durst

Congratulations on your purchase of this Durst equipment. It is the result of intensive research and development by Durst Phototechnik AG, Brixen, Italy.

The Durst company has been attested by the German Society for the Certification of Quality Assurance Systems for conformity of its products to Standard ISO 9001/EN 29001, Certificate No. 44 411 - 01 dated 30.04.93, which guarantees the highest quality in development and manufacture. Durst equipment is carefully inspected and tested before delivery.

The technology and specification represent state-of-the-art optics and electronics. New developments and enhancements are continuously incorporated; the diagrams, dimensions or technical data shown in this manual may therefore have been modified to take account of the latest advances.

This manual describes the optimum operation of the machine, and contains basic instructions on handling, potential faults and operating mistakes; it is advisable to read it carefully before putting the instructions into practice. If you have any queries or require extra information, please contact your local Durst Service agent.

Please help us to improve this manual, and send us your comments on the two pages at the end of the manual.

Durst Phototechnik AG
Brixen, Italy

Index

1.0

⚠️

There are no hazards, specifically electrical hazards, under proper conditions of use. Extra precautions for the safe use of the equipment are given below.

a)
The enlarger Durst Pictograph AF is fitted with an earth wire for protection against electrical shock, which also ensures electro-magnetic safety (EMS/interference suppression). This earth wire can however only fulfil its function if your mains connection (socket) is also earthed. Have your mains connection checked by a qualified electrician for an earth connection.

b)
Extra protection is offered by a ground fall interruptor, which an electrician can install in your lab.

c)
Avoid continuous high relative humidity and condensation. Protect the equipment from splashes of water and chemicals.

d)
To ensure proper functioning, maintain the following operating conditions:
relative humidity: 5 - 95 % r. h.
ambient temperature: 15 - 30 °C.

e)
Do not make any repairs to the electrical system of the equipment by yourself. Have them carried out by a service engineer.

f)
Before opening the power unit, lamp house or disconnecting cables, make sure that the unit is switched off and that the mains cable is unpluged.

g)
Danger of injury on AF version. Persons must keep clear of moving parts during motorized adjustment, due to the danger of injury.

h)
Before changing the lamp, switch off the equipment and let it cool down. There is a risk of injury by burning when changing lamps.

i)
The manufacturer does not accept liability for any damage caused by neglect of the safety precautions.

2.0
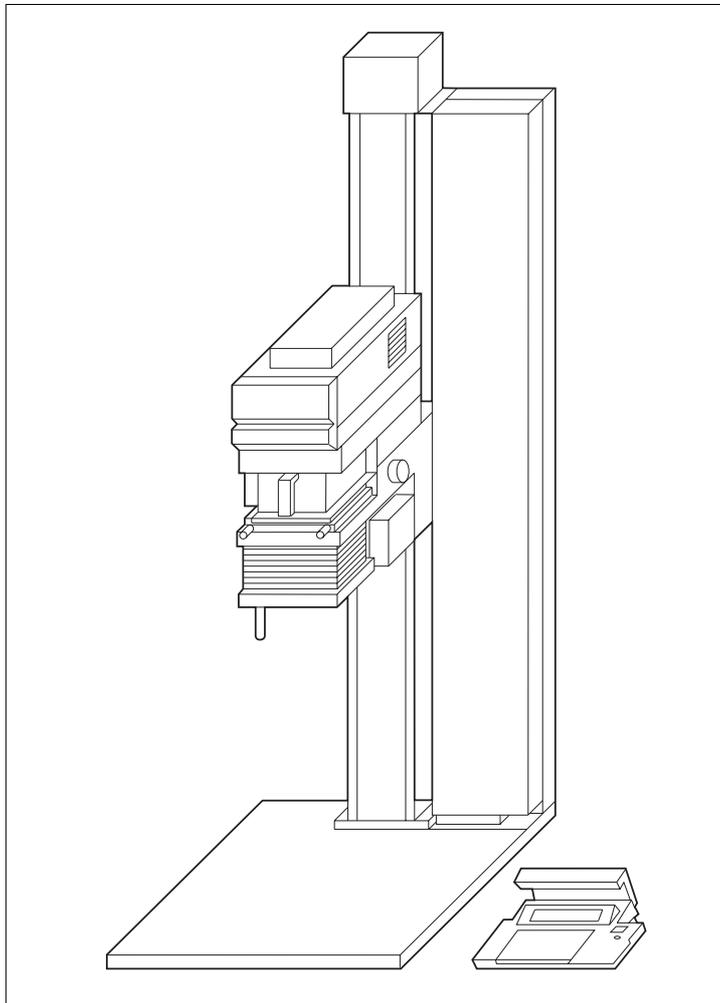
2.1
Description of the machine

The Pictograph AF is a high-performance B/W enlarger with AF autofocus and motorized adjustment of the head height. The enlarger is designed to process film originals up to 10 x 12.5 cm (4 x 5 in.) on B/W variable-contrast and B/W fixed-contrast papers.

2.2
The Closed Loop system

„Closed Loop" is a system which has already been used on a number of machines. This type of light monitoring for colour enlargers has now been incorporated in the Pictograph AF for B/W processing. The light is read in the enlarger head by three sensors sensitive to the primary colours blue, green and red, and compared with the target contrast figures set on the control panel. The filters are adjusted until the comparison does not detect any variation. This achieves constantly reproducible results, and so cuts the time needed and amount of material used.

Filter stepping motors

Light source

Y
M
C

Density diaphragm
stepping motor

30

60

Closed Loop processor

Box reading
• C
• M
• Y

Diffusor

Interchangeable mixing
box

Diffusor

Negative

Shutter stepping motor
Metal shutter

Correction and set-up
channels

```
f = 5,6/150 m = 12,450
Y = 43,8 M = 23,0 D = 80
f = 2.8/50 m = 13.30
Y = 28,4 M = 7,0 D = 110
f = 5,6/150 m = 12,450
```

Lens

Filter value input and
display

• Scan-mouse

Control board

Head motor

Control board

Head position

Keyboard AF system

Pictograph electronics

Pictograph control panel

Lens carrier control

2.3
The AF autofocus system

As well as the already familiar features of the Durst Pictograph B/W enlarger, such as Closed Loop light monitoring, density and contrast reading and integrated job memories, Durst is now also offering autofocus and motorized head height adjustment for the Pictograph.

The availability of ten freely programmable AF channels enables existing lenses to be used, which can be programmed very quickly and with little trouble. Depending on the lens focal length, 8 to 12 base points, distributed over the complete column height, are stored in the machine's computer. During operation the head position set is scanned via a potentiometer, and the information passed to the computer, which then finds and controls the focus position to be set. If different projection planes are being used, such as a baseboard with adjustable height, the resulting misfocus is compensated by the freely programmable positive variator.

The freely programmable negative variator has the function of compensating any misfocusing, if different film size masks are used or glass inserts of varying thickness.

2.4
Technical specification

Film sizes:	up to 10 x 12.5 cm/roll film up to 12.5 x 12.5 cm (4 x 5 in./5 x 5 in.)
Height of column with baseboard:	155 cm (61 in.)
Maximum height (machine head in top position):	174 cm (69 in.)
Dimensions of baseboard:	4 x 64 x 69 cm (1.5 x 25 x 27 in.)
Usable area of baseboard:	64 x 57 cm (25 x 22.5 in.)
Distance optical axis - column:	31 cm (12.2 in.)
Usable focal length:	50-150 mm (180 mm)

Light source/lighting system
Halogen lamp: 250 W/24 V
Lighting power
(factor 5x, f-stop 8): $\varnothing$ E 4,8 lux (box 450)
$\varnothing$ E 33,0 lux (box 35)

Efficiency
(factor 5x, f-stop 8): η 5,3 lm/kW (box 450)
Illumination
(factor 5x, f-stop 11)
Centre-corners: $C_e 1$ max. 20 %
4 corners: $C_e 2$ max. 5 %

Connections:
• foot switch or roll paper easel
• data printer
• scan-mouse probe for finding exposure time and contrast

Filters
Max. filter density Y: 1.50 densitometric units
Max. filter density M: 1.70 densitometric units adjustable in 0.001 D-steps (0.1 filter values)
Filter density C „in": 1,30
Filter density C „out": 0,30

Density diaphragm in 2 steps
Step 1: 0,30 D
Step 2: 0,60 D
Exposure time range: 0,5-999 sec.
Paper tables: 1 for paper with fixed contrast
3 preprogrammed for Ilford, Kodak and Agfa variable-contrast paper
4 freely programmable
Paper channels: 30
Film channels: 8
Settable gradation range: 00 to 5 in 0.1 steps

Gradation steps
With reading with mouse: 1/2
With manual input: 1/10
Job memories: 199 (0÷198)
Reading point diameter: 7,5 mm

Adjustment speeds
Pictograph AF autofocus

Head fast:	approx. 8.2 cm/sec.
Head slow:	approx. 6 mm/sec.
Lens carrier fast:	approx. 7.2 mm/sec.
Lens carrier slow:	approx. 1.2 mm/sec.
Lens channels:	10 (0-9)
Programmable lens focal lengths:	50 to 180 mm
Resolution of positioning device:	0.01 mm
Reproducibility of lens position:	± 0.02 mm
Range of positive variator:	+ 999/- 99 mm (1 digit = 1 mm)
Range of negative variator:	+ 99/- 99 mm (1 digit = 0,05 mm)

Enlargement factors Pictograph AF (guiding figures)

Lens mm	Film size	Base-board min.	Base-board max.	Labom table max.
150	10 x 12.5 cm (4 x 5 in.)	1.0 x	6.6 x	10.6 x
135	9 x 12 cm (3 1/2 x 4 3/4 in.)	1.0 x	7.6 x	12.0 x
105	6 x 7 cm/6 x 9 cm (2 1/4 x 2 3/4 in./ 2 1/4 x 3 1/2 in.)	1.0 x	10.3 x	16.0 x
100	6 x 7 cm/6 x 9 cm (2 1/4 x 2 3/4 in./ 2 1/4 x 3 1/2 in.)	1.0 x	10.7 x	17.0 x
80	4,5 x 6 cm/6 x 6 cm (1 3/4 x 2 1/4 in./ 2 1/4 x 2 1/4 in.)	2.6 x	14.0 x	21.0 x
50	24 x 36 mm	5.8 x	24.0 x	36.0 x

▭	Maximum film size
⊠	Lamp power
∅ E	Light power
η	Light yield
C_e1	Illumination centre-corners
C_e2	Maximum error
C_d	Colour mixing value

are quality characteristics
defined by Durst and intro-
duced to permit the objective
appraisal of the quality of
professional equipment.

2.5
Technical data

Manufacturer:	Durst Phototechnik AG, I-39042 Brixen	
Type name:	Pictograph AF	

Order no. with
Software D/E:	AL48042	
Software F/I:	AL48046	
Software F/S:	AL48044	

Mains voltage:	100/110/120 V AC	230/240 V AC
Mains frequency:	60 Hz	50 Hz
Mains voltage tolerance:	+ 10% - 15%	+ 10% - 15%
Power consumption:	approx. 500 VA	approx. 500 VA
Mains fuse:	see indications on the equipment	
Lamp fuse:	T 12 A, 250 V	T 12 A, 250 V

Installation Ambient temperature:	15-30 °C
Relative humidity:	5-95 %

Equipment protection class:	I

Interference suppression to:	EN 55022, EN 50082-1, EN 55024-2, EN 55024-3, EN 55024-4

Electrical safety to:	EN 60950

Noise level:	56 db (A)

Dimensions:
Length:	64 cm
Width:	69 cm
Height:	174 cm

Weight:	approx. 60 Kg

3.0

Items included

	Quantity
Basic unit with column, machine head rest, bellows and lens carrier	1
Services conduit for electronics and connecting cables with built-in AF control unit	1
Machine head	1
Operating panel	1
Scan-mouse	1
Film carrier with 2 glasses	1
Anti-Newton glass for film carrier	1
Mixing box for film sizes up to 10 x 12.5 cm (4x5 in.)	1
Halogen lamp 250 W	1
Mains cable	1
Black and white test negative 35 mm	1
Manual	1

Radio interference suppression/manufacturer's certificate
We certify herewith that this system conforms to the Vfg. 243/1991 regulations of German Mail for high-frequency equipment, for industrial, scientific, medical (ISM) and similar purposes in respect to interference suppression. The inspection was carried out to VDE 0871/limit value class B.

   The BZT/German Office for Registration in Telecommunication has been notified that the system is in public use.

   Simultaneously permission is granted to German Mail to inspect the product for conformity to the regulations.

Version	Space requirement	Minimum room heights
With base-board Accessories needed: Femobre	64 cm (25 in.) 64 cm (25 in.)	174 cm (69 in.)
Motorized with adjustable baseboard Accessories needed: Labomot 450	127 cm (50 in.) 90 cm (35 in.) 110 cm (43 in.) 145 cm (57 in.)	263 cm (104 in.)
With height-adjustable base-board Accessories needed: Labom Table Labom Tablet	100 cm (39.4 in.) 120 cm (47 in.)	245 cm (97 in.)

Version	Space requirement	Minimum room heights
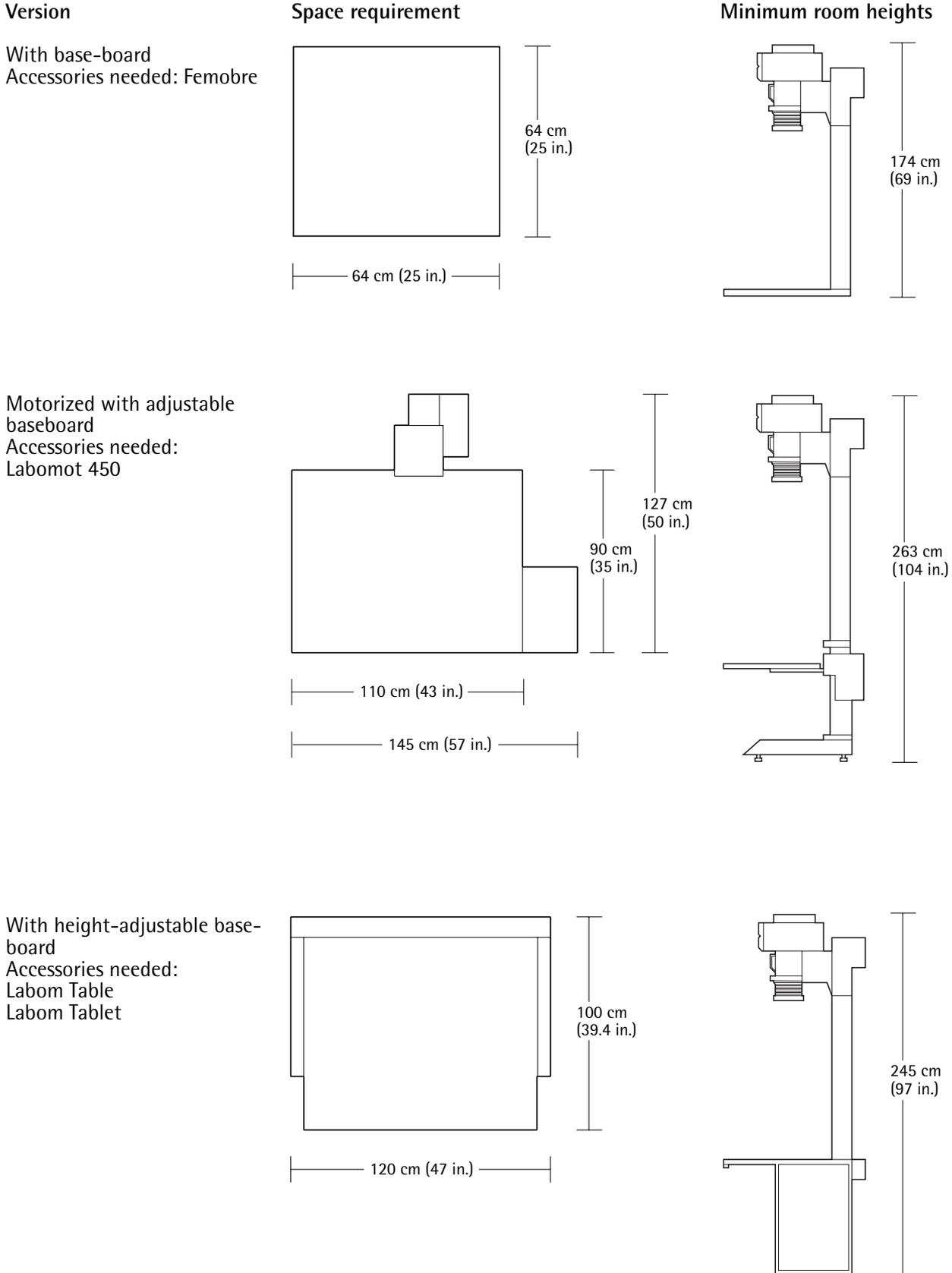
With wall mount
Accessories needed:
Femo
Wallmount
Picto Tablet
Papermot
Interface-cable

Papermot 34

60 cm
(24 in.)

76 cm (30 in.)

Papermot 57

81 cm
(32 in.)

100 cm (30 in.)

169 cm
(67 in.)
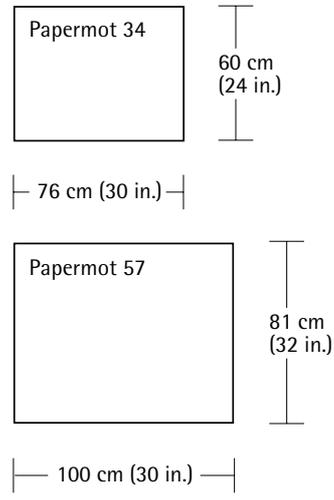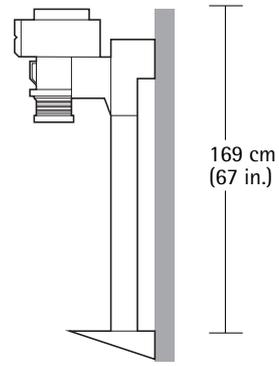
With folding table
Accessories needed:
Slide Table
Labom Tablet
Papermot
Interface-cable

97 cm
(38.2 in.)

106 cm (41.7 in.)

264 cm
(104 in.)
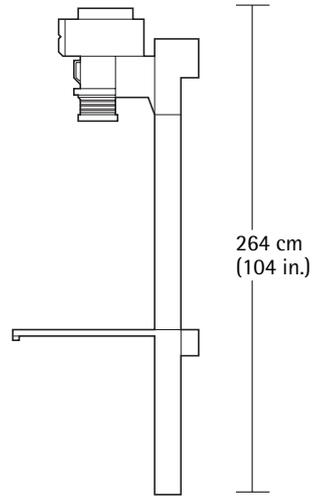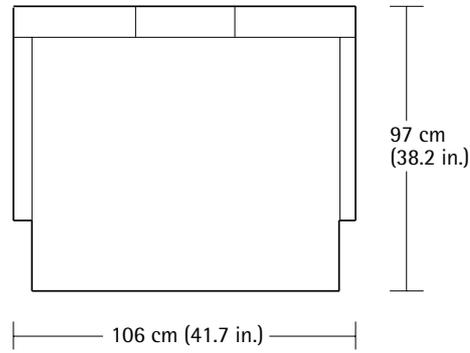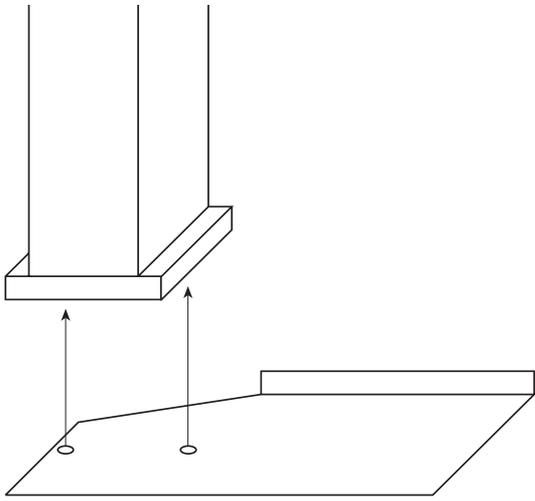
3.3
Assembly of basic unit
Before assembling the unit, fasten the metal plate to the bottom of the column pedestal (screws are provided).
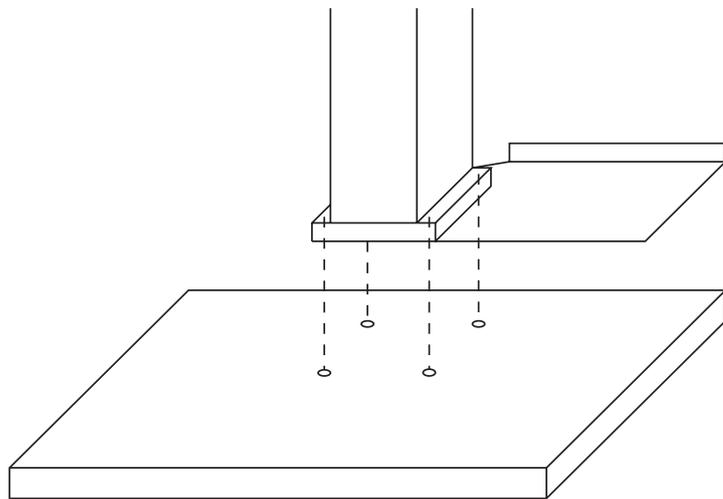
Fasten the machine to the baseboard, table or the Wallmount with the four screws provided.

Instructions for fitting the enlarger to the various machine tables (Labom Table, Slide Table and Labomot) are given in the relevant manual.
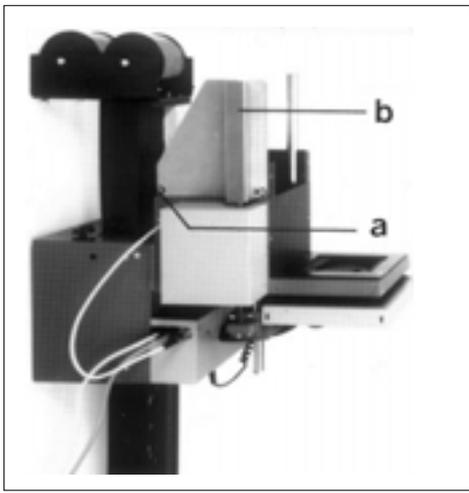
3.4
Assembly of machine head and services conduit
Remove screws (a) and take off the guard bracket (b).
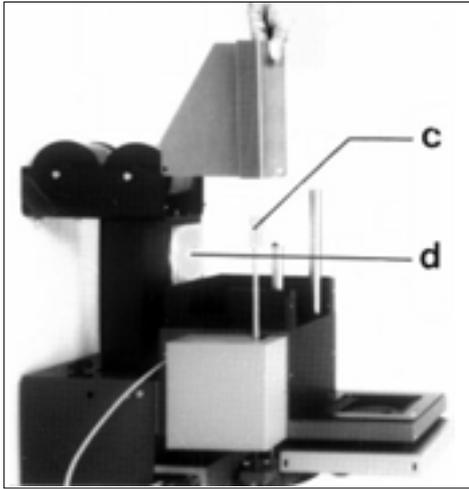
Take off the spindle guard (c).

Note
Do not take off the transport bar (d) until the machine has been assembled.
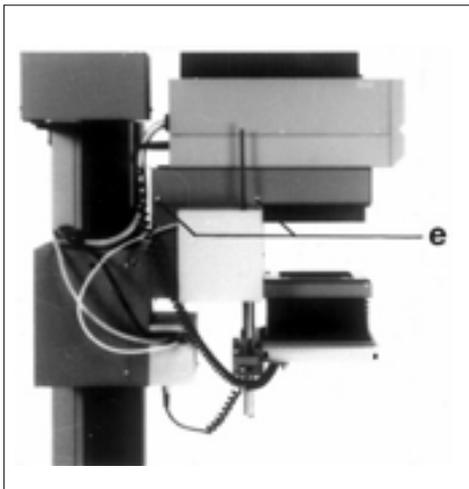
Fit the machine head and fasten it with the four screws (e) provided.

When the machine is erected, fit the holder bracket (f) to the top end of the column. Leave the screws a little loose. Put the services conduit (g) into the illustrated position, and fasten it to the bottom holder bracket (h) first. Screw the services conduit to the top holding bracket (f) as well, and tighten the two screws on the holding bracket firmly.
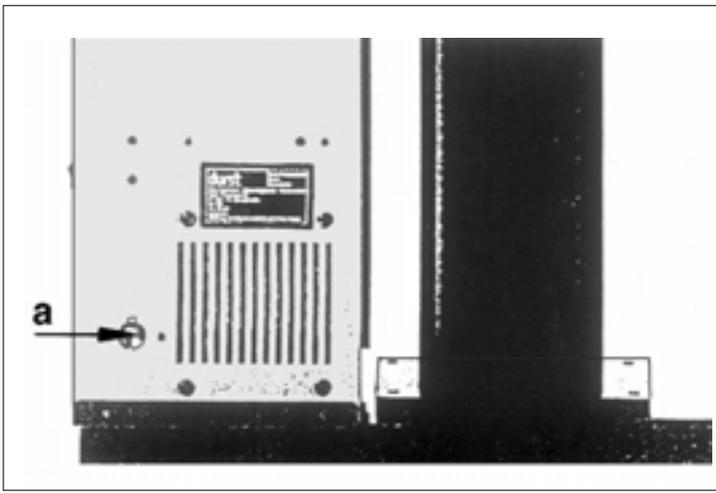
3.5
Power supply

N.B.
- Before connecting to the mains, set the voltage selection switch (a) to the correct mains voltage.
- With 110 V mains voltage, fit the 6.3 AT fuse. The machine is supplied with the 3.15 AT fuse for 220 V.
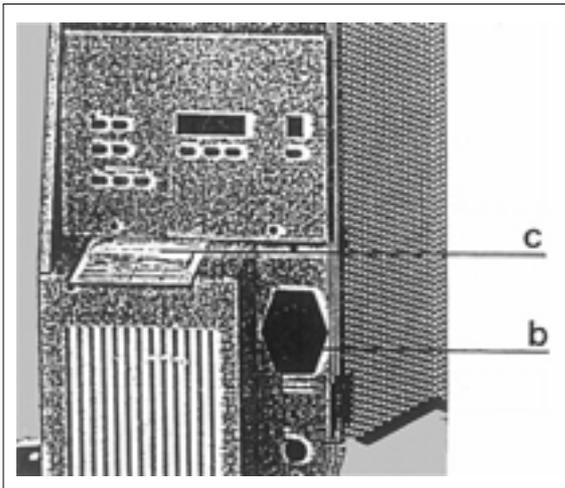
Fuse holder (b) for mains and spare fuse.
Spare fuses (c).

3.5.1
Cable connections

1 Data printer
2 Operating panel
3 Roll paper easel or foot switch
4 Scan-mouse
5 Mains voltage switch (machine set to 220 V when supplied)
6 Main switch
7 Mains connection
8 Fuse
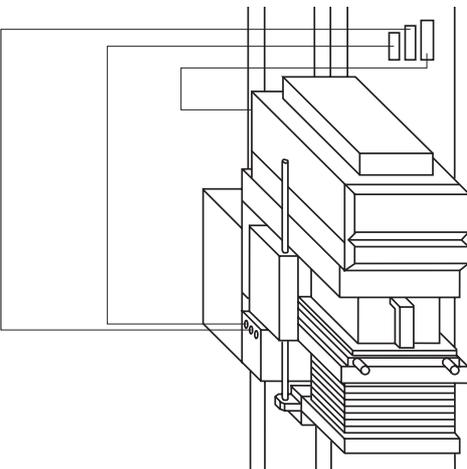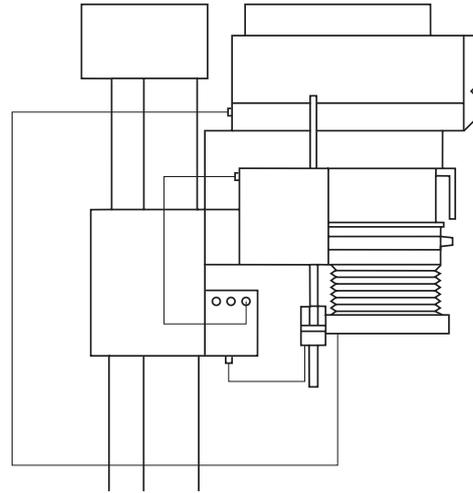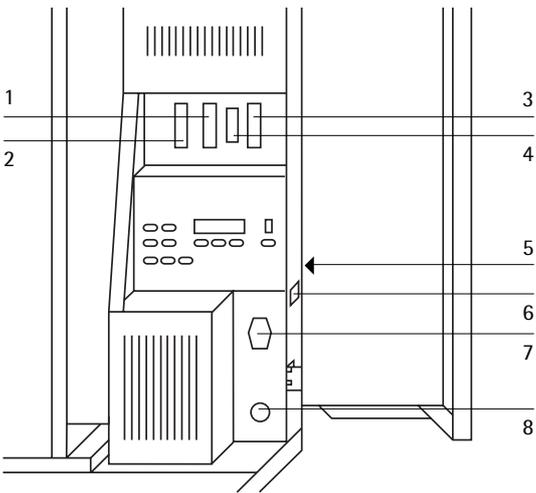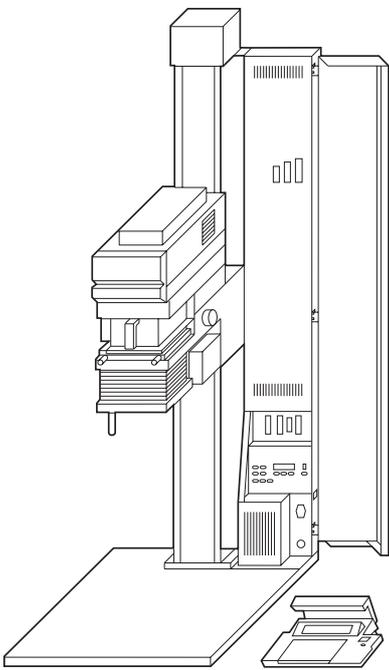
4.0
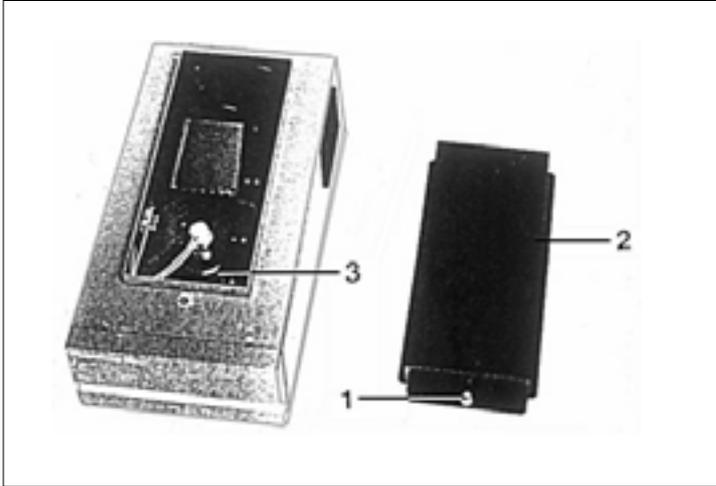
4.1
Fitting and changing the lamp

Switch off the machine before changing the lamp

- Press the locking pin (1)
- Take off the lamphouse cover (2)
- Put the lamp in the lamp socket.
  N.B. Do not touch the inside of the reflector.
- Push the lamp under the retaining springs and close the lamphouse cover

Note
Only the lamps (Colamp 250) selected by Durst guarantee correct matching of the new lamp by the Closed Loop System

4.2
Handling the mixing boxes

The mixing box is pushed into its guides until it locks in position. Remove the film carrier before you take out the box downwards by light pressure on the handle (4).

4.2.1
Choosing the right mixing box

Max. film size	Mixing box	Designation
12.5 x 12.5 cm (5 x 5 in.)	Pictobox 550	accessory
10 x 12,5 cm (4 x 5 in.)	Pictobox 450	standard
6 x 7 cm (2 1/4 x 2 3/4 in.)	Pictobox 67	accessory
24 x 36 mm	Pictobox 35	accessory
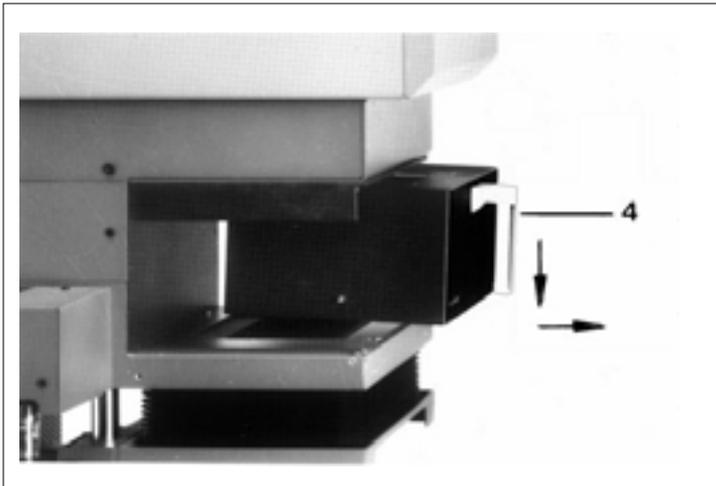
The „Pictobox Shutter" (5) mixing box shutter available as a special extra for composing work stops light escaping when the enlarger light is switched on, when the film carrier is not in use (see illustration).

Before removing the film carrier, switch off the enlarger light. So that as little as possible light (preheat light) escapes during film carrier changing, slot in the two density filters with the function „Filt. 0.90D" (see the description of the Option key on page 55).
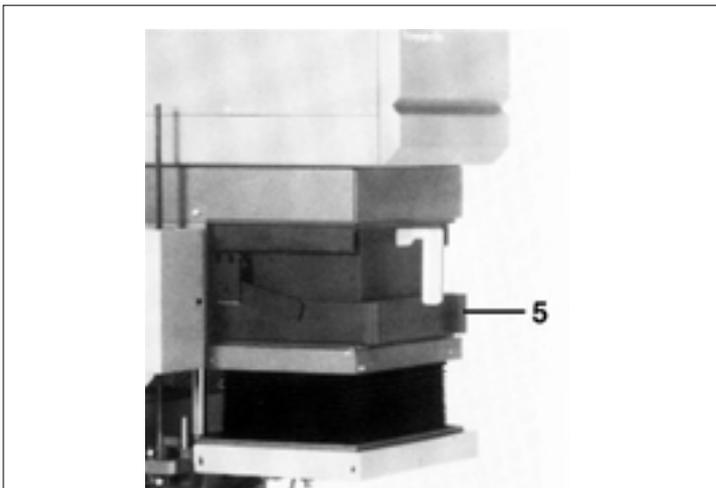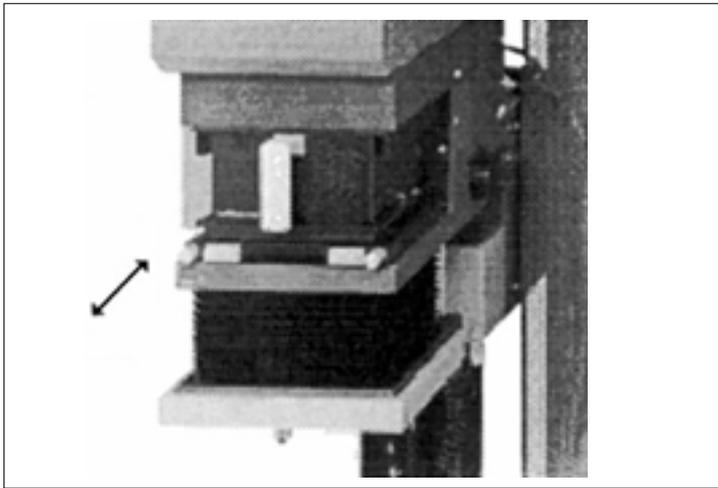
4.3
Handling the film carrier

The film carrier is equipped with two sheets of glass retained by holding springs (1). The metal format masks are used for glassless enlarging. For sizing crops the film carrier is fitted with four individually adjustable masking strips that can be moved with the aid of the adjustment handles (2). It is also possible to combine glass and format mask.

Accessories for the film carrier
Femogla AN: special glass for preventing Newton rings; it is used instead of the top glass in the Femoneg film carrier.
Femomask 450: mask pair made of metal for 10 x 12.5 cm film size for glassless enlarging.
Femomask 92: for 9 x 12 cm
Femomask 69 N: for 6 x 9 cm
Femomask 67 N: for 6 x 7 cm
Femomask 66 N: for 6 x 6 cm
Femomask 45 N: for 4.5 x 6 cm
Femomask 35 N: for 24 x 36 mm
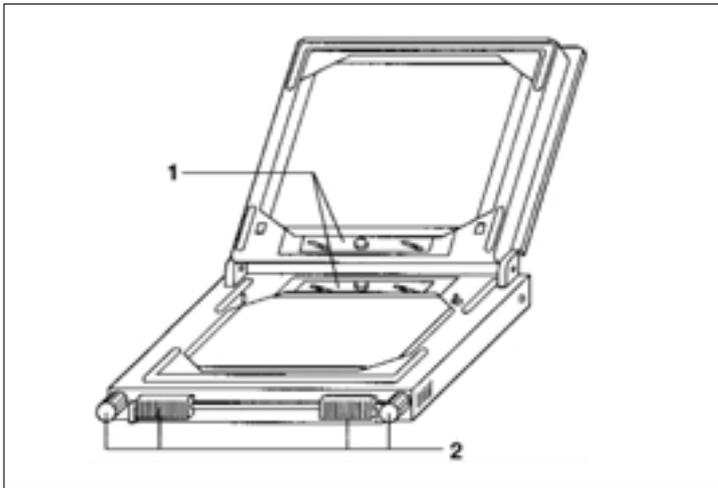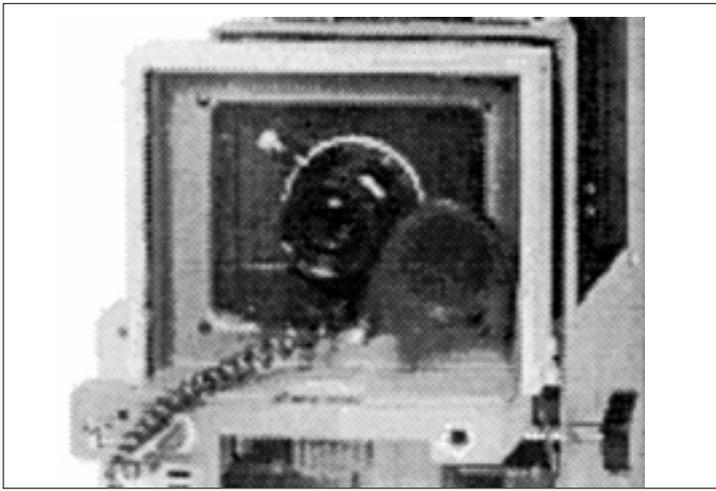
4.4
Lenses

The lens is screwed into the matching circuit board down to the stop.

The board is placed together with the lens in the three-point holder of the lens carrier and fastened with the knurled screw.

Make sure that the f-stop indicator faces forwards. A metal shutter is built into the lens carrier and controls the exposure time.

Lenses for Pictograph AF
Rodagon, new series from 50 to 180 mm focal length in normal body.

Componon S, new series from 50 to 150 mm focal length in normal body. The Componon S 180 is not suitable.

4.4.1
Choosing the right lens and the matching lens board

Lens	Lens board
Apo-Rodagon-N 2.8/50	Setopla 0839
Rodagon 2.8/50	Setopla 0839
Rodagon 4/60	Setopla 0839
Apo-Rodagon-N 4/80	Setopla 0839
Rodagon 4/80	Setopla 0839
Rodagon 5.6/105	Setopla 0839
Rodagon 5.6/135	Setopla 0839
Rodagon 5.6/150	Lapla 50
Rodagon 5.6/180	Lapla 50
Componon-S 2.8/50	Setopla 0839
Componon-S 5.6/60	Setopla 0839
Componon-S 4/80	Setopla 0839
Componon-S 5.6/100	Setopla 0839
Componon-S 5.6/135	Lapla 50
Componon-S 5.6/150	Lapla 50
El-Nikkor 2.8/50	Setopla 0839
El-Nikkor 5.6/80	Setopla 0839
El-Nikkor 5.6/105	Setopla 0839

5.0

The programme structure

000 Setting
This programme enables paper and film channels to be pro-
grammed and channel data to be adapted and corrected.

The „Setting" main menu contains the following sub-menus.
- 001 Installation
  For setting the language
  For setting the print-out format
  For setting the interface for matching to the printer
- 002 System
  For switching the „Alarm" function (bleep for wrong entry)
  on or off
  For switching the „Acoustic" function (bleep each time a key
  is pressed) on or off
  For switching the „Scan" function (bleep when the scan-
  mouse button is pressed on or off)
- 003 Master
  For adjusting the density with chemistry drifting (affects all
  paper channels)
- 004 Paper
  For setting up a paper channel
  For adapting a paper channel (subsequent density or recipro-
  city correction)
  For copying an already set paper channel to a channel still
  free
  For setting or changing the paper tables
- 005 Film
  For setting a film channel
- 006 Reset
  For resetting all the paper and film tables to the prepro-
  grammed figures.

000 Start

Setting

002
System

Alarm
+ / -
On | Off

Acoustics
+ / -
On | Off

Scan Acoustics
+ / -
On | Off

003
Master — Density corr.

004
Paper — Set-up 1 — Set-up 2 — Set-up 3-6

Adapting — Density corr. — Reciprocity comp.

Copying

Tables — Table 1 — Table 2 — Table 3-8

005
Film 1 — Film 2 — Film 3-8

006
Reset — Exit

001

Installation

013
RS 232 C

Baud rate
Data bit
Stop bit
Parity
Hdshake
Time out

012
Printer

+ / - Paper width

+ / - Empty lines

011

Language

+ English

- German

5.2
Autofocus control panel

5.2.1
Description of keys

Function keys
1 AF Setup
Switches the programming mode of autofocus on and off.

2 Enter
Confirms entry (focal length).
Saves focused set-up points.

3 Lens adjust
Lens carrier adjusted upwards ∧ or downwards ∨ at two speeds:
by pressing key within five seconds slow (1.2 mm/sec.)
after 5 sec. fast (7.2 mm /sec.).

4 Size/head adjust
Projection size/head adjustment with automatic focusing.

∧   scale gets bigger, head moves upwards

∨   scale gets smaller, head moves downwards

5 Rapid
Simultaneously with key (4) ∨
or (4) ∧ for fast adjustment of projection size/head.

6 Select
For selecting the FLG, PV and NV display.
If PV is shown, the PV figure can be entered. For compensating the difference in height in the projection plane (e.g. exposure frame, roll paper easel), range +999/-99 mm (1 digit = 1 mm). Changes downwards in the projection plane (towards the floor) are entered with plus signs, changes upwards with minus signs.
  If NV is shown, the NV figure can be entered. For compensating variations in the thickness of the original (e.g. emulsion upwards on internegatives), range ± 99 (1 digit = 0.05 mm).
Press Select: switches the display off
Press Select: returns to the FLG lens focal length display

7 –Clear+
For entering the lens focal length, PV and NV figures.
„-" and „+" simultaneously delete the stored set-up points for autofocus in the programming mode.

8 CH-lens
Select lens channel, press key (8) repeatedly, counter forwards.
Press and hold down key (8), counter backwards.

5.2.2
LED display

8

9
Displays the lens channel (max. 10).

150

10
Displays:
• lens focal length
• positive variator
• negative variator

One of the three displays is chosen with „Select" (6).

```
FLG
PV
NV
```

11
Displays the current status:
FLG - lens focal length
PV - positive variator
NV - negative variator

5.3
Programming the memory channels

5.3.1
Autofocus
Ten freely programmable AF channels permit the use of existing enlarging lenses, which you can programme very quickly and quite simply, as described below. During operation a potentiometer detects the set machine head position, from which the computer then finds and automatically sets the corresponding focus position.

Aids for programming autofocus
Standard: „Test 69" AF test negative
Accessory: „Focus Target" Durst focusing glass

Description and display

FLG 50	1
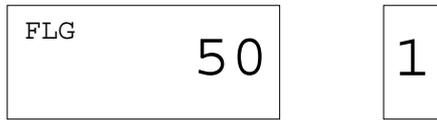
1
Switch on main switch.
The lens carrier moves to the Ref. position.
Fit lens and place AF test negative in the film carrier with the glass covers. The lens type/board table is shown on page 22.

CH-lens

FLG 80	3

2
Select lens channel, e.g. „3".

3
Check the NV-PV figures as follows.

Note
If a negative variator is stored (NV does not equal 0), the programming mode cannot be started. „NV" flashes while the „AF Set-up" key is pressed.

- +

Clear

+05 NV	3

Remedy
Delete NV figure.

Select

PV +16	3
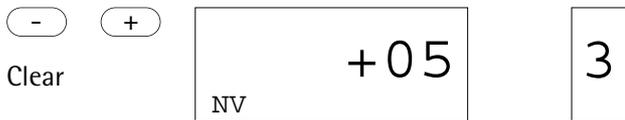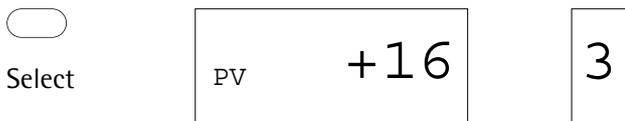
4
For programming on the baseboard plane, delete the PV figure in the channel, continue with Point 7.

- +

Clear

PV 0	3

ex. 40 cm = PV-value

Paper
plane

5
If a roll paper easel, Durst lab furniture or floor projection with a difference in height of projection plane greater than ± 10 cm is being used, proceed as follows. Measure the difference in height and enter the PV figure (mm), e.g. „40 cm".
  Changes in the projection plane downwards (towards the floor) are entered with plus signs, changes upwards with minus signs.

− +	PV +40	3

6
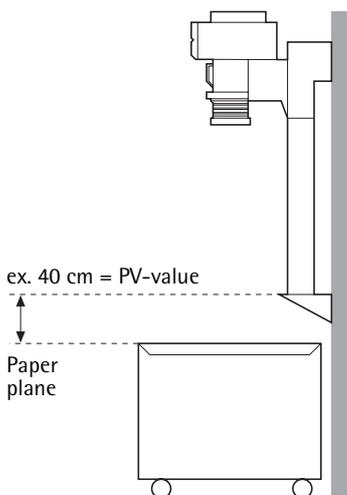
AF-setup − +	FLG 150	3

7
Programme the autofocus as described below.
Activate mode, „FLG" flashes, enter the lens focal length, e.g.
„150 mm" and save with „Enter" key.

Enter	FLG Clr	3

− + Clear	□□□	3

8
Delete all the base points of the autofocus. The lens carrier
moves to Ref. position.

	SFC	3

▼ ▲ Rapid	

9
Set the enlarger head position to suit the lens focal length
used.

Lens focal lengths

50 mm	80 mm	100 mm	135 mm	150 mm	180 mm
60 mm	90 mm	105 mm			

Machine head positions as per CM scale

20	20	23.2	34	40	52.4
21	21	24	34.3	40.3	53.5
24	23	26	34.6	40.6	55
30	26	30	35	41	60
50	30	35	36	42	70
75	40	45	37	44	85
110	60	60	40	47	110
	85	80	45	52	
	110	110	55	60	
			70	70	
			90	90	
			110	110	

ex. 40 cm
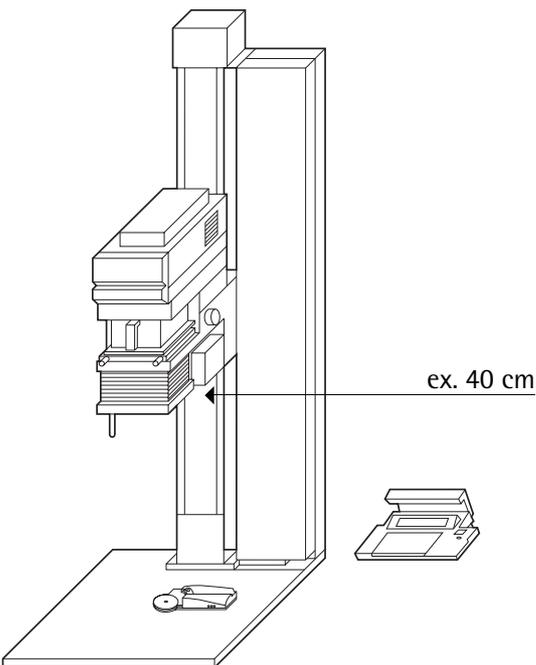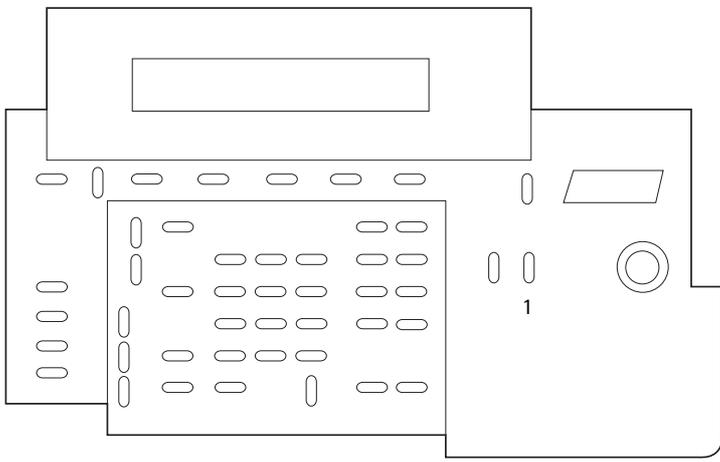
10
Switch on white light (1)

▼ ▲
Lens Adjust

```
FLG
       SFC      3
```

11
Focus the projection. Lens carrier adjustment: by pressing the key within 5 sec. slow (1.2 mm/sec.), after 5 sec. fast (7.2 mm/sec.).

Note
Always approach the final focus position from below (key ⋀), to eliminate mechanical tolerances during programming.

Enter

```
       SFC      3
```

12
Save the enlarger head position. The machine automatically focuses.

Is the projection sharp?
If so, continue with Point 13.
If not, continue with Point 11.
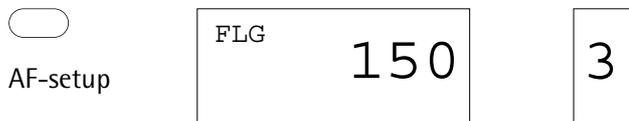
13
Have you focused all the positions listed on page 28 matching the lens used, and saved them as described above?
If so, continue with Point 14.
If not, continue with Point 9.

14
Switch off the programming mode of autofocus

AF-setup

```
FLG
       150      3
```

5.3.2
Subsequent correction of the autofocus for a certain head position.

If the machine does not autofocus for a certain head position, you can readjust the autofocus by manually focusing and saving an extra base point.

Example

1
Set the machine head position to be corrected.

▼ ⬭ ▲

Rapid

2
Start the programming mode of autofocus and confirm the displayed lens focal length.
„FLG" flashes.

⬭
AF-setup

| FLG | 150 | 3 |

⬭
Enter

Note
If a negative variator is saved (NV is not equal to 0), the programming mode cannot be activated. „NV" flashes while the „AV set-up" key is pressed.

Remedy
Delete NV figure (refer to the description of page 27, no. 3).

⬭
Enter

| FLG | Clr | 3 |

3
Focus the projection.

▼ ▲
Lens Adjust

| FLG | SFC | 3 |

4
Save the enlarger head position. The machine automatically focuses.

⬭
Enter

| | SFC | 3 |

Is the projection sharp?
If so, continue with Point 5.
If not, continue with Point 3.

5
Switch off the programming mode of autofocus.

⬭
AF-setup

| FLG | 150 | 3 |

5.3.3
Paper channels

The various makes of variable-contrast papers require different basic figures. These basic figures are stored in the paper tables of the Pictograph AF. When a paper channel is set up, a table is allocated to a channel and an additional density correction made to the density in the table. The Pictograph AF contains over thirty paper channels for different paper types, which can be combined at will with any tables.

A paper channel contains:
a) a paper table with the following data: gradation, contrast, yellow and magenta filtration and density compensation
b) density channels

Before practical work, set up a suitable paper channel for the paper used as described below.

Description and display

1
Enter 004 and press „Expose/Start".

```
0      0      4          Expose/Start
```

```
SETUP/PAPER                              1
 1: NEW CAL    4: TABLES     7:
 2: ADJUST     5:
 3: COPY       6:                    EXIT
```

2
Enter „1" or position the cursor with the arrow keys to „1" and press the „Expose/Start" key.

```
1          Expose/Start
```

```
SETUP/PAPER/NEW CAL -  PC12A/1
Select Paper Channel and continue with
PC=12A                              Start
PAPER                               EXIT
```

3
Enter the paper channel, e.g. „12".

```
1      2      ←          Expose/Start
```

```
SETUP/PAPER/NEW CAL -  PC12A/2           2
 1:FIX G.=F    4:AGFA   =A   7:X
 2:ILFORD=I    5:U           8:Y
 3:KODAK =K    6:T                   EXIT
```

4
Select the paper table, e.g. table „2".

Note
On the Pictograph and Pictograph AF four tables (1-4) are preprogrammed, and a further four are freely pro-grammable.

```
2          Expose/Start
```

```
SETUP/PAPER/NEW CAL - PC12I/3
* Insert test negative
* Adjust print size to 20*25cm/8*10inch
* Step down 2 f/stops         ^      EXIT
```

Expose/Start

```
SETUP/PAPER/NEW CAL - PC12I/4
* Scan lightest and darkest areas
                     L=        D=
* Expose test print            ^      EXIT
```

Light


```
SETUP/PAPER/NEW CAL - PC12I/4
* Scan lightest and darkest areas
                     L=0.900  D=1.900
* Expose test print            ^      EXIT
```

Light   Expose/Start

```
SETUP/PAPER/NEW CAL - PC12I/5

Test print equal ref print?
Yes      No                    ^      EXIT
```

←   →

```
SETUP/PAPER/NEW CAL - PC12I/6
Density correction = +00.0
* Enter dens. corr. to match test print
* Expose test print            ^      EXIT
```

+   5   D   Expose/Start

5
Press key „Expose/Start"
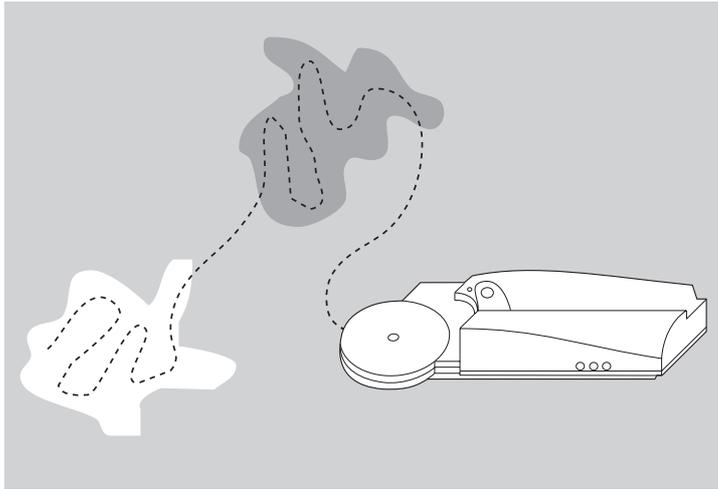
6
Switch on the enlarger light and switch off the room light.

7
Position the scan-mouse on the brightest point of the project-
ed image, and press and hold down the key on the mouse.
With the mouse key pressed, pass over the brightest and dark-
est areas of the image. The computer saves the brightest and
darkest points during this, and so detects the gradation and
exposure time. The resulting exposure time should be between
1 and 16 sec.. If not, repeat the operation.
Min. reading time 1 sec.
Max. reading time 25 sec.

8
Switch off the enlarger light, prepare the exposure and expose.

9
Compare the test print and reference print. If the two are
identical, press the „Yes" key (set-up finished), if not, continue
with „No".

E.g. enter „+5D".
Prepare the exposure and expose.
Continue with Point 9.

Paper tables

Grad.	Kontrast	Y-Filt.	M-Filt.	D-Comp
00	1.60	129.0	0.0	+26.0
0.0	1.40	85.0	0.0	+22.0
0.5	1.30	68.0	0.0	+20.0
1.0	1.20	45.0	0.0	+16.0
1.5	1.10	27.0	0.0	+9.0
2.0	1.00	0.0	0.0	-3.0
2.5	0.90	0.0	3.0	+0.0
3.0	0.80	0.0	43.0	+18.0
3.5	0.73	0.0	62.0	+25.0
4.0	0.65	0.0	75.0	+28.0
4.5	0.58	0.0	115.0	+32.0
5.0	0.50	0.0	170.0	+36.0

5.4
Paper tables

The paper tables show the contrast, yellow and magenta filtra-
tion, and the density compensation for various gradations in
half steps. On the Pictograph AF four tables are prepro-
grammed, and a further four freely programmable.

The following paper tables are shown in the Appendix:
Ilford Multigrade III RC De Luxe *
Ilford Multigrade FB
Ilford Multigrade RC XPRESS
Kodak Polycontrast III *
Kodak Polyprint RC
Agfa Multicontrast *
Labophot Multiscal
Argenta Varigrade

* preprogrammed tables

All the parameters in a paper table, except for the density
compensation at gradation 2.5, can be changed if necessary.
E.g. for gradation 3.0 the magenta filtration in the table shown
is to be changed from 43.0 to 45.

Note
**A change in the paper table can affect several paper chan-
nels, if this table is also allocated to other paper channels.**

Remedy
**To avoid this effect occurring, you can set up a new table
and allocate it to just one paper channel.**

Description and display

Enter „004" and press the „Expose/Start" key.

0   0   4   Expose/Start

```
SETUP/PAPER                         1
 1: NEW CAL    4: TABLES    7:
 2: ADJUST     5:           8:
 3: COPY       6:              EXIT
```

Enter „4" or move the cursor with the arrow keys to „4" and
confirm.

4   Expose/Start

```
SETUP/PAPER/TABLE - I/1              2
 1:FIX G.=F    4:AGFA   =A  7:X
 2:ILFORD=I    5:U          8:Y
 3:KODAK =K    6:T             EXIT
```

Select the paper table, e.g. „2 ILFORD".
Select the gradation, e.g. gradation „3.0".

2   Expose/Start

```
SETUP/PAPER/TABLE - I/2
Grade Contrast Y-Filtr M-Filtr D-Comp
2.0   1.00        0.0     3.0  - 3.0
GRADE   CONTRAST          RESET   EXIT
```

○　　○　　○　　○　　　○

3　　　←　　4　　　5　　　　M
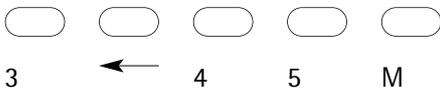
Enter the filter density correction found, e.g. „45 M".

```
SETUP/PAPER/TABLE - I/2
Grade Contarst Y-Filtr M-Filtr D-Comp
3.0   0.80       0.0    45.0  +18.0
GRADE   CONTRAST         RESET    EXIT
```

○

Exit

Press the „Exit" key.

Adapting a paper channel
With the adaption programme you can correct the reciprocity and density correction of a paper channel. Variations in these two factors may be caused for instance by chemistry drifts. Find the correction necessary by producing test prints. Note the correction figures (density and exposure time), and enter these as follows.

Description and display

○　　○　　○　　　○

0　　　0　　　4　　　Expose/Start

Enter „004" and press „Expose/Start" key.

```
SETUP/PAPER                           1
 1: NEW CAL   4: TABLES    7:
 2: ADJUST    5:           8:
 3: COPY      6:               EXIT
```

○　　　○

2　　　Expose/Start

Enter „2" or move the cursor with the arrow keys to „2" and confirm.
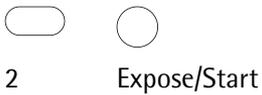
```
SETUP/PAPER/ADJUST -  PC12I/1
Density correction =  0
PC=12I
PAPER             ENTER          EXIT
```

○　　○　　　○

2　　　←　　　Expose/Start

Select the paper channel to be corrected, e.g. „2".
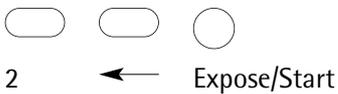
```
SETUP/PAPER/ADJUST -  PC021I/1
Density correction =  0
PC=02I
PAPER             ENTER          EXIT
```

+   5   D

Enter the density correction, e.g. „+5D".

```
SETUP/PAPER/ADJUST -  PC02I/1
Density correction = +05.0
PC=02I
PAPER            ENTER          EXIT
```


Expose/Start

Press the „Expose/Start" key.

```
SETUP/PAPER/ADJUST -  PC02I/2
Adjust reciprocity corr. factor ?

                 YES       ^       NO
```


Press the arrow key.

```
SETUP/PAPER/ADJUST -  PC02I/3
Reciprocity Density Correction = 0
Corresponding exposure time   = 0
   (Help)         ENTER    ^     EXIT
```


+   8   D

Enter the density correction, e.g. „+8D".

6   2   Time

Enter the exposure time of the previously produced print (range 50 - 999 sec.), e.g. „62 sec.".

Press the arrow key.

Copying a paper channel

With the copy function all the data in a paper channel can be copied to another channel not yet used.

E.g. copying channel „1" to channel „15".

Description and display

Enter „004" and press the „Expose/Start" key.

```
0       0       4           Expose/Start
```

```
SETUP/PAPER                                  1
 1: NEW CAL    4: TABLES     7:
 2: ADJUST     5:            8:
 3: COPY       6:                       EXIT
```

Start the copying programme, enter „3" and press the „Expose/Start" key.

```
3           Expose/Start
```

```
SETUP/PAPER/COPY

PC=00    PC=00
SOURCE   DESTINATION         COPY      EXIT
```
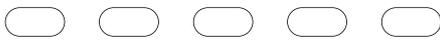
Enter „Source 1" and „Target 15".

```
1       ←       1       5       →
```

```
SETUP/PAPER/COPY

PC= 1    PC=15
SOURCE   DESTINATION         COPY      EXIT
```

Confirm the copying operation with the arrow key and press the „Exit" key.

```
↑       Exit
```

Film channels

Film	FK 2		
Grad.	Y-Offset	M-Offset	D-Offset
00	+10.0	+ 0.0	+ 0.0
0.0	+ 5.0	+ 0.0	+ 0.0
0.5	+ 2.5	+ 0.0	+ 0.0
1.0	+ 0.0	+ 0.0	+ 0.0
1.5	+ 0.0	- 2.5	+ 0.0
2.0	+ 0.0	- 5.0	+ 0.0
2.5	+ 0.0	- 7.5	- 4.0
3.0	+ 0.0	-10.0	- 8.0
3.5	+ 0.0	-12.5	- 6.5
4.0	+ 0.0	-15.0	- 5.0
4.5	+ 0.0	-20.0	- 4.0
5.0	+ 0.0	-25.0	- 3.0

Film channel set-up

Films which have different basic colours affect the gradation control, and these films therefore have to be set up on the Pictograph AF. Filter and density corrections can be entered for each gradation step. Film channel 2 is preprogrammed for Ilford XP films, the remaining 7 film channels are freely programmable.

The filter and density figures in the adjacent table are preprogrammed for Ilford XP films. These figures can be changed if necessary (see example).

Example
The following figures are necessary for gradation 5.0:
Y Offset = 0, M Offset = 28, D Offset = - 2.0.
The figures initialised in the factory in the table can be reset with RESET.

Description and display

Enter „005" and press the „Expose/Start" key.

0   0   5   Expose/Start

```
SETUP/FILM - FC2 /1                    2
 1:STANDARD    4:Film 4    7:Film 7
 2:I/XP        5:Film 5    8:Film 8
 3:Film 3      6:Film 6           EXIT
```

Select film channel 2

2   Expose/Start

```
SETUP/FILM - FC2 /2
Grade   Y-Offset  M-Offset  D-Offset
2.5     + 0.0     - 7.5      - 4.0
GRADE                 RESET      EXIT
```

Select gradation step 5.0.
Press the arrow key repeatedly.

←

```
SETUP/FILM - FC2 /2
Grade   Y-Offset  M-Offset  D-Offset
5.0     + 0.0     -25.0      - 3.0
GRADE                 RESET      EXIT
```

Enter the magenta offset, e.g. „- 28 M".

-     2   8   M

```
SETUP/FILM - FC2 /2
Grade    Y-Offset   M-Offset   D-Offset
5.0      + 0.0      -28.0       - 3.0
GRADE                         RESET     EXIT
```

⬭ ⬭ ⬭   Enter the density offset, e.g. „- 2 D".

-     2   D


```
SETUP/FILM - FC2 /2
Grade    Y-Offset   M-Offset   D-Offset
5.0      + 0.0      -28.0       - 2.0
GRADE                         RESET     EXIT
```

⬭   Press the „Exit" key twice.

Exit

5.5
Connection for data printer

Sub-D 25M   Sub-D 25M

2   2

3   3

5   5

6   6

7   7

8   8

20   20

Conditions for the printer:
- serial interface RS 232 C
- data bit = 8
- stop bit = 1
- parity bit = none
- handshake (protocol) = DTR/DSR or XON/XOFF
- paper width = min. 76 mm, max. 210 mm
- if sticky labels are used, these must not be smaller than 102 x 23 mm and not bigger than 105 x 36 mm.

RS 232 cable needed as illustrated.
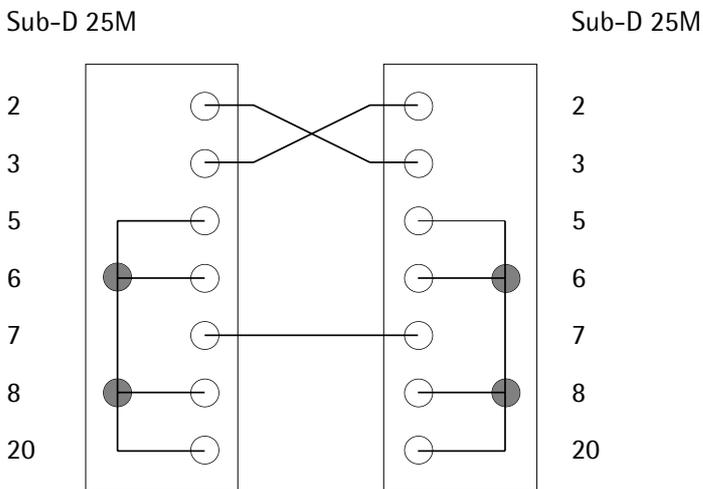
5.5.1
Setting the interface on the Pictograph AF

Description and display

Enter „001" and press the „Expose/Start" key.

⬭ ⬭ ⬭ ◯

0   0   1   Expose/Start

```
SETUP/INSTALL                        1
 1: LANGUAGE  4:          7:
 2: PRINTER   5:          8:
 3: RS 232 C  6:              EXIT
```

⬭ ◯

3   Expose/Start

Enter „3".

```
SETUP/INSTALL/RS 232 C
  Baud    = 1200   Parity  = none
  Databit = 8      Hd.shake=  DTR/DSR
  Stopbit = 1      Timeout =   5 sec  EXIT
```

Set the two baud and handshake parameters to match the settings on the printer.

Put the cursor with the arrow keys on the relevant parameter and set with the „+/-" keys.

 ⬭

Exit

Press the „Exit" key twice.

5.5.2
Setting the paper width

The paper width of the printer connected to the machine can be set optionally to 76 mm (3 in.) or 210 mm (8.2 in.), and the line spacing between each print-out from 0 to 9 empty lines.

Description and display and print-out

Enter „001" and press the „Expose/Start" key.

 ⬭ ⬭ ⬭ ◯

0   0   1   Expose/Start

```
SETUP/INSTALL                              1
  1: LANGUAGE  4:            7:
  2: PRINTER   5:            8:
  3: RS 232 C  6:                    EXIT
```

 ⬭

2

Enter „2".

```
SETUP/INSTALL/PRINTER
  76  mm paper        ( 3   inches paper)
  0 free rows
                                     EXIT
```

Position the cursor with the arrow keys on the paper width and set the width with the „+/-" key.
The empty lines can be set in the same way.

 ⬭

Exit

Press the „Exit" key.

```
Order N.= 12345678  Job=  1    AUTO SCAN         E.g. print-out 76 mm/1
PC=03I FC=1  Box 450.0     f= 150/11
Grade=4.0 Contrast=0.18 D= 50.0 m= 65.5
Burn In=  NO   DF=  0  Time=  15.50s

Order N.= 12345678  Job=  2    AUTO SCAN
PC=03I FC=1  Box 450.0     f= 150/11
Grade=4.0 Contrast=0.65 D= 50.0 m= 65.5
Burn In=  NO   DF=  0  Time=   0.72s
```

E.g. print-out 210 mm/1

```
Order N.= 12345678  Job=  1    AUTO SCAN PC=03I FC=1  Box 450.0    f= 150/11
Grade=4.0 Contrast=0 18 D= 50.0 m= 65.5 Burn In=  NO   DF=  0  Time=  15.50s

Order N.= 12345678  Job=  2    AUTO SCAN PC=03I FC=1  Box 450.0    f= 150/11
Grade=4.0 Contrast=0.65 D= 50.0 m= 65.5 Burn In=  NO   DF=  0  Time=   0.72s
```

6.0
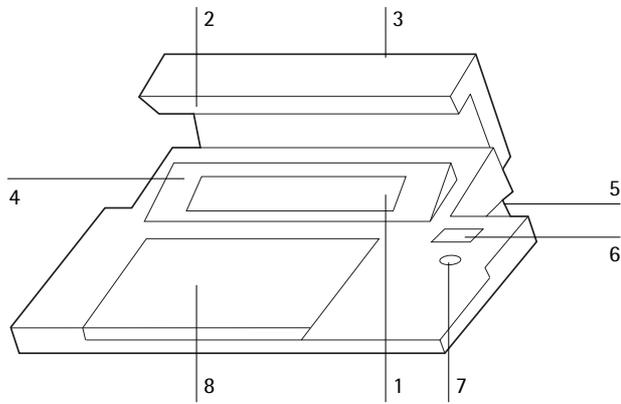
6.1
Operating panel

1 Display
2 Panel lighting
3 Switch for panel lighting
4 Tilting display panel
5 Regulator for display brightness
6 Display for exposure time
7 Recessed exposure key
8 Keyboard
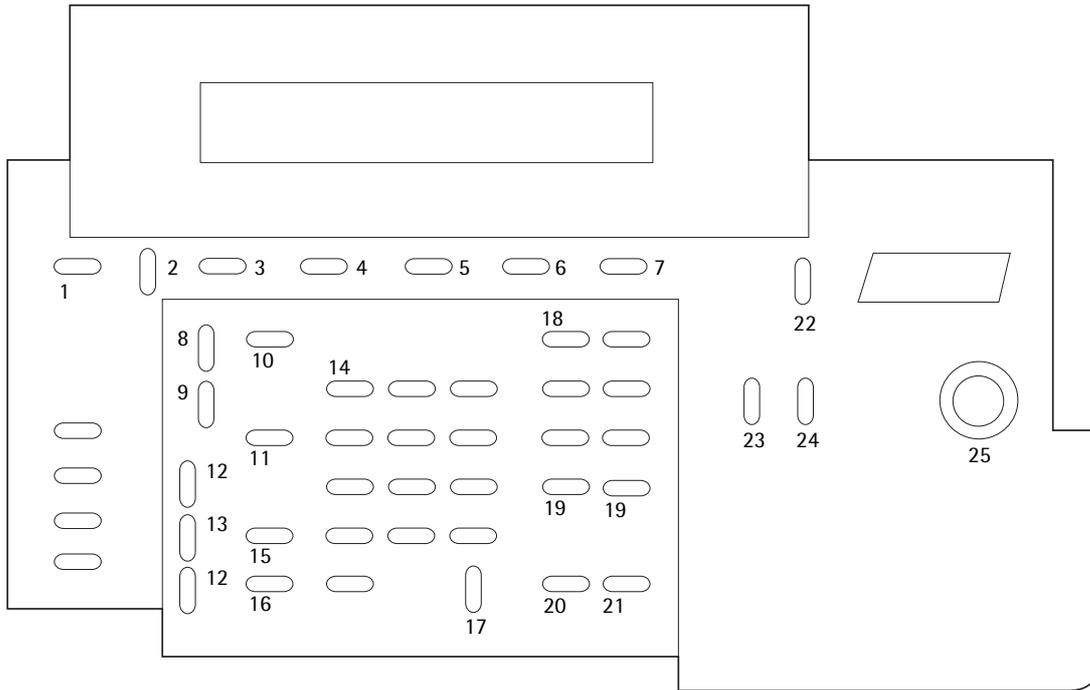
1 Help
For certain programming operations, when „Help" shows on the display, the „Help" key provides detailed information.

2 Option
Selection key
The programme menu is called with the „Option" key (page 55). The desired programme is selected with the cursor and confirmed with the „Expose/Start" key.
Some programmes contain sub-programmes which can either be selected by entering the programme numbers or with the variable keys.

3–7 Variable keys (soft keys)
The keys 3 - 7 vary in function depending on the mode: the current key function is shown on the bottom line in the display. The keys are also for controlling the cursor, e.g. in option menus.

Example
3 key for subsequent correction of gradation
5 key for changing the reading type.

7 Exit
Key for leaving the programme

8 Sto/Print
Double function key
• With a connected matrix printer the exposure data are printed out with „Sto/Print".
• To save the exposure data in the job memory, enter the job number and press „Sto/Print"

9 RCL/Show
Double function key
• With „RCL/Show" exposure data are displayed which appear on the display during normal operation. If „Light" is switched on, the effective exposure time is also displayed.
• In order to view the exposure data of a stored job memory, enter the job number and press „RCL/Show".

10 No/Online
Function key for entering the 8-figure job number*.

11 Channel
Function key for entering the lens focal length*, the box size*, the paper channel and film channel.
   The entry is confirmed with the variable keys. The paper channel can also be entered directly with this key.

12–13
12–13 Projection size/head adjustment with autofocus
(12▲) scale gets bigger, head moves upwards.
(12▼) scale gets smaller, head moves downwards.
„Rapid" (13) simultaneously with (12▲) or (12▼) is for the projection size/head fast adjustment.

14 Numeric keyboard

15 m/size
Function key for entering the enlargement scales* (see column scales).

16 Film change position
The enlarger head moves to a position convenient for changing the film carrier/film. When the key is repressed, the enlarger head moves back to the previously set position.

17 Clear/Stop
Double function key
„Clear/Stop" removes fault warnings and wrongly entered figures.
„Clear/Stop" cancels an exposure in progress.

18 Colour keys
Colour keys for yellow and magenta setting.
   These are used as entry keys for the paper and film tables.
The other colour keys do not have functions on this machine.

Example of a filter entry (only in programming mode):
choose the desired filter setting with the numerical keyboard, then press the colour key.

19 Density keys
If a print is to be made lighter or darker, on the Pictograph AF the correction can be entered in density figures, as well as with the other functions, such as changing the f-stop and the exposure time. The display shows a density from 0 to 99.
   A correction of +30 D is equivalent to doubling the exposure time, and a correction of -30 D cuts the exposure time by half.

20 F.Stop
Function key for setting the aperture.
The „+" sign shows half the stop.
   If the aperture is changed, the exposure time is automatically adjusted.

21 Time
Exposure time entry
First select an exposure time from 1 to 999 sec. and press the „Time" key. If you press „Time" without entering a figure, the following options are possible:
• percentage correction of time
• entry of the burn-in time (in per cent)
• adjustment of the density filters (stop down 0, 1, 2 x)
These three extra functions are confirmed with the relevant variable keys (see page 46).

22 Display On/Off
On and off switch for the display light.

23 Light
Key for switching the enlarger light on and off for mouse scanning.

24 W. Light
Key for switching the enlarger light on and off and slotting out the colour and density filters.

25 Expose/Start
„Expose" = exposure key
„Start" = confirmation key for programming

* Lens focal length, light box, projection scale and job number only have value as documentation.

```
Grade=5.0 Contrast=0.02 D=80.0
f=150/11         m= 27.6   No.=        22
PC=02I     FC=1
GRADE           AUTO SCAN
```

◯ ◯ ◯

8   0   D

Direct correction entry
Print too light: Enter „80D", print becomes more dense.

```
Grade=5.0 Contrast=0.02 D=20.0
f=150/11         m= 27.6   No.=        22
PC=02I     FC=1
GRADE           AUTO SCAN
```

◯ ◯ ◯

2   0   D

Print too dark: enter „20D", print becomes lighter.

```
Grade=5.0 Contrast=0.02 D=80.0
f=150/11         m= 27.6   No.=        22
PC=02I     FC=1
GRADE           AUTO SCAN
```

◯ ◯ ◯ ◯

3   0   -/+   L/D

Correction with plus and minus signs
Print too light: enter „-30L" or „+30 D", print becomes more
dense.

```
Grade=5.0 Contrast=0.02 D=20.0
f=150/11         m= 27.6   No.=        22
PC=02I     FC=1
GRADE           AUTO SCAN
```

◯ ◯ ◯ ◯

3   0   -/+   L/D

Print too dark: enter „+30 L" or „-30 D", print becomes lighter.

6.1.2
LCD display

Description and display

```
Grade=5.0 Contrast=0.02 D=20.0
f=150/11        m= 27.6   No.=      22
PC=02I    FC=1
GRADE         AUTO SCAN
```

Description in normal mode

`Grad:`	gradation
`Contrast:`	contrast range of negative
`D:`	density figure
`f:`	lens focal length/aperture
`m:`	enlargement factor or head position as per column scale
`No.:`	job number
`PC:`	paper channel
	1 F = fixed contrast
	2 I = Ilford
	3 K = Kodak
	4 A = Agfa
	5-8 = free
`FC:`	film channel
	1 standard
	2 Ilford XP
	3-8 free
`GRAD:`	„Soft key" for entering the gradation step
`AUTO SCAN`	
`P.00 MAN SCAN:`	„Soft key" for changing the reading method (autoscan and spot reading)
`P.nn`	shows the number of readings made

```
Grade=5.0 Contrast=0.02 DF= 0
f=150/11           Box 450.0  Job=  1
PC=02I    FC=1
```

RCL/
Show

Display with pressed „show" key

`DF nn`	position of density filter
`Box:`	mixing box
`Job:`	job number

```
Use Box    = 450.0
Use Lens f = 150       F-Stop = 11
Set magnification        m =  60.0
                              EXIT
```

3   RCL/   Exit
       Show

Example: call „Job memory".
Display after calling a job memory.

Initialised figures when the machine is delivered
Job number = 0
Gradation = 2.5
Contrast = 1.10
Paper channel PC = 01 I (paper channel 1, Ilford table)
Film channel FC = 1
Job memory = 0
Cyan filter = „Off"
D 90 filter = „Off"
Job automatic = „Off"
Contrast correction = 0%
D = 50.0*
Density filter = 0
Focal length = 80
F-stop = 11
Box = 450
Scale = 60
Exposure time = 10.0
Burn-in = 0%

* To permit density corrections to be made in both directions, the starting figure is set at D = 50.

6.1.3
Time key
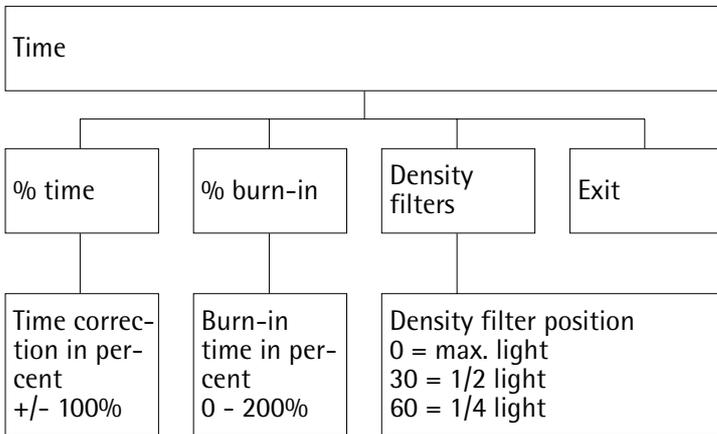
Density correction in percentages
As well as directly entering the exposure time and the density correction with the density keys (page 44), the time can also be adjusted in per cent (+/- 100%).

Example
The print with an initial exposure time of 10 sec is too light.

Time			
% time	% burn-in	Density filters	Exit
Time correction in per cent +/- 100%	Burn-in time in per cent 0 - 200%	Density filter position 0 = max. light 30 = 1/2 light 60 = 1/4 light	

Description and display

Press „Time" key.

Time

```
TIME /

         Burn In = 0%    Dens Filt = 30
%TIME       %BURN IN          D.FILT    EXIT
```

Enter correction in percentage, e.g. „+50%".

New exposure time = 15 sec.

+   5   0   ←   Exit

```
Grade=5.0 Contrast=0.02 D=20.0
f=150/11        m= 27.6   No.=        22
PC=02I     FC=1
GRADE          AUTO SCAN
```
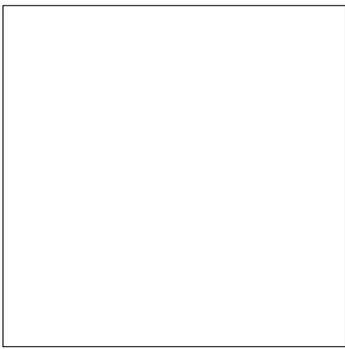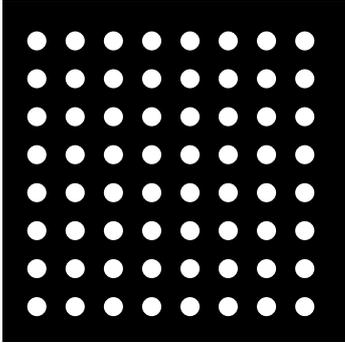
Position 0
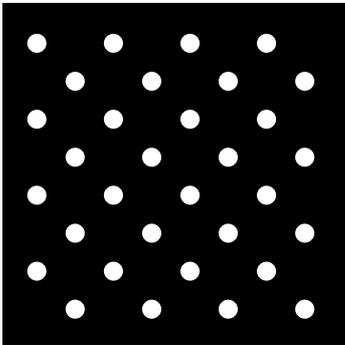
Position 30

Position 60

6.1.4
Density filters

There are two density diaphragms (filters) immediately under the lamp.

In position 0 both filters are slotted out (maximum light).
In position 30 the light intensity is halved once.
In position 60 the light intensity is halved twice.

These light regulators are used for small scales of the repro-
duction, for underexposed negatives, and for reexposures with
dodging, in order to lengthen the exposure time. The light can
also be reduced, and consequently the exposure time short-
ened, by the lens diaphragm. This is however not advisable due
to the loss of quality at too small apertures (diffraction of the
light rays at the edge of the diaphragm).
   Always use the density filters whenever the exposure time is
shorter than a second.

Density filter example
The print is too dark at 1.2 seconds exposure, and the follow-
ing density correction results in too short an exposure time.
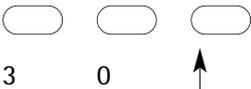
Description and display

Press „Time" key.

Slot in density filters.

Time

```
TIME /

        Burn In =  0%   Dens Filt = 00
%TIME     %BURN IN           D.FILT    EXIT
```

The new exposure time is double the first one (entering „60"
quadruples the time).

3   0

```
TIME /

        Burn In =  0%   Dens Filt = 30
%TIME     %BURN IN           D.FILT    EXIT
```

Burn-in function
A second exposure can be made by entering the percentage in relation to the main exposure.

Example
A print has been exposed with 10 sec. The overall print is good, except for a too bright area. This bright area needs a 20% longer exposure time.

Press „Time" key.

Time

```
TIME /

        Burn In =  0%   Dens Filt = 00
%TIME     %BURN IN            D-FILT    EXIT
```

2   0   →   Exit

```
Grade=5.0 Contrast=1.10 D=20.0
f=150/11        m= 60.0   No.=        22
PC=02I    FC=1     Burn In = 20 %  1.Exp.
GRADE         AUTO SCAN
```

New exposure data:
first exposure - 10 seconds for the complete print
second exposure - 2 seconds for the too bright print area (with the rest of the print covered).

If a roll paper easel is connected, the first exposure is started from the easel and the second from the operating panel.

Expose, press „Expose/Start" key.

Expose/Start

```
Grade=4.5 Contrast=1.10 D=20.0
f=150/11        m= 60.0   No.=        22
PC=02I    FC=1     Burn In = 20 %  2.Exp.
GRADE         AUTO SCAN
```

Note
The second exposure can also be made with a different gradation step or density, it is not necessary to use the scan-mouse.

←   Expose/Start

Expose, press „Expose/Start" key.

Note
The „RCL/Show" key shows the relative exposure time on the timer display with the enlarger light switched on. Due to the lamp fluctuations the Closed Loop system has to adjust this continuously. An entered time of 10 seconds may therefore actually be more or less than 10 seconds, depending on whether the lamp is brighter or weaker, or whether the yellow or magenta filter is slotted in or out.

```
Grade=5.0 Contrast=0.94 DF= 0
f=150/11            Box 35       Job=198
PC=02I    FC=2
```

RCL/
Show

6.1.5
Channel key

```
                        ┌─────────────────────────────────────────────┐
                        │ channel                                     │
                        └─────────────────────────────────────────────┘
                                          │
         ┌──────────┬───────────┬─────────┴──────┬──────────┐
    ┌────────┐ ┌────────┐  ┌────────┐    ┌────────┐  ┌────────┐
    │ paper  │ │ film   │  │ lens   │    │ box    │  │ exit   │
    └────────┘ └────────┘  └────────┘    └────────┘  └────────┘
         │          │           │             │
 ┌──────────┐ ┌──────────┐ ┌──────────┐ ┌──────────┐
 │ paper    │ │ film     │ │ focal    │ │ number   │
 │ chan-    │ │ channel  │ │ length   │ │ of       │
 │ nel      │ │ number   │ │ of lens  │ │ mixing   │
 │ number   │ │ from 1   │ │          │ │ box      │
 │ from 0   │ │ to 8     │ │          │ │          │
 │ to 29    │ │          │ │          │ │          │
 └──────────┘ └──────────┘ └──────────┘ └──────────┘
```
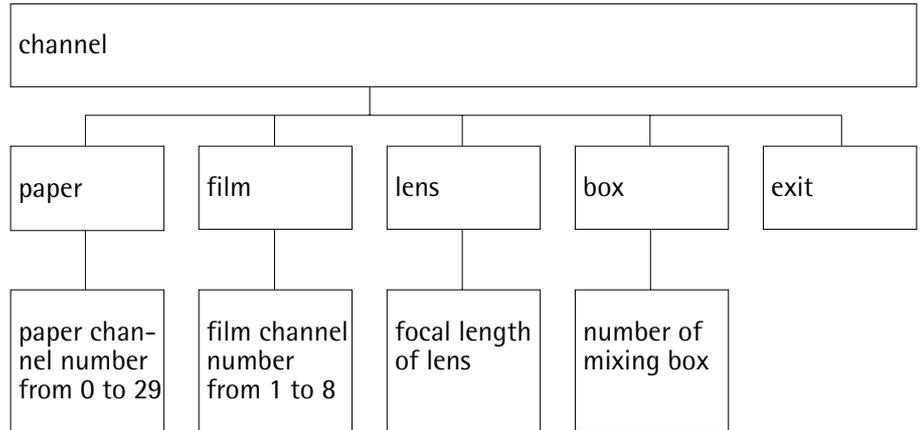
```
CHANNEL/

PC=12I     FC=2      f=150      Box 450.0
PAPER      FILM      LENS       BOX       EXIT
```

Paper   Enter the paper channel corresponding to the paper type being processed. When the paper emulsion changes, check that the density matches the previous emulsion. If not, then repeat the paper calibration. There are a total of 30 paper channels available.

Film   Enter the film channel corresponding to the film type being processed. Enter the lens focal length.

Lens

Note
The lens and mixing box can be entered independently of the paper and film channels.
These figures remain stored until they are cancelled by new entries.
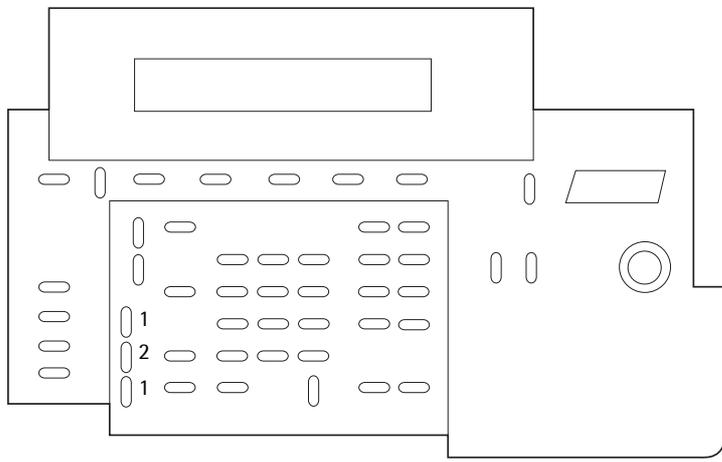
6.2
Setting the enlargement format

The desired enlargement format can be steplessly set, focusing is automatic.

(1▲) Scale gets larger, head moves upwards
(1▼) Scale gets smaller, head moves downwards
(2) „Rapid" simultaneously with (1▼) or (1▲) is for rapid adjustment.

z. B. -30 cm = PV-Wert

Paper plane
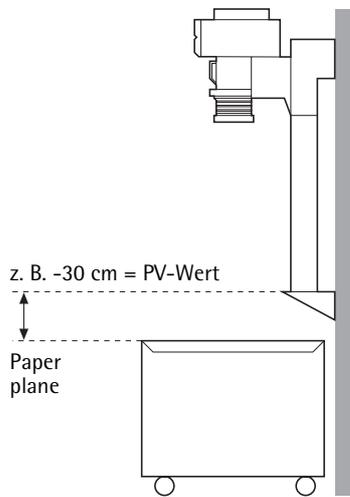
6.3
Setting the positive variator (PV)

The positive variator is a channel for compensating the difference in height in the projection level. After the PV figure has been found and entered, autofocusing is preserved for all lenses. If different projection levels are used, such as a height-adjustable baseboard, a roll paper easel or masking frame, proceed as follows.
Measure the difference in height (= PV figure).

If the difference in height is greater than $\pm$ 10 cm, e.g. when a roll paper easel is used, the autofocus must be programmed on the projection level (roll paper easel). Before programming the autofocus, measure and enter the difference in height (PV figure), then programme the autofocus (see page 26).
   If the PV figure is smaller than $\pm$ 10 cm, enter the PV figure as described below.

Description and display

1
Select PV

Select | PV 0 | 3

2
Enter the PV figure in mm, e.g. „+8". Changes downwards are entered with minus signs, changes upwards with plus signs (1 digit = approx. 1 mm).

-/+ | PV +8 | 3

The enlarger automatically refocuses round the entered PV figure.

Is the projection sharp?
If so, continue with Point 4.

3
If not, change the PV figure until the projection is sharp.

-/+ | PV +11 | 3

Select	FLG 150	3

4
Press the „Select" key three times.

6.4
Setting the negative variator (NV)

The negative variator is a channel for compensating variations in the film level, e.g. when the film carrier glass/format mask is changed.
   When the NV figure has been found and entered, the auto-focus is preserved for all lenses.

Description and display

Select	0 NV	3

Select „NV".

-/+		

Enter the „NV" figure (1 digit = approx. 0.05 mm).
Changes downwards (from the lens) are entered with minus signs, changes upwards with plus signs.

The enlarger automatically refocuses round the entered NV figure.

	+25 NV	3

Is the projection sharp?
If so, end the operation.

If not, change the NV figure until the projection is sharp.

Select	

Setting completed.
Press the „Select" key twice.

6.5
Manual focusing with the Pictograph AF

In exceptional cases (e.g. for exposing only one film original), the projection can be manually focused on a masking frame or a roll paper easel without a PV figure.

Description and display

▼ ▲ Lens adj.	

1
Focus projection with „Lens adj." keys.

▼ ▲ Rapid	AFC	3

2
The Pictograph AF does not autofocus until the machine head is readjusted.

Note
For reductions focus manually with the „Lens adj". keys. To do this, delete all the support points of a not yet pro-grammed lens channel, to avoid unnecessary automatic lens adjustments when the head is readjusted.

6.6
The scan-mouse probe

With the Pictograph scan-mouse you have two types of reading available, „Autoscan" and „Man Scan".
Choose the reading type with the variable key ($\vee$).
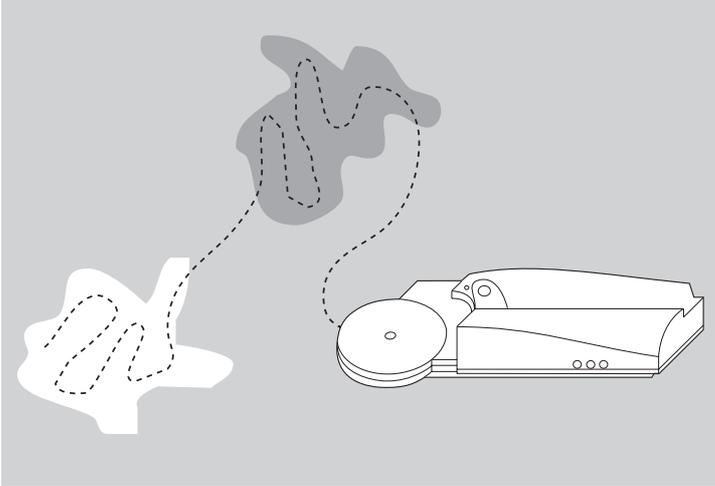
6.6.1
Autoscan reading

With the autoscan reading method on the Pictograph AF, after the main points on the print have been scanned with the mouse, the brightest and darkest readings are automatically stored. The brightest and darkest points read determine the gradation and exposure time.
Number of readings: 10 per second
Minimum reading time: 1 second
Maximum reading time: 25 seconds

Example

Description and display

```
Grade=5.0 Contrast=0.02 D=20.0
f=150/11         m= 27.6     No.=12345678
PC=02I    FC=1
GRADE     P.00  MAN SCAN
```

1
Switch on autoscan reading.

```
Grade=5.0 Contrast=0.02 D=20.0
f=150/11         m= 27.6     No.=12345678
PC=02I    FC=1
GRADE           AUTO SCAN
```

Light

2
Switch on the enlarger light.

3
Estimate which are the brightest and darkest areas and scan these in lines with the mouse (see above diagram). Hold down the key on the mouse while these areas are being scanned.
   After the reading, the timer display shows the new exposure time.
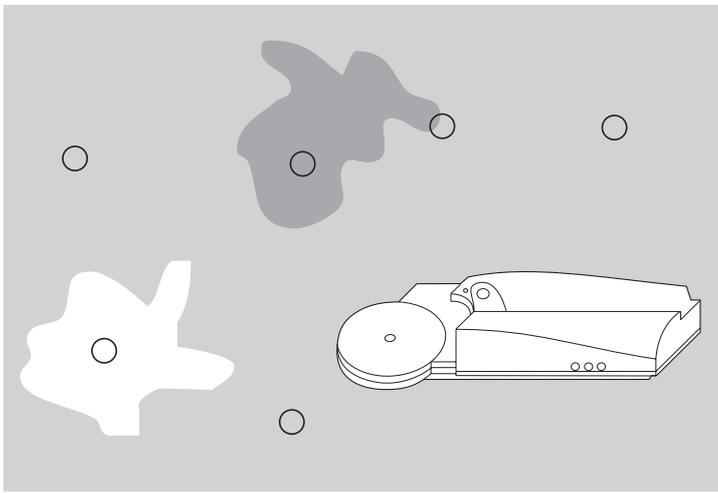
6.6.2
Manual scan reading (spot reading)

With spot reading the brightness values of the main elements of the image are stored by pressing the key on the mouse.
  The Pictograph AF finds the gradation from the brightest and darkest spot readings, and the exposure time from the average of all the spots read.

Example

Description and display

```
Grade=5.0 Contrast=0.02 D=20.0
f=150/11        m= 27.6    No.12345678
PC=02I    FC=1
GRADE          AUTO SCAN
```

1
Switch on spot reading

```
Grade=5.0 Contrast=0.02 D=20.0
f=150/11        m= 27.6    No.12345678
PC=02I    FC=1
GRADE    P.00  MAN SCAN
```

Light

2
Switch on the enlarger light.

3
Read the brightest and darkest spots and two to three main points on the image, pressing the key on the mouse. The „P" counter on the display shows the number of readings made (see diagram above).

Light

4
Switch off the enlarger light.
The timer display shows the new exposure time.

Expose/Start

5
Expose, press key „Expose/Start".

Note
Read a negative only once and save the data in the machine's main memory. For corrections recall the data from the main memory (for example see page 43).
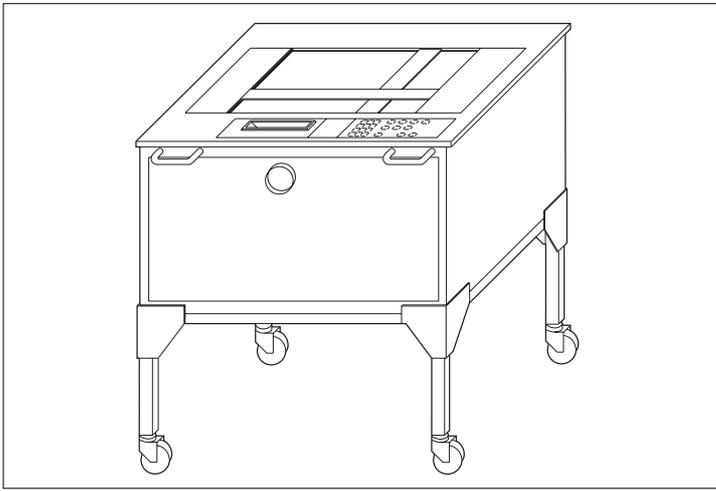
6.7
Working with the Durst Papermot roll paper easel

For the electrical connection of the roll paper easel refer to page 19.

Note
For serial exposures switch off the „Autoprint" function.

Burn-in function with the Durst Papermot roll paper easel
A second exposure can be made by entering the percentage of the main exposure. The main exposure must be made on the roll paper easel in the automatic mode, and the second exposure on the operating panel.

Example
A print is exposed with 10 sec. Except for one too bright print area, the overall print is good. The too bright area needs a 20% longer exposure time.

Description and display

1
Press „Time" key.

Time

```
TIME /

        Burn In =  0%   Dens Filt = 30
%TIME     %BURN IN          D.FILT    EXIT
```

2   0   →   Exit

```
Grade=5.0 Contrast=0.02 D=20.0
f=150/11         m= 27.6    No.=12345678
PC=02I     FC=1
GRADE          AUTO SCAN
```

2
New exposure data:
first exposure - 10 seconds for the complete print
second exposure - 2 seconds for the too bright area (covering the rest of the print).
The burn-in time is not displayed.
If a roll paper easel is connected, the first exposure is started from the easel and the second from the operating panel.

3
Start main exposure, press „Start/Enter" on the Papermot roll paper easel.

The easel curtain stays open in the automatic mode until the burn-in time has also expired.

Expose/Start

4
Start second exposure.
Press „Expose/Start" on the operating panel.

Option	1	Printer				Exit

	Job Print-out	Statistics Print-out	Calibration	Mode	Only main data

- 2 — Cyan filter
  - + On
  - − Off

- 3 — Contrast correction

- 4 — Job automatic
  - + On
  - − Off

- 5 — D filter 90
  - + On
  - − Off

- 7 — Statistics

Printer branch:
- Calibration
  - Paper channel Print-out
  - Print-out of all paper channels
  - Paper table print-out
  - Film channel print out
  - Exit
- Mode
  - Automatic print-out after exposure
    - + On
    - − Off
- Only main data
- All data
- All data but only for new job number

Statistics branch:
- Time on
- Total time on
- Time lamp on
- Total exposures
- Print-out statistics

Option
With the „Option" key you start a programme for setting, switching on, checking or printing certain functions or data.

Functions for switching on/off
- Automatic print-out of the exposure data after each exposure.
- Slotting the cyan filter in or out.
- Automatic storage of the exposure data (job) after each exposure
- Simultaneous slotting in of both D30 and D60 density diaphragms.

Functions for setting or checking
- Setting one of the three print-out options:
  only the main data
  all data
  all data, but only when a new job number is entered
- Setting the contrast correction in per cent
- Checking the statistical data

Data print-out
Print-out of the jobs
Print-out of the statistical data
Print-out of the paper channels
Print-out of the paper tables
Print-out of the film channels

Examples
Printing out the exposure data of a negative

Description, display and print-out

Press „Sto/Print" key.

Sto/Print

```
Grade=5.0 Contrast=0.02 D=20.0
f=150/11        m= 27.6    No.=12345678
PC=12I     FC=2
GRADE          AUTO SCAN
```

```
Order N.= 12345678  Job= 15   AUTO SCAN
PC=12I FC=2  Box 450.0    f= 150/11
Grade=5.0 Contrast=0.02 D= 20.0 m= 27.6
Burn In=  NO   DF=  0  Time=  10.01s
```

Printing out a paper channel, e.g. channel 20.

Option

```
OPTION                              1
 1: PRINT     4: AUTOSTORE 7: STATISTICS
 2: CYAN FILT 5: D-90-FILT 8:
 3: CONTRAST  6:
```

Select the printer with key „1" and press „Exposure/Start".

1   Expose/Start

```
OPTION / PRINT


JOB    STATIST.  CALIBR.   MODE      EXIT
```

Press the arrow key.

↓

```
OPTION/PRINT/CALIBR.

PAPER    ALL PAPER PAPER    FILM
CHANNEL CHANNELS   TABLE   CHANNEL   EXIT
```

Enter „20" and press the arrow key.

2   0   ←

```
PK=20          D-CAL=200.0    X-COMP=1.000
```

Printer print-out

```
OPTION/PRINT/CALIBR.

PAPER    ALL PAPER PAPER    FILM
CHANNEL CHANNELS  TABLE    CHANNEL    EXIT
```

Print out of all the paper channels with the arrow key.

⟶

```
PC=00          D-CAL=200.0    X-COMP=1.000
PC=01          D-CAL=202.0    X-COMP=1.000
PC=02          D-CAL=200.0    X-COMP=1.000
PC=03          D-CAL=200.0    X-COMP=1.000
PC=04          D-CAL=200.0    X-COMP=1.000
PC=05          D-CAL=200.0    X-COMP=1.000
PC=06          D-CAL=200.0    X-COMP=1.000
PC=07          D-CAL=200.0    X-COMP=1.000
PC=08          D-CAL=200.0    X-COMP=1.000
PC=09          D-CAL=200.0    X-COMP=1.000
PC=10          D-CAL=179.9    X-COMP=1.000
PC=11          D-CAL=198.9    X-COMP=1.000
PC=12          D-CAL=204.9    X-COMP=1.017
PC=13          D-CAL=200.0    X-COMP=1.000
PC=14          D-CAL=200.0    X-COMP=1.000
PC=15          D-CAL=202.0    X-COMP=1.000
PC=16          D-CAL=200.0    X-COMP=1.000
PC=17          D-CAL=200.0    X-COMP=1.000
PC=18          D-CAL=200.0    X-COMP=1.000
PC=19          D-CAL=200.0    X-COMP=1.000
PC=20          D-CAL=200.0    X-COMP=1.000
PC=21          D-CAL=200.0    X-COMP=1.000
PC=22          D-CAL=200.0    X-COMP=1.000
PC=23          D-CAL=200.0    X-COMP=1.000
PC=24          D-CAL=200.0    X-COMP=1.000
PC=25          D-CAL=200.0    X-COMP=1.000
PC=26          D-CAL=200.0    X-COMP=1.000
PC=27          D-CAL=200.0    X-COMP=1.000
PC=28          D-CAL=200.0    X-COMP=1.000
PC=29          D-CAL=200.0    X-COMP=1.000
```

Printer print-out

```
OPTION/PRINT/CALIBR.

PAPER    ALL PAPER PAPER    FILM
CHANNEL CHANNELS  TABLE    CHANNEL    EXIT
```

Printing out a paper table

Press the arrow key.

↓

```
┌─────────────────────────────────────────────┐
│ OPTION/PRINT/CALIBR./PAPER T.          1    │
│  1:FIX G.=F   4:AGFA   =A  7:X              │
│  2:ILFORD=I   5:U          8:Y              │
│  3:KODAK =K   6:T                 EXIT      │
└─────────────────────────────────────────────┘
```

⬭ ⬮   ⬭

2   Sto/Print   Exit

Select paper table „2" and press „Sto/Print".

Printer print-out

```
PAPER TABLE: I

Grade        Contrast     Y-Filt.      M-Filt.     D-Komp.
00           1.60         129.0          0.0       +26.0
0.0          1.40          85.0          0.0       +22.0
0.5          1.30          68.0          0.0       +20.0
1.0          1.20          45.0          0.0       +16.0
1.5          1.10          27.0          0.0       + 9.0
2.0          1.00           0.0          0.0       - 3.0
2.5          0.90           0.0          3.0       + 0.0
3.0          0.80           0.0         43.0       +18.0
3.5          0.73           0.0         62.0       +25.0
4.0          0.65           0.0         75.0       +28.0
4.5          0.58           0.0        115.0       +32.0
5.0          0.50           0.0        170.0       +36.0
```

```
┌─────────────────────────────────────────────┐
│ OPTION/PRINT/CALIBR.                        │
│                                             │
│ PAPER    ALL PAPER PAPER     FILM           │
│ CHANNEL  CHANNELS  TABLE     CHANNEL  EXIT  │
└─────────────────────────────────────────────┘
```

Printing out a film channel, e.g. channel 2.

⬭ ⬭ ⬮   ⬭

↑   2   Sto/Print   Exit

Enter film channel „2" and press „Sto/Print".

```
┌─────────────────────────────────────────────┐
│ OPTION/PRINT/CALIBR./FILM CH.          1    │
│  1:STANDARD    4:Film 4      7:Film 7       │
│  2:I/XP        5:Film 5      8:Film 8       │
│  3:Film 3      6:Film 6            EXIT     │
└─────────────────────────────────────────────┘
```

Printer print-out

```
Film FC 2

Grade        Y-Offset     M-Offset     D-Offset
00           +10.0        + 0.0        + 0.0
0.0          + 5.0        + 0.0        + 0.0
0.5          + 2.5        + 0.0        + 0.0
1.0          + 0.0        + 0.0        + 0.0
1.5          + 0.0        - 2.5        + 0.0
2.0          + 0.0        - 5.0        + 0.0
2.5          + 0.0        - 7.5        - 4.0
3.0          + 0.0        -10.0        - 8.0
3.5          + 0.0        -12.5        - 6.5
4.0          + 0.0        -15.0        - 5.0
4.5          + 0.0        -20.0        - 4.0
5.0          + 0.0        -25.0        - 3.0
```

6.8.2
Cyan filter

The ability of the cyan filter to suppress the basic fog level with long exposure times produces better whites on the final print.

Example
Slot in cyan filter

Description and display

Press „Option" key.

Option

```
OPTION                              1
 1: PRINT     4: AUTOSTORE 7: STATISTICS
 2: CYAN FILT 5: D-90-FILT 8:
 3: CONTRAST  6:
```

2   Expose/Start

Enter „2" and press „Expose/Start".

```
OPTION/CYAN-FILTER
Cyan Filter = out
Switch in or out with +/- keys
                              EXIT
```

+/-   Exit

Slot in cyan filter with „+" key.
Press „Exit" key twice.

6.8.3
Contrast correction
Contrast adaption affects all the paper tables.
The correction is entered in per cent.

Example:
+ 20% = increase in contrast
– 20% = decrease in contrast
20% is roughly equivalent to a complete gradation step. Correction range: –30% to +30%.

6.8.4
Job memories
The following exposure data are needed to repeat an exposure:
• gradation
• exposure time
• reproduction scale
• focal length of lens
• aperture
• mixing box
• density filters
• paper channel
• film channel
• burn-in time (if this was also set for the first exposure)

All this data and some extra functions which also affected the first exposure such as job number, contrast, type of reading (Autoscan or Man Scan), density display and cyan filter, can optionally either be stored automatically after each exposure or by entering a number in the job channel.

Note
With Job Automatic switched on, when the „RCL/Show" key is pressed, the next higher job number is always displayed (preparation for automatic saving of the following job).

Automatic print–out
When this function is switched on and a printer is connected, the exposure data is automatically printed out after each exposure.
  If a roll paper easel is connected, switch off the „Automatic Print-out" function for serial exposures. Otherwise the same data would be printed out after each exposure.

Automatic storage
When Job Automatic is switched on, the data is automatically saved on the job channel after each exposure: the first exposure for the job just set, the following in job 1 etc., until channel number 198 (if the channel is full, a message is displayed). The job memories can be overwritten at any time. This automatic storage system can be started from any job channel from 0 to 198.

Example
• Switch on Job Automatic
  Enter the number of the job channel on which the job is to be saved (e.g. 20)
• Press „Sto/Print" key
• Expose
The exposure data is saved in job channel 20, the next exposure in job 21 etc.

Manual storage
With manual storage (Job Automatic switched off) you enter the desired job number and press the „Sto/Print" key.

Calling the jobs
• Select the job number
• Press the „RCL/Show" key

The data which has to be checked is displayed, such as:
• mixing box
• focal length
• aperture
• reproduction scale
All the other data is set automatically.

6.8.5
D filter 90
When this function is switched on, the two density diaphragms slot in with the lamp switched off.

Preheating, which has the advantage of suppressing the cold/warm drifting of the lamp, may result in unwanted light when the film carrier is removed. Particularly when there are several enlargers in one darkroom, or with double exposures for which the negative has to be exchanged while the paper is still in the paper frame, this light leak may be a nuisance.

In these cases, switch off the enlarger light before taking out the film carrier. We also recommend using the mixing box shutter available as a special extra.

6.8.6
Statistics
The Statistics programme shows the following information.
• Length of time on
  Displays the operating hours since the enlarger has been switched on. When the enlarger is switched off and on again, the hour counter is automatically zeroed.
• Total time switched on
  Displays the operating hours since purchase of the enlarger. This display cannot be reset to zero.
• Lamp time on
  Displays the time the lamp has been switched on. When the lamp fails, the hour counter is automatically set to zero.
  To zero the hour counter for a lamp which has not failed, you just need to switch the enlarger light on and off quickly without the lamp fitted.
• Total exposures
  Display of the exposures made since purchase of the enlarger. Blank exposures are also counted. This display cannot be zeroed.
All this data can be printed out if a printer is connected.

7.0

⚠

Switch it off and pull out the main plug before cleaning.

Use only a clean soft cloth. No liquid must get inside the equipment. Never use corrosive cleaning agents.

⚠

The main plug must be pulled out before faulty fuses are replaced.

The fuse is on the back of the timer (the rating is marked). If the breakdown is not repaired by replacing the fuse, contact a service engineer (also if the same fuse blows successively).

Time	Machine parts	Note
Daily	Clean the following parts: • film carrier glasses • lenses • mixing boxes	Clean with chamois leather, anti-static brush or anti-static cloth.
Once a month	Dust filter on the back of the machine head.	Clean with warm water
Every six months	Lubricate the following parts: • the counter-weight springs • both guide rods of the lens carrier • the lens carrier spindle	With Vaseline or mineral oil. **Warning** Clean off oil deposits before relubricating. **Note** If the counter-weight springs are damaged, they must be replaced by the service engineers.

8.0

Display AF operating panel	Cause	Remedy

| Err5 | | Enlarger head adjustment blocked |

⬯
Enter

If this fault occurs several times, please contact our Durst main agent after-sales service.

| Err6 | | Thirty base points were exceeded when programming the autofocus. |

⬯
Enter

Delete the support points

⬯   ⬯   (−)   (+)

AF-setup   Enter   Clear

Reprogramme the autofocus

| Err7 | | Lens carrier blocked |

⬯
Enter

If this fault occurs several times, please contact our Durst main agent after-sales service.

| E | | Memory figures deleted! Possibly the battery is exhausted. | Please contact our Durst main agent after-sales service. |

9.0

Nb.	Display		Cause

1
```
Exposure time out of range !
Modify F-Stop or D-Filter and
enter exposure time
Press Clear to continue.
```

N.B.
The cause and remedy for
fault warnings 1 - 9 are self-explanatory.

2
```
Reciprocity compensation factor
out of range 0.90 - 1.20
Enter a lower density correction
Press Clear to continue.
```

3
```
Exp. Time out of calibration
range  1 - 16 s.
Modify f.stop and repeat scanning.
Press Clear to continue.
```

4
```
Enter values in the range of
          00 / 0.0 - 5.0
Press Clear to continue.
```

5
```
D-Comp for Grade 2.5 is fixed to 0.0

Press Clear to continue.
```

6
```
To little light :
Modify F-Stop or D-Filter
Press Clear to continue.
```

7
```
To much light :
Modify F-Stop or D-Filter
Press Clear to continue
```

8
```
Scanning buffer overflow
Repeat scanning
Press Clear to continue
```

9
```
Scanning time to short
Repeat scanning
Press Clear to continue
```

Nb.	Display	Cause	Remedy
10	ERROR 1-RAM memory defect - switch the power OFF and ON to check if RAM really defekt - call customer service	This fault warning appears when the RAM lithium battery is exhausted (battery life approx. 10 years).	Switch off the enlarger and switch on again. If this fault warning still appears, contact our Durst main agent after-sales service.
11	ERROR 4: Colour head not connected or W.Light error. Call customer service.	This fault warning appears when the enlarger is switched on, if the head is not connected to the services unit.	Connect the cables. Please contact our Durst main agent after-sales service.
12	No. Light. Switch power off and replace lamp	This fault warning appears when the lamp is switched on (light or W. Light), or when an exposure is started. The lamp or lamp fuse is faulty.	• Check the lamp and lamp fitting. • Check the lamp fuse.
13	Loop error: Switch power off and replace lamp • Lamp defect? • Lamp positioned correctly?	If this fault warning appears when the lamp is properly fitted and not faulty, the lamp circuit is not in order.	• Check the lamp and lamp fitting. • Lamp the lamp fuse. If the fault is still present after doing this, contact our Durst main agent after-sales service.
14	ERROR 2: OFFSET A/D-Conv. out of range. Call customer service.	Zeroing on test 11 out of range.	Please contact our Durst main agent after-sales service.

Ilford Multigrade III RC De Luxe

Gradation	Contrast	Yellow	Magenta	D Comp.
00	1.60	129	-	+ 26
0.0	1.40	85	-	+ 22
0.5	1.30	68	-	+ 20
1.0	1.20	45	-	+ 16
1.5	1.10	27	-	+ 9
2.0	1.00	-	-	- 3
2.5	0.90	-	3	-
3.0	0.80	-	43	+ 18
3.5	0.73	-	62	+ 25
4.0	0.65	-	75	+ 28
4.5	0.58	-	115	+ 32
5.0	0.50	-	170	+ 36

Agfa Multicontrast

Gradation	Contrast	Yellow	Magenta	D Comp
00	1.70	130	-	+ 23
0.0	1.60	103	-	+ 21
0.5	1.50	87	-	+ 19
1.0	1.40	70	-	+ 17
1.5	1.30	48	-	+ 12
2.0	1.20	25	-	+ 5
2.5	1.10	13	-	-
3.0	1.00	-	15	+ 1
3.5	0.90	-	38	+ 13
4.0	0.80	-	60	+ 21
4.5	0.70	-	87	+ 27
5.0	0.60	-	170	+ 32

Ilford Multigrade RC XPRESS Gradation

Gradation	Contrast	Yellow	Magenta	D Comp
00	1.70	120	-	+ 25
0.0	1.60	100	-	+ 23
0.5	1.50	85	-	+ 21
1.0	1.40	67	-	+ 17
1.5	1.30	48	-	+ 13
2.0	1.20	37	-	+ 9
2.5	1.10	18	-	-
3.0	1.00	-	2	- 7
3.5	0.90	-	21	+ 3
4.0	0.80	-	43	+ 12
4.5	0.70	-	75	+ 21
5.0	0.58	-	170	+ 28

Labophot Multiscal

Gradation	Contrast	Yellow	Magenta	D Comp
00	1.70	85	-	+ 14
0.0	1.60	69	-	+ 12
0.5	1.50	57	-	+ 11
1.0	1.40	45	-	+ 11
1.5	1.30	33	-	+ 7
2.0	1.20	16	-	+ 2
2.5	1.10	4	-	-
3.0	1.00	-	16	+ 9
3.5	0.90	-	36	+ 18
4.0	0.80	-	55	+ 27
4.5	0.70	-	85	+ 36
5.0	0.60	-	170	+ 44

Ilford Multigrade FB

Gradation	Contrast	Yellow	Magenta	D Comp
00	1.60	144	-	+ 31
0.0	1.40	90	-	+ 28
0.5	1.30	70	-	+ 25
1.0	1.20	49	-	+ 20
1.5	1.10	30	-	+ 13
2.0	1.00	10	-	+ 5
2.5	0.90	0	0	-
3.0	0.80	-	30	+ 13
3.5	0.73	-	40	+ 16
4.0	0.62	-	57	+ 20
4.5	0.53	-	75	+ 23
5.0	0.43	-	170	+ 29

Argenta Variograde

Gradation	Contrast	Yellow	Magenta	D Comp
00	1.70	105	-	+ 8
0.0	1.60	90	-	+ 7
0.5	1.50	76	-	+ 6
1.0	1.40	61	-	+ 5
1.5	1.30	47	-	+ 4
2.0	1.20	33	-	+ 2
2.5	1.10	19	-	-
3.0	1.00	4	-	- 3
3.5	0.90	-	18	+ 8
4.0	0.80	-	37	+ 20
4.5	0.70	-	69	+ 35
5.0	0.60	-	170	+ 48

Kodak Polycontrast III

Gradation	Contrast	Yellow	Magenta	D Comp
00	1.60	69	-	- 1
0.0	1.40	45	-	- 5
0.5	1.30	33	-	- 6
1.0	1.20	16	-	- 11
1.5	1.10	4	-	- 16
2.0	1.00	-	16	- 7
2.5	0.90	-	28	-
3.0	0.80	-	52	+ 13
3.5	0.73	-	68	+ 20
4.0	0.65	-	80	+ 23
4.5	0.58	-	95	+ 27
5.0	0.50	-	170	+ 34

Kodak Polyprint RC

Gradation	Contrast	Yellow	Magenta	D Comp
00	1.70	53	-	+ 5
0.0	1.60	45	-	+ 3
0.5	1.50	27	-	- 2
1.0	1.40	10	-	- 9
1.5	1.30	-	3	- 12
2.0	1.20	-	16	- 7
2.5	1.10	-	42	-
3.0	1.00	-	80	+ 6
3.5	1.00	-	80	+ 6
4.0	1.00	-	80	+ 6
4.5	1.00	-	80	+ 6
5.0	1.00	-	80	+ 6

Agfa Multicontrast Premium

Gradation	Contrast	Yellow	Magenta	D Comp.
00	1.60	98	–	+ 30
0.0	1.40	75	–	+ 25
0.5	1.30	58	–	+ 22
1.0	1.20	45	–	+ 19
1.5	1.10	31	–	+ 14
2.0	1.00	18	–	+ 8
2.5	0.90	–	–	–
3.0	0.80	–	15	+ 8
3.5	0.73	–	38	+ 22
4.0	0.65	–	60	+ 30
4.5	0.58	–	80	+ 36
5.0	0.50	–	170	+ 44

Kodak Polymax RC

Gradation	Contrast	Yellow	Magenta	D Comp.
00	1.60	150	–	+ 46
0.0	1.40	95	–	+ 38
0.5	1.30	79	–	+ 33
1.0	1.20	62	–	+ 28
1.5	1.10	51	–	+ 24
2.0	1.00	40	–	+ 20
2.5	0.90	4	–	–
3.0	0.80	–	32	+ 10
3.5	0.73	–	58	+ 15
4.0	0.65	–	83	+ 19
4.5	0.58	–	127	+ 22
5.0	0.50	–	170	+ 23

Tetenal TT Vario Ultra

Gradation	Contrast	Yellow	Magenta	D Comp.
00	1.60	90	–	+ 23.5
0.0	1.40	63	–	+ 19.3
0.5	1.30	50	–	+ 16.3
1.0	1.20	40	–	+ 13
1.5	1.10	24	–	+ 8
2.0	1.00	7	–	+ 0.4
2.5	0.90	–	5	–
3.0	0.80	–	32	+ 17.3
3.5	0.72	–	45	+ 24
4.0	0.65	–	61	+ 30.6
4.5	0.58	–	100	+ 40.2
5.0	0.51	–	170	+ 46

Ilford Multigrade IV Papier

Gradation	Contrast	Yellow	Magenta	D Comp.
00	1.70	89	0	+22
0.0	1.50	69	0	+18
0.5	1.40	54	0	+13
1.0	1.30	40	0	+9
1.5	1.20	25	0	+3
2.0	1.10	10	0	-3
2.5	1.00	0	10	+0
3.0	0.90	0	20	+2
3.5	0.80	0	38	+8
4.0	0.70	0	56	+14
4.5	0.60	0	82	+18
5.0	0.50	0	170	+24

EU–Conformity declaration

CE

We,

Durst Phototechnik
AG
Postfach 223
Vittorio-Veneto-Straße 59
I-39042 Brixen

declare, that the apparatus named hereafter complies with the applicable EU Safety and Health Guidelines.
  This declaration is void, if any alterations to the apparatus have been implemented prior to our consent.

Nature of the apparatus: Enlarger

Type: Durst Pictograph AF

Applicable EU Guidelines: 73/23/EEC
                                                      89/336/EEC
                                                      93/31/EEC

Applied Standard in particular: EN 60950, EN 55022, EN 50082-1,
                                                      EN 55024-2, EN 55024-3, EN 55024-4

Date: Brixen, August 1995

Manufacturer's signature:

Title of Signer: Dr. Richard Piock
                                                      Managing Director

Improvements

Improvements

durst

IV48035