimal and that the colour mixing is perfect. As a result, the filter values are low and the exposure times correspondingly short. Apart from this, the filter corrections needed when the lamp is changed are very small indeed.

The heat protection filter and UV barrier filter are part of the lamphouse. They ensure, firstly, that the negatives and slides do not overheat, and secondly, they do not permit exposure of the photo paper by UV or IR.

Accessories for the Modular 70 series:

- Stabiliser (Model 70 Stabi)
- Dust cover (Autocuf)
- Wall-mounting device (AC 800 Wallmount)

Conversion kit, see page 57

Technical data

Modular 70 Start Pro – basic unit

Max. film format: 6 x 7 cm (2 1/4 x 2 3/4 in)
 Baseboard size: 60 x 65 cm (23 3/4 x 25 1/2 in)
 Max. print size (on baseboard): 60 x 60 cm (23 1/2 x 23 1/2 in)
 Lens (not included): 35 - 105 mm
 Overall height: 130 cm (51 in)
 Weight: approx. 27.5 kg (60.6 lbs)
 Power consumption: approx. 300 W
 Power supply: 115 V/60 Hz; 230 V/50 Hz

Linear magnification factors:

Focal length	Film format	min.	max.
100/105 mm	6 x 9 cm (2 1/4 x 3 1/2 in)	1,5	7,8
75/80 mm	6 x 6 cm (2 1/4 x 2 1/4 in)	1,5	11,0
50 mm	24 x 36 mm	2,2	19,0
35 mm	18 x 24 mm	4,6	28,0

Modular 70 Lumo

Lighting module for diffuse illumination (Modular 70 Color and Modular 70 Vario)

Light source: 100 W halogen lamp, selected spectrum and centering (Colamp 100 S)
 Density aperture: up to 60 D (2 apertures)
 Transformer with overheating cut-out. For voltage stabiliser, upgradable with extra module
 consistency: + 10%/- 15%
 Interchangeable mixing box: 24 x 36 mm to 6 x 7 cm (2 1/4 x 2 3/2 in) by sliding lever.

UV and IR filters
 Weight: approx. 7 kg (15.4 lbs)

Modular 70 Color and Vario

Filter modules for use with Modular 70 Lumo
 Dichroic filters, filter values: up to 170 D
 Contrast grade with Vario: stepless from 0.0 to 5.0, controlled via combined yellow and magenta filters
 Filter scale lighting: yellow light diode, 9 V block battery
 Weight: approx. 2 kg (4.4 lbs)

Modular 70 BW

Condenser lighting system: via deflecting mirror and double condenser
 Light source: 150 W opal lamp (Dulamp 150)
 Weight: approx. 4 kg (8.8 lbs)



Modular 70 Vario

The Vario filter module makes working with variable-contrast papers a good deal easier. The required contrast is set with the aid of a scale which can be lit up at the press of a button. With Ilford Multigrade IV variable-contrast paper, the density can be automatically compensated by the accurately machined cam, so that it remains constant through all the gradation stages. A magenta filter with a precisely selected colour spectrum and the 100 W halogen lamp, which has been manufactured to particularly tight tolerances, produce a light which is especially suitable for variable-contrast papers. For absolutely accurate focusing, the filters can be moved out of the light path with the white light lever.

The Modular 70 Vario is used together with the Modular 70 Lumo lighting unit. The diffuse lighting has the advantage for black-and-white enlarging that not only is it very uniform, it also makes small dust particles or slight imperfections on the negative less visible. Consequently, large crop enlargements or small negative formats are easier to handle.

The test criteria for the reflected colour spectrum have been made even more stringent for the lamp used for variable-contrast paper in the Modular 70 Lumo. Exact colour balance is a prime requirement for accurate automatic density compensation with the various contrast grades.

Modular 70 Color

Like the Modular 70 Vario, the Modular 70 Color filter module is simply slotted on to the Modular 70 Lumo lighting module. The high grade dichroic filters for yellow, magenta and cyan are moved into the beam via special cams. The filter values can be set accurately up to 170 D.

To simplify reading the filtration setting, the filter scales can be directly illuminated, but with particularly fast photo papers and materials, the lighting is switched off. The white light lever is for focusing without the filters in the light path. The colour module can be exchanged for the multi-contrast module in seconds.



For full Scheimpflug correction, the head can be infinitely tilted, with the lens carrier tilted in the opposite direction. Reference scales ensure exact repeats. The enlarger can be converted for wall projection in no time at all.

Labometer

For precise colour and density measurement

The Labometer is a colour analyser with built-in exposure timer. The simultaneous integral reading of the spectral colours blue, green and red allows an easy determination of the required filter settings and exposure time. The required colour corrections are displayed on an LCD.

The Labometer consists of a measuring unit with integrated probe and power supply unit. The LCD takes the user step by step through the analysis of a negative and the production or correction of a print. Any one of five languages can be selected. The exposure time is displayed on a separate, easy-to-read red LCD.

The Labometer can be used with all colour enlargers up to a switching power of 250 W.



Efficient and uncomplicated working: The Labometer can be placed on the baseboard to save space.

The green LCD display also gives step-by-step instructions during the setup procedure:

- Ten channels are available in each case to set the various film and paper types and for paper reciprocity compensation. The values for most standard materials have been preset.
- Any light variations resulting from changing the lamp can be compensated by a simple measurement to achieve constant results.
- The auto-zero mode automatically compensates reading deviations due to changes in room temperature.



The step-by-step instructions in German, English, French, Italian or Spanish guide the operator through the entire process.

Technical data

Labometer

Measuring method:	simultaneous integral reading of colour negatives	Memory channel for under/over-correction:	1
Measuring cells:	silicon diodes	Colour under/over-correction:	adjustable from 0 - 150% (preset at 50%)
Analysis range:	3 m lux to 3 lux (relative to the Kodak Gold reference negative, measured in white light)	Languages for operating instructions:	English, German, Italian, French, Spanish
Exposure time range of the timer:	0.5 to 999 sec (0.50 - 0.99/1.00 - 9.99/100 - 999)	Dimensions (without power supply unit)	
Displays:	Green LCD for user instructions and menus; LCD illumination is automatically cut back when the enlarger light is switched off. LCD (three-digit, red) for exposure time	Length:	20 cm (7 3/4 in)
Memory channels		Width:	15 cm (6 in)
Paper channels:	0 - 9	Height:	7 cm (2 3/4 in)
Film channels:	0 - 9	Weight:	
		Measuring unit:	approx. 0.6 kg (1.3 lbs)
		Power supply unit:	approx. 1.3 kg (2.8 lbs)
		Power consumption:	approx. 250 W
		Power supply:	115 V/60 Hz; 230 V/50 Hz

Working with the Labometer

Preparation

Place the Labometer in the centre of the baseboard. Insert the negative, switch on the enlarger light (without filters).

Analysis

After the diffuser has been moved underneath the lens, the Labometer measures the diffused light, works out what filtration values are needed and displays the result together with the calculated exposure time. Good first-time results are achieved because the predominant colours are precisely analysed by means of an integrated colour undercorrection facility. The reciprocity compensation program produces consistent results even with large magnifications.

Exposure

Once the filtration has been adjusted on the colour head, the Labometer automatically assumes the function of an exposure timer.



Colour analyser without colour undercorrection



Durst Labometer with colour undercorrection



Selective enlargement analysed by the Durst Labometer with automatic reciprocity compensation

The three photos on the left show the result of a colour analysis without colour undercorrection and, for comparison, the result analysed with the Durst Labometer featuring colour undercorrection. Through the reciprocity compensation facility, enlargements at high magnification do not vary in colour or density.

Durst Labometer: the Easy Color principle

Should colour or density corrections nevertheless be needed, the Labometer offers a very simple correction system used on professional printers. This is the Easy Color principle, which carries out colour and density corrections directly.

With conventional colour analysers, in order to eliminate a yellow cast, you have to increase rather than reduce the yellow filtration. The colour correction with the Labometer, on the other hand, works logi-

cally: to remove, say a yellow cast, you would simply enter "- 5 Y" (Y = yellow) on the display. The Easy Color principle also has the advantage that prints can be corrected not only in yellow, magenta and cyan, but also directly in the colours red, green and blue.

Density fluctuations caused by filter corrections are automatically compensated by altering the exposure time.

The density is also corrected directly, and is automatically

converted into exposure time. If, for example, a picture is too bright, it can either be corrected by entering "+10 D" (D = density) which alters the exposure time.



Print with red cast:
Correction: minus red



Picture with yellow cast:
Correction: minus yellow



Correct print

M 805

To meet professional requirements

The M 805 is a professional enlarger for people who set the highest standards in terms of print quality and individual creativity. Thanks to its modular design, the enlarger can be fitted with a wide variety of lighting systems in line with a particular application.

For example:

- with a colour head (halogen light source and diffuse illumination system)
- with a condenser illumination system (opal light source)

- with a microprocessor controlled enlarger head (halogen light source and motor-controlled filter for printing variable-contrast black-and-white papers)

The M 805 has been designed for film sizes up to 6 x 9 cm (2 x 3 in). It meets the requirements of both the demanding amateur enthusiast and the professional user when it comes to producing quality prints in a wide variety of sizes in either colour or black-and-white.

The **basic unit** of the M 805 consists of a stable column, a large, rugged baseboard (maximum print format 60 x 60 cm/23 1/2 x 23 1/2 in), the main body and a professional film carrier with two carrier glass inserts.

The height is adjusted by a dual-purpose handgrip for both fine and fast adjustment. A counterweight spring ensures correct balance. Magnification scales in cm and inches on the column enable precise resetting of any magnification factor.

Focusing is carried out by a rotating knob. Double-side guide rails on the lens carrier ensure optimum edge-to-edge sharpness.

The solidly built metal film carrier has steplessly adjustable masking strips and interchangeable metal format masks and glass inserts.

The enlarger head can be steplessly pivoted up to 90° for wall projection. The lens carrier also pivots to permit full rectification by the Scheimpflug principle. Reference scales ensure exact reproducibility.

M 805 BW

Enlarger head with 150 W opal lamp and condenser-illumination system for formats up to 6 x 6 cm (2 1/4 x 2 1/4 in) convertible up to 6 x 9 cm (2 1/4 x 3 1/2 in) permitting high contrast rendition of the subjects.



Features and functional description

Lighting system

A deflecting mirror and format-related condensers ensure directional light and thus sharp, brilliant colour rendition.

Condenser system with diverted beam

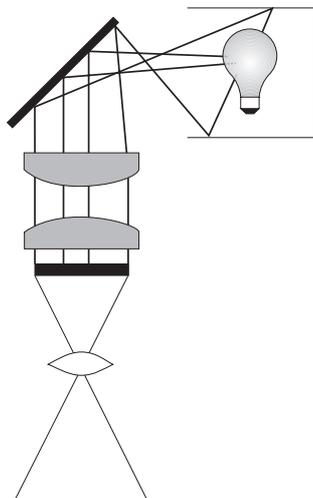
So that the lamphouse can be made more compact and the ventilation system ideally positioned, the beam of light from the lamp is turned 45° by a mirror.

Lamp holder

With adjustment facility for accurate centering of the lamp.

Filter drawer

For inserting gradation and colour filters.



Technical data

M 805 – basic unit

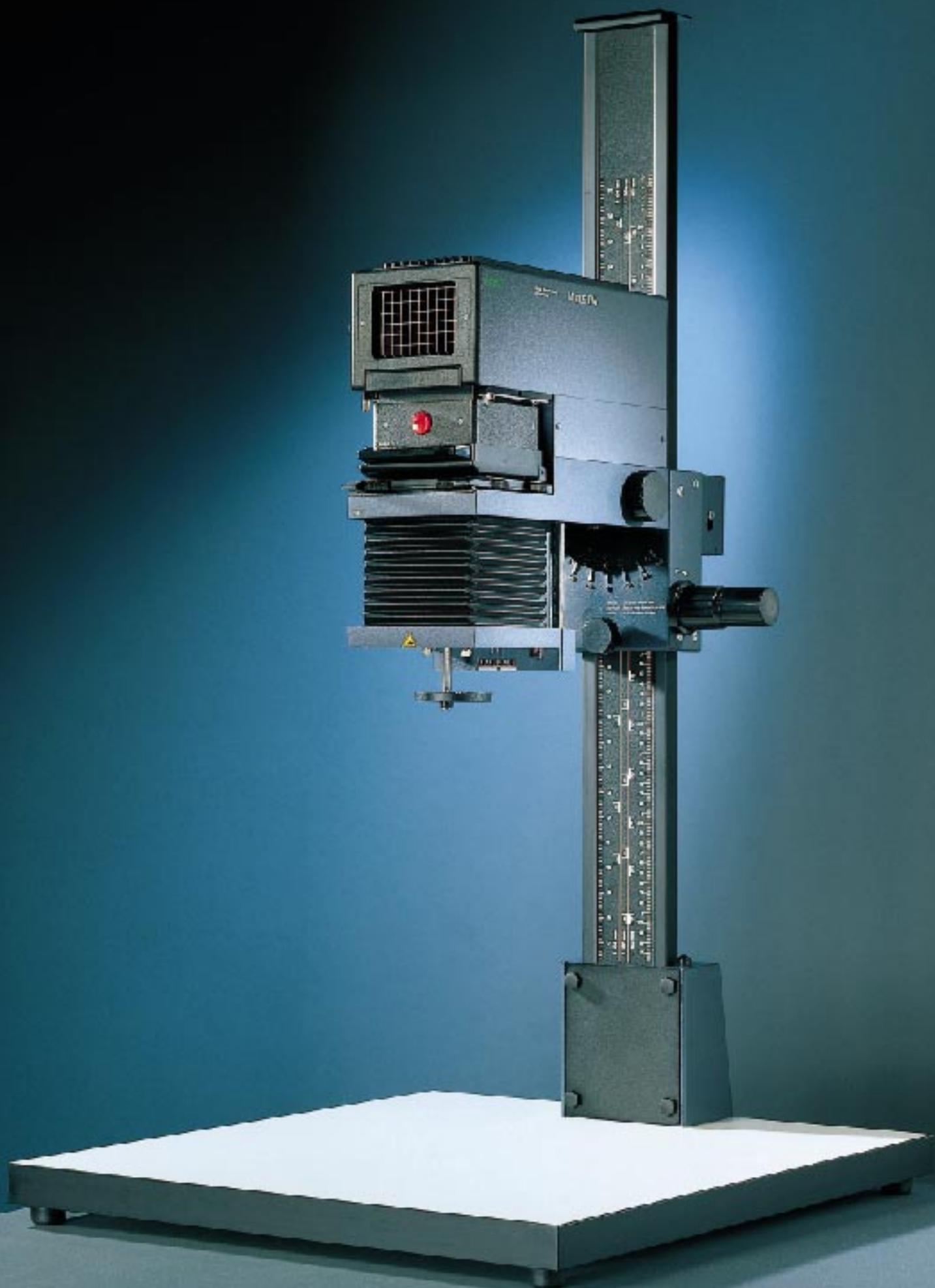
Max. film format: 6 x 9 cm (2 1/4 x 3 1/2 in)
 Baseboard size: 60 x 65 cm (23 1/2 x 25 1/2 in)
 Max. print size (on baseboard): 60 x 60 cm (23 1/2 x 23 1/2 in)
 Lens (optional): 28 - 105 mm
 Overall height: 135 cm (53 in)
 Weight: approx. 24 kg (52.9 lbs)

Linear magnification factors:

Focal length	Film format	min.	max.
100/105 mm	6 x 9 cm (2 1/4 x 3 1/2 in)	1,5	7,3
75/80 mm	6 x 6 cm (2 1/4 x 2 1/4 in)	1,1	10,3
50 mm	24 x 36 mm	4,3	17,8
35 mm	18 x 24 mm	7,2	26,5
28 mm	13 x 17 mm	9,2	32,0

M 805 BW

Light source: 150 W opal lamp (Dulamp 150)
 Light beam: via deflecting mirror and condensers
 Cooling: by convection
 Filter drawer: 9 x 9 cm (3 1/2 x 3 1/2 in)
 Weight (only head): approx. 3.6 kg (7.9 lbs)
 Power consumption: approx. 130 W
 Power supply: 115 V/60 Hz; 230 V/50 Hz



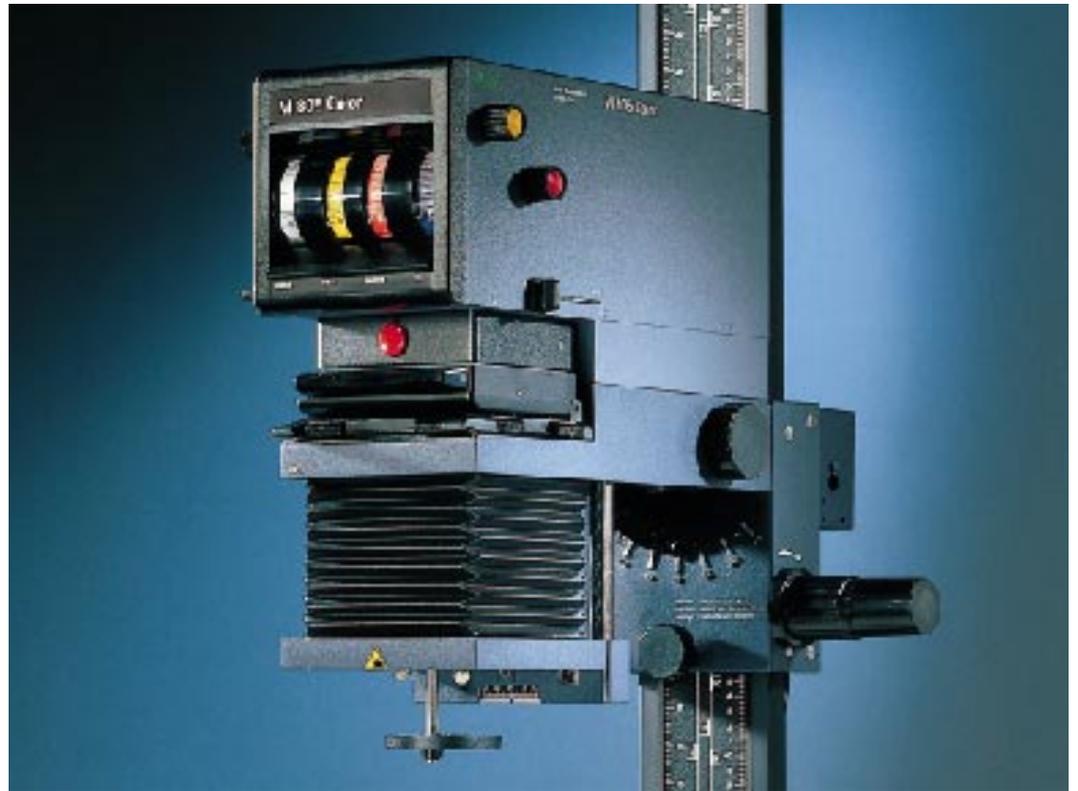
M 805 Color

With 250 W halogen light source and diffuse lighting system for film sizes up to 6 x 9 cm (2 1/4 x 3 1/2 in). The strength of the M 805 Color lies in the wide range of possibilities it offers for customising colour prints in all kinds of different sizes based on colour negatives and/or slides.

Features and functional description

diecast enlarger head with integrated vibration-free fan for adequate cooling in the lamp-house, and consequently less heat for the film

Perfect illumination by direct lighting. Special diffuser for minimum light loss and integrated interchangeable mixing box (from 24 x 36 mm to 6 x 9 cm / 2 1/4 x 3 1/2 in) for optimising light output



Steplessly adjustable dichroic filter (yellow, magenta, cyan) with a density of 130 densitometric values

Integrated swing-in extra filter (45 yellow, 15 magenta) for processing old, unmasked films

Steplessly adjustable density diaphragm (0 - 60 D)

- to maintain the ideal working aperture while changing the magnification scale
- to increase the exposure time for reductions to minimise the effect of after-glow
- to increase the exposure time while maintaining the ideal working aperture (giving possibility to dodge and burn-in)

White light lever
To control the projected image, both the filters and the density diaphragm can be withdrawn from the light path. This is indicated by a light on the front panel.

Accessories for the M 805 series:

- Stabiliser/transformer (Est 500 N/Tra 500 N)
- Dust cover (Autocuf)
- Wall mount system (AC 800 Wallmount)
- Foot switch for Multigraph (Pictope)

Conversion kits see page 57

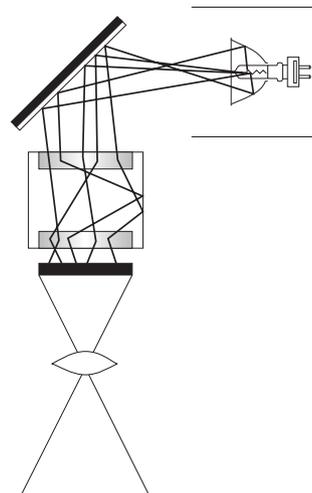
Technical data

M 805 Color

Light source:
Light beam:
Cooling:
Filters:

Max. filter densities:
Supplementary filters:
Density diaphragm:
Weight (head only):
Power consumption:
Power supply:

250 W halogen lamp (Colamp 250 S) via deflecting mirror and mixing boxes by fan
dichroic filters in yellow, magenta and cyan
130 densitometric units (= D 1.3)
approx. 45 yellow/15 magenta (= D 0.6)
0 - 60 densitometric units (= D 0.6)
approx. 5.5 kg (12.1 lbs)
approx. 130 W
115 V/60 Hz; 230 V/50 Hz



Lighting system for M 805 Color and M 805 Multigraph – diffuse lighting with mixing box

The lighting system for the enlargers has been optimised in recent years by varying the shape of the reflectors in the halogen lamps. The silvered surface of the mixing box increases the yield of indirect light. Optimising the filament size and reflector shape has raised efficiency by over 50%.

M 805 Multigraph

The M 805 Multigraph is a universal microprocessor-controlled enlarging head for film sizes up to 6 x 9 cm (2 1/4 x 3 1/2 in) for printing conventional and variable-contrast black-and-white papers.

Features and functional description

Enlarger head with 250 W halogen light source and integrated, vibration-free ventilator for adequate cooling in the lamphouse and consequently less heat for the film

Contrast and density measurement

The probe, which is connected by a cable to the operating panel, is used to meter the contrast range and density. Hundreds of different metering points are read in a matter of seconds. From this, the computer calculates the necessary contrast range and exposure time and automatically sets the values on the display and enlarger head.



Exposure control

The exposure is started via the "expose" key. The lamp is powered up to maximum output and the motor-driven filters are accurately positioned. Only then does the motorised light shutter open and then close again after the exposure time has expired. The resultant print is therefore not affected by the pre and after-glow of the lamp.

"Permanent Closed Loop" light monitoring

A voltage drop in the electricity network, a change in colour temperature of the lamp or filters, or a new lamp can produce instable results. It can

also be a problem particularly with print runs. The permanent closed loop light monitoring system in the Multigraph balances out influences such as these and thus guarantees consistent, reproducible results.

"Burn-in" mode

This function allows three additional exposure times and contrasts to be set for burn-in. Once the main exposure time has finished, the modified times and gradations for burn-in are automatically set and displayed.

Adjustable gradation table for different paper types

This table is used to set the filters and density data of the particular paper grade. The M 805 Multigraph can thus be optimised in line with the speed of all currently available and future paper types.

Technical data

M 805 Multigraph

Light source:	250 W halogen lamp (Colamp 250 S)
Lamphouse cooling:	integrated cooling fan
Light control:	permanent closed loop system
Max. filter density:	yellow: 1.70 D / magenta: 1.70 D
Filter control:	motorised
Exposure time range:	1.0 - 999 sec
Exposure control:	integrated timer and motorised light shutter
Gradation table:	can be freely programmed for all available future paper types
Gradation ranges:	00-0-1-2-3-4-5
Gradation increments:	with manual input = 1/10
Contrast correction:	with probe measurements = 1/10 ± 30 %
Paper channel:	1 (digital display of the memory value)
Connections:	footswitch or roll easel, measuring probe

Metering probe:	contrast and density measurement. The values are then displayed and automatically set in the colour head. The measurement is not affected by darkroom lights because the sensor is protected with special filters.
Diameter of the sensor:	7.5 mm
Burn-in function:	Three exposure times and gradations for burn-in effects can be pre-programmed. They are set automatically at the end of the main exposure time.
Weight (head only):	approx. 7.5 kg (16.5 lbs)
Power consumption:	approx. 300 W
Power supply:	115 V/60 Hz; 230 V/50 Hz

Reprosystem

Complete system for precision copy work

Repro 670/Repro 805

The Repro 670 and Repro 805 camera holders fit the Durst M 670, Modular 70 and M 805 enlargers and have been developed for particularly accurate copy work. The camera holders can be adjusted in all directions and are designed in such a way that mounting of the camera in any position is particularly easy and safe. They can also be swung up to 90° for projecting large formats on to the wall. The Repro 670 and Repro 805 are intended for use

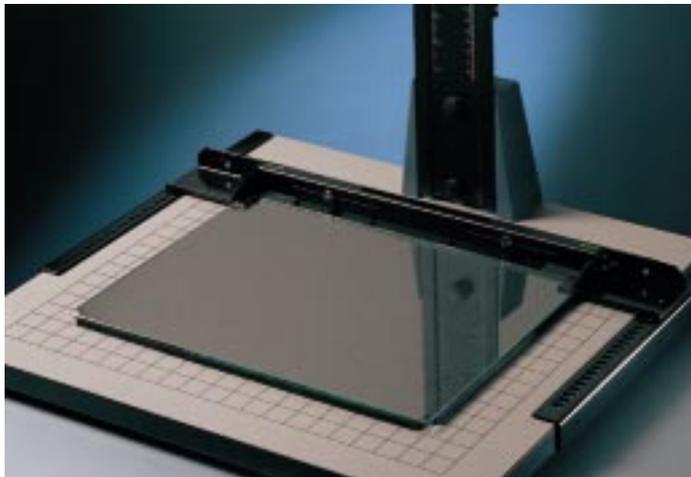


with 35 mm and medium-format cameras up to a total weight of 4 kg (8.8 lbs).

Copy Holder

The Copy Holder is an adjustable multi-functional frame which is mounted on the baseboard of the Reprostand. It simplifies the accurate positioning of the original (e.g. picture, book or magazine).

- A glass plate is provided to keep the original flat.
- A sliding strip with register pins at Leitz standard distances is provided for positioning originals, mounts and other templates.



Technical data

Repro 670

to fit: M 670
Weight: approx. 700 g (1.5 lbs)

Repro 805

to fit: Modular 70 and M 805
Weight: approx. 900 g (1.9 lbs)

Copy Holder

Size: 50 x 34 cm (19 3/4 x 13 1/4 in)
Size of glass plate:
35 x 25 cm (13 3/4 x 9 3/4 in)
Weight: approx. 2 kg (4.4 lbs)

Reprolamp:

Colour temperature: 5,400 °K
Light intensity: 1,900 Lm
Light source: compact, fluorescent tube TC-L 36 W, daylight "de luxe"
Weight: approx. 5.2 kg (11.5 lbs)
Cord length: 1.5 m (590 1/2 in)
Power consumption: approx. 36 W
Power supply:
115 V/60 Hz; 230 V/50 Hz

Reprostand:

Column length: 110 cm (43 1/4 in)
Baseboard size:
46 x 50 cm (18 x 19 3/4 in)
Weight: approx. 10 kg (22 lbs)
Camera types: 35 mm, medium format up to 4 kg (8.8 lbs)



Repro lamps

Professional lighting system for copy work in daylight quality illumination, to fit the Durst Reprostand and the corresponding Durst enlargers. The main features:

- two fluorescent lamps with 5,400 °K (light colour 12)
- uniform, large-area illumination of the original
- can be pivoted in any direction, also up and down.

Reprostand

With the Durst Reprostand, you can be sure of good results from the very beginning:

- the non-reflecting baseboard in neutral 0.70 D grey, makes it easier to determine the exposure time. The camera and copy can be aligned with the aid of the black gridlines.
- The sturdy aluminium column eliminates the possibility of wobble during exposure
- The Reprostand is suitable for 35 mm and medium-format cameras weighing up to 4 kg.
- For horizontal copies of large originals on the wall, the camera can be turned round and the camera stage set upright. This is typical of the versatility of the Durst Reprostand.



Filmetta

The fully automatic film processor

The Filmetta processes 35 mm, roll and sheet film up to a format of 13 x 18 cm (5 x 7 in) and papers up to 18 x 24 cm (7 x 9 in).

This Filmetta film processor is noted above all for its outstanding economy when it comes to water and chemistry consumption. There is not even any need to connect it up to the mains, and about four 35 mm films can be processed at the same time. Should only one 35 mm film have to be processed, a system of spacers can be placed in the developing tank to minimise chemistry consumption. Apart from this, the developing and fixing solutions are collected separately.

This means they can be used for a further use with a longer process time, or they can be disposed of separately in an environmentally friendly manner. The Filmetta is user friendly in its ease of handling: once the program has been set and the chemistry and water have been filled in, the rest is automatic.



As soon as the process temperature has been reached, the first chemical is pumped into the tank. Then, after the required time has elapsed, it is emptied and collected. The rinse water, adjusted automatically to the right temperature, is pumped in from the water jacket. The current bath temperatures are continuously displayed on an LCD (in °C or °F). A total of ten different processes can be freely programmed, with the most important of them having been preset in the factory (E6, C41, B/W).

The Filmetta can be used for processing all types of films, such as slide, colour negative and black-and-white films. High-speed processes requiring process temperatures up to 45 °C (113 °F) are no problem either. At the end of the process, a self-cleaning program can be selected; the amount of maintenance needed is minimal.



The Filmetta comprises the basic unit (including water-jacket), chemistry tanks and the integrated keyboard, the developing drum, four film reels (adjustable for 135 and 120 mm films) and three spacers. Additional developing drums, reels, spacers and film holders (for sheet film 9 x 12 cm, 4 x 5 in, 5 x 7 in) are available as optional accessories.

Technical data

Filmetta

Dimensions:	
Length:	53.5 cm (21 in)
Width:	25.0 cm (9 3/4 in)
Height:	38.5 cm (15 1/2 in)
Weight (incl. developing drum):	approx. 13 kg (28.6 lbs)
Process types:	C 41, 3 bath, E6, B/W and compatible max. 10 processes programmable
Film formats:	135 mm 120/220 mm 4 x 5 in (9 x 12 cm) 5 x 7 in (13 x 18 cm) up to 7 x 9 in (18 x 24 cm)
Paper format:	3
Number of chemical tanks:	max. 320 ml
Tank volume (chemicals):	5.65 l
Tank volume (water jacket):	150 - 320 ml
Water consumption for rinsing:	4 135 mm films 2 120/220 mm films 4 4 x 5 in (9 x 12 cm) films 1 5 x 7 in (13 x 18 cm) films
Capacity of drums:	2 - 45 rpm 0 - 999 sec 7
Speed of drum:	45 sec
Process time per tank:	adjustable 5 - 45 °C (41-113 °F)
Max. no. of washing stages:	approx. 30 min
Wash time:	via keyboard and LCD display either in °C or °F
Tank heating:	approx. 500 W
Heating-up time:	115V/60 Hz; 230 V/50 Hz
Operation:	
Power consumption:	
Power supply:	



UT 100

The UT 100 has been designed to dry all film materials quickly and safely. Apart from this, the unit can also be used to dry plastic-coated enlarging paper (PE, RC). Its particular features include a ventilator unit with maintenance-free axial fan, automatic overheat protection, three-step switch for hot and cold air, heating output of 240 and 460 W; the basic unit includes rollfilm drying cabinet and film clips. Accessories:

- **UTP:** Plastic drying cabinet (size 55 x 35 x 75 cm/21 1/2 x 13 3/4 x 29 1/2 in) for sheet film and plastic-coated paper (e.g. 6 sheets 50 x 60 cm/19 3/4 x 23 1/2 in)
- **UT 100 film bag** (replacement): drying cabinet (size 26 x 20 x 170 cm (10 1/2 x 7 3/4 x 66 3/4 in) for 35 mm and rollfilm and paper up to 5 sheets of 20 x 25 cm (7 3/4 x 9 3/4 in)

L 1200

The professional enlarger

The L 1200 is a professional enlarger which, in terms of its print quality and scope, leaves nothing to be desired. The basic unit can be equipped with various lighting systems, depending on the particular application:

- with a colour head (halogen light source and diffuse lighting system)
- with a condenser lighting system and opal light source
- with a condenser lighting system and point light source
- with a microprocessor-controlled enlarger head (halogen light source and motor-controlled filter for processing variable-contrast black-and-white papers)

The L 1200 is designed for film formats up to 4 x 5 in (10.2 x 12.7 cm) and satisfies all possible demands made by professional users – however high they might be – relating to the production of quality prints in colour and black-and-white.

The baseboard of the L 1200 basic unit can cope with enlargements up to a maximum print size of 50 x 70 cm (19³/₄ x 27¹/₂ in). The unit is equipped with a stable profiled column, a large, rugged baseboard, the main body and a professional film holder (including two glass plates).

The handgrip has a twin function for fast and fine adjustment of the height of enlarger head. A counterweight spring ensures effortless movement. The magnification scales are given in cm and inches on the column for precise referencing.

The hard-wearing, metal film carrier has been manufactured to meet the demands of professional users, and is equipped with steplessly adjustable masking strips, register pins and glass plates.

The lens is focussed by a rotating knob, and there is a pull-out extension arm for larger magnifications. Double-

sided guide rails on the lens carrier ensure better edge-to-edge sharpness.

The enlarger head can be pivoted steplessly up to 90° for wall projection. The lens carrier also pivots to permit full rectification according to the Scheimpflug principle. Reference scales ensure exact reproducibility.

L 1200 Color

With its 250 W halogen light source and diffuse lighting system for film formats up to 4 x 5 in (10.2 x 12.7 cm), the L 1200 Color is ideal for the individual production of colour prints in all different sizes from colour negatives or transparencies.

Features and functional description

diecast enlarger head with integrated vibration-free fan: There is adequate cooling in the lamphouse to reduce the heat at the film stage.

Perfect illumination through direct lighting, special diffuser with minimum light loss, and mixing boxes matched to each film format (from 24 x 36 mm to 4 x 5 in, 10.2 x 12.7 cm) for optimum light output

Steplessly adjustable dichroic filters (yellow, magenta and cyan)

with a density of 130 densitometric values, extension rods for comfortable adjustment of the desired filter values, even when the head is in a high-up position

Integrated swing-in additional filter (45 yellow, 15 magenta)

For enlarging old non-masked films.



Steplessly adjustable density aperture (0 - 60 D)

- Maintains the ideal working aperture while changing the magnification
- Increases exposure times for reductions to minimise effect of after-glow
- Increases exposure time at the ideal working aperture to simplify dodging and burning-in

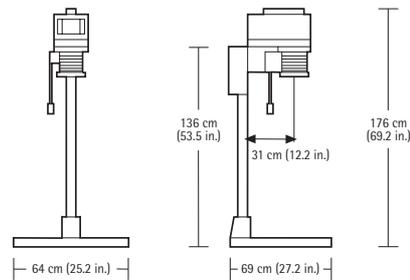
White-light lever

To monitor the projected image, the filters and density diaphragm can be moved out of the light path. A lamp indicates this on the front panel.

Technical data

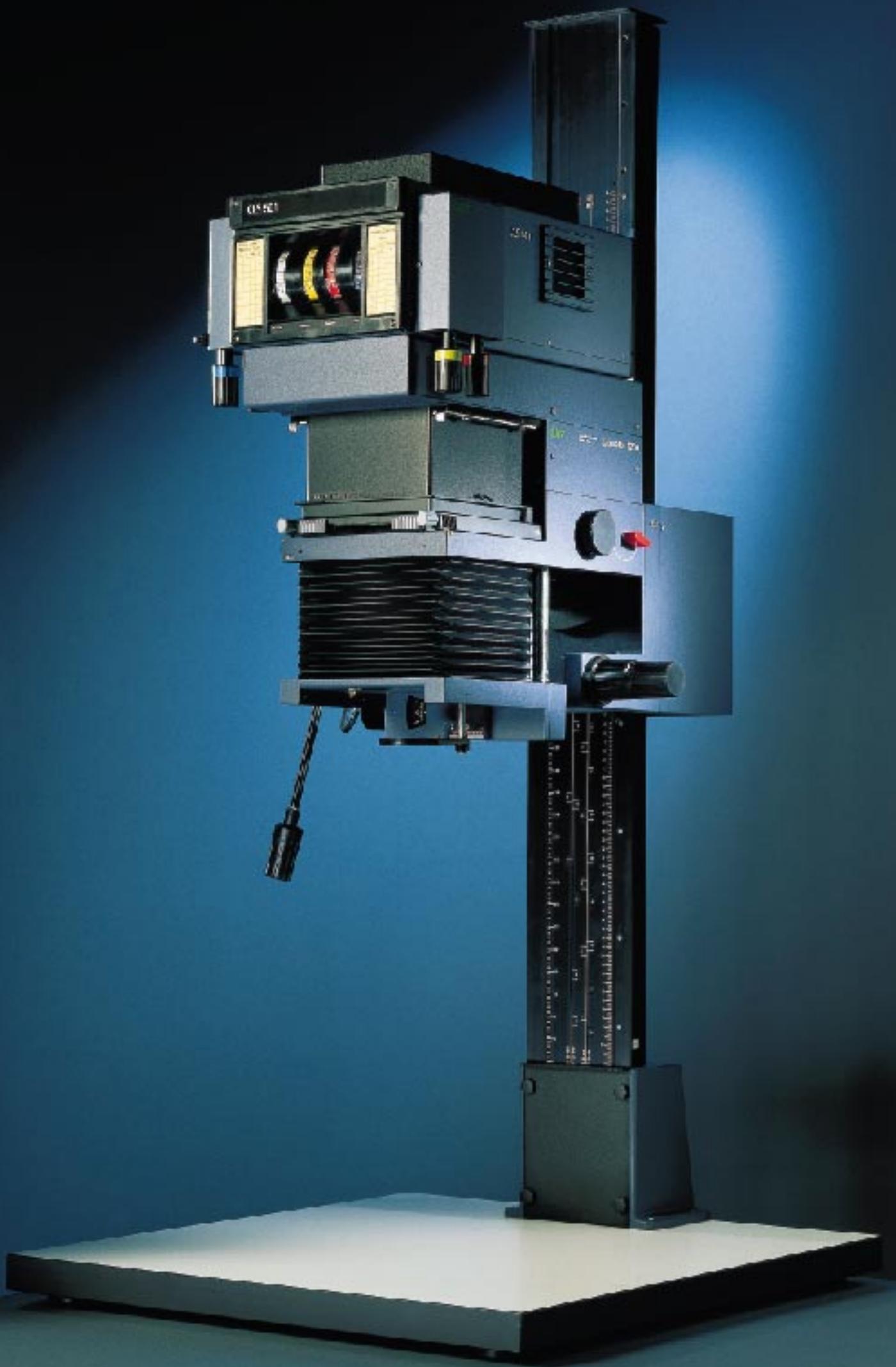
L 1200 basic unit

Max. film format: 4 x 5 in (10.2 x 12.7 cm)
 Max. print size on baseboard: 50 x 70 cm (19³/₄ x 27¹/₂ in)
 Lens (optional): 50 - 150 mm, weight: approx. 45 kg (99.2 lbs)
 Power consumption: approx. 300 W
 Power supply: 115 V/60 Hz; 230 V/50 Hz



Linear magnification factors:

Focal length	Film format	min.	max.
150	100 x 125 (4 x 5 in)	1,5 x	6,5 x
135	85 x 100	1,2 x	7,5 x
105	65 x 90	1,0 x	10,3 x
100	65 x 90	1,0 x	10,8 x
80	56 x 72	2,5 x	14,3 x
50	24 x 36	5,4 x	22,5 x



L 1200 Multigraph

The L 1200 Multigraph is a universal, microprocessor-controlled enlarger head for film sizes up to 4 x 5 in (10.2 x 12.7 cm). It is used for printing conventional and variable-contrast B/W papers.

Features and functional description

Enlarger head with 250 W halogen light source and integrated, vibration-free ventilator. Sufficient cooling in the lamphouse to minimize the heat generation in the film stage.

Contrast and density measurement

A probe connected to the operating panel measures the contrast range and density. Based on the result, taken from several hundred readings in the space of a few seconds, the computer calculates the necessary gradation and exposure time. The setting is made automatically on the display and enlarging head.



Exposure control

The exposure is started by pressing the "Expose" button. The lamp is powered up and the motorised filters are positioned exactly. Only then does the motorised light shutter open and then close again at the end of the set exposure time. Consequently, the resultant print is not influenced by the pre and after-glow of the lamp.

"Permanent Closed Loop" light monitoring

Voltage drops in the mains, colour temperature fluctuations of the lamp and filters, and replacement lamps are all factors which produce unsatisfactory results, particularly with print runs. The permanent closed loop light monitoring system in the L 1200 Multigraph guarantees consistent, reproducible results.

"Burn-in" function

With this special mode, three additional exposure times and gradations can be set for burn-in exposures. The burn-in times and gradations are automatically displayed and set in the enlarging head after the main exposure time has elapsed.

Five adjustable gradation tables for different paper types

The L 1200 Multigraph can be adapted to the speed of all currently available and future paper types: with the aid of five tables, the filters and density values of the particular paper type can be easily adjusted.

L 1200 Varipoint

Enlarger head with 100 W point light source and condenser lighting system, for film sizes up to 4 x 5 in (10.2 x 12.7 cm), for processing low-contrast black-and-white exposures and black-and-white electron micrographs.

Features and functional description

100 W point-source lamp for razor-sharp contours and perfect rendition of even the tiniest details

Lighting system

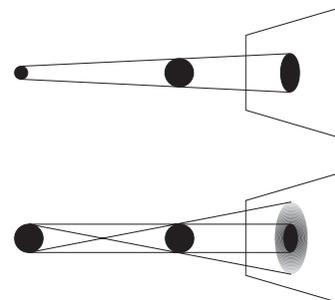
with T* coated surface-treated deflection mirror, condensers and negative carrier glass plates

Stepless control of light intensity

from zero to max, by means of variable-voltage transformer

Lamp holder

with micrometric XY adjusting facility for accurate centering of the lamp



Advantage of a point light source:

A black disc is illuminated with a point light source. Its shadow is razor-sharp and enlarged on the screen. When illuminated with a diffuse light source, the shadow is unsharp.

Accessories for the L 1200 series:

- Dust cover (Lacuf)
- Wall mounting attachment (L 1200 Wallmount)
- Footswitch for Multigraph (Pictope)

Conversion kits see page 57

L 1200 BW

Enlarger head with 150 W opal light source and condenser lighting system, specially for film formats up to 4 x 5 in (10.2 x 12.7 cm), particularly for processing low-contrast B/W negatives.

Features and functional description

Lighting system

Deflecting mirror and format-related condensers ensure directional light and thus sharp, brilliant image rendition.



Lamp holder
with micrometric XY setting option for exact lamp centering

Filter drawer
for inserting gradation and colour filters

Protim

Professional exposure timer with digital display, numerical keyboard, integrated time memory mode for saving up to ten exposure times and a time correction function in percent. The brightness of the control panel and display can be adjusted in ten steps.



Technical data

L 1200 Multigraph

Light source:
Lamp house cooling:
Light monitoring:
Max. filter density:
Filter control:
Exposure time range:
Exposure control:

250 W halogen lamp (Colamp 250S)
integrated cooling fan
permanent closed loop system
yellow; 1.70 D / magenta: 1.70 D
motorised

Gradation table:

Gradation ranges:
Gradation increments:

1.0 - 999 sec
integrated timer and motorised light shutter
can be freely programmed for all available and future paper types
00-0-1-2-3-4-5
with manual input = 1/10
with probe measurements = 1/10
± 30 %

Contrast correction:
Paper channels:

5 (digital display of the memory value)

Connections:

footswitch or roll easel,
measuring probe

Metering probe:

contrast and density measurement
The values are then displayed and automatically set in the multigraph head. The measurement is not affected by darkroom lights because the sensor is protected with special filters.

Diameter of the sensor:
Burn-in function:

7.5 mm
Three exposure times and gradations for burn-in effects can be pre-programmed. They are set automatically at the end of the main exposure time.

Weight (head only):
Power consumption:
Power supply:

approx. 7.5 kg (16.5 lbs)
approx. 300 W
115 V/60 Hz; 230 V/50 Hz

L 1200 Varipoint

Light source:
Light control:
Negative carrier glass:
Weight of head:
Power consumption:
Power supply:

100 W point-source lamp (Pulamp)
via deflecting mirror and condensers with special T* coating
approx. 7 kg (15.4 lbs)
approx. 100 W
115 V/60 Hz; 230 V 50 Hz
output voltage steplessly controllable from 0-12 V

L 1200 BW

Light source:
Light control:
Cooling:
Filter drawer:
Weight of head:
Power supply:

150 W opal lamp (Dulamp 150)
via deflecting mirror and condensers by convection
12 x 12 cm (4 3/4 x 4 3/4 in)
approx. 9.8 kg (21.6 lbs)
115 V/60 Hz; 230 V/50 Hz

Protim

Display: digital (3 LED digits)
Exposure time range: 0.1 to 999 sec
Time correction range: ± 99 %
Memory: 0 - 9 times
Brightness steps for key panel illumination: 0 - 9
Switching power at 230 V: 2000 W
Switching power at 110 V: 1000 W
Dimensions (L x W x H): 23 x 15 x 8 cm (9 x 6 x 3 1/2 in)
Power consumption: approx. 6 W
Power supply: 115 V/60 Hz; 230 V/50 Hz

Printo

Modular paper processor

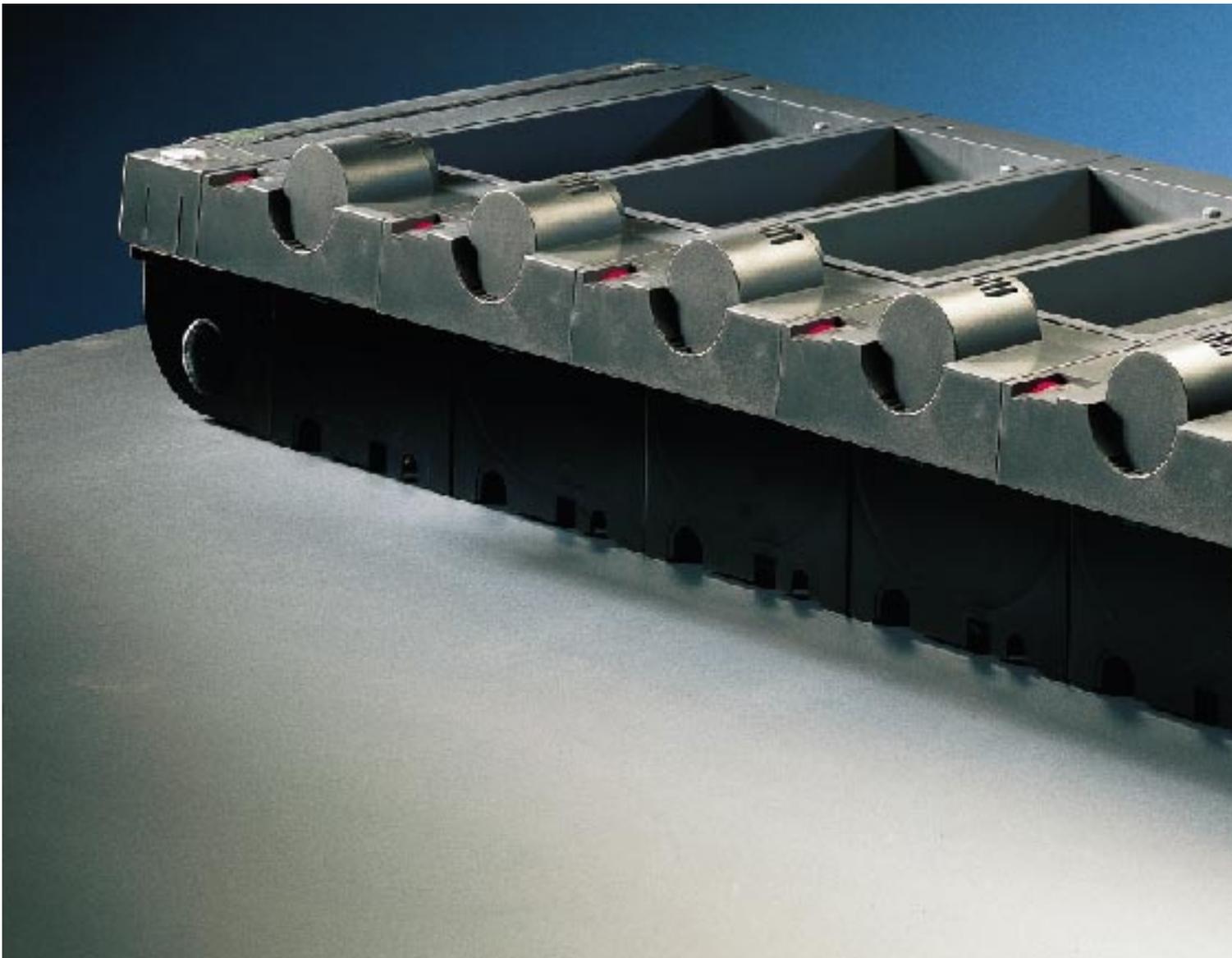
The Printo is a paper processing system that can be adapted to individual specific needs and requirements. Whether you select the three-module basic outfit, the professional dry-to-dry setup, or something between the two, Printo can help you build your own customised photo lab.

Ideal modular system

The basic version of the Printo can be put together with just three modules. As your requirements change or you become more sophisticated, you can add units without making your existing modules redundant. The full system with a total of six modules is a professional dry-to-dry machine with automatic replenishment.

This means that you can buy just the modules you need for your current requirements without investing prematurely in unnecessary items. The possibilities grow with the system. It all adds up to the most flexible mechanical paper processing system on the market. Printo can cope with all the normal chemical paper processing processes, and produces outstanding results into the bargain: black-and-white, traditional and high-speed colour negative processes or even colour prints from transparencies.

The speed of operation - and thus the time which your prints stay in the various chemicals - and the circulating speed of the chemicals are controlled by a simple system of plug-in cog wheels.



The indispensable assistant

The Printo effectively reduces the process to a single step. All you do is feed the paper into the first module, the Intro, and the finished print emerges in just a few minutes.

The advantages over conventional dish development are obvious: you no longer have to time the various processes individually, carry out intermediate rinses or change the chemical baths – that is now a thing of the past. The Printo is your indispensable assistant. It is easy to clean and also a guarantee for clean working. It also has the big advantage that you can concentrate entirely on the creative side of the printing process.

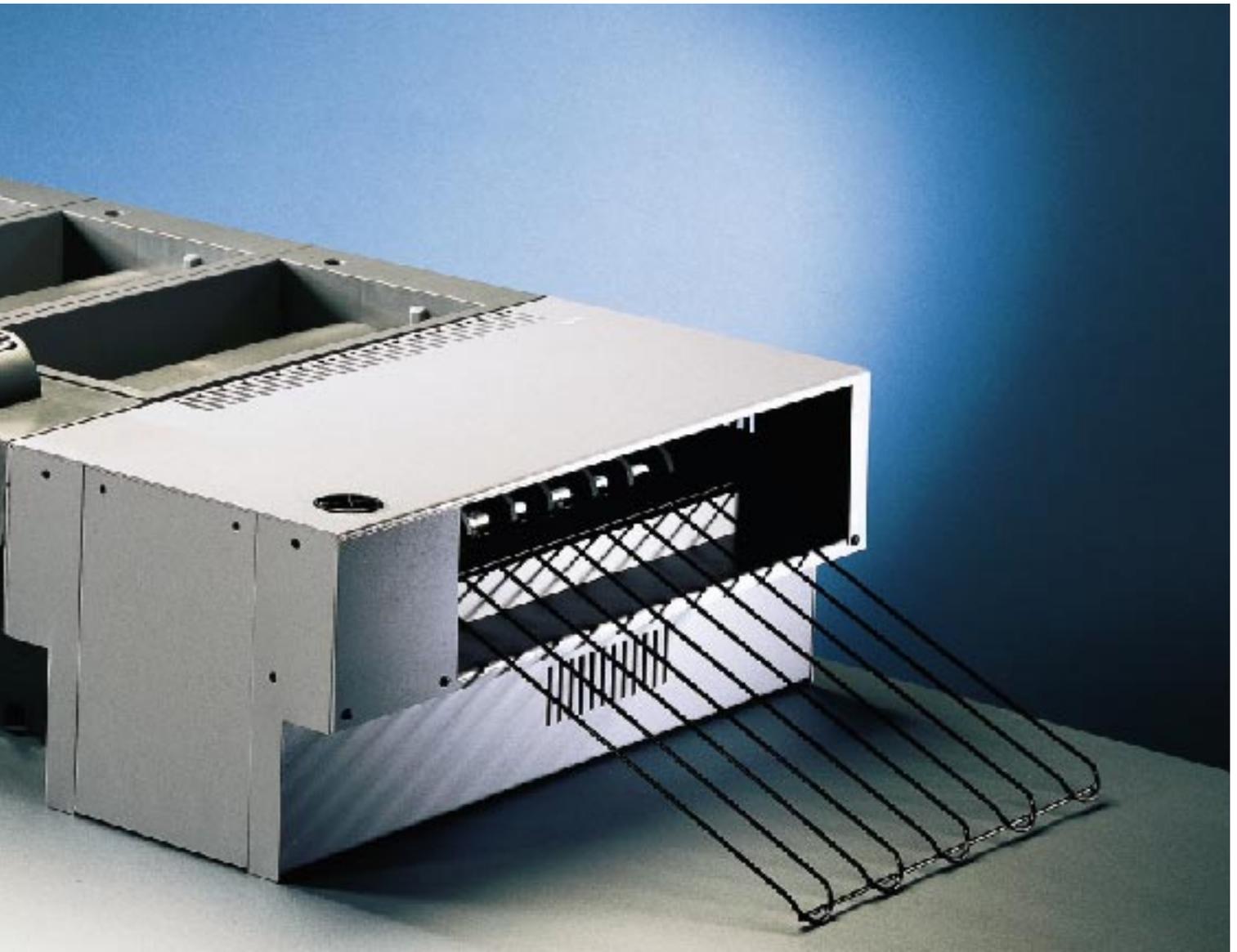
Space-saving, top performance

Not only is the Printo quick to set up, it is just as quick to take apart. The individual elements are standardised so that they can be stacked and not take up any valuable space. The paper processing system shows its true strengths when confronted with a large number of prints to be processed in a short time – the Printo is always ready to take on a heavy work load. And it only needs a minimum of energy and chemicals. With a single tank filling of 2.5 litres, it can process 20 prints of 30 x 40 cm (12 x 16 in) or 100 prints of 13 x 18 cm (5 x 7 in).

Precision and easy handling

The Printo is a user-friendly, high-performance precision machine. The immersion heaters keep bath temperatures constant to within $\pm 0.3\text{ }^{\circ}\text{C}$ ($32.54\text{ }^{\circ}\text{F}$). By moving the cog wheels to any of four different positions, you have a choice of four different running speeds. No tools are needed. The synchronised motors in the Printo drive module ensure perfectly smooth running even with voltage fluctuations.

Every Printo module coming into contact with chemicals is made of highly resistant material: either of stainless steel or Noryl, a high-grade plastic, which is resistant to all the normal photochemicals.

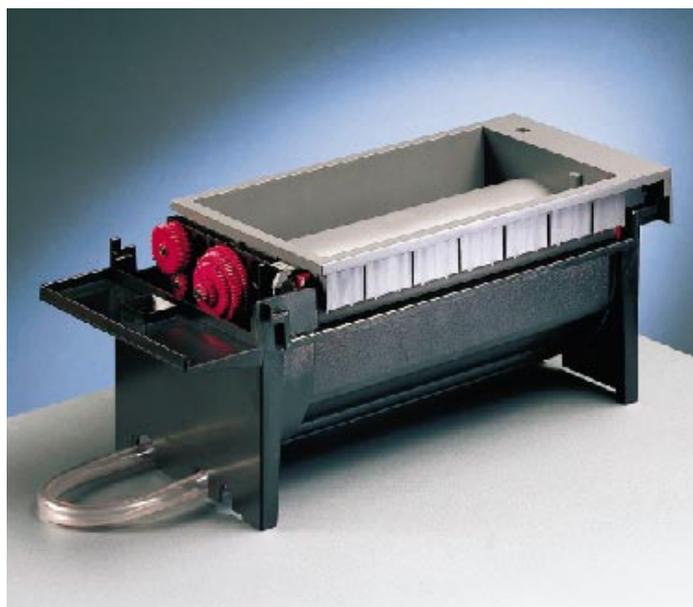


The moduls



Printo Intro

The Intro module feeds the exposed paper through rollers into the first bath. Once the paper has been inserted, the lightproof cover can be closed. The Intro also has an on/off switch and a mains connection. It also supplies the other modules with electricity via a plug-and-socket system.



Printo Tank

At the heart of the system is a tank with overflow and drainage hose, an immersed rack which carries the transport mechanism, and a lightproof cover. The photo paper is passed via five pairs of rollers through the chemical solutions. A spiral agitator and rollers are linked to the transport mechanism via a cog wheel. The thermometer is inserted through a light-tight

opening in the cover. Squeegee rollers on the racks prevent the chemicals from transferring from one bath into the other, ensuring consistent process quality and extended operating life for the solutions.

Every tank can be emptied either on the right or the left-hand side. The hose can be easily connected through openings in the side walls.

Printo Energy

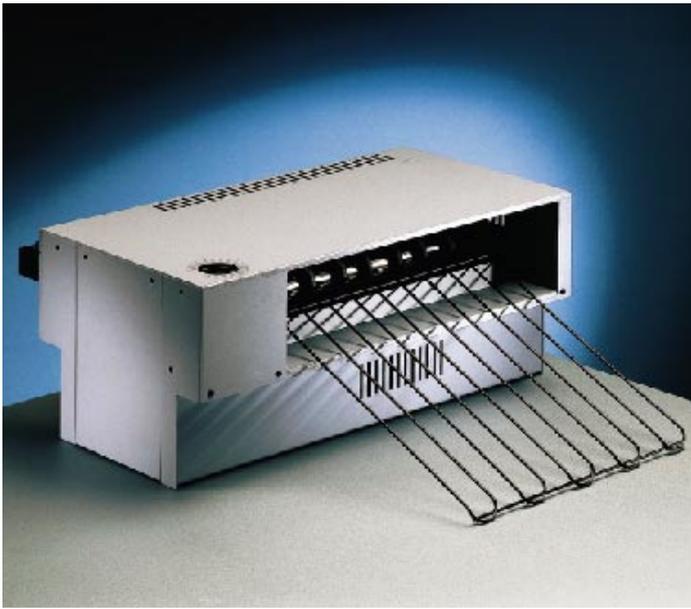
The drive modules are fitted laterally on to the racks to provide the electrical connections and transmission of the mechanical drive from the motor. There are two versions, depending on the usage of the Printo Tank:



Energy Mot drives the tank's rollers and spiral agitator.

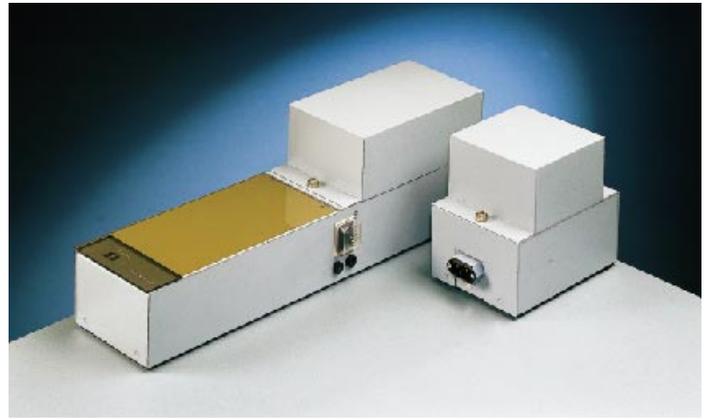


Energy Therm is additionally equipped with a thermostat-controlled heating element to keep the solutions at the right temperature. Synchronous motors guarantee smooth paper feed even with voltage fluctuations.



Printo Dry

This module is also powered from the plug-and-socket system so that the drive, cross-flow fans and heating elements function perfectly. Printo Dry guarantees perfect production-line drying of all types of black-and-white and colour papers.



Printo Novochem

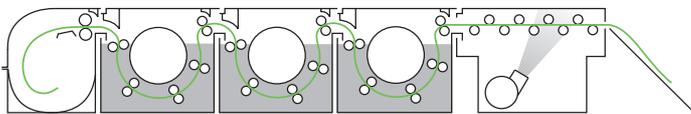
Is a three-part replenishment system for the automatic replacement and stabilisation of the chemicals. In this way, the processing can be kept constant over a prolonged period. The quality of the last-processed print corresponds to that of the first one, even at high throughput. Printo Novochem is mounted next to the Printo, with the emphasis here, too, on modularity.

Novochem Basic

This basic module has been designed for the replenishment of two baths, the developer and the bleach-fix bath. It contains the electronic control for the entire replenishment system. The sensor strip to be fitted to the Intro scans the paper as it is fed in. After 0.1 m² of paper has passed through, the replenishing pumps are activated and fresh chemicals are pumped into the tanks.

The **Novochem pump module**, which is used for replenishing a third chemical solution, and the **Novochem Water Economiser** can alternatively be connected to the Basic module via a plug. The key component of the Water Economiser is a valve for ensuring that the water flows only when needed.

Paper transport scheme



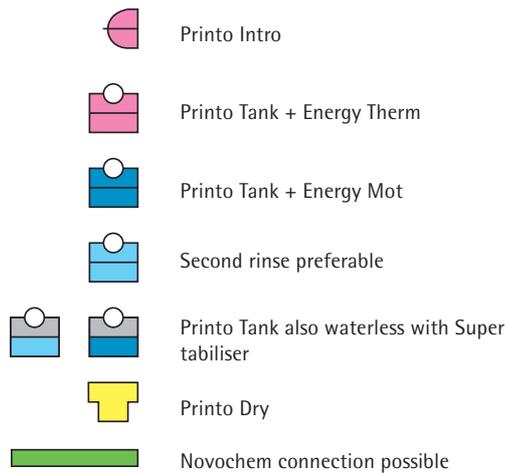
RCD 3200

Paper dryer

Continuous drier for all PE and RC photo papers, also Ilfochrome, max. feed width 32 cm (12 1/2 in), power output 980 W, with two heater levels of 65 °C (149 °F) and 85 °C (185 °F), hot-air radial fan, infinitely variable throughput speed from 4 cm (1 1/2 in) per min to 80 cm (31 1/2 in) per min.

Combinations

Every module of the Printo system extends its field of application. This means you always have a photo lab that conforms exactly with your needs.

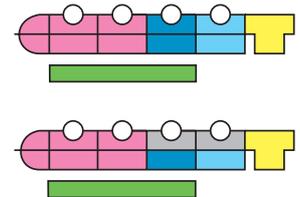
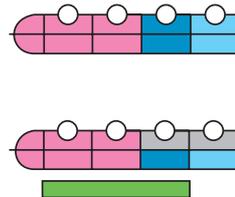
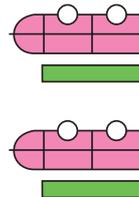


Basic
for fixed or
bleach-fixed prints

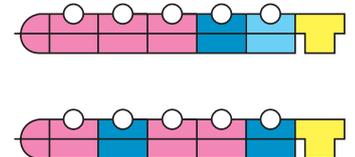
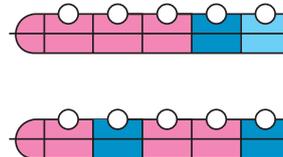
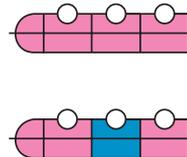
Basic plus
for rinsed prints

Dry-to-dry
for dried prints

Negative/positive processes
black-and-white processes
(Ilfospeed 2000)
colour processes
(RA4 colour)



Positive/positive processes
Ilfochrome processes
(Ilfochrome 730 P)
R3000 processes
(Ektachrome-3000)



Technical data

Printo

Process types:

Sheet size:

Tank volume:

Transport speed:

Bath cycle time (variable in 4 steps):

Heating:

Heating-up time:

Power consumption:

Energy Mot module:

Energy Therm module:

Dry module:

Power supply:

RA 4 and compatible,
black-and-white, Ilfochrome, R-3000
min 7 x 10 cm (3 x 4 in),
max. 30.5 x 40.6 cm (12 x 16 in)
2.5 l per tank
48 cm (18 3/4 in)/min to 10.5 cm
(4 in)/min
Step 1 = 2 min per solution
Step 2 = 45 sec per solution
Step 3 = 1 min per solution
Step 4 = 3.5 min per solution
adjustable temperature range from
19 °C (66.2 °F) to 43 °C (113 °F),
individually variable for each solution
approx. 30 min

approx. 3.6 W
approx. 50 W
approx. 750 W
115 V/60 Hz, 230V/50 Hz

Processing capacity/hour

Format	B/W	RA4			Ilfochrome		Ektachrome R-3000	
		RA4	Ilfochrome	Ektachrome R-3000	Ilfochrome	Ektachrome R-3000		
30 x 40 cm	13	23	45	63				
20 x 30 cm	25	43	30	117				
18 x 24 cm	27	47	100	130				
13 x 18 cm	54	94	200	260				
9 x 13 cm	108	187	415	509				
7 x 10 cm	176	308	722	835				

Input speed	10,5 cm/min	18 cm/min	36 cm/min	48 cm/min
Throughput time per solution	3 1/2 min	2 min	1 min	45 sec

Dimensions (Length x Width x Height)

Printo Intro	17 x 50 x 20 cm
Printo Tank	21 x 50 x 20 cm
Printo Energy Mot	13 x 24 x 20 cm
Printo Energy Therm	13 x 24 x 20 cm
Printo Dry	25 x 50 x 20 cm
Printo Water Economizer	20 x 21,5 x 9,5 cm

Weight

Printo Intro	approx. 2,3 kg
Printo Tank	approx. 5 kg
Printo Energy Mot	approx. 1 kg
Printo Energy Therm	approx. 1,1 kg
Printo Dry	approx. 8 kg

Rinsing

Lepidolepis sprattiformis
Günth
Ag



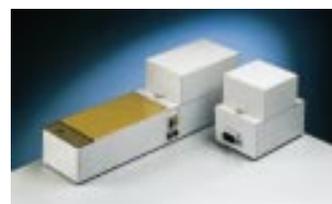
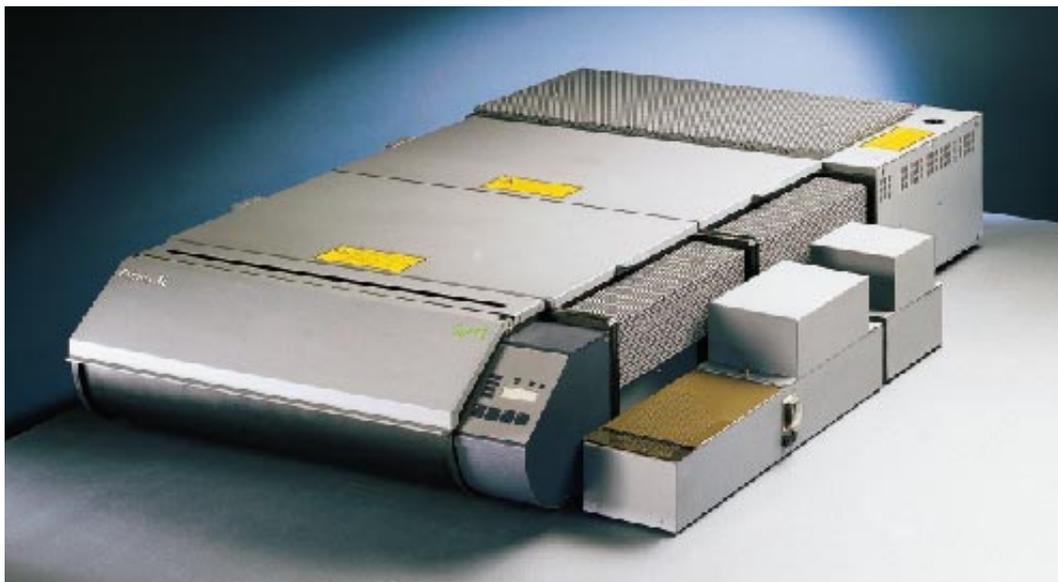
Printo XL

Paper processor for the professional lab

The Printo XL has been designed for RA4 and black-and-white processes, and can cope with sheet paper up to 50.8 x 80 cm (20 x 30 in). This means that it can also be used for producing posters in your own lab.

The Printo XL paper processor is easy to operate and ensures consistent, reproducible results. A microprocessor controls all the main functions, and spiral agitators guarantee effective circulation of the solutions.

The Printo XL is modular in design so that you can equip it exactly to suit your own needs. The favourably priced basic unit can later be fitted with a combined wash-and-dry module and a replenishing unit. Fully equipped, the Printo XL becomes a fully automatic dry-to-dry processing system, capable of fulfilling the highest requirements.



The Modules

The basic unit consists of the paper feed section, the chemical tanks for the developer and bleach-fix baths, the integrated heating elements and the roller transport racks equipped with a spiral agitator. The machine is operated via a membrane keyboard and LED display with automatic brightness adjustment.

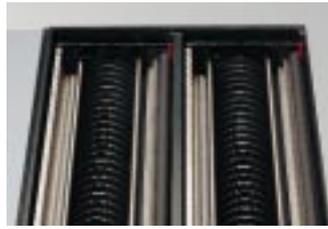
The combined wash-and-dry module is available in two versions – for water wash or chemical wash. The wash racks and drier unit are driven by a synchronised motor. The drier is equipped with heating elements and a cross-flow fan. The drying temperature is adjusted steplessly via a control knob.

The replenishment module consists of the Basic module, an additional Pump module and a Water Economiser module. All three components can be positioned to the side of the Printo XL, depending on the outfit. For replenishing the developer and bleach-fix baths, the Basic module with two replenishing pumps is adequate. It also contains the complete control unit.

If the basic processor is upgraded by adding the combined wash-and-dry module, an additional replenishing pump is needed for the chemical wash (or the Water Economiser with integrated water-limiting valve for continuous wash).



The **operating panel** with integrated LED display provides information on the process status, covering all key data such as bath cycle time, temperatures of the developer and bleach-fix baths, and temperature during the heating-up phase. The machine can be reset for new processing data by pressing only a few buttons. Temperatures can be displayed either in °C or °F.



Spiral agitators to circulate the chemicals replace the circulation pumps normally employed. They mix the chemicals without any turbulence, preventing excessive oxygen contact and, together with the heating elements, ensure even temperature distribution in the tank.



The **exposed photographic paper** is fed into the first bath via a guide plate and feed rollers. Large prints can be fed into the lower part of the feed section so that the flap can be closed as soon as the sheet has been inserted. A precisely controlled drive motor and large pairs of rollers guarantee smooth paper transport.



The **replenishment module** is equipped with efficient bellows pumps. A sensor bar integrated in the paper feed section scans the amount of material passing across it and carries out a replenishment cycle for each 0.1 m² of material. The individual replenishment rates for each bath are set via colour-coded rotary potentiometers. An LED display signals which processing track is occupied and goes off as soon as the sheet has been completely fed in.

Technical data

Printo XL

Basic

Process types:
RA 4 and compatible, black-and-white

Paper sizes:
min. 8.9 x 12.7 cm (3.5 x 5 in),
max. 50.8 x 80 cm (20 x 30 in)

Tank volume:
5 litres per tank

Transport system:
roller transport

Transport speed:
17 cm (6 1/2 in)/min up to 85 cm (33 1/2 in)/min

Bath cycle time:
adjustable from 30 sec to 120 sec per bath

Bath heating:
adjustable temperature range from 15 °C (59 °F) to 45 °C (113 °F), individually adjustable for each bath

Processor warm-up time:
approx. 30 min

Bath agitation:
via spiral agitator integrated in the transport rack

Operation:
by membrane keypad and LED display with bath cycle time in sec, temperature of developer, temperature of bleach-fix. Either in °C or °F.

Processing capacity/hour:

format	RA 4	B/W
9 x 13 cm	900 p/h	1.350 p/h
10 x 15 cm	780 p/h	1.170 p/h
13 x 18 cm	390 p/h	585 p/h
20 x 30 cm	160 p/h	240 p/h
30 x 45 cm	80 p/h	120 p/h
40 x 50 cm	60 p/h	90 p/h
50 x 75 cm	34 p/h	50 p/h

Dimensions (Length x Width x Height):
64 x 75 x 24 cm (25 x 29 1/2 x 9 1/2 in)
Weight: 51 kg (112.4 lbs)
Power consumption: 700 W
Power supply: 115 V/60 Hz; 230 V/50 Hz

Wash and dry module

Transport system:
via synchronised motor

Wash tanks:
2 wash tanks connected via cascade

Tank volume:
5 litres per tank

Continuous wash version:
2 l/min, preheated water needs external supply
via water economiser, connection = 3/4 in

Chemical wash:
chemical baths are heated (300 W/tank), circulated and replenished with fresh solution

Dryer:
Hot-air dryer with temperature range from 20 °C (68 °F) to 85 °C (185 °F)

Dimensions: (Length x Width x Height):
83 x 75 x 25 cm (32 1/2 x 29 1/2 x 9 3/4 in)
Power consumption: approx. 2,300 W/2,800 W
Power supply: 115 V/60 Hz; 230 V/50-60 Hz

Replenishment module:

Paper scanning:
via sensor bar with 15 sensors

Control of replenishment rate:
individually adjustable for each bath,
manual replenishment at the press of a button

Replenishment supply:
via 2 or 3 bellows pumps
with a volume of 120 ml/min

Replenishment cycle:
one cycle per 0.1 m² paper

Dimensions (Length x Width x Height):
Basic module: 59 x 13.5 x 17 cm
(23 1/4 x 5 1/4 x 6 3/4 in)
Pump module: 20 x 13.5 x 17 cm
(7 3/4 x 5 1/4 x 6 3/4 in)
Water Economiser: 20 x 13.5 x 10 cm
(7 3/4 x 5 1/4 x 4 in)

Power consumption: approx. 50 W
Power supply: 115 V/60 Hz; 230 V/50 Hz

Conversion accessories for enlargers

M 370 BW/Easycolor

	APS	24 x 36 mm	4,5 x 6 cm	6 x 6 cm	6 x 7 cm
Negative carriers					
Lidineg 35		•			
Lidineg 50*	•	•	•	•	•
Negative masks					
Sivopar APS	•				
Sivopar 35		•			
Sivopar 45			•		
Sivopar 66				•	
Sixma 66 (lower mask)				•	
Sivoma 66 (upper mask)				•	
Sidia (mask for mounted 35 mm slides)					•
Sivogla AN (anti-Newton glass)			•	•	•
Sivogla (normal glass)			•	•	•
Lens Boards					
Siriopla 39	•	•	•	•	
Vegatub 39					•
Condensers					
Lidicon 50		•			
Lidicon 80			•	•	
Lidicon 100					•
Mixing boxes					
Lidibox 35	•	•			
Lidibox 667			•	•	•
B/W format conversion kits					
Lidiset 66			•	•	
Lidiset 67					•
Colour format conversion kits					
Lidicolset 66			•	•	
Lidicolset 67					•

* To be used with negative masks or glass

M 670 BW/Color/VC

	APS	24 x 36 mm	4,5 x 6 cm	6 x 6 cm	6 x 7 cm
Negative carriers					
Unineg*	•	•	•	•	•
Sinoneg*	•	•	•	•	•
Negative masks					
Sivopar APS	•				
Sivopar 35		•			
Sivopar 45			•		
Sivopar 66				•	
Sixma 66 (lower mask)				•	
Sivoma 66 (upper mask)				•	
Sidia (mask for mounted 35 mm slides)					•
Sivogla AN (anti-Newton glass)			•	•	•
Sivogla (normal glass)			•	•	•
Lens Boards					
Siriopla 39	•	•	•	•	
Vegatub 39					•
Condensers					
Siriocon 50		•			
Siriocon 80			•	•	
Vegacon 100					•
Mixing boxes					
Vegabox 35	•	•			
Vegabox 667			•	•	•
B/W format conversion kits					
Vegaset 66			•	•	
Vegaset 67					•
Colour format conversion kits					
Vegacolset 66			•	•	
Vegacolset 67					•
B/W conversion kits (for M 670 Color/VC)					
Vegakit		•			
Colour conversion kits (for M 670 BW)					
Colis 670	•	•			

Modular 70

	APS	24 x 36 mm	4,5 x 6 cm	6 x 6 cm	6 x 7 cm
Negative carriers					
Sinoneg	•	•	•	•	•
Negative masks					
Sivopar APS	•				
Sivopar 35		•			
Sivopar 45			•		
Sivopar 66				•	
Sixma 66 (lower mask)				•	
Sivoma 66 (upper mask)				•	
Sidia (mask for mounted 35 mm slides)					•
Sivogla AN (anti-Newton glass)			•	•	•
Sivogla (normal glass)			•	•	•
Lens Boards					
Siriotub 39		•			
Siriopla 39			•	•	•
Condensers					
Siriocon 50		•			
Siriocon 80			•	•	
Vegacon 100					•
B/W format conversion kits					
Sinoset 66				•	
Sinoset 67					•
Colour format conversion kits					
Sinocolset 66				•	
Sinocolset 67					•

M 805 BW/Color/Multigraph

	APS	24 x 36 mm	4,5 x 6 cm	6 x 6 cm	6 x 7 cm	6 x 9 cm
Negative carriers						
Bimaneg	•	•	•	•	•	•
Negative masks						
Binema APS	•					
Binema 35		•				
Binema 45			•			
Binema 66				•		
Binema 67					•	
Binema 69						•
Bidia (mask for mounted 35 mm slides)						•
Bimagla AN (anti-Newton glass)						•
Luriogla (normal glass)						•
Lens Boards						
Siriopla 39		•	•	•	•	•
Condensers						
Bimacon 75		•				
Femocon 50		•				
Bimacon 70			•	•		
Bimacon 80					•	•
Mixing boxes						
MG-Box 35/805		•				
MG-Box 66/805			•	•		
MG-Box 69/805					•	•
B/W conversion kits (for M 805 Color)						
Luriokit		•	•	•		
Colour conversion kits (for M 805 BW)						
Colis 805	•	•	•	•	•	•
MG-conversion kits (for M 805 Color/BW)						
Multigraph M 805					•	•

L 1200 BW/Color/Multigraph/Varipoint

	APS	24 x 36 mm	4,5 x 6 cm	6 x 6 cm	6 x 7 cm	6 x 9 cm	9 x 12 cm	4 x 5 inch
Negative carriers								
Femoneg	•	•	•	•	•	•	•	•
Negative masks								
Femomask APS	•							
Femomask 35		•						
Femomask 45			•					
Femomask 66				•				
Femomask 67					•			
Femomask 69						•		
Femomask 92							•	
Femomask 450								•
Femogla AN (anti-Newton glass)								•
Femogla (Version T)* (normal glass)								•
Boards								
Setopla 2839	•	•						
Lapla 39, 42, 50			•	•				
Femotub					•	•	•	•
Condensers								
Femocon 50** (Version T)*		•						
Femocon 80 (Version T)*			•	•				
Femocon 151/152					•	•	•	•
Mixing boxes								
Femobox 35	•	•		•				
Femobox 66			•	•				
Femobox 69					•	•		
MG-Box 35		•						
MG-Box 66			•	•				
MG-Box 69					•	•		
MG-Box 450							•	•

* Version for L 1200 Varipoint

** To be used with Femocon 80

durst

Durst Phototechnik
AG
Division Phototechnik
Postfach 223
Vittorio-Veneto-Straße 59
I-39042 Brixen, Italy
Telefon ++39/(0)472/83 06 20
Telefax ++39/(0)472/83 09 80
<http://www.durst-online.com>
E-Mail: info@durst.it

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