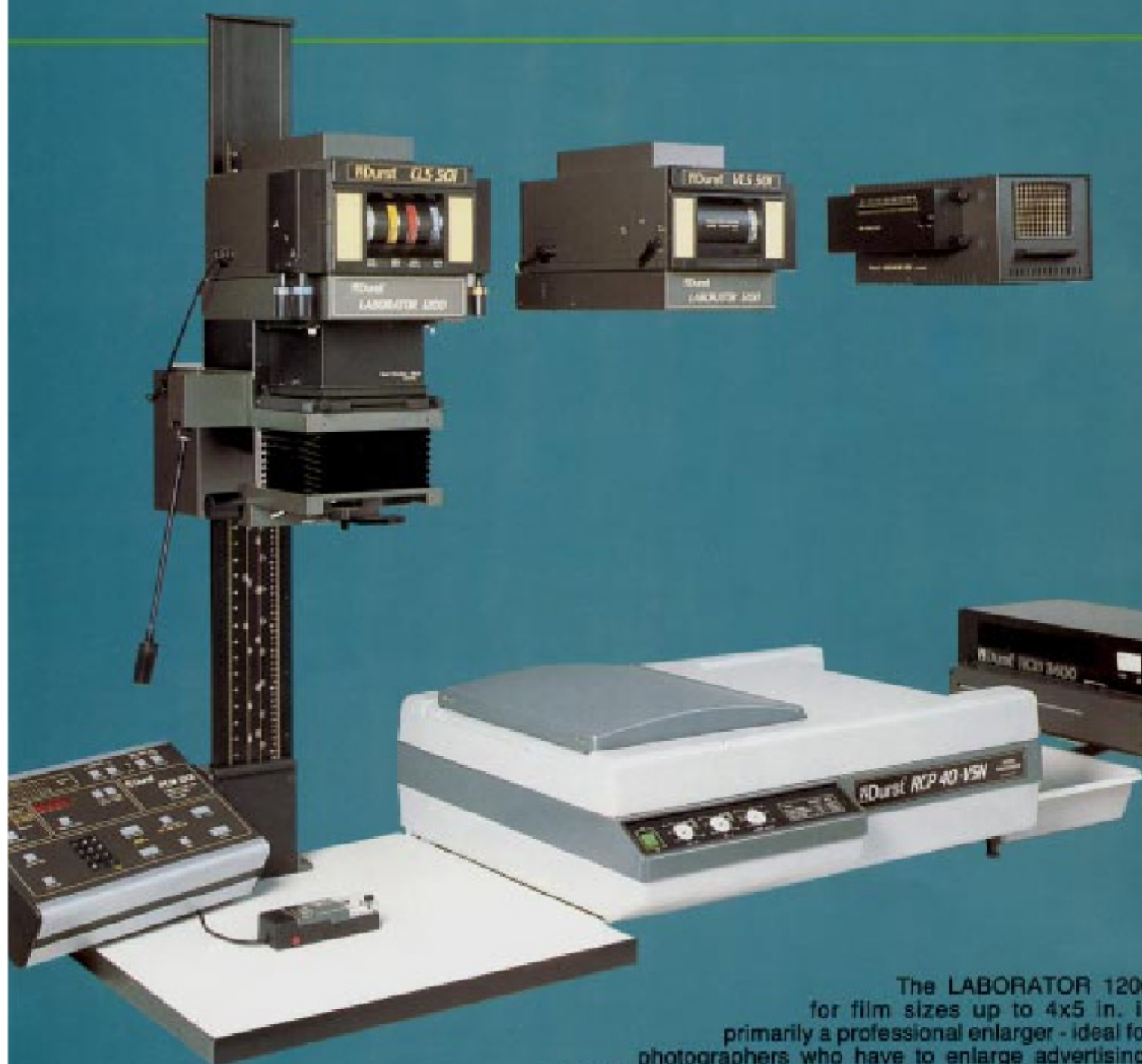


English

Durst *LABORATOR* *1200*



The modular enlarger system



The LABORATOR 1200 for film sizes up to 4x5 in. is primarily a professional enlarger - ideal for photographers who have to enlarge advertising architectural and high-quality portrait pictures. The new VARIPOINT 1200 point source condenser lighting unit is particularly useful for perfect enlargements from difficult electron micrographs. Through its full-accessory system, you can be sure of the LABORATOR 1200 continuing to be the perfect enlarger for all future needs, too.

CLS 501

Colour head

Scope of application

- Individual control of professional enlargements (portrait, advertising and landscape pictures)
- Prints of non-standard sizes
- Low-cost entry point

Features and functions

Perfect illumination with direct lighting: a special diffuser with minimum light loss and mixing boxes matched to film sizes from 24x36 mm to 4x5 in. provide maximum light output.

Stepless dichroic filter adjustment (yellow, magenta and cyan) up to a densitometric 100 setting. Extension rods facilitate convenient filter adjustment even with the enlarger head at the top of the column (see Accessories for illustration).

Integral supplementary slide-in filter (45 yellow + 15 magenta) for enlarging old non-masked negatives.

Unique density diaphragm

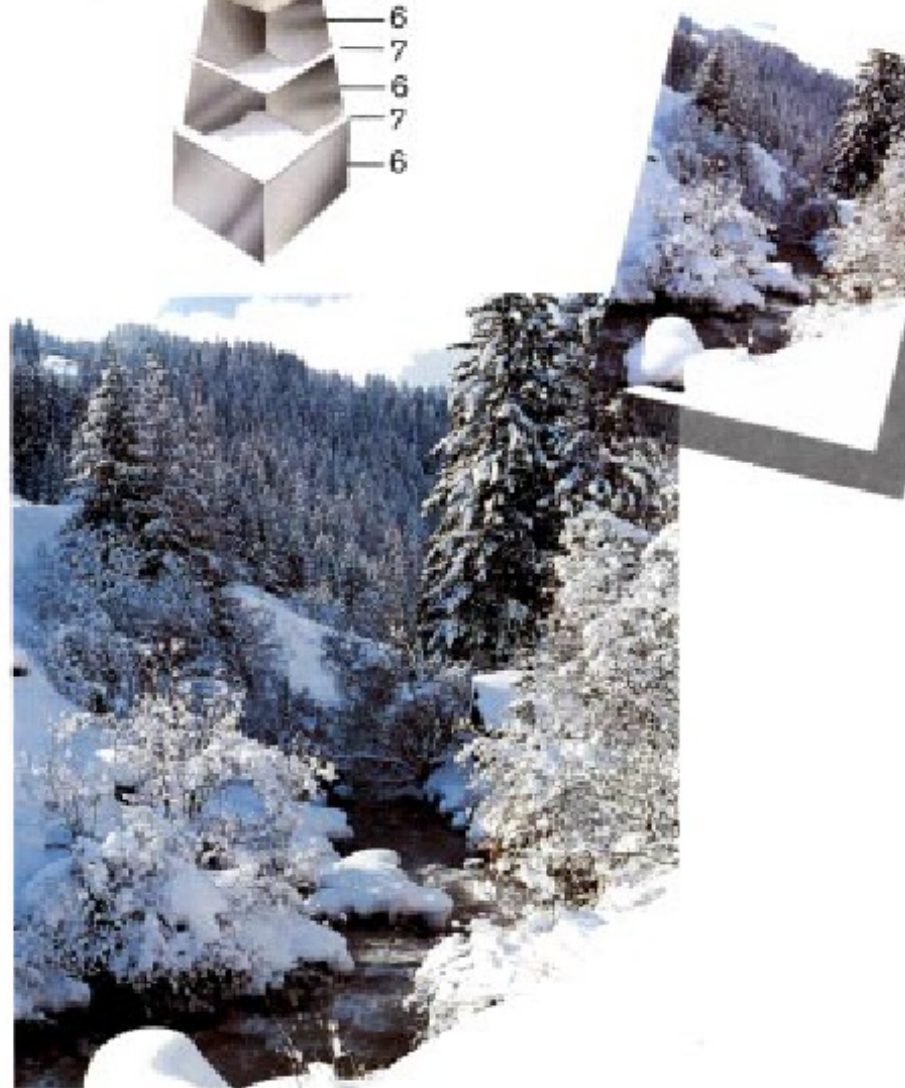
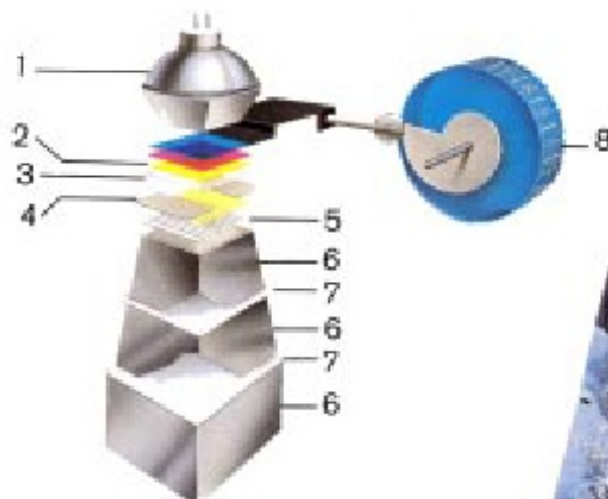
- Maintains the ideal working aperture while changing magnifications;
- Increases exposure times for reductions to minimize effect of afterglow;
- Extends exposure time at the ideal working aperture to simplify shading (dodging) and burning in.

The white-light lever withdraws the filters and density diaphragm from the light path for easier viewing of the projected image. A lamp signals this on the front panel.

Accessories

- FEMOBOX 69 N, 88 N and 35 N with the standard FEMONEG negative carrier
- BIMABOX 69 N, 88 N and 35 N with the BIMANEG negative carrier (used with the rotating FEBIDAP 6x9 cm negative carrier system available extra).

- ① Halogen lamp
- ② Filter pack
- ③ Heat absorbing filter
- ④ Density diaphragm
- ⑤ Special diffusing system
- ⑥ Mirror box
- ⑦ Diffuser
- ⑧ Filter wheel



VLS 501

Diffused illumination system for black-and-white

Scope of application

- Fast, convenient exposure on fixed-grade or variable-contrast black-and-white papers (grades 0 to 5).
- Diffused lighting system largely suppresses scratches and flaws in the negative.

Features and functions

Stepless gradation settings via a control knob.

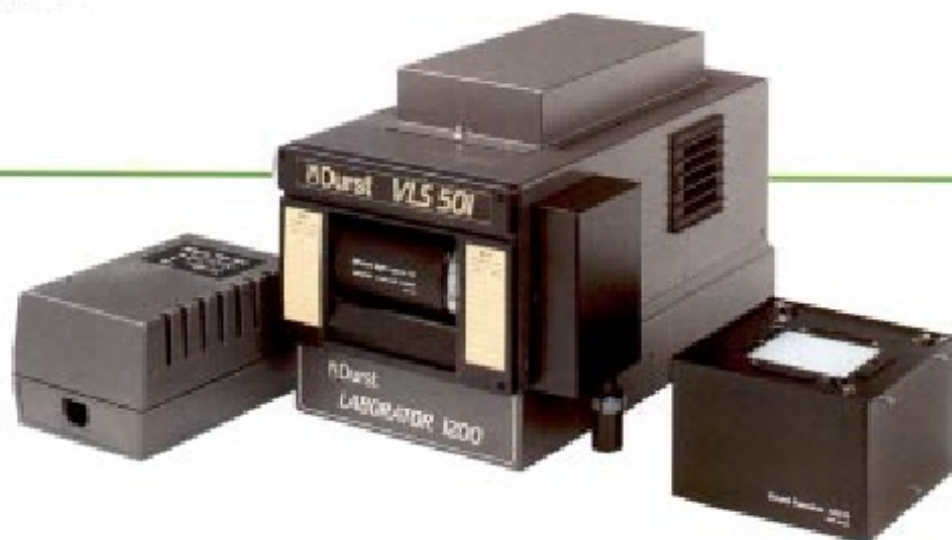
Constant exposure at all grades.

A special control mechanism for the filters and density diaphragm compensates exposure differences at the various gradation settings. This mechanism is disengaged for enlargements on fixed-grade papers.

Optimum highlight and shadow detail - particularly important when enlarging portrait negatives.

Accessories

- FEMOBOX 69 N, 66 N and 35 N with the standard FEMONEG negative carrier
- BIMABOX 69 N, 66 N and 35 N with the BIMANEG negative carrier (used with the rotating FEBIDAP 6x9 cm negative carrier system available extra).



Condenser system

VARIPOINT 1200 Point-source lighting

Scope of application

Enlarging low-contrast negatives and electron micrographs - see illustrations.

Features and functions

- Pin-sharp rendering of finest detail by point-source illumination.
- High contrast.
- Stepless light intensity control.
- Micrometer lamp holder adjustment for precise lamp centering.
- Coated condensers to match lenses of 50, 60, 80 and 150 mm focal length.

Advantage of point-source lighting (see illustration left)

A black disc lit by a point source projects a pinsharp shadow on the screen. With a diffused light source the same shadow appears blurred.

Accessories

FEMOCON 80-T - Double-condenser for 80 mm lenses

FEMOCON 60-T - Double-condenser for 60 mm lenses

FEMOCON 50-T - Double-condenser for 50 mm lenses

FEMOKIT (with opal lamp)

Scope of application

Enlarging low-contrast black-and-white negatives and copying.

Features and functions

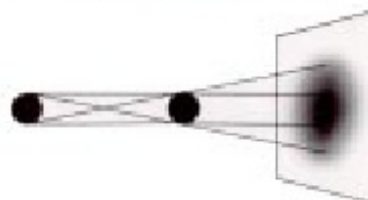
- The double condenser (for 150 mm lenses) yields concentrated directional illumination for sharp, high contrast enlargements even from soft negatives.
- Micrometer lamp holder adjustment for precise lamp centering.

Accessories

FEMOCON 80 - Double condenser for 80 mm and 80 mm lenses

FEMOCON 50 - Single condenser, may be used together with the FEMOCON 80 for lenses from 28 mm to 50 mm, and with the BIMACON 80 for 50 mm lenses.

BIMACON 80 - May be used with the FEMIDAP adapter to cover film sizes up to 6x6 cm (2 1/4 x 2 1/4 in.).



Basic enlarger

Features

Thanks to its interchangeable enlarger head the LABORATOR 1200 is very versatile. Here are the main features of the basic enlarger:

- Easy and rapid vertical movement with fine adjustment.
- Sophisticated enlarger for precise professional work with films up to 4x5 in., also for reductions and copying.
- Full Scheimpflug-type correction of converging verticals (Fig. 1). Converging lines not corrected during the camera exposure may be rectified during enlarging.
- Scale settings for repeat jobs (Fig. 2).



Technical data

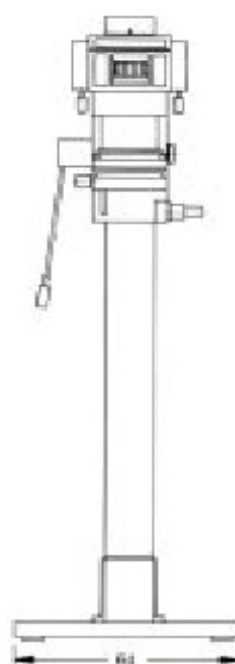
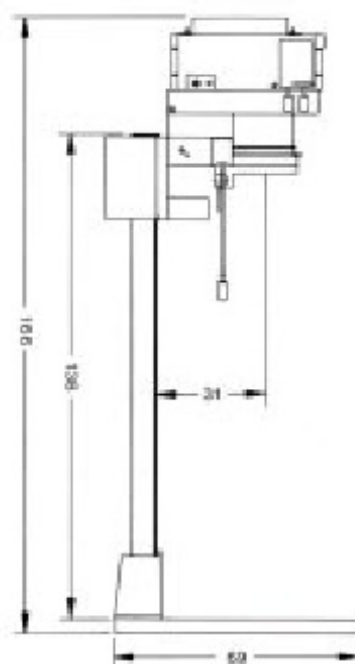
Basic enlarger

Column height: 136 cm (53.5 in.)
 Maximum column height (fully raised enlarger head): 166 cm (65.4 in.)
 Baseboard size: 4 x 64 x 69 cm (3.16 x 25.2 x 27.2 in.)
 Usable baseboard area: 64 x 57 cm (25.2 x 22.4 in.)
 Optical axis/column base distance: 31 cm (12.2 in.)
 Net weight: Approx. 45 kg (99 lbs)

Linear magnifications

Lens	Film size	Minimum*	Maximum*
150 mm	100 x 125 mm	1.5 x	5.5 x
135 mm	85 x 100 mm	1.1 x	5.3 x
105 mm	65 x 90 mm	0.8 x	4.7 x
100 mm	55 x 90 mm	0.7 x	4.0 x
80 mm	56 x 72 mm	2.5 x	12.1 x
50 mm	24 x 36 mm	5.4 x	19.8 x
35 mm	18 x 24 mm	9.0 x	30.6 x
28 mm	13 x 17 mm	11.0 x	36.8 x

* Approx. values



CLS 501

Light source: 250 watt/24 volt tungsten-halogen lamp
 Mains supply: Via TRA 500 transformer for: 100 volt/60 Hz, 110-120 volt/ 60 Hz or 220-240 volt/50 Hz
 Via stabilised EIST 500 transformer for: 110-140 volt/ 60 Hz or 180-260 volt/ 50 Hz
 Filters: Dichroic filters in yellow, magenta and cyan
 Filter densities: Up to 130 densitometric units (= D 1.3)
 Supplementary filters: Approx. 45 yellow / 15 magenta (= D 0.6)
 Diaphragm control: From 0 up to 60 densitometric units
 Dimensions: 530 x 290 x 300 mm
 Weight: Approx. 16 kg

VLS 501

Light source: 250 watt/24 volt tungsten-halogen lamp
 Mains supply: Via TRA 500 transformer 110/120 volt or 220 volt or 240 volt/50-60 Hz
 24 volt output voltage
 Contrast range: From 0 up to 5 (contrast steps being indicated in 0.5 units)
 Variable-contrast filters: From soft to hard
 Dimensions: 450 x 290 x 270 mm
 Weight: Approx. 9 kg

Condenser system VARIPOINT 1200

Film sizes: Up to 10 x 12.5 cm (4 x 5 in.)
 Light source: 12 volt 100 watt point source lamp
 Net weight: Approx. 7 kg (15.4 lbs)
 AC mains supply: Via transformer (100/110, 120/220/240 volts, 50-60 Hz); output voltage infinitely variable from 0 to 12 volts
 Power consumption: Approx. 100 watts
 Condensers, deflecting mirrors, negative carrier glasses: Specially coated

Note the following table of condenser combinations to cover different film sizes with the Durst LABORATOR 1200 and the VARIPOINT 1200.

Focal length of lens mm	Film size mm	Approx. linear magnifications		Condenser combination
		min.	max.	
150	100 x 125	1.5 x	5.5 x	FEWOCOR 152 T FEWOCOR 151 T
80	60 x 90	2.5 x	14.5 x	FEWOCOR 80 T
60	32 x 45*	5.2 x	19.5 x	FEWOCOR 60 T
50	24 x 36	5.4 x	23 x	FEWOCOR 50 T

* aperture cards

Note:

To avoid colour fringes and effects when using the Durst VARIPOINT 1200 point source lighting system always keep the lens at its full aperture.

Accessory range

① FEMOBOK 69 N, 68 N, 35 N with matching format masks

- FEMOMASK - Glassless masks for the standard FEMONEG negative carrier, for nominal film sizes of 24 x 36 mm, 4.5 x 6 cm (1 3/4 x 2 1/4 in.), 6 x 6 cm (2 1/4 x 2 1/4 in.), 6 x 7 cm (2 1/4 x 2 3/4 in.), 6 x 9 cm (2 1/4 x 3 1/4 in.), 8 x 12 cm (3 1/2 x 4 3/4 in.) and 10 x 12.5 cm (4 x 5 in.)

- FEMOGLA AN (4 x 5 in.)

- BINEMA - Glassless masks for the BINANEg negative carrier (for use with separate FEBIDAP adapter), for nominal film sizes of 24 x 36 mm, 4.5 x 6 cm (1 3/4 x 2 1/4 in.), 6 x 6 cm (2 1/2 x 2 1/4 in.), 6 x 7 cm (2 1/4 x 2 3/4 in.) and 6 x 9 cm (2 1/4 x 3 1/4 in.)

- BIDIA - To take mounted slides.

② FEMKA Copying outfit

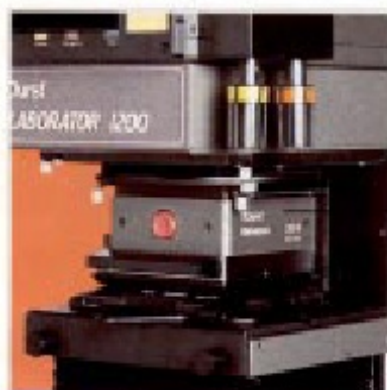
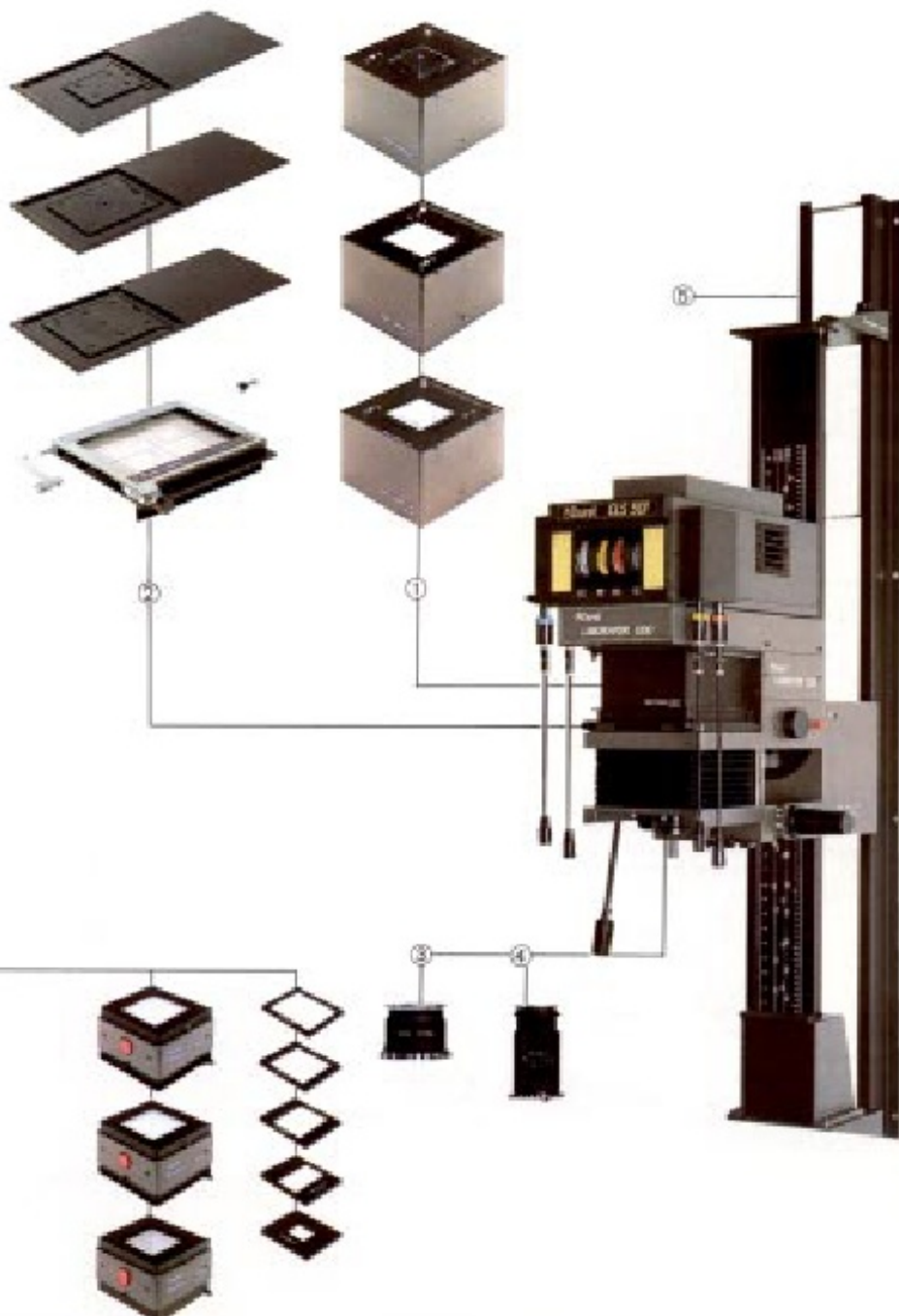
- FILMKA - Sheet film holders for 6.5 x 9, 8 x 12 and 10 x 12.5 cm (2 1/2 x 3 1/2, 3 1/2 x 4 3/4 and 4 x 5 in.) films

- LAPLA 39, 42, 50 - Lens boards

③ FEMOTUB for 1:1 reproduction (with 150 mm lens)

④ OUTUB 2 - Extension tube with stepless extension adjustment for high reductions

⑤ FEMOWAL IN



- FEBIDAP - 6 x 9 cm negative carrier system for rapid handling of 35 mm and 120/220 rollfilms, permits rotation of BINANEg negative carrier, with matching mixing boxes, condensers and format masks.

O p e r a t i n g m a n u a l

D U R S T O P T O C O M

B a s i c u n i t

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1. DESCRIPTIONS

DURST OPTOCOM - a modular enlarging system for printing
film originals up to 10 x 12,5 cm
(4 x 5 in.)

MODULAR CON- for matching unit components to your
STRUCTION requirements

SCOPE OF AP- colour as well as black-and-white work,
PLICATION: layout-matching enlargements, reductions,
 part enlargements

SAFE AND EFFICIENT OPERATION depending on unit outfit

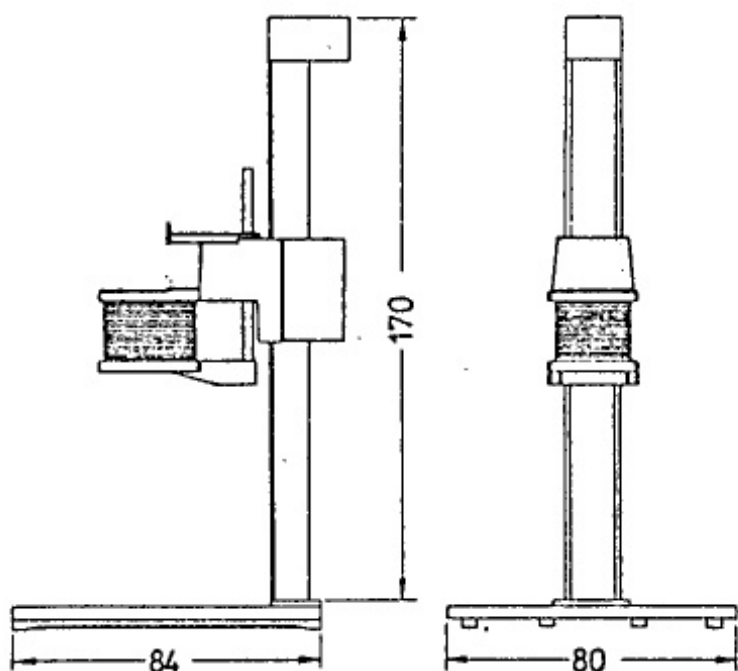
- by automatic print size determination and autofocus
- automatic exposure control
- use of various light sources

1.1. The basic unit's outfit

- * OPTO - EPU power supply unit
- * OPTO - MOT motor unit
- * EI - SINO mains lead
- * spanner with screws and two metal guides

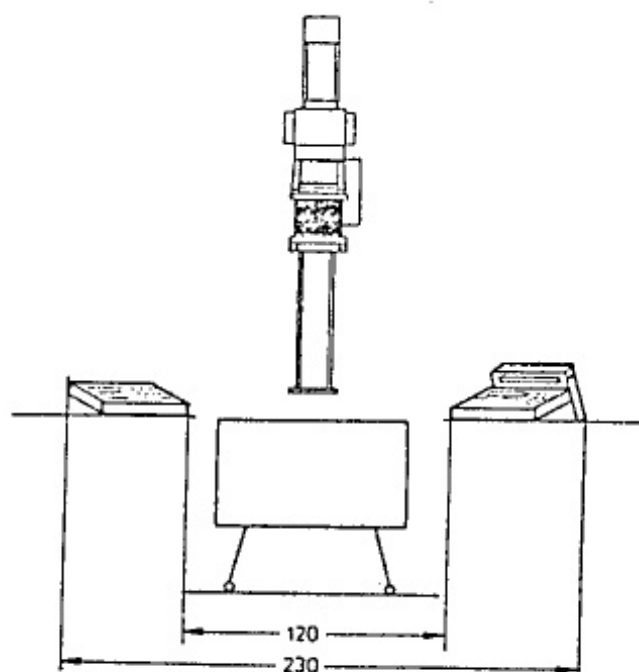
Basic unit

1.2. Dimensions



basic unit

1.3. Space requirements



outfit including roll
paper easel and auto-
matic exposure control
(AC 1201)

1.4. Technical data

Mains supply	: 220/240 V, 100/110/120 V, 50-60 Hz
Stabilising range	: + 10 % - 15 %
Power consumption	: approx. 400 VA max. (for outfit including all options)
Suggested ambient conditions	: 30 to 80% relative humidity, 25 to 55 degrees Celsius temperature
Column height	: 170 cm
Maximum height (enlarger head fully extended)	: 196 cm
Speed of adjustment smallest/largest magnification factor (autofocus version)	: approx. 10 seconds
Baseboard dimensions	: 80 x 84 cm
Usable baseboard area	: 80 x 70 cm
Optical axis/column base distance	: 35.8 cm
Net weight	: approx. 54 kg

M a g n i f i c a t i o n f a c t o r s				
Lens	Film size	minimum*	maximum*	maximum* (lab table)
150 mm	10 x 12.5 cm (4 x 5")	0.7 x	7.3 x	11.3 x
135 mm	9 x 12 cm	0.6 x	8.3 x	13 x
105 mm	6x7/6x9 cm	0.45 x	11.2 x	17.5 x
100 mm	6x7/6x9 cm	0.4 x	11.8 x	18 x
80 mm	4.5x6/6x6 mm	0.3 x	15.4 x	23.5 x
50 mm	24 x 36 mm	0.7 x	25 x	38 x

* indicative values

2. RANGE OF APPLICATIONS

What component combinations /light sources are available?

COLOUR PRINTING

 COLIKIT 1201 (CLS 501) colour head with continuously adjustable colour filters (Y, M, C, 0 - 130), built-in density control (0 - 60) and supplementary filters (45 Y, 15 M) as well as FEMOBOX 450 N mixing box.

 OPTO-col AUTOCOLOR system with built-in colour and exposure control, low correction and exposure timer complete with OPTO-col adapter and FEMOBOX 450 N mixing box.

 OPTO-AC 1201 colour head with automatic subtractive exposure control, low correction, automatic reciprocity failure compensation and VCNA translator mode; the outfit includes one FEMOBOX 450 N mixing box.

BLACK-AND-WHITE PRINTING

 VALIKIT 1201 (VLS 501) diffused light source for printing on conventional black-and-white enlarging paper as well as variable-contrast enlarging paper, complete with FEMOBOX 450 N mixing box.

 FEMOKIT B/W condenser light source for printing flat black-and-white negatives, complete with FEMOCON 151 and FEMOCON 152 condensers.

 VARIPOINT 1200 point light source for printing electron-microscope as well as technical negatives, complete with surface-coated FEMOCON 151T and FEMOCON 152T condensers.

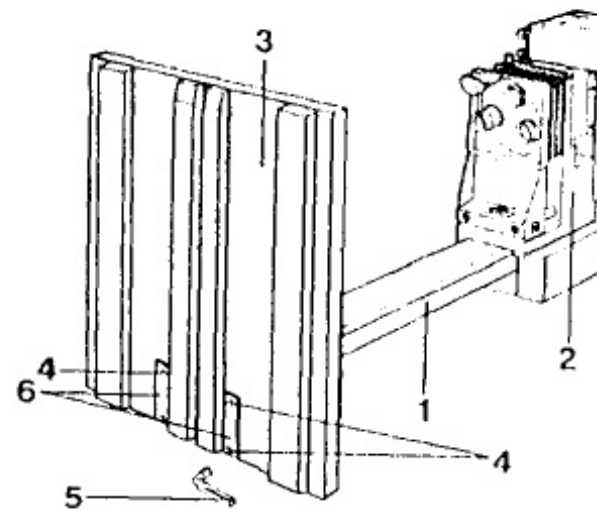
3. PREPARING THE BASIC UNIT

3.1. Cleaning

Before assembly clean all parts with a cloth.

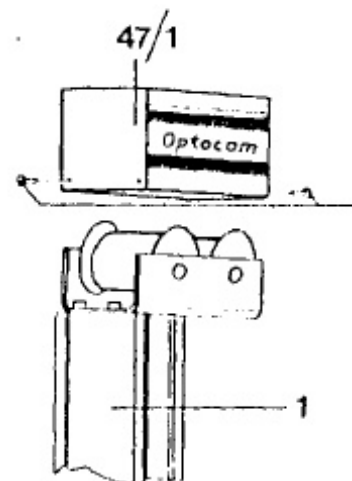
3.2. Mounting the baseboard

- * Place the column (1) and enlarger head support (2) on a table or the floor
- * Hold the baseboard (3) against the column (1) and secure with the socket head cap screws (4), ensuring that the reinforcing rails (6) are first fitted.
- * Tighten socket head cap screws with spanner (5)



3.3. Mounting the counterweight spring's cover plate

- * Place cover plate (47/1) on column (1)
- * Secure cover plate (47/1) with screws (48/1)



3.4. Balancing the counterweight springs

The two counterweight springs are factory adjusted to the weight of the heaviest enlarger head (AC 1201).

Upon fitting another enlarger head, adjust the counterweight springs as follows:

- * Remove screws 9/1
- * Remove cover 9/2
- * Remove screws 9/3
- * Lift cover 9/4
- * Remove screw 9/5
- * Either remove or insert metal plate 9/6, depending upon enlarger head being fitted (see charts 1, 2)

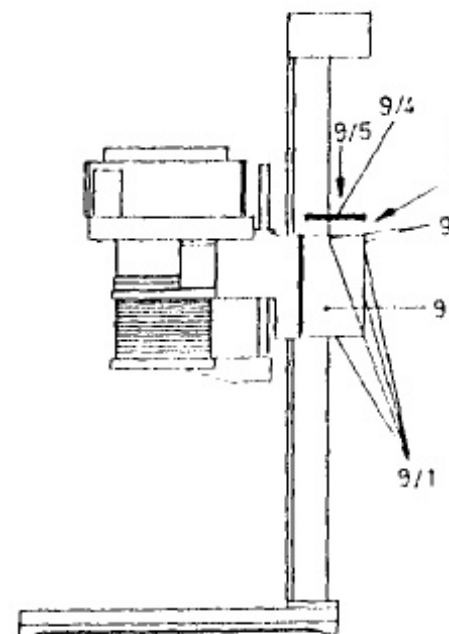


CHART 1

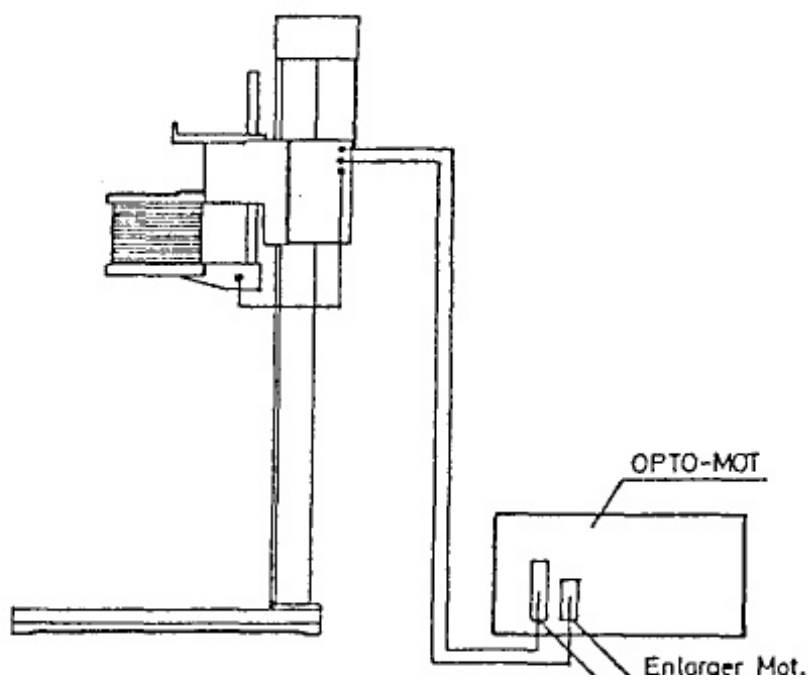
Enlarger head	Metal plates
AUTOCOLOR 1200	Insert 1 plate
CLS 501	Insert 4 plates
VLS 501	Insert 8 plates
VARIPOINT 1200	Insert 9 plates
FEMOKIT BH	Insert 9 plates

CHART 2

Enlarger head with FEBIDAP	Metal plates
AUTOCOLOR 1200	Remove 2 plates
CLS 501	Insert 1 plate
VLS 501	Insert 5 plates
VARIPOINT 1200	Insert 6 plates
FEMOKIT BH	Insert 6 plates

3.5. Establishing electrical connections

Establish the following cable connections



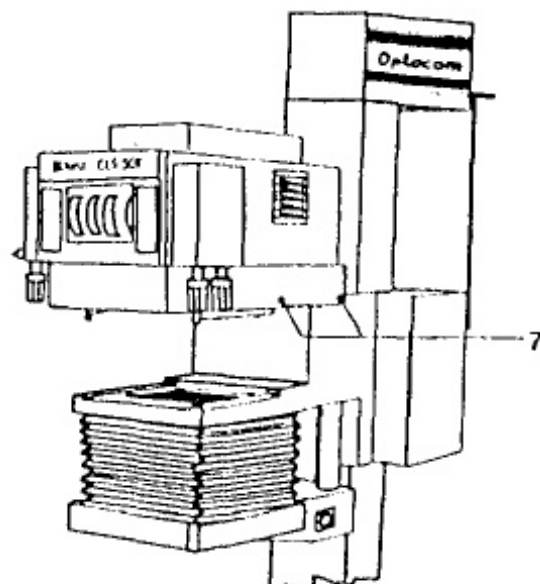
- * Cable (A) with "Enlarger Enc." socket
- * Cable (B) with "Enlarger Mot." socket

For plugging the unit into the mains

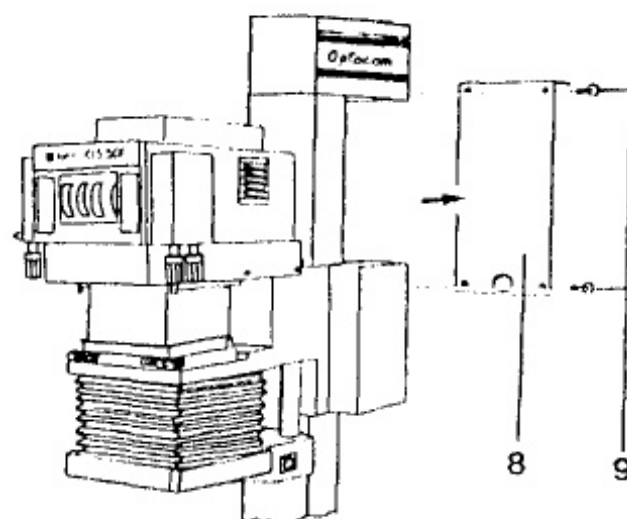
- * First mount the enlarger head
- * Then remove the shipping plate

For this proceed as follows:

- * Place enlarger head on baseboard
- * Secure enlarger head by means of knurled head screws (7)



- * Unscrew shipping plate (8)
 - at the rear of the column
 - by undoing screws (9)



3.6. Starting up the enlarger head

See operating manual of enlarger head being used

- CLS 501 / VLS 501 / VARIPOINT 1200 / FEMOKIT BW
- OPTO - AC 1201
- OPTO - COL

3.7. Fitting the film carrier

See operating manual of film carrier being used

- FEBIDAP / BIMANEG
- FEMONEG
- OPTONEG
- OPTOCROP - CARRIER

3.8. Mounting lens holder and lens panels

See lens holder/lens panels operating instructions.

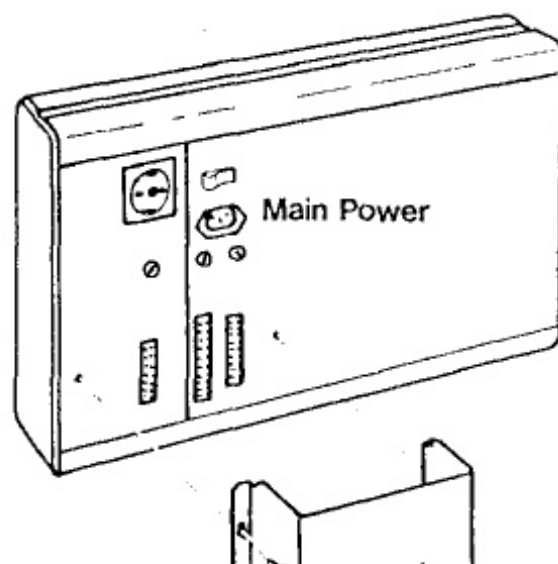
3.9. Connecting the basic unit to the mains

* Connect the basic unit to the mains supply

3.10. Fitting the cover plate

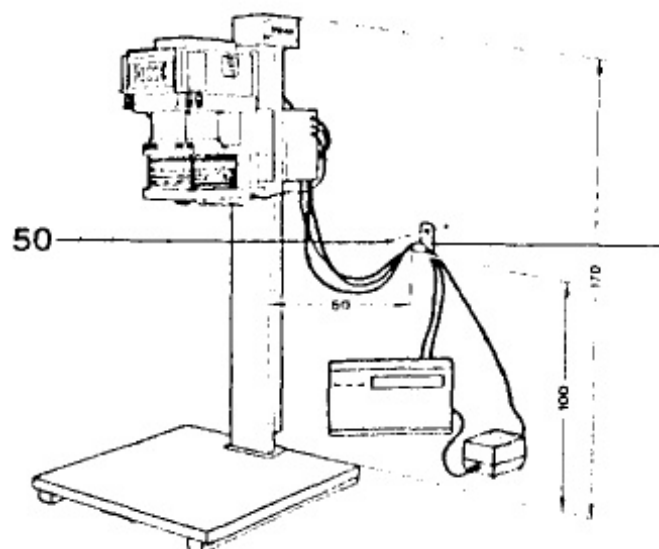
Screw down cover plate (47)
using screws (48)

Removing the cover plate:
Undo screws (48) and push
cover plate (47) upwards.



3.11. Mounting the cable holder of baseboard equipped unit versions

- * Screw hook (49) to the wall using screw (50)

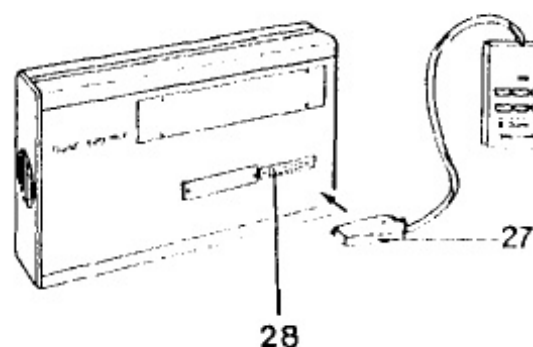


4. STARTING UP THE BASIC UNIT WITHOUT CONTROL PANEL

4.1. Electrical connection of remote control

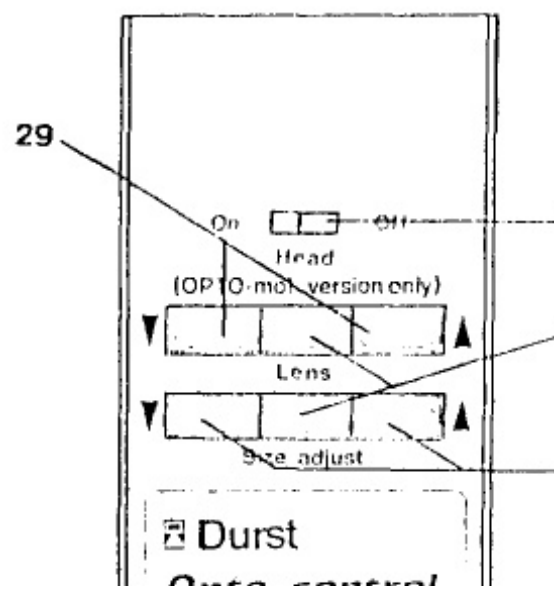
- * Connect plug (27) to socket (28)

- * Switch on the unit with the "Main Switch"



4.2. Description of remote control operating elements

- 29 - keys for up or down enlarger head movement
- 30 - keys for up or down lens movement
- 31 - "RAPID" keys for quick adjustment of lens stage and enlarger head
- 32 - On/Off switch for lens stage and enlarger head adjustments



NOTE: Before retro-fitting your Durst OPTOCOM with "OPTO-FUS" or "OPTO-FUS-MEMORY", call in the service department of your country's Durst Sole Agency.

5. STARTING UP THE BASIC UNIT WITH CONTROL PANEL

For this consult the OPTO-FUS/OPTO-FUS-MEMORY/OPTO-PRINTER/OPTO-TIM operating instructions

6. CARE AND MAINTENANCE

6.1. Maintenance

When	What	Note
Every 6 months	Lubricate following parts: - both counterweight springs - both lens stage guide rails - lens stage spindle	Use vaseline or mineral oil

ATTENTION: If the counterweight springs show signs of wear, have the service technician attend to it.

7. ACCESSORY RANGE

LAGUM: dust cover for basic unit and enlarger head

OPTOCOM ENLARGING SYSTEM

OPTOCOM BASIC UNIT

AUTOFOCUS	:	OPTO FUS OPTO FUS MEMORY OPTO PRINTER OPTO TIM	
EXPOSURE SYSTEMS	:	VARIPOINT 1200 FEMOKIT BW OPTOCOL OPTO AC 1201	CLS VLS
FILM CARRIERS	:	OPTONEG FEMONEG OPTOCROP-SYSTEM FEBIDAP	
LENS HOLDERS	:	OPTO UNO OPTO TRIS	
WALL MOUNTING	:	OPTO WAL	

OPTOCOM

O p e r a t i n g m a n u a l

D U R S T O P T O C O M

OPTO-FUS / OPTO-ECU / OPTO-FUS-MEMORY / OPTO-PRINTER / OPTO-TIM

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1. INTRODUCTION

OPTOCOM is a modular system.

The basic modules are:

- * OPTO-MOT - motor unit
- * OPTO-ECU - overall control
- * OPTO-FUS - autofocus control

Supplementary modules are:

- * OPTO-FUS-MEMORY - working memories (1-50)
- * OPTO-TIM - exposure timer
- * OPTO-PRINTER - data printer

OPTO-MOT / OPTO-ECU / OPTO-FUS

These modules offer the following advantages:

- * Simple operation - built-in user's guide by computer
- * Autofocus - prints are always in focus
- * Autosizing - by entering negative size and pro-
 jection size
 or by
 - entering magnification factor
- * Easy to servie - thanks to built-in test program

2. THE CODING SYSTEM

2.1. "Set-up" code 001

Memory for programming the autofocus. Optimum autofocus function ensured by absolutely precise focusing and projection size measurement.

Explanation of symbols you are frequently going to find in this operating manual.

Symbol	Outfit
●	with OPTO - TIM
○	without OPTO - TIM
▲	with OPTO - FUS - MEMORY
△	without OPTO - FUS - MEMORY
■	with OPTO - UNO single-lens holder
□	with OPTO - TRIS lens turret
XX XX	value depending upon programming and input

Aids: - "OPTO-FUS-NEG" line-test negative

Accessories: - line-plate order code IU 00310
 - professional focusing magnifier PROSCOP

2.1.1. Programming

* Removal:

- of end switch extension pins on lens stage
- of red filter or diffuser

* Switch on the unit with the main switch

Step	The following indications will appear in sequence on the display	Run-down of routine questions and their alternatives
------	--	--

▲ A1 DURST OPTOCOM-MEMORY
SETUP VERSION MP 30.10
Q.12

Head moves to reference
setting

△ A2 DURST OPTOCOM SETUP
VERSION ME 30.31 Q.12

● A3 m=XX,XXX NV= ±X,XX
PV=±XXX,X F/XX,X

Enter code 001
Press the "START" key

○ A4 m=XX,XXX NV=±X,XX
PV=±XXX,X

A5 IS TIMER OPTO-TIM IN-
TEGRATED? YES/NO

Do you use the OPTO-TIM
exposure timer?

YES	NO
Enter "YES"	Enter "NO"

A6 STEP 1: CARRIER 1 SE-
LECTED?

Did you select the no. 1 film
carrier?

YES	NO
Press "YES" ---> A 13	Press "NO" ---> A 7

A7 STEP 2A: CARRIER 1 =
FEMONEG? YES/NO

Are you using the FEMONEG
film carrier?

YES	NO
Press "YES" ---> A 11	Press "NO"

A8 STEP 2B: CARRIER 1 =
BIMANEG? YES/NO

Are you using the BIMANEG
film carrier?

YES	NO
Press "YES" ---> A 11	Press "NO"

A9 STEP 2C: CARRIER 1 =
OPTONEG? YES/NO

Are you using the OPTONEG
film carrier?

YES	NO
Press "YES" ---> A 11	Press "NO"

A10 STEP 2D: CARRIER 1 =
OPTOCROP-CARR. ? YES/NO

Are you using the OPTOCROP-
CARRIER?

YES	NO
Press "YES" ---> A 11	Press "NO" ---> A 7

A11 STEP 2E: GLASSLESS
CARRIER? YES/NO

Film carrier with glasses:
Press "NO"
Film carrier without glasses:
Press "YES"

A12 STEP 2F: USE THIS CAR-
RIER AS NR. 1! YES

Press "YES"

A13 UNIT IN OPERATION

A14 STEP 2: INSERT CARRIER
1! YES USE TEST NEG

Insert line-test negative in
no. 1 film carrier
Push film carrier into the
unit and press "YES"

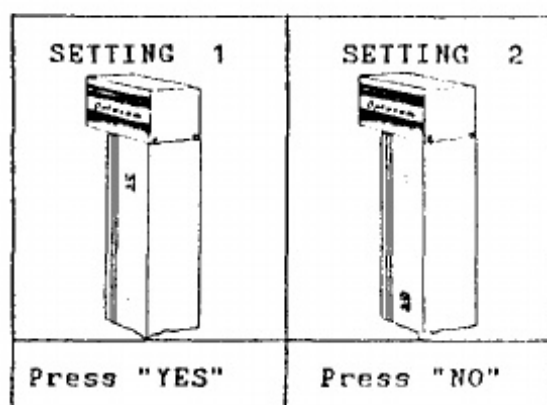
A15 STEP 3: SELECT LENS!
YES

Select lens
Press "YES"

A16 UNIT IN OPERATION

A17 USE MAXIMUM COLUMN
LENGTH? YES/NO

The Durst service engineer
can mount the limit switch
stop either on setting 1
or setting 2



---> A 18



---> A 19

A18 ENTER LENS CHANNEL
NR. 1/2/3/4

Enter the lens channel
Press "ENTER"

A19 STEP 4: ENTER FOCAL
LENGTH

Enter actual focal length value,
if same unknown, enter
nominal focal length value
Press "ENTER"

A20 STEP 5: ENTER HH

For HH values see on page ..
Enter HH value, if unknown,
enter "NULL"
Press "ENTER"

A21 UNIT IN OPERATION

Head moves to maximum magni-
fication factor setting

- A22 STEP 6: FOCUS MANUALLY WITH LENS! YES Switch on enlarger lamp
Focus with "SIZE/LENS ADJUST"
Press "YES"
- A23 STEP 7: MEASURE PROJECTED IMAGE OF XX MM ENTER Measure length being displayed on projection plane and enter in mm. Press "ENTER"
- A24 STEP 8: FOCUS MANUALLY WITH LENS! YES Focus by means of "SIZE/LENS ADJUST"
Press "YES"
- A25 STEP 9: MEASURE PROJECTED IMAGE OF XX MM ENTER Measure length being displayed on projection plane and enter in mm. Press "ENTER"
- A26 FOCAL LENGTH ERROR = XX, XX% IMPROVE YES/NO STEP 10 Press "YES" ---> A 23
NOTE: deviation smaller than 0,05% ---> A 27
- A27 UNIT IN OPERATION Head moves to 1:1 magnification factor setting
NOTE: display indication when programming 28 or 35 mm lenses: "MAG. OUT OF RANGE, PRESS YES, ENTER NEW m."
REMEDY: Press "YES"
While in STATUS mode enter the HH value of the lens being used (see page 12 step B10) End of programming
- A28 STEP 11: IMAGE IN FOCUS YES/NO  Switch on enlarger lamp
- Image in focus:
Press "YES" ---> A 30
- Image out of focus:
Press "NO"

A29 STEP 12: FOCUS MANUAL- Focus by means of:
 LY WITH HEAD! YES "HEAD ADJUST"
 Press "YES"

A30 END OF AUTOFOCUS SET- Would you like to program
 UP? YES/NO additional lenses?
 Yes: Press "NO" ---> A 14
 No : Press "YES"

A31 m=XX,XXX NV=±X,XX
 PV=±XXX,X F/XXX

End

A32 m=XX,XXX NV=±X,XX
 PV=±XXX,X

2.2. Status code 002

By entering known lens characteristics you may program or monitor your unit. Measuring and focusing won't be required for this.

Step	Display	Run-down of routine questions and their alternatives
------	---------	--

● B1 m=XX,XXX NV=±X,XX
PV=±XXX,X F/XXX

Enter code 002
Press "START"

○ B2 m=XX,XXX NV=±X,XX
PV=±XXX,X

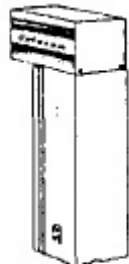
B3 IS TIMER OPTO-TIM INTEGRATED? YES/NO

Are you using the OPTO-TIM exposure timer?

YES	NO
Press "YES"	Press "NO"

B4 MODIFY WITH ENTER OR
CONTINUE WITH STEP
REF C = XXXX,X

Press "STEP " or REF.
Compare C value with table
below and if necessary change
Press "ENTER"
Press "STEP "

LIMIT SWITCH STOP	
SETTING 1 	SETTING 2 

Limit switch stop on setting 1		
Film carrier	REF C with-out glass	REF C with glass
FEMONEG	1410,0	1409,0
BIMANEG	1415,6	1414,9
OPTONEG	1409,0	1408,8
OPTOCROP	-	
CARR	1409,0	1408,8

Limit switch stop on setting 2		
Film carrier	REF C with-out glass	REF C with glass
FEMONEG	1183,8	1182,8
BIMANEG	1189,4	1188,7
OPTONEG	1182,8	1182,6
OPTOCROP	-	
CARR	1183,8	1182,8

B5 USING SINGLE LENS-BOARD? YES/NO

☒ Press "YES"
☐ Press "NO" ---> B7

B6 ENTER LENS CHANNEL NR. 1/2/3/4

Enter lens channel
Press "ENTER"

B7 ENTER LENS NR. 1/2/3

Enter lens number
Press "ENTER"

B8 ENTER CARRIER NR. 1/2/3/4

Enter film carrier number
Press "ENTER"

B9 MODIFY WITH ENTER OR CONTINUE WITH STEP LENS X CARRIER X
F = XXX, XX

Press "STEP " or change focal length "F"
Press "ENTER"
Press "STEP "

B10 MODIFY WITH ENTER OR CONTINUE WITH STEP
LENS X CARRIER X
HH' = $\pm$ XX, XX
Press "STEP " or change HH value
Press "ENTER"
Press "STEP "

B11 MODIFY WITH ENTER OR CONTINUE WITH STEP
LENS X CARRIER X
dA = $\pm$ XX, XX
Press "STEP " or change dA value
Press "ENTER"
Press "STEP "

B12 END OF CA STATUS YES/NO
Are you going to check, modify or program anew other lens channels?
YES: press "NO" ---> B 5
No : press "YES"

B13 m=XX, XXX NV= $\pm$ X, XX
PV= $\pm$ XXX, X F/XXX

END

B14 m=XX, XXX NV= $\pm$ X, XX
PV= $\pm$ XXX, X

2.3. NV code 003

If the film original's thickness differential is not known, use the user's guide code 003 (NV = negative variator)

Step	Display	Run-down of routine questions and their alternatives
C1	m=XX,XXX NV= $\pm$ X,XX PV= $\pm$ XXX,X F/XXX	Enter code 003 Press "START"
C2	m=XX,XXX NV= $\pm$ X,XX PV= $\pm$ XXX,X	
C3	STEP 30: USE LENS WITH SHORTEST FOCAL LENGTH! YES	Use the lens having the shortest focal length Press "YES" ☒ ---> C 4 ☐ ---> C 5
C4	ENTER LENS CHANNEL NR. 1/2/3/4	Enter appropriate lens channel Press "ENTER"
C5	UNIT IN OPERATION	
C6	STEP 31: FOCUS MANUAL- LY WITH LENS! YES	☐ Switch on enlarger lamp Focus by means of: "SIZE/LENS ADJUST" Press "YES" NOTE: if "STEP 32 NV OUT OF RANGE RETRY! YES" is being indicated, press "YES" ---> C 3
☒ C7	m=XX,XXX NV= $\pm$ X,XX PV= $\pm$ XXX,X F/XXX	
☐ C8	m=XX,XXX NV= $\pm$ X,XX PV= $\pm$ XXX,X	NV indicates the film original's thickness differential (mm) that has been established

END

2.4. PV code 004

NOTE: These instructions are only meant for the establishment of the thickness differential of paper easels. In all other cases the distance differential relative to the reference plane must be measured by hand and the respective value entered.

Step	Display	Run-down of routine questions and their alternatives
------	---------	--

- | | | |
|---|--|--|
| ● | D1 m=XX,XXX NV=+X,XX
PV=+XXX,X F/XXX | Enter code 004
Press "START" |
| ○ | D2 m=XX,XXX NV=+X,XX
PV=+XXX,X | |
| | D3 USING ENLARGER WITH
BASEBOARD YES/NO? | Upon using:
- baseboard-equipped enlarger
or lab furniture with unit
table in no. 1 setting

Press "YES"

- enlarger without baseboard
or lab furniture with unit
table in setting 2, 3, 4 or 5 |

Press "NO"

- D4 REMOVE FROM BASEBOARD
ALL ITEMS YES All items are to be taken off the baseboard
NOTE: upon using the 50 mm lens, remove the following parts, if they are still mounted:
- limit switches' extension pins of the lens stage
- diffuser or red filter
Press "YES"
- D5 UNIT IN OPERATION Enlarger head moves to the 1 : 1 magnification setting
- D6 STEP 40: FOCUS MANUALLY WITH HEAD! YES ☐ Switch on enlarger lamp
Focus by means of:
"HEAD ADJUST"
Press "YES"
NOTE: if "STEP 41: PV OUT OF RANGE! YES" is being indicated, press "YES" ---> D 1
- D7 ENTER DISTANCE-ENLARGER-SOCKET TO PROJECTION-PLANE IN MM Upon using:
- OPTO-WAL (wall mounting) fit the FOCUSING ARM to the basic unit (see OPTOHAL instructions), take a measurement of distance A and enter in mm

FOCUSING ARM

ROLL PAPER UNIT

Press "ENTER"

- LABOM (lab furniture)
Take a measurement of distance B and enter in mm

LABOM
unit table

Press "ENTER"

● D8 m=XX,XXX NV=±X,XX
PV=±XXX,X F/XXX

PV indicates the height differential (mm) of the projection plane

○ D9 m=XX,XXX NV=±X,XX
PV=±XXX,X

END

2.5. CARRIER SET-UP code 005

E) Programming the film carriers

Use code 005 to program the height differential between the negative planes of the FEMONEG, BIMANEG, OPTONEG, OPTOCROP-CARRIER and FEMKA film carriers (4 film carriers maximum)

Step	Display	Run-down of routine questions and their alternatives
------	---------	--

- E1 m=XX,XXX NV=+X,XX
PV=+XXX,X F/XXX

Enter code 005
Press "START"

- E2 m=XX,XXX NV=+X,XX
PV=+XXX,X

- E3 STEP 50: USE LENS WITH
SHORTEST FOCAL LENGTH!
YES

Use the lens having the shortest focal length
Press "YES"

☒ ---> E 4
☐ ---> E 5

- E4 ENTER LENS CHANNEL NR.
1/2/3/4

Enter the appropriate lens channel
Press "ENTER"

- E5 STEP 51: ENTER CARRIER
NR. 2/3/4

Fit the desired film carrier in the unit and enter its number
Press "ENTER"

Make a note of the number in the table.

Film carrier	Film carrier no. 1 - 4
FEMONEG BIMANEG OPTONEG OPTOCROP CARR FEMKA	

E6 UNIT IN OPERATION

E7 STEP 52: FOCUS MANUAL-
LY WITH LENS! YES

○ Switch on enlarger lamp
Focus by means of:
"SIZE/LENS ADJUST"
Press "YES"

● E8 m=XX,XXX NV=±X,XX
PV=±XXX,X F/XX

The "CARRIER" LED will now
indicate the film carrier
that has been programmed

○ E9 m=XX,XXX NV=±X,XX
PV=±XXX,X

END

2.6. Negative glass compensation code 006

This code is used upon changing film carrier glasses of metal format masks.

The code is required for the compensation of glass thickness and metal mask thickness differentials.

NOTE: All lens channels that have been programmed are automatically readjusted for each film carrier.

Step	Display	Run-down of routine questions and their alternatives
------	---------	--

● F1 m=XX,XXX NV=+X,XX
PV=+XXX,X F/XXX

Enter code 06
Press "START"

○ F2 m=XX,XXX NV=+X,XX
PV=+XXX,X

F3 STEP 60: USE LENS WITH
SHORTEST FOCAL LENGTH!
YES

Use the lens having the shortest focal length
Press "YES"

☒ ---> F 4
☐ ---> F 5

F4 ENTER LENS CHANNEL NR.
1/2/3/4

Enter the appropriate lens channel
Press "ENTER"

F5 STEP 61: ENTER CARRIER NR.
1/2/3/4

Enter film carrier number
Press "ENTER"

F6 UNIT IN OPERATION

F7 STEP 62: FOCUS MANUAL-
LY WITH LENS! YES

○ Switch on enlarger lamp
Focus by means of:
"SIZE/LENS ADJUST"
Press "YES"

● F8 m=XX,XXX NV=±X,XX
PV=±XXX,X F/XXX

The unit will now take into
account glass or format mask
thickness.

○ F9 m=XX,XXX NV=±X,XX
PV=±XXX,X

END

2.7. Memory print out code 007

Step	Display	Printer	Run-down of routine questions and their alternatives
------	---------	---------	--

● G1 m=XX, XXX
NV=+X, XX
PV=+XXX, X
F/XXX

Enter code 007
Press "START"

○ G2 m=XX, XXX
NV=+X, XX
PV=+XXX, X

G3	MEMORY PRINT OUT	MEMORY PRINT OUT REF. C = XXXX, X	REF C values (see page 11 step B 4)
----	---------------------	---	--

G4 USING SINGLE
LENSBOARD
YES/NO?

☒ Press "YES"
☐ Press "NO" ---> G7

G5 MEMORY PRINT OPTO-UNO
OUT

G6	ENTER LENS CHANNEL NR. 1/2/3/4	Enter lens channel Press "ENTER" ---> G 9
----	--------------------------------------	---

G7 MEMORY PRINT OPTO-TRIS
OUT

G8 ENTER LENS
NR. 1/2/3

G9 MEMORY PRINT LENS NR = X
OUT

G10 ENTER CARRIER NR. 1/2/3/4 Enter film carrier number
Press "ENTER"

G11 MEMORY PRINT CARRIER NR=X
OUT F = XXX, XX
HH' = $\pm$ X, XX
dA = XXX, XX

G12 END OF MEMORY PRINT OUT? Would you like to transfer
YES/NO additional lens focal length
values to the data printer?
Yes: Press "NO" ---> G 4
No : Press "YES"

● G13 m=XX, XXX
NV= $\pm$ X, XX
PV= $\pm$ XXX, X
F/XXX

END

○ G14 m=XX, XXX
NV= $\pm$ X, XX
PV= $\pm$ XXX, X

2.8. "▼▼▼set-up" code 008

Pressing the "FILM CHANGE POSITION" key causes the head to move to an easily accessible height for the sitting user.

Step	Display	Run-down of routine questions and their alternatives
------	---------	--

● H1 m=XX,XXX NV=±X,XX
PV=±XXX,X F/XXX

Enter code 008
Press "START"

○ H2 m=XX,XXX NV=±X,XX
PV=±XXX,X

H3 FILM CHANGE POSITION
IN FOCUS? YES/NO

- 1) If projected image is in focus, press "YES"
- 2) If projected image is out of focus, press "NO"

● H4 m=XX,XXX NV=±X,XX
PV=±XXX,X F/XXX

END

○ H5 m=XX,XXX NV=±X,XX
PV=±XXX,X

3. THE AUTOFOCUS IN PRACTICE

Step	Display	Run-down of routine questions and their alternatives
------	---------	--

● I1 m=XX,XXX NV=±X,XX
PV=±XXX,X F/XXX

Upon using the film carrier:

- FEMONEG ---> I 3

- BIMANEG ---> I 4

- OPTONEG ---> I 5

- OPTOCROP-CARRIER ---> I 6

○ I2 m=XX,XXX NV=±X,XX
PV=±XXX,X

I3

- fit lens, mixing box and
glass or glassless mask

- insert film carrier

Film size	Lens	FEMO- MASK	FEMO- BOX
24x36 mm	50 mm	35 N	35 N
4.5x 6 cm	80 mm	45 N	66 N
6x 6 cm	80 mm	66 N	66 N
6x 7 cm	100/105	67 N	69 N
6x 9 cm	105 mm	69 N	69 N
9x12 cm	135 mm	92 N	450 N
10x12,5cm	150 mm	450	450 N
4x5"			

---> I 7

I4

- fit lens, mixing box and
glass or glassless mask

- insert film carrier

Film size	Lens	BINE- NA	BIMA- BOX
24x36 mm	50 mm	35	35
4.5x 6 cm	80 mm	45	66
6x 6 cm	80 mm	66	66
6x 7 cm	100/105mm	67	69
6x 9 cm	105 mm	69	69

---> I 7

I5

Fit "OPTODAP-NEG" and "OPTO-DAP-BOX" adapters (see sandwich-type carrier instructions).
Fit lens as well as mixing box and insert film carrier.

Film size	Lens	OPTO-NEG	FEMO-BOX
24x36 mm	50 mm	35	35 N
4.5x 6 cm	80 mm	45	66 N
6x 6 cm	80 mm	66	66 N
6x 7 cm	100/105	67	69 N
6x 9 cm	105 mm	69	69 N
9x12 cm	135 mm	92	450
10x12,5cm	150 mm	450	450
4x5"			

---> I 7

I6

Fit "OPTODAP-NEG" and "OPTO-DAP-BOX" adapters (see sandwich-type carrier instructions).
Insert OPTOCROP mask in film carrier (for detailed instructions see OPTOCROP operating manual)

I7

Switch on enlarger lamp

I8

Place negative in film carrier

I9

Select film carrier number (see page 17 step E5)
Press "CARRIER"

I10

☒ Enter number of lens being used
Press "LENS"

I11

☐ Select lens by turning lens holder

I12

Enter desired magnification factor. There are three ways for doing this:

- 1) Enter magnification factor
Press "m"
- 2) Enter percentage value
Press "%"
- 3) Enter the negative's edge length, press "N"
Enter desired projection size (edge length)
Press "P"
Press "ENTER"

NOTE: Use the same unit of measure when entering edge length values for negatives and projection sizes.

I13

Press "FILM CHANGE POSITION". The enlarger moves to an easily accessible height for the sitting user.

I14

Adjust filtration, exposure time and f/stop according to the light source being used.

I15

Press "START"

I16 FOCUSING OPERATION

The unit focuses automatically

I17

Trigger the exposure

END

For example:

The negative of a photo taken from a shoe is to be printed in three different sizes. The length of the shoe in the negative amounts to 4.3 cm.

1st print: length of shoe 15.8 cm

2nd print: length of shoe 31.6 cm

3rd print: length of shoe 57.3 cm

FILM ORIGINAL

4 x 5 in. negative

Making the first print

Step	Display	Run-down of routine questions and their alternatives
● J1	m=XX,XXX NV=±X,XX PV=±XXX,X F/XXX	Enter length of shoe in the negative Press "N"
○ J2	m=XX,XXX NV=±X,XX PV=±XXX,X	
J2	N=4,3 P=XXXX,X PRESS ENTER TO READ m"	Enter projection size of 1st print Press "P"
J4	N=4,3 P=15,8 PRESS ENTER TO READ m"	Press "ENTER"
● J5	m=3,674 NV=±X,XX PV=±XXX,X F/XX,X	Press "START"
○ J6	m=3,674 NV=±X,XX PV=±XXX,X	
J7	FOCUSING OPERATION	The unit focuses automatically Expose ---> J 8

Making the second print

Step	Display	Run-down of routine questions and their alternatives
J8	UNIT IN FOCUS PRESS STOP OR ADJUST SIZE	Press "STOP" Enter projection size of second print Press "p"
J9	N=4, 3 P=31, 6 PRESS ENTER TO READ m	Press "ENTER"
● J10	m=7, 348 NV=±X, XX PV=±XXX, X F/XXX	Press "START"
○ J11	m=7, 548 NV=±X, XX PV=±XXX, X	
J12	FOCUSING OPERATION	The unit focuses automatically Expose ---> J 13

Making the third print

Step	Display	Run-down of routine questions and their alternatives
J13	UNIT IN FOCUS PRESS STOP OR ADJUST SIZE	Press "STOP" Enter projection size of third print Press "p"
J14	N=4, 3 P=57, 3 PRESS ENTER TO READ m	Press "ENTER"
● J15	m=13, 325 NV=±X, XX PV=±XXX, X F/XXX	Press "START"
○ J16	m=13, 325 NV=±X, XX PV=±XXX, X	
J17	FOCUSING OPERATION	The unit focuses automatically Expose

END

3.1. The working memories

The OPTO-FUS-MEMORY module is equipped with 50 working memories for storing all printing data.

3.1.1. Storing printing data

Step	Display	Run-down of routine questions and their alternatives
● K1	m=XX,XXX NV=+X,XX PV=+XXX,X F/XXX	■ ---> K 3
○ K2	m=XX,XXX NV=+X,XX PV=+XXX,X	□ ---> K 4
K3		Enter lens channel, e.g. 2 Press "LENS" ---> K 5
K4		Select lens on OPTO-TRIS e.g. 3
K5		Enter film carrier number, e.g. 4 Press "CARRIER"
K6		Enter magnification factor, e.g. 7.852 Press "m"
		● Enter exposure time, e.g. 8.2 seconds Press "EXP. TIME"
K7		Enter working memory number, e.g. 5 Press "STORE"

- K8 Y=XXX M=XXX C=XXX
D=XXX F/STOP XXX
ENTER Y OR STEP▲ CH=5 Press "STEP▲" --> K10 ●
--> K11 ○
- K9 Y=XXX M=XXX C=XXX
D=XXX F/STOP XXX
T=XXX, X ENTER Y
OR STEP▲ CH=5 or
enter yellow filter value,
e. g. 70
Press "ENTER" --> K10 ●
--> K11 ○
- K10 Y= 70 M=XXX C=XXX
D=XXX F/STOP XXX
ENTER M OR STEP▲ CH=5 Press "STEP▲" --> K12 ●
--> K13 ○
- K11 Y= 70 M=XXX C=XXX
D=XXX F/STOP XXX
T=XXX, X ENTER M
OR STEP▲ CH=5 or
enter magenta filter value,
e. g. 50
Press "ENTER" --> K12 ●
--> K13 ○
- K12 Y= 70 M= 50 C=XXX
D=XXX F/STOP XXX
ENTER C OR STEP▲ CH=5 Press "STEP▲ " --> K14 ●
--> K15 ○
- K13 Y= 70 M= 50 C=XXX
D=XXX F/STOP XXX
T=XXX, X ENTER C
OR STEP▲ CH=5 or
enter cyan filter value,
e. g. 0
Press "ENTER" --> K14 ●
--> K15 ○
- K14 Y= 70 M= 50 C=0
D=XXX F/STOP XXX
ENTER D OR STEP▲ CH=5 Press "STEP▲ " --> K16 ●
--> K17 ○
- K15 Y= 70 M= 50 C=0
D=XXX F/STOP XXX
T=XXX, X ENTER D
OR STEP▲ CH=5 or
enter density value,
e. g. 15
Press "ENTER" --> K16 ●
--> K17 ○

- K16 Y= 70 M= 50 C=0
D= 15 F/STOP XXX ENTER
F/STOP OR STEP ▲ CH=5 Press "STEP ▲ " --> K19 ●
--> K18 ○
- K17 Y= 70 M= 50 C=0
D= 15 F/STOP=XXX
T=XXX, X ENTER F/STOP or
OR STEP ▲ CH=5 enter F/stop, e. g. 16
Press "ENTER" --> K19 ●
--> K18 ○
- K18 Y= 70 M= 50 C=0
D=15 F/STOP 16 T=XXX, X Press "STEP ▲ " --> K19
ENTER EXP. TIME OR or
STEP ▲ CH=5 enter exposure time,
e. g. 8.2 seconds
Press "ENTER"
- K19 m=7,852 NV=±X, XX
PV=±XXX, X F/XXX The following data will be
stored automatically:
- negative variator
- positive variator
- magnification factor
- film carrier number
● - exposure time
- K20 m=7,852 NV=±X, XX
PV=±XXX, X F/XXX

END

3.1.2. Calling up stored printing data

Step	Display	Run-down of routine questions and their alternatives
● L1	m=XX,XXX NV=±X,XX PV=±XXX,X F/XXX	Enter working memory number, e.g. 5 Press "RECALL"
○ L2	m=XX,XXX NV=±X,XX PV=±XXX,X	
L3	SELECT LENS 3! YES	Mount OPTO-TRIS (see lens holder instructions) Select lens 3 Press "YES"
L4	USE OPTO-UNO LENS 2! YES	Mount OPTO-UNO (see lens holder instructions) Fit no. 2 lens and enter 2 Press "CARRIER" Press "YES"
L5	USE CARRIER NR. 4! YES	Insert no. 4 film carrier Press "YES"
● L6	Y= 50 M= 50 C= 0 D= 15 F/STOP 16 CH=5 PRESS CLEAR TO EXIT	Take over or set filtration or correction data
○ L7	Y=70 M=50 C=0 D=15 F/STOP 16 T=8,2 CH=5 PRESS CLEAR TO EXIT	Press "CLEAR"
● L8	m=7,852 NV=±X,XX PV=±XXX,X F 16	Exposure time indication on OPTO-TIM display, e.g. 8.2
○ L9	m=7,852 NV=±X,XX PV=±XXX,X	

END

3.1.3. Printing out printing data

Step	Display	Run-down or routine questions and their alternatives
------	---------	--

- ☒ M1 m=XX,XXX NV=±X,XX
PV=±XXX,X F/XXX

Enter working memory number
Press "PRINT"

- ☐ M2 m=XX,XXX NV=±X,XX
PV=±XXX,X

M3 DATA PRINT OUT

PRINTING DATA

CH= 2
M= 4.256
NV=+ 0.00
PV=+ 0.0
OPTO-TRIS
LENS NR 2
CARRIER NR 2
Y= 85
M= 56
C= 0
D= 23
F/STOP 11
T= 8.2

- ☒ M4 m=XX,XXX NV=±X,XX
PV=±XXX,X F/XXX

- ☐ M5 m=XX,XXX NV=±X,XX
PV=±XXX,X

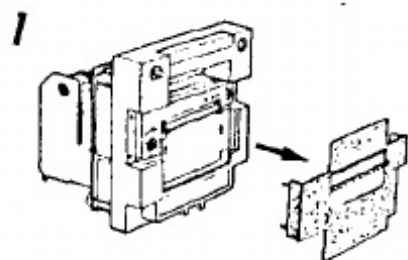
END

3.2. Changing the roll of paper

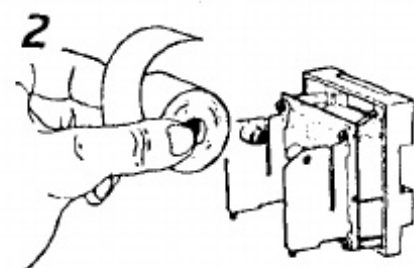
We recommend to stock 2 - 3 rolls of paper always.

Order code: AD 83910

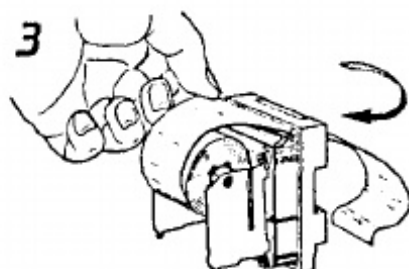
Paper width: 45 mm



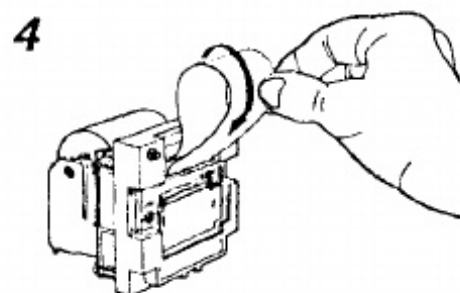
- Remove cover
- Swing out printer



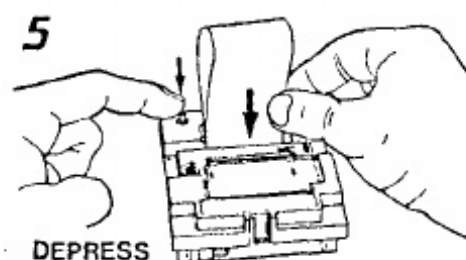
- Fit roll of paper



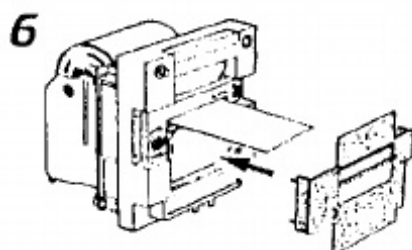
- Push paper through slit
- Swing back printer



- Push paper into the feed mechanism



- Press key until paper is advanced automatically

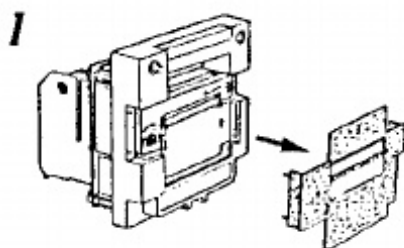


- Refit cover

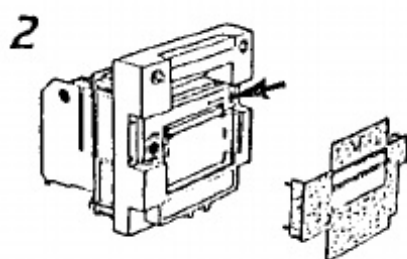
3.3. Changing the ribbon

We recommend to stock one ribbon always.

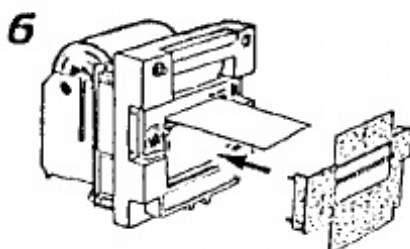
Order code : AD 83 920



- Remove cover



- Exert pressure on the ribbons' s
right-hand side and remove
- Insert new ribbon



- Refit cover

4. "OPTO-TIM" EXPOSURE TIMER

4.1. Description of controls

EXPOSURE TIME



Digital exposure time display
(Range from 0.1 up to 999 seconds)

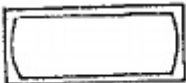
EXP. TIME



LIGHT

- To enter exposure times, e.g. 7
Press "EXP.TIME" and the exposure time will be displayed
- To switch the enlarger lamp on or off

F/STOP



- To enter f/stop values, e.g. 16
By pressing the "F/STOP" key, the f/stop value will be shown on the central display and the exposure time will be changed accordingly
- To trigger the exposure

4.2. Operation

Exposure times are automatically corrected upon changing magnification factor or f/stop values. Reciprocity failures won't be compensated.
To achieve this, keep exposure times constant by changing f/stop values.

4.3. Connecting a roll-paper easel

The OPTO-TIM timer has an interface for the connection of roll-paper easels.

Use the OPTO-WAL wall mounting to attach the basic unit to the wall (see OPTO-WAL operating instructions).

For the electrical connections see ill. 1

● NOTES:

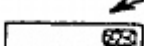
Enlarger lamp ON/OFF and "EXPOSE" functions can only be controlled from the roll-paper easel.

If display indicates:

"UNIT IN FOCUS PRESS STOP OR ADJUST SIZE"

press "STOP" key before switching the enlarger lamp on or off or before triggering an exposure.

When making exposures in series, switch off the control panel light by means of switch (33)

0  1

5. LENS DATA SHEET

Lens type	Nominal focal length	Actual focal length according to lens manufacturer	HH distance between principal planes
Rodagon 1:5,6 alt	$f = 50$	$f = 50,4$	- 0,67
Rodagon 1:4	$f = 50$	$f = 50,1$	+ 2,80
Rodagon 1:2,8	$f = 50$	$f = 50,1$	- 2,80
Rodagon 1:5,6 alt	$f = 60$	$f = 61,6$	- 0,80
Rodagon 1:4	$f = 60$	$f = 61,8$	- 1,92
Rodagon 1:5,6 alt	$f = 80$	$f = 81,2$	- 1,70
Rodagon 1:5,6	$f = 80$	$f = 81$	- 2,46
Rodagon 1:4	$f = 80$	$f = 81,2$	- 2,46
Rodagon 1:5,6	$f = 105$	$f = 106,4$	- 1,65
Rodagon-G 1:5,6	$f = 105$	$f = 104,2$	- 2,50
Rodagon 1:5,6	$f = 135$	$f = 135,7$	- 2,45
Rodagon 1:5,6 alt	$f = 150$	$f = 150,6$	- 3,30

Lens type	Nominal focal length	Actual focal length according to lens manufacturer	HH distance between principal planes
Rodagon 1:5,6	$f = 150$	$f = 150,3$	- 2,35
Rodagon-G 1:5,6	$f = 150$	$f = 146,6$	- 3,5
Rodagon 1:5,6 alt	$f = 180$	$f = 182,8$	- 4,00
Rodagon 1:5,6	$f = 180$	$f = 182,5$	- 3,22
Aporodagon 1:2,8	$f = 50$	$f = 50,2$	- 0,17
Aporodagon 1:4	$f = 90$	$f = 91,60$	- 1,98
Componon 1:2,8	$f = 50$	$f = 52,7$	- 6,5
Componon 1:5,6	$f = 80$	$f = 79,8$	+ 0,30
Componon 1:5,6	$f = 100$	$f = 102,2$	- 2,40
Componon 1:5,6	$f = 135$	$f = 135,6$	- 3,00
Componon 1:5,6	$f = 150$	$f = 150,5$	- 3,30
Componon 1:5,6	$f = 180$	$f = 180,2$	- 3,90
El-Nikkor 1:2,8	$f = 50$	$f = 52,1$	- 13,90
El-Nikkor 1:4	$f = 50$	$f = 51,6$	+ 1,50
El-Nikkor 1:2,8	$f = 63$	$f = 62,9$	- 5,00
El-Nikkor 1:4	$f = 75$	$f = 75,0$	+ 2,70
El-Nikkor 1:5,6	$f = 80$	$f = 80,1$	- 3,30
El-Nikkor 1:5,6	$f = 105$	$f = 105,5$	+ 0,90
El-Nikkor 1:5,6	$f = 135$	$f = 135,0$	+ 2,20
El-Nikkor 1:5,6	$f = 150$	$f = 150,0$	+ 2,40
El-Nikkor 1:5,6	$f = 180$	$f = 180,0$	- 0,30
Apo El-Nikkor 1:5,6	$f = 105$	$f = 104,8$	- 2,80

6. ERRORS AND THEIR CAUSES

NUMBER TOO SMALL PRESS CLEAR

NUMBER TOO LARGE PRESS CLEAR

Cause: number input too small or too large.

Remedy: * press "CLEAR" key and enter new number

NOT A CODE PRESS CLEAR

Cause: a figure being smaller than 001 or larger than 008 has been entered and the "START" key pressed

Remedy: * press "CLEAR" and enter CODE 006 once more

NOT F/STOP PRESS CLEAR

Cause: the number has been entered is not within the f/stop range

Remedy: * press "CLEAR" key and enter new f/stop

TIMER OVERFLOW PRESS CLEAR

Cause: exposure time longer than 999 seconds

Remedy: * press "CLEAR" key and enter higher f/stop value or smaller magnification factor

MAGN. OUT OF RANGE, PRESS YES, ENTER m

Cause: magnification factor either too small or too large

Remedy: * press "YES" key and enter new magnification factor

7. TECHNICAL DATA

Number of lens channels	: 7
Time required for programming a lens	: approx. 5 minutes
Recommended lens type	: Rodenstock RODAGON Schneider COMPONON NIKON EL NIKKOR
Setting and repeatability accuracy of lens setting	: 0.01 mm
Construction	: modular, suitable for retrofitting
Number of working memories (OPTO-FUS-MEMORY version)	: 1 - 50 for storing filtration, density, exposure time, lens channel, f/stop, magnification factor, film carrier number, negative and positive variator values
NV range	: $\pm 9,99$ mm
PV range	: $\pm 999,9$ mm
OPTO-TIM exposure timer range	: 0,1 - 999 seconds
TIMER contact rating	: 5 A Max/220 V AC Max
ROLL-BOX-INTERFACE	: only on OPTO-TIM
Input range of filter density units for OPTO-FUS-MEMORY	: ± 127

Durst products are being constantly developed to the latest state of the art. Illustrations and descriptions are therefore subject to change.

8. SUPPLEMENT

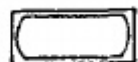
8.1. Description of controls

LENS
☐ ☐ ☐ ☐
 1 2 3 4

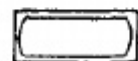
To indicate lens channel being used (7 max.). No. 1, 2, 3 lens channels may be programmed twice, once with OPTO-UNO and once with OPTO-TRIS.

CARRIER
☐ ☐ ☐ ☐
 1 2 3 4

To indicate film carrier being used.

NV


For thickness differential compensation of film original (e.g. top layer of internegatives). Input in mm, input range of $\pm 9,99$ mm. If the value to be entered is not known, enter code 003 (see page 13)

PV


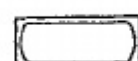
For thickness differential compensations on the projection plane (e.g. exposure easels, LABOM unit table, roll-paper easel etc.). Input in mm, input range of $\pm 999,9$ mm. If the value to be entered is not known, enter code 004 (see page 14)

N


To enter film size value (edge length).

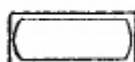
P


To enter the desired projection size (edge length).

m


To enter the desired magnification factor.

%



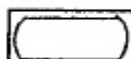
To enter the desired magnification factor in percentage values.

LENS



To call up the desired lens channel.

CARRIER



To call up the different film carriers.

HEAD ADJUST



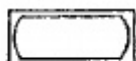
To adjust enlarger head height (slow speed).

To adjust lens stage height in the manual operating mode (slow speed)

SIZE/LENS
ADJUST

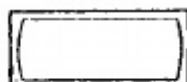


RAPID



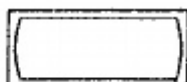
- If pressed simultaneously with the "HEAD ADJUST" keys, this key permits quick enlarger head height adjustment
- if pressed simultaneously with the "SIZE/LENS ADJUST" keys, this key permits the quick lens stage height adjustment.

START



- To set magnification factors in the AF mode
- to actuate code numbers 001 to 008

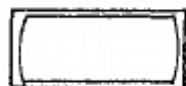
FILM CHANGE POSITION



For quick and simple film original changes. The enlarger head moves to an easily accessible height for the sitting user.
Press the "START" key:
The enlarger head returns to the previous setting and focuses.

001 - 008 CODE SYSTEM (see description on page 4).

STOP



NO

- To stop the motorized enlarger head and lens stage adjustment after having pressed the "START" or "FILM CHANGE POSITION" keys
- to lock a focus setting
- to answer questions of the user's guide
- to interrupt an exposure

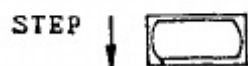
ENTER



YES/PRINT

- To terminate the input of a figure
- permits print-out of printing data on the data printer
- to answer questions of the user's guide

STORE



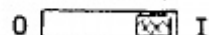
- To store all printing data (see page 29)
- to count down STEP numbers, only for CODE 001, 003, 004, 005, 006, 007, 008

RECALL

- To call up already stored printing data
- to skip STEP numbers, only for CODE 002



DISPLAY



To switch off control panel illumination and background lighting of display



Dimmer for the display's background lighting



Dimmer for control panel illumination

OPTO MOT

O p e r a t i n g m a n u a l

D U R S T O P T O C O M

C L S 501

V L S 501

VARIPOINT 1200

FEHOKIT B/W

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1. DESCRIPTIONS

The enlarger heads dealt with in this operating manual may be mounted either on the LABORATOR 1200 or OPTOCOM enlarger.

- * DURST CLS 501 - Colour head with perfectly even illumination thanks to direct lighting system. Maximum output for each format from 24x36 mm up to 4x5 in. with aid of special mixing boxes.

Application: - For custom prints made from professional photography film originals (portraits, advertising, landscape work).

- * DURST VLS 501 - Diffused illumination system for black-and-white enlarging using variable-contrast papers. The contrast is continuously adjusted with a control knob. The system provides also automatic density compensation.

Application: - Quick and easy exposures on variable-contrast or fixed-contrast (black-and-white) paper.

- * VARIPOINT 1200 - Condenser illumination system using point source of light for razor-sharp rendering of details and increased contrast (see ill.)

Application: - For printing negatives lacking contrast and electron-microscope negatives.

- * FEMOKIT B/W - Condenser illumination system using opal lamps.

Application: - For printing flat black-and-white negatives and for making reproductions.

1.1. The outfit

1.1.1. CLS 501

- * Colour head with adapter
- * 250 W/24 V tungsten-halogen lamp
- * 10x12.5 cm (4x5 in.) mixing box
- * Transformer or voltage stabilizer

Durst-codes:	COLIKIT 1201 TR 110
COLIKIT 1201 ES 110	COLIKIT 1201 TR 220
COLIKIT 1201 ES 220	COLIKIT 1201 TR 240

1.1.2. VLS 501

- * Diffused-illumination housing complete with adapter
- * 250 W/24 V tungsten-halogen lamp
- * 10x12.5 cm (4x5 in.) mixing box
- * Transformer

Durst codes:	VALIKIT 1201 / 110
VALIKIT 1201 / 220	VALIKIT 1201 / 240

1.1.3. VARIPOINT 1200

- * Condenser dome complete with adapter
- * Condenser housing
- * One each surface-coated FEMOCON 151 T/FEMOCON 152 T condensers (condenser combination and film size chart on pages 18, 19)
- * 100 W/12 V point light lamp
- * Regulating transformer
- * 2 surface-coated film carrier glasses
- * 1 surface-coated deflection mirror

Durst codes:	
POINTKIT AM 110	POINTKIT EU 240
POINTKIT EU 220	POINTKIT SAA 240

1.1.4. FEMOKIT B/R

- * Condenser dome complete with adapter
- * Condenser housing
- * One each FEMOCON 151/FEMOCON 152 condenser (condenser combination and film size chart on pages 20, 21)
- * 150 W opal lamp

Durst codes:

FEMOKIT AM 110

FEMOKIT EU 240

FEMOKIT EU 220

FEMOKIT SAA 240

1.2. TECHNICAL DATA

1.2.1. CLS 501

Light source	: 250 W/24 V tungsten-halogen lamp
Mains supply	: - via TRA 500 transformer: 110/120 V, 220 V or 240 V/50-60 Hz or via - stabilized transformer EST 500: 110-140 V or 180-260 V/50-60 Hz / output voltage: 24 V $\pm$ 2%
Filters	: yellow, magenta and cyan dichroic filters
Filter densities	: 130 densitometric units (=D 1.3)
Supplementary filter:	approx. 45 yellow / 15 magenta
Density control	: 0-60 densitometric units (=D 0.6)
Dimensions	: 530 x 290 x 300 mm
Height	: approx. 16 kg

1.2.2. VLS 501

Light source	: 205 W/24 V tungsten-halogen lamp
Mains supply	: via TRA 500 transformer: 110/120 V, 220 V or 240 V/50-60 Hz
Contrast range	: from soft to hard
Dimensions	: 450 x 290 x 270 mm
Height	: approx. 9 kg

1. 2. 3. VARIPOINT 1200

Light source : 100 W/12 V point light lamp
 Mains supply : via VARICONTROL 1200 transformer:
 100/110/120/220/240 V 50-60 Hz
 continuously adjustable output
 voltage from 0 to 12 V
 Power consumption : approx. 150 VA
 Net weight : approx. 12 kg
 Condensers, deflec-
 tion mirror, film
 carrier glasses : special surface coating

1. 2. 4. FEMOKIT BR

Light source : 150 W opal lamp
 Mains supply : 110, 220 and 240 V
 Lighting system : via deflection mirror and condensers
 Filter drawer : 120 x 120 mm
 Dimensions : 340 x 295 x 190 cm
 Weight : approx. 9.80 kg

2. BEFORE STARTING UP THE ENLARGER HEAD

2.1. Cleaning

Before assembly clean all components with a cloth.

2.2. Fitting the enlarger lamp

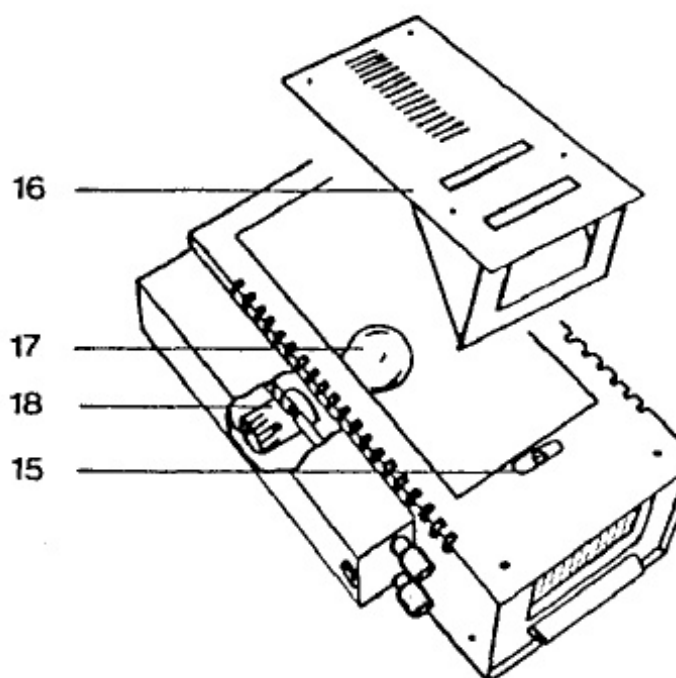


CAUTION: SWITCH OFF THE UNIT BEFORE
REPLACING THE LAMP

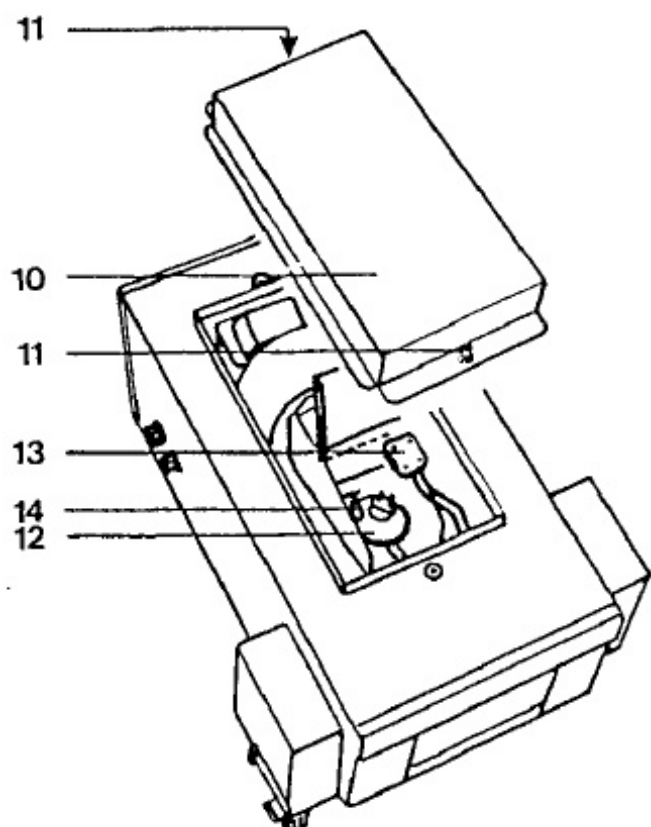
2.2.1. CLS 501 / VLS 501

- * Open the lamphouse cover (10) by pressing the retaining studs (11)
- * Mount the tungsten-halogen lamp (12) on the lamp fitting (13) and push it underneath the retaining springs (14)

Take care never to touch the inside of the reflector



- * Close lamphouse cover (10) by pressing the retaining studs (11)



2.2.2. VARIPOINT 1200/FEMOKIT BH

- * Undo latch (15)
- * Lift off lamphouse cover (16)
- * Screw opal lamp or point light lamp (17) into lamp fitting (18)

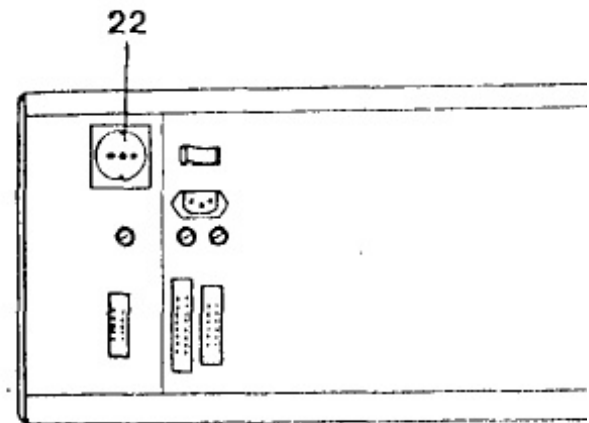
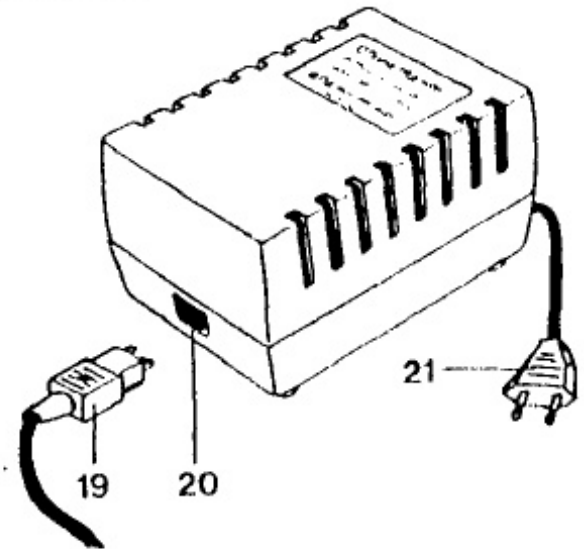
2.3. Electrical connections for enlarger head

2.3.1. CLS 501 / VLS 501

- * Connect plug (19) with socket (20)

- * If you are using the OPTO-TIM-equipped unit version, connect plug (21) with socket (22)

- * If unit version without OPTO-TIM is used, connect plug (21) with the TIMER OUTPUT socket of your exposure timer (ditto if the LABORATOR 1200 is used)

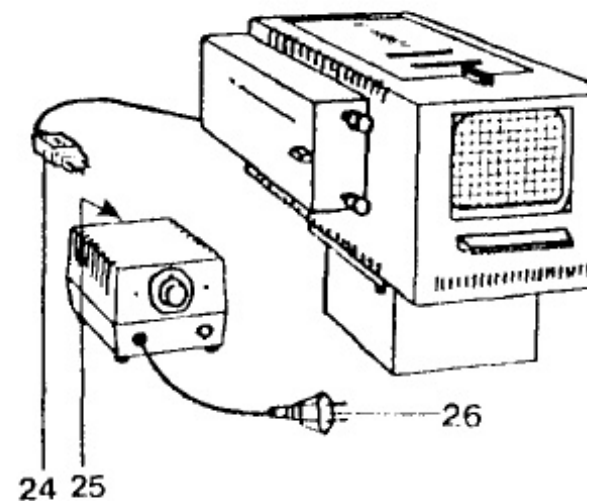


2.3.2. VARIPOINT 1200

- * Connect plug (24) with socket (25)

- * If OPTO-TIM-equipped unit version is used, connect plug (26) with socket (22)

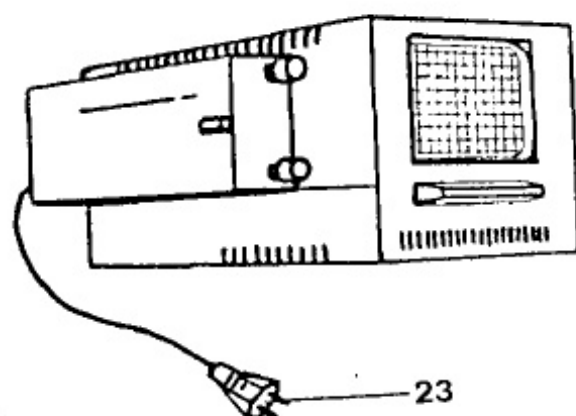
- * If unit version without OPTO-TIM is used, connect plug (26) with the TIMER OUTPUT socket of your exposure timer (ditto if the LABORATOR 1200 is used)



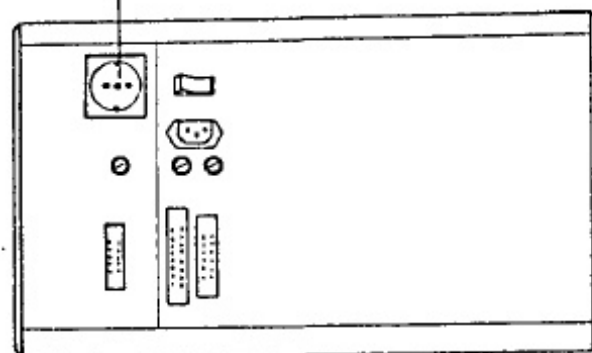
2.3.3. FEMOKIT BH

* If OPTO-TIM-equipped unit version is used, connect plug (23) with socket (22)

* If unit version without OPTO-TIM is used, connect plug (23) with the TIMER OUTPUT socket of your exposure timer (ditto if the LABORATOR 1200 is used)



22



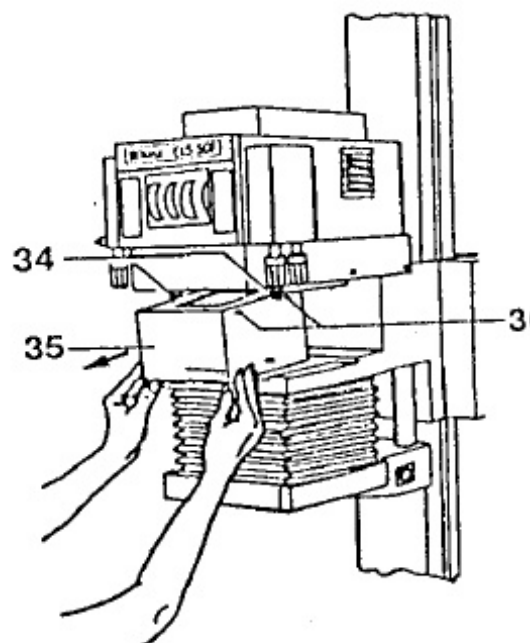
2.4. Fitting the mixing boxes

2.4.1. CLS 501 / VLS 501

* Push catches (34) forward

* Push the mixing box (35) with the four retaining studs (36) into the cutout in the catches (34)

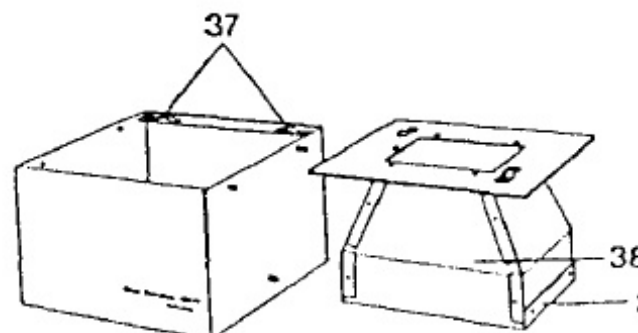
* Push the catches (34) back



2.5. Replacing the diffuser

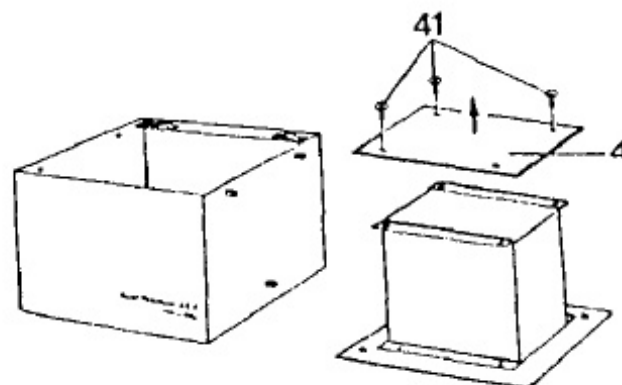
* Remove mixing box

* Push retaining springs (37) and remove the inner mixing box (38)



FEMOBOX 450 N

* Lift off retaining springs (39) and replace diffuser (40)



FEMOBOX 69 N / 66 N

* Replace diffuser (40) after undoing screws (41)

NOTE: the inner mixing box can be fitted either vertically or horizontally.

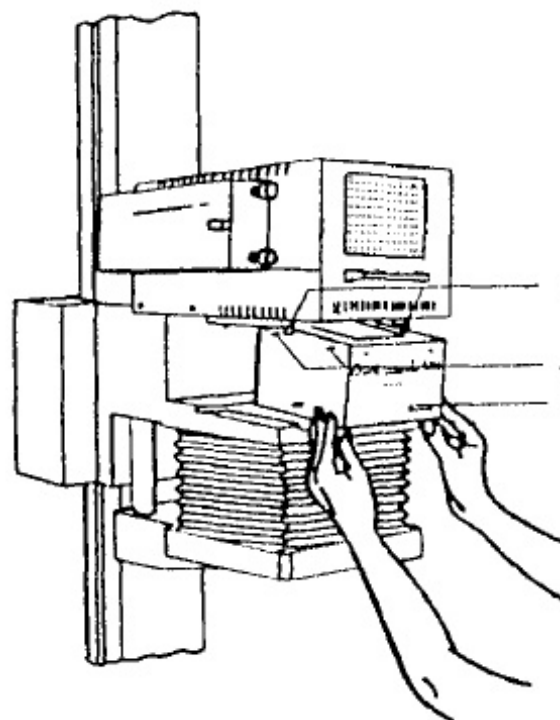
2.6. Fitting the condenser housing

2.6.1. FEMOKIT BH / VARIPOINT 1200

* Push catches (42) forward

* Push condenser housing (43) with the four retaining studs (44) into the cutouts in the catches (42)

* Push the catches (42) back



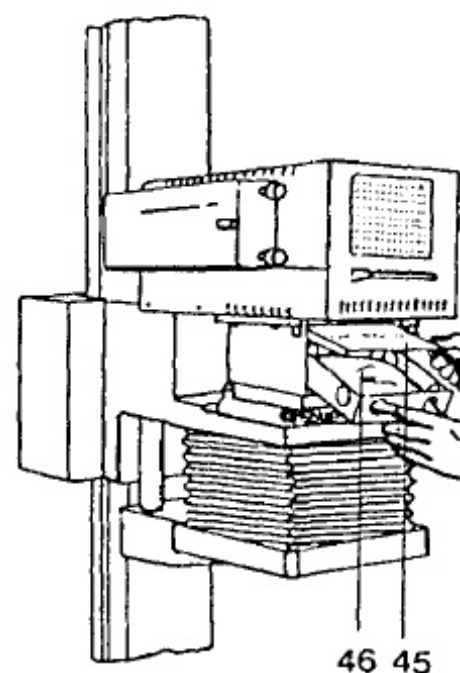
2.7. Fitting the condensers

* Open cover (45) and slide
in condensers (46)

* Close cover (45)

NOTE: condenser combinations

FEMOKIT BR	see pages 20, 21
VARIPOINT 1200	see pages 18, 19



3. STARTING UP THE ENLARGER HEAD

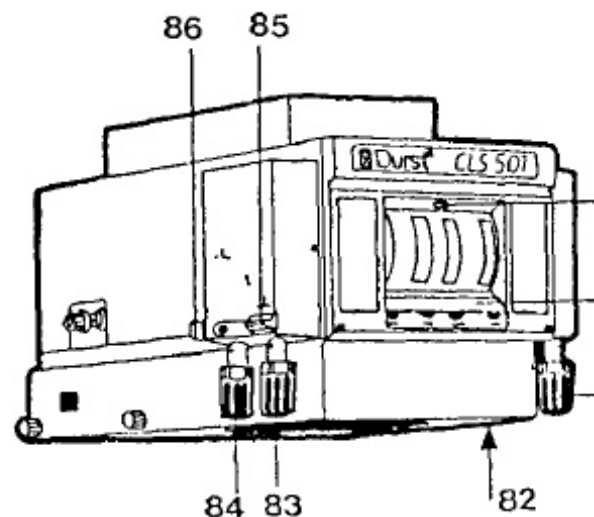
3.1. Colour enlarging with the CLS 501

3.1.1. Filter and density control settings

* Filter controls

81 yellow
82 magenta
83 cyan

Settings:
Continuously from 0 up to 130
densitometric values



Filter value comparison table

Filter values			
Durst densi- ties	CC/CP densi- ties	CIBA densi- ties	AGFA densi- ties
0	0	0	0
10	15	15	20
20	30	30	40
30	45	45	60
40	60	60	80
50	75	75	100
60	90	90	120
70	105	105	140
80	120	120	160
90	135	135	180
100	150	150	200
110	165	165	220
120	180	180	240
130	195	195	260

* 84 density control

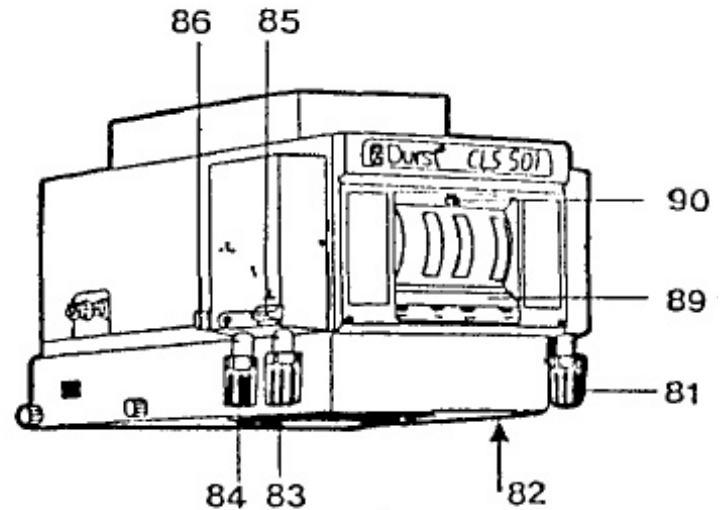
Settings:

Continuously from 0 up to 60

Comparison table

Density va- lues of den- sity control	Exposure change in lens stops
00	Working aperture of lens
15	1/2 stop smaller than working aperture
30	1 stop smaller than working aperture
45	1 1/2 stops smaller than working aperture
60	2 stops smaller than working aperture

89 Aperture for scale illumination



3.1.2. Supplementary filter

If you want to increase your yellow and magenta filtration, push lever (86) to the "IN" setting. This causes the supplementary filter (45 Y, 15 M) to swing into the light path.

3.1.3. White-light setting

By pushing the lever (85) to the "OUT" setting, filters and density control swing out of the light path. Signal (90) will light up.

3.2. Black-and-white enlarging with CLS 501 / VLS 501

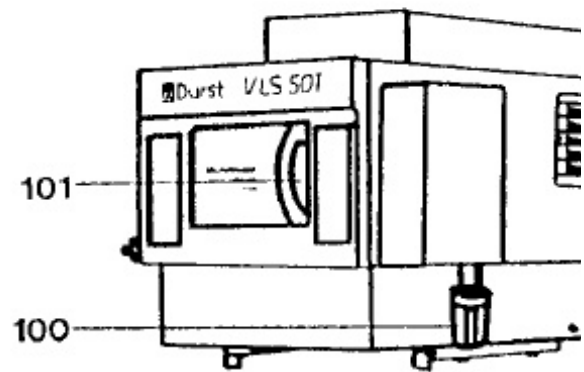
3.2.1. Black-and-white enlargements using fixed-contrast paper

CLS 501

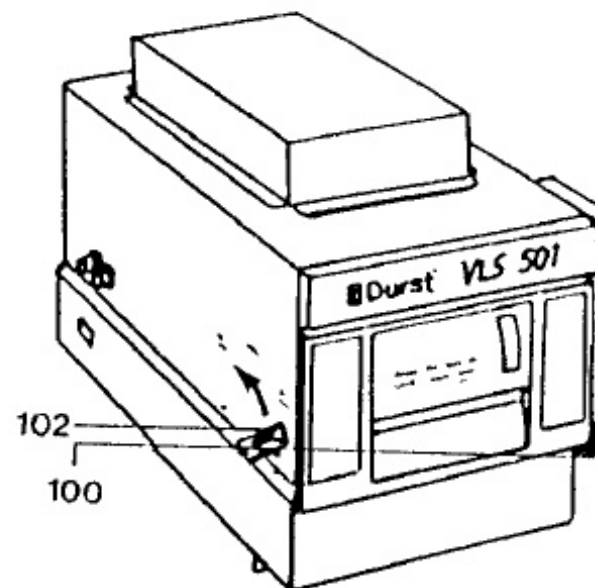
- * Turn all colour head filter controls to zero. The continuously adjustable density control may however be used also for black-and-white printing.

VLS 501

- * Turn filter control knob (100) to the 2.5 (= white light) setting, according to scale 101.



- * Set lever (102) to the "POS. MANUAL" setting to achieve maximum light output.



3.2.2. Black-and-white enlargements using variable-contrast paper

VLS 501

- * Turn knob (100) to the desired contrast (0 to 5) setting.
Set lever (102) to the automatic setting.

Advantage of using variable-contrast paper:

- * Constant exposures
 - thanks to automatic density control

With lever (102) you may swing the density control out of the light path.

Contrast changes

- * TO INCREASE CONTRAST
 - turn knob (100) from 2.5 to 5, according to scale 101
- * TO REDUCE CONTRAST
 - turn knob (100) from 2.5 to 0, according to scale 101

CLS 501

- * Setting the desired contrast (0 to 4)
 - by turning in the yellow and the magenta filters (see following chart)

NOTE: increasing the yellow filtration results in a lower contrast; increasing the magenta filtration makes for higher contrast.

Paper grada- tion	Colour head filter settings for ILFO- SPEED MULTIGRADE II			Paper grada- tion	Colour head filter settings for KODAK POLYCONTRAST II		
	Y	M	C		Y	M	C
0	65	37	--	0	70	4	--
0,5	49	46	--	0,5	58	10	--
1	34	56	--	1	47	16	--
1,5	26	62	--	1,5	39	24	--
2	19	68	--	2	32	32	--
2,5	15	77	--	2,5	22	39	--
3	12	86	--	3	15	46	--
3,5	5	103	--	3,5	5	88	--
4	--	120	--	4	--	130	--

3.3. Black-and-white enlarging with VARIPOINT 1200

Check for evenness of illumination

- * Switch on enlarger lamp

For unit version equipped with OPTO-TIM

- * Press the "LIGHT" key

- * Open lens diaphragm fully

Lamp centering:

If there are shadows on the base-board, centre the lamp as follows:

- * Turn knobs (103) and (105) until projection is free of shadows
- * Turn lamp and adjust horizontally

103 = horizontal adjustment

105 = vertical adjustment

Light intensity adjustment

* Switch on enlarger lamp

For unit version equipped with OPTO-TIM

* Press the "LIGHT" key

* Adjust light intensity by turning control (107)

NOTE: Do not stop down the lens!

Condenser combination table for VARIPOINT 1200 used with OPTOCOM

Focal length in mm	Film size	Lensboard for OPTO-UNO	Adapter ring for OPTO-TRIS	Linear magnification factors*		FEMOCON condenser combination
				min.	max.	
150	4x5" 9x12 cm 6x 7 / 6x 9 cm	LAPLA 42 or LAPLA 50	HORING 42 or directly	0.7x	1.2x	152 T 152 T
				1.2x	7.3x	152 T 151 T
80	6x6 cm	LAPLA 39	OPTORING 7539	0.3x	0.9x	152 T 151 T
				1.0x	2.3x	151 T 151 T
				2.4x	15.4x	80 T
60	32x45 mm microfiche	SETOPLA 2839	OPTORING 1539	2.1x	21.5x	60 T
				1.0x	2.0x	80 T
50	24x36 mm	SETOPLA 2839	OPTORING 1539	0.8x	2.0x	80 T
				2.1x	26.0x	50 T

* indicative values

Condenser combination table for VARIPOINT 1200 used with LABORA

Focal length in mm	Film size	Lensboard	Linear magnification factors ^A		FEMOCON condenser combinatio
			min.	max.	
150 mm	4x5"	LAPLA 42 or RODING 5071	1.5x	6.5x	152 T 151 T
80 mm	6x6 cm	LAPLA 42 or LAPLA 39	2.5x	14.5x	80 T
60 mm	32x45 mm microfiche	LAPLA 39	4.0x	20.0x	60 T
50 mm	24x36 mm	LAPLA 39	5.4x	23.0x	50 T

* indicative values

3.4. Black-and-white enlarging with FEMOKIT B/H

Check for evenness of illumination

* Switch on enlarger lamp

For unit versions equipped with OPTO-TIM

* Press the "LIGHT" key

* Use full lens aperture

Lamp centering:

If there are shadows on the base-board, centre the lamp as follows:

* Turn knobs (103) and (110) until projection is free of shadows

* Turn lamp round its axis and adjust horizontally

108 = horizontal adjustment

110 = vertical adjustment

Contrast control

- by using enlarging papers with different gradations.

Condenser combination table for FEMOKIT B/W used with OPTOCOM

Focal length in mm	Film size	Lensboard for OPTO-UNO	Adapter ring for OPTO-TRIS	Linear magnifi- cation	magnifi- factors*	FEMOCON conden- ser com- bination
				min.	max.	
150	4x5"	LAPLA 42 or LAPLA 50	HORING 42 or directly	0.7x	1.2x	152 152
				1.3x	7.3x	152 151
135	9x12 cm	LAPLA 39 or LAPLA 50	HORING 39 or HORING 42	0.6x	1.2x	152 152
				1.3x	3.0x	152 151
				3.1x	8.3x	151 151
105	6x7 cm 6x9 cm	LAPLA 39	OPTORING 7.539	0.45x	11.2x	151 151
100	6x7 cm 6x9 cm	LAPLA 39	OPTORING 7.539	0.4x	11.8x	151 151
80	4.5x6 cm 6x6 cm	LAPLA 39	OPTORING 7.539	0.3x	2.5x	151 151
				2.6x	15.4x	80
50	24x36 mm 18x24 mm 12x17 mm	SETOPLA 2839	OPTORING 1539	0.7x	1.4x	80
				1.5x	26 x	50 80

* indicative values

Condenser combination table for FEMOKIT B/H used with LABORATOR 1200

Focal length in mm	Film size	Lensboard	Linear magnifi- cation factors *			FEMOCON condenser combination
			min.	max.	min. FEMOTUB	
150 mm	4x5"	LAPLA 42 or RODING5071	1.5x	5.5x	0.9x	152 151
135 mm	9x12 cm	LAPLA 42 or LAPLA 39	1.1x	6.4x	0.8x	152 151
105 mm	6x7 cm 6x9 cm	LAPLA 39	0.8x	8.7x	0.55x	151 151
100 mm	6x7 cm 6x9 cm	LAPLA 39	0.7x	9.0x	0.50x	151 151
80 mm	6x6 cm	LAPLA 39	2.5x	12.1x	0.50x	80
50 mm	24x36 mm	LAPLA 39	5.4x	19.8x	--	50 80
35 mm	18x24 mm	SETOPLA 2839 or LAPLA 39	9.0x	30.6x	--	50 80
35 mm	12x17 mm	SETOPLA 2839 or LAPLA 39	4.0x	36.8x	--	50 80

* indicative values

Black-and-white enlargements with variable-contrast paper

Contrast control:

- insert variable-contrast filters (12x12 cm) in filter
drawer (111). Such filters are carried by photo stores.

NOTE: yellow filter = reduce contrast
magenta filter = increase contrast

4. MAINTENANCE

4.1. Care

When	What to do	Notes
Daily	Clean following parts - film carrier glasses - lenses - condensers - mixing boxes	Use chamois leather; antistatic brush or cloth
Every six months	Clean following parts - dust filter - colour filter - special filters for variable contrast paper - heat filter	To be handled by a service engineer of your Durst Sole Agent in your country

CAUTION: ALWAYS DISCONNECT THE
UNIT FROM THE MAINS IF



- the lamphouse is opened to reach
the light source for repairs
- the lamp is to be replaced

5. ACCESSORY RANGE

5.1. CLS 501 / VLS 501

- FEMOBOX 69 N : for film sizes up to 6 x 9 cm
- FEMOBOX 66 N : for film sizes up to 6 x 6 cm
- FEMOBOX 35 N : for film sizes up to 24 x 36 mm

NOTE: For shortening exposure time use the less dense diffusers, provided you can do with less than perfect colour mixing.

5.2. VARIPOINT 1200

- FEMOCON 50 T : Three-element condenser for 50 mm lenses
- FEMOCON 60 T : Three-element condenser for 60 mm lenses
- FEMOCON 80 T : Two-element condenser for, 80 mm lenses

5.3. FEMOKIT BR

- FEMOCON 80 : Two-element condenser for 60 and 80 mm lenses
- FEMOCON 50 : Supplementary condenser for FEMOCON 80 for 50 mm lenses
- FEMOCON 151 : Condenser for 100 and 105 mm lenses
- VARIPOINT 1200 : Point source of light system

Durst products are being constantly developed to the latest state of the art. Illustrations and descriptions are therefore subject to change.

O p e r a t i n g m a n u a l

D U R S T O P T O C O M

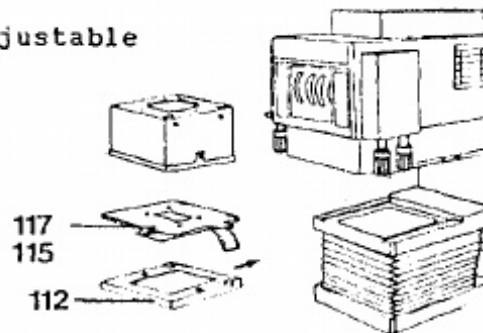
O P T O N E G

DESCRIPTIONS

OPTONEG - are rotatable and axially adjustable sandwich-type film carriers.

APPLICATION

For glassless enlarging of all film sizes from 35 mm up to 10 x 12.5 cm (4x5")

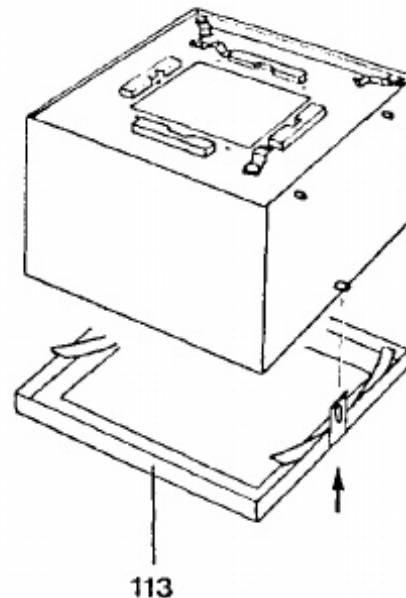


BEFORE INSERTING THE OPTONEG FILM CARRIER

Mount OPTODAP-NEG and OPTODAP-BOX adapters as follows:

* Slide adapter (112) into the unit

* Press adapter (113) against the mixing box

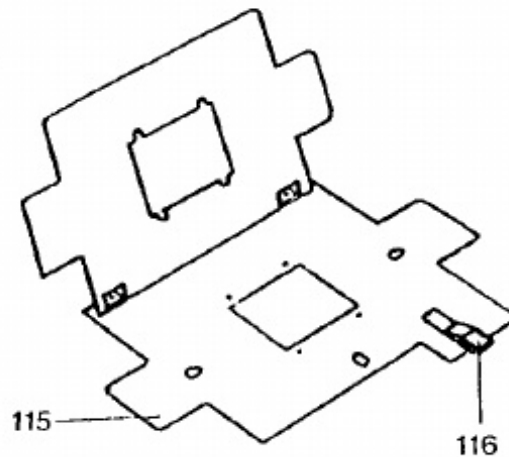


INSERTING SINGLE NEGATIVES OR FILM STRIPS

- * Remove film carrier (115)
- * Place negative in film carrier and centre
- * Replace film carrier (115)

ADVANCING FILM STRIPS

- * Push back slide (116)
- * Advance film strip
- * Push slide (116) forward once more.



ACCESSORY RANGE

Film carriers

OPTONEG code	For film sizes
35	24 x 36 mm
45	4.5 x 6 cm
66	6 x 6 cm
67	6 x 7 cm
69	6 x 9 cm
92	9 x 12 cm
450	10 x 12,5 cm (4x5")
S	for other DIN or ASA standard film sizes or special sizes

- Film carrier support adapter OPTODAP-NEG
- Mixing box adapter OPTODAP-BOX

O p e r a t i n g m a n u a l

D U R S T O P T O C O M

F E M O N E G

APPLICATION

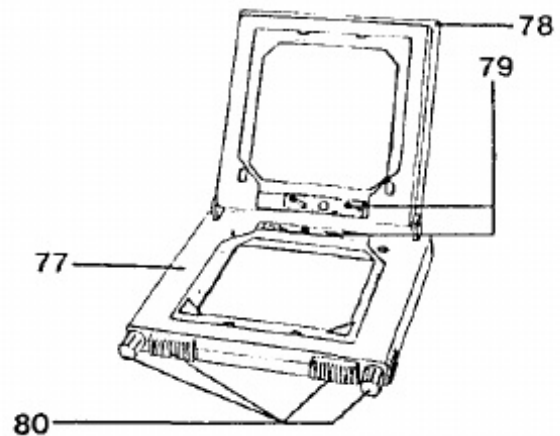
- to print, either with or without glasses, all film original sizes from 35 mm up to 10 x 12,5 cm (4x5")
- for register work

INSERTING SINGLE NEGATIVES OR FILM STRIPS

- * Remove film carrier (77)
- * Insert negative in film carrier and centre
- * Replace film carrier (77)

ADVANCING FILM STRIPS

- * Lift lever (78)
- * Advance film strip
- * Release lever (78)



FITTING GLASSLESS MASKS OR FILM CARRIER GLASSES

- * Remove film carrier (77)
- * Open film carrier
- * Push retaining springs (79)
- * Fit desired format mask or glass and slide back retaining springs (79)

For format masks and glasses see accessory range on page ..

DESCRIPTION OF MASKING STRIPS

The masking strips' (80) use
avoids reflections.

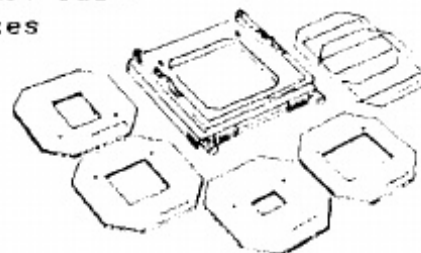
NOTE: do not use the masking strips for defining film
sizes or instead of the FEMOMASK format masks.

ACCESSORY RANGE:

- MIVALO register punch (for description see MIVALO
operating manual)

FORMAT MASKS

- FEMOMASK 35 N for 24 x 36 mm film sizes
- FEMOMASK 45 N for 4,5 x 6 cm film sizes
- FEMOMASK 66 N for 6 x 6 cm film sizes
- FEMOMASK 67 N for 6 x 7 cm film sizes
- FEMOMASK 69 N for 6 x 9 cm film sizes
- FEMOMASK 92 N for 9 x 12 cm film sizes
- FEMOMASK 450 N for 10 x 12,5 cm (4x5") film sizes
- FEMOMASK S for other DIN and ASA standard film
sizes as well as special sizes



FILM CARRIER GLASSES

- FEMOGLA standard film carrier glass
- FEMOGLA AN film carrier glass with anti-Newton treatment

O p e r a t i n g m a n u a l

D U R S T O P T O C O M

O P T O - C R O P - S Y S T E M

Durst GA IV30095 (e) 5/87

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1. DESCRIPTIONS

- 1.1. OPTO-CROP-SYSTEM - is a new film handling system for quick and easy processing of your jobs.

OPTO-CROP-SYSTEM is supplied with:

- | | |
|------------------------------------|---------------------|
| 1. Format masks | : OPTO-CROP-MASK |
| 2. Sandwich-type film carriers | : OPTO-CROP-CARRIER |
| 3. Display with light table | : OPTO-CROP-SYSTEM |
| 4. File for storing OPTO-CROP-MASK | : OPTO-CROP-FILE |

- 1.1.1. OPTO-CROP-MASK - Format masks (either with or without glasses) for printing all film sizes from 35 mm up to 10 x 12.5 cm (4x5 in.)

Advantages:

- * Simple cropping
- * Quick and easy part enlargements
- * Possibility for recording data on the masks

- 1.1.2. OPTO-CROP-CARRIER - Rotatable and axially adjustable sandwich-type film carrier accepting OPTO-CROP-MASKS.

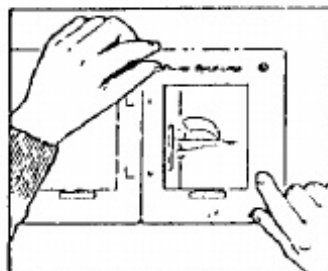
- 1.1.3. OPTO-CROP-DISPLAY - OPTO-CROP-MASK holder with built-in light table to be used in the lab's reception. Customers may glue their negatives into the masks, note down data and leave them with the receptionist.

- 1.1.4. OPTO-CROP-FILE - File for storing OPTO-CROP-MASKS.

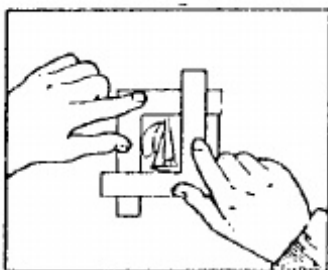
2. INSERTING SINGLE NEGATIVES OR TRANSPARENCIES IN THE OPTO-CROP-MASK

- * Select OPTO-CROP-MASK matching your film size

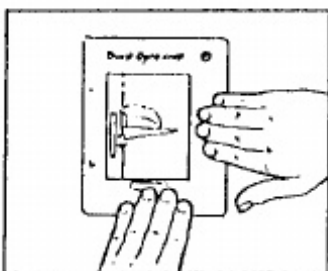
- * Crop negative area to be enlarged or,



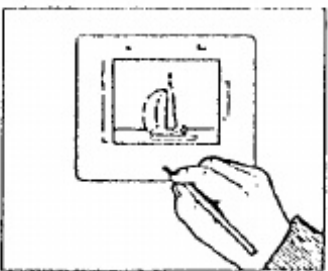
- * when enlarging particular negative sections, use angle



- * close OPTO-CROP-MASK and press tightly together



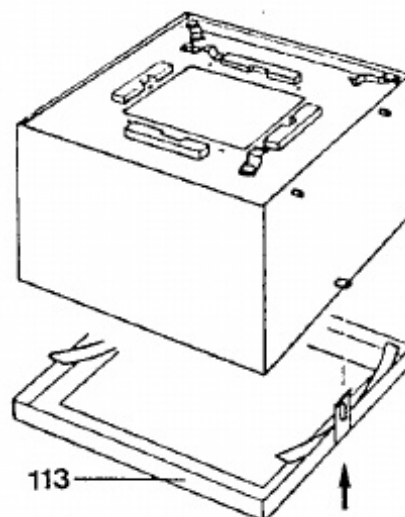
- * Fill in customer's mask section



OPTO-CROP-SYSTEM

3. MOUNTING OPTODAP-NEG AND OPTODAP-BOX ADAPTERS

* Push adapter (112) into the unit



* Press adapter (113) against
the mixing box

4. INSERTING OPTO-CROP-MASKS IN THE FILM CARRIER

* Open film carrier

* Insert masks

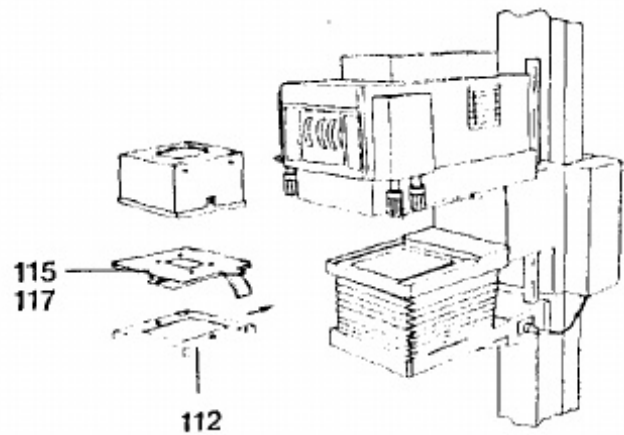
* Close film carrier

5. FITTING THE FILM CARRIER

- * Slide film carrier (117) into the unit. The film carrier comes to rest in the 90 degree angle positions (vertical or transverse axis)

Crop

- * Slightly lift and rotate the film carrier or adjust it axially



6. ACCESSORY RANGE

Masks

OPTO-CROP-MASK	FOR FILM SIZES
1	18 x 24 mm
2	24 x 36 mm
3	4.5 x 6 cm
4	6 x 6 cm
5	6 x 7 cm
6	6 x 9 cm
7	9 x 12 cm
8	10 x 12.5 cm

- Film carrier stage adapter : OPTODAP-NEG
- Mixing box adapter : OPTODAP-BOX

O p e r a t i n g m a n u a l

D U R S T O P T O C O M

F E B I D A P

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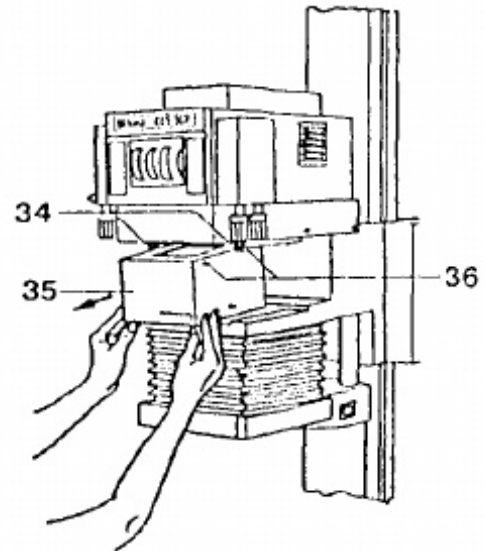
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1. INTRODUCTION

The special FEBIDAP adapter permits quick and easy processing of 35 mm and 120/220 films. The advantage of this film carrier system is the possibility of rotating the film carrier with mixing box or condensers through 90 degrees, which is an important feature when using roll-paper easels.

2. MOUNTING THE ADAPTER

- * Remove mixing box (35)

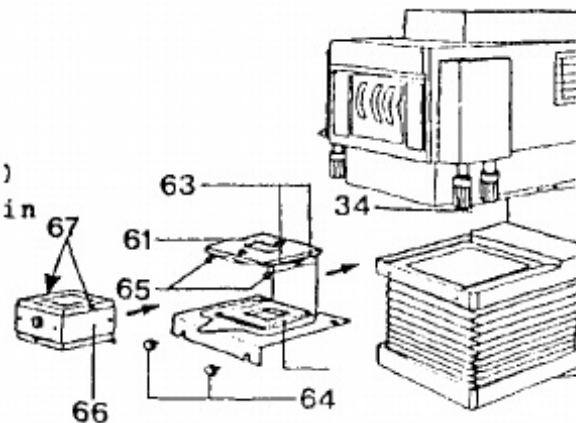


- * Push catches (34) forward

- * Place the adapter's top section (61) with the four retaining studs (63) in the cutouts in the catches (34)

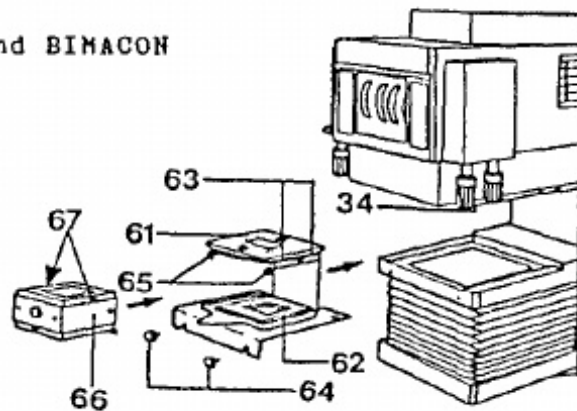
- * Push back catches (34)

- * Insert the adapter's bottom section (62) and secure with knurled-head screws (64)



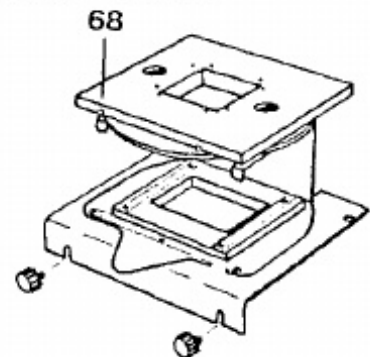
2.1. Fitting the BIMABOX mixing boxes and BIMACON /FEMOCON 50 condensers

- * Push catches (65) forward
- * Place the mixing box (66) with the two retaining studs (67) in the cutouts of the catches (65)
- * Push back catches (65)



2.2. Condenser combination table for Durst OPTOCOM for the use of Durst NEONON, Schneider COMPONON or Rodenstock RODAGON lenses with an opal lamp as light source

- * Remove intermediate part (68) to avoid vignetting

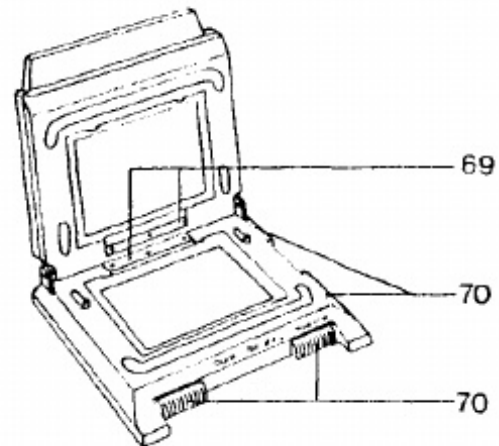


Focal length in mm	Film size	Magnification factors		Condenser combinations with use of FEBIDAP
		min. *	max. *	
50 mm	24 x 36 mm	0.7 x	1.4 x	BIMACON 80
		1.5 x	26 x	FEMOCON 50 BIMACON 80
60 mm	32 x 45 mm microfiche	0.7 x	21.5 x	BIMACON 75
80 mm	6 x 6 cm 4.5 x 6 cm	1.0 x	15.4 x	BIMACON 80
100 mm	6 x 9 cm 6 x 7 cm	2.7 x	11.8 x	BIMACON 80
105 mm	6 x 9 cm 6 x 7 cm	2.7 x	11.2 x	BIMACON 80

* indicative values

2.3. Fitting a glassless format mask or a film carrier glass

- * Remove and open film carrier
- * Place desired glassless format mask or film carrier glass in film carrier and push against retaining springs (69)



2.4. Description of masking strips

- * The masking strips (70) avoid the formation of reflections

NOTE: do not use the masking strips for defining film sizes or instead of the BINEMA format masks

2.5. Accessory range for mixing boxes and BINANEG film carrier

- BINABOX 35 N : mixing box for film sizes up to 24 x 36 mm
- BINABOX 66 N : mixing box for film sizes up to 6 x 6 cm
- BINABOX 69 N : mixing box for film sizes up to 6 x 9 cm

NOTE: For shortening exposure times you may use the less dense diffusers, provided you can do with less than perfect colour mixing.

Film carrier glasses

- LURIOGLA : standard film carrier glass
- BIMAGLA AN : anti-Newton film carrier glass

Glassless format masks

- BINEMA 35 : format mask for 24 x 36 mm film sizes
- BINEMA 45 : format mask for 4.5 x 6 cm film sizes
- BINEMA 66 : format mask for 6 x 6 cm film sizes
- BINEMA 67 : format mask for 6 x 7 cm film sizes
- BINEMA 69 : format mask for 6 x 9 cm film sizes
- BINEMA S : for all other film sizes and special sizes
- BIDIA : metal format mask for mounted 35 mm (5x5 cm) slides. To be used in place of the bottom glass in the BINANEK film carrier.

2.6. Accessory condensers

- BIMACON 80 : condenser for 24 x 36 mm, 4.5 x 6 cm, 6 x 6 cm, 6 x 7 cm, 6 x 9 cm film sizes
- BIMACON 75 : condenser for 32 x 45 mm microfiche
- FEMOCON 50 : condenser for 24 x 36 mm film sizes

O p e r a t i n g m a n u a l

D U R S T O P T O C O M

Lens holder / Lens panels

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1. OPTO-UNO SINGLE-LENS HOLDER

1.1. Outfit

OPTO-UNO lens holder complete with red filter

1.2. Mounting lenses in required lens panels

For mounting different lenses or focal lengths, the following lens panels are available as accessories:

- SEIPLA 7539
- SETOPLA 2839
- LAPLA 39 / LAPLA 42 / LAPLA 50

Screw your lens into the appropriate lens panel as shown in the chart here below.

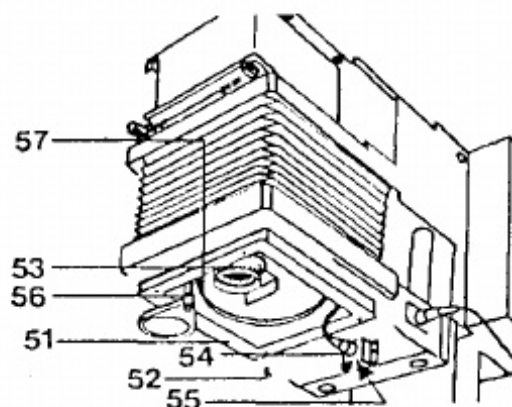
Lens	Thread	Lens panel required
Rodagon 28	M 39	Seipla 7539
Componon 28	M 39	Seipla 7539
Rodagon 35	M 39	Seipla 7539
Componon 35	M 39	Seipla 7539 *
Rodagon 50	M 39	Setopla 2839
Apo-Rodagon 50	M 39	Setopla 2839
Componon 50	M 39	Setopla 2839
Neonon 50	M 39	Setopla 2839
El-Nikkor 50	M 39	Setopla 2839
Rodagon 80	M 39	Lapla 39
Componon 80	M 39	Lapla 39
Neonon 80	M 39	Lapla 39
El-Nikkor 80	M 39	Lapla 39
Apo-Rodagon 80	M 39	Lapla 39
Rodagon 105	M 39	Lapla 39
Componon 100	M 39	Lapla 39
Neonon 105	M 39	Lapla 39
Rodagon 135	M 39	Lapla 39
Componon 135	M 50	Lapla 50
Rodagon 150	M 50	Lapla 50
Componon 150	M 42	Lapla 42

- * If the lens is fully retracted, the FEMONEG film carrier or the FEBIDAP adapter with BIMANEG film carrier can't be pushed in, because of the protruding rearmost lens element. This will however be no problem in all normal focusing settings.

LENS PANELS

1.3. Mounting the OPTO-UNO lens holder

- * Screw down lens holder (51) by means of cross head screws (52)
- * Screw the lens into the appropriate lens panel (53) and fit same in the lens holder
- * Connect plug (54) with socket (55)



1.4. Mounting the red filter or the diffuser

- * Secure shaft with red filter (56) on lens holder with locking screw (57)

2. OPTO-TRIS LENS TURRET FOR MOUNTING THREE LENSES

2.1. Outfit

OPTO-TRIS lens turret complete with:

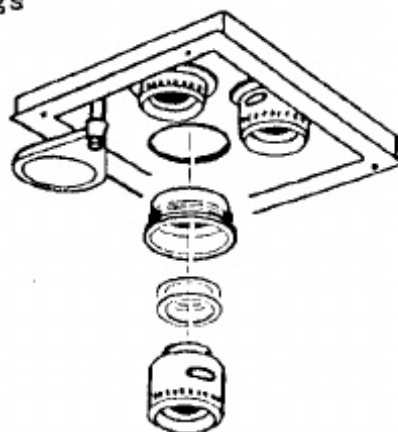
- 1 red filter
- one each adapter ring
 - OPTORING 1939
 - OPTORING 1539
 - OPTORING 7,539
 - HORING 39
 - HORING 42
- 12 spacer rings

2.2. Mounting lenses in required lens adapter rings

NOTE:

Place one or two spacer rings between lens and OPTORING to ensure the f-stop numbers come to rest on a slightly lateral position for better visibility

- * Screw lens into adapter ring (see chart here below)



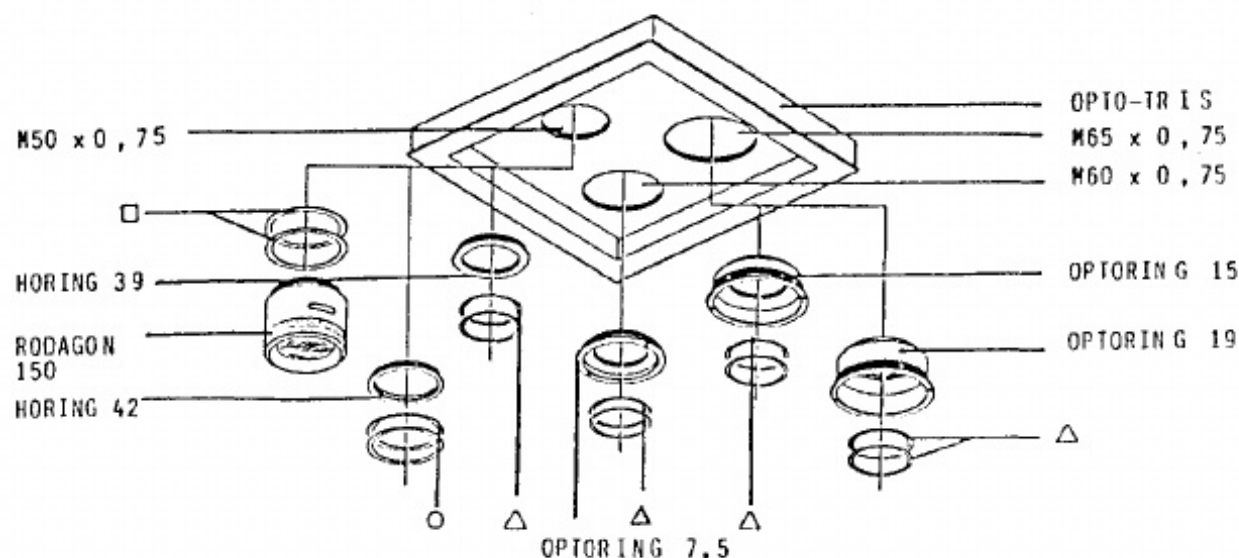
LENS PANELS

Lens adapter ring chart for using different lenses in conjunction with OPTONEG, OPTO-CROP-CARRIER, FEMONEG and BIMANEG film carriers

Lens	Thread	Lens adapter rings required	
		With OPTONEG/OP-TOCROPNEG/FEMONEG film carriers	With BIMANEG film carrier
RODAGON 50	M 39	OPTORING 15 39	OPTORING 19 39
APO-RODAGON 50	M 39	OPTORING 15 39	OPTORING 19 39
COMPONON 50	M 39	OPTORING 15 39	OPTORING 19 39
EL-NIKKOR 50	M 39	OPTORING 15 39	OPTORING 19 39
NEONON 50	M 39	OPTORING 15 39	OPTORING 19 39
COMPONON 60	M 39	OPTORING 15 39	OPTORING 19 39
RODAGON 80	M 39	OPTORING 7,539	OPTORING 7,539
APO-RODAGON 80	M 39	OPTORING 7,539	OPTORING 7,539
COMPONON 80	M 39	OPTORING 7,539	OPTORING 7,539
EL-NIKKOR 80	M 39	OPTORING 7,539	OPTORING 7,539
NEONON 80	M 39	OPTORING 7,539	OPTORING 7,539
RODAGON 105	M 39	OPTORING 7,539	OPTORING 7,539
COMPONON 100	M 39	OPTORING 7,539	OPTORING 7,539
NEONON 105	M 39	OPTORING 7,539	OPTORING 7,539
RODAGON 135	M 39	HORING 39	HORING 39
COMPONON 135	M 42	HORING 42	HORING 42
RODAGON 150	M 50	*	*
COMPONON 150	M 42	HORING 42	HORING 42

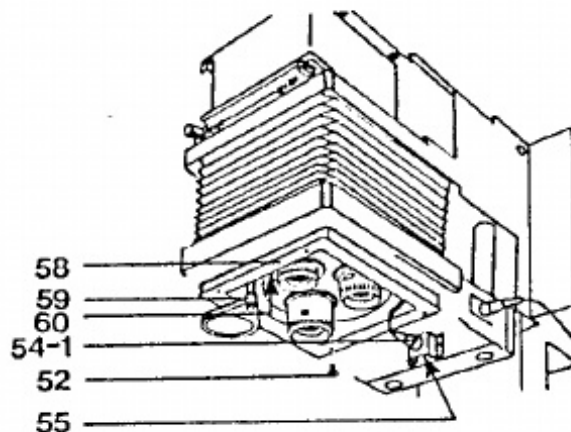
* No lens adapter ring is required. The lens can be screwed directly into the OPTO-TRIS lens turret.

NOTE: Short focal length lenses (shorter than 50 mm) cannot be used in the OPTO-TRIS.



3. Mounting the OPTO-TRIS lens turret

- * Secure lens turret (58) by means of cross head screws (52)
- * Connect plug (54/1) with socket (55)



4. Mounting the red filter or the diffuser

- * Secure shaft with red filter or diffuser (59) on lens turret with locking screw (60)

O p e r a t i n g m a n u a l

D U R S T O P T O C O M

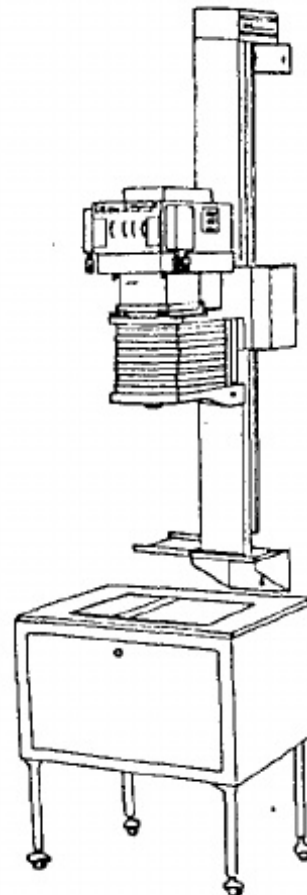
O P T O N A L

1. GENERAL NOTE

Durst OPTO-WAL is the wall-mounting unit for the Durst OPTOCOM enlarger.

Application

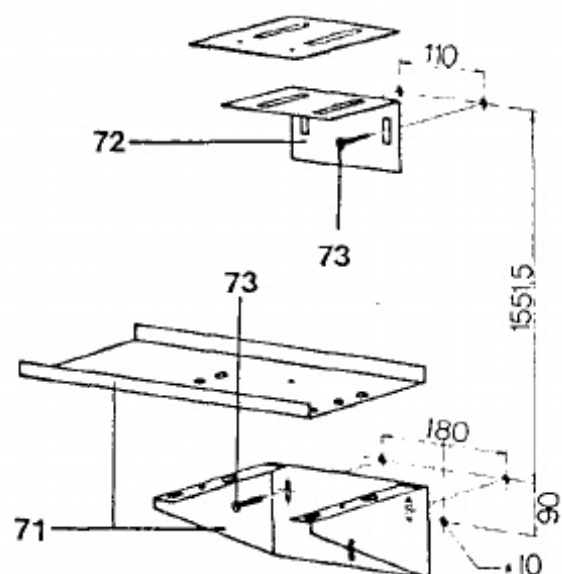
- when using a roll-paper easel
- when making giant enlargements (e.g. floor projection)



2. MOUNTING OPTO-WAL

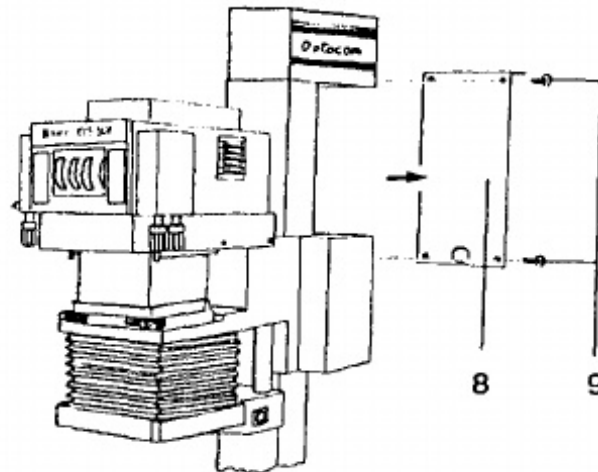
- * Make sure the wall is without unevenness. Level out the wall, if necessary.

- * Mark drill hole positions



- * Drill 10 mm holes and fit dowels

- * Attach plates (71) and (72) by means of screws (73)

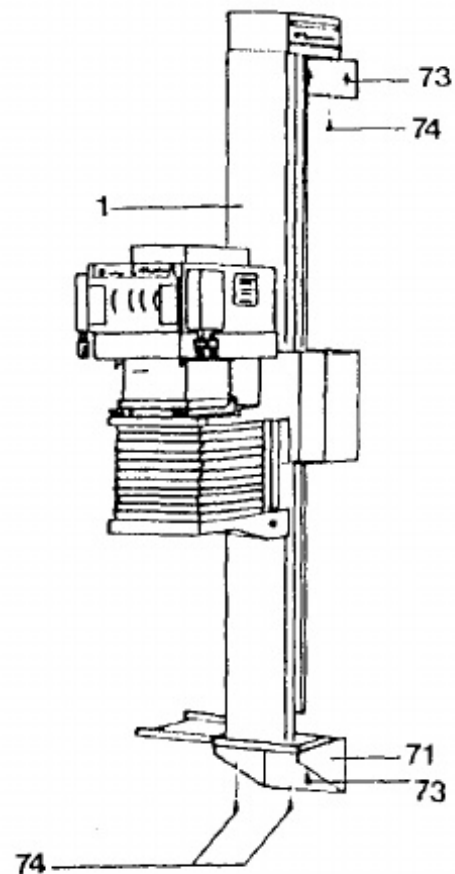


- * Mount the enlarger head (see basic unit operating instructions)

- * Remove baseboard (3) and shipping plate (8), if mounted

IF SHIPPING PLATE (8) IS NOT MOUNTED, DO NOT TAKE THE UNIT IN A HORIZONTAL POSITION AS THE ENLARGER HEAD CAN SHOOT UP EASILY

- * Lift unit with column (1) onto support plate (71) and secure top and bottom with screws (74)
- * Check the unit's vertical position, then tighten screws (73) and (74)

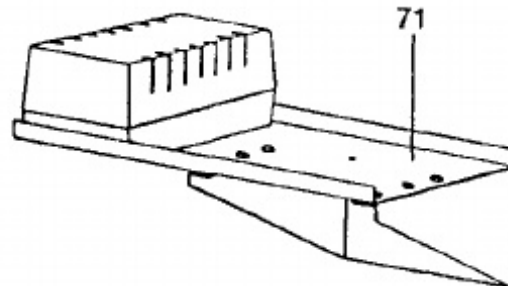


Use a spirit level to check alignment

3. COMPONENTS AND USE THEREOF

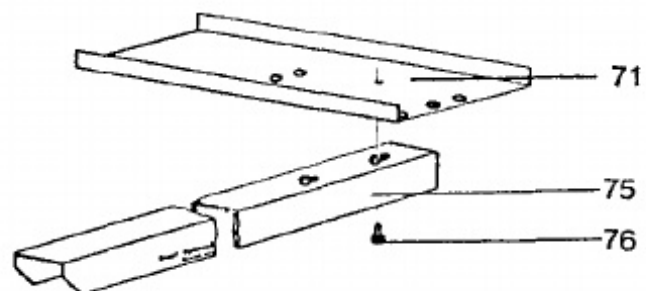
* OPTO-RAL FOCUSING ARM

- to program the autofocus



* PLATE (71)

- serves as repository for the TRA 500 transformer or the EST 500 voltage stabilizer. The EPU 1200 power supply unit for OPTO-AC 1201 and OPTO-COL-EPU for OPTO-COL are best placed on the floor or in the bottom drawer of the LABOM DESK



4. MOUNTING THE FOCUSING ARM

- * Screw down the focusing arm