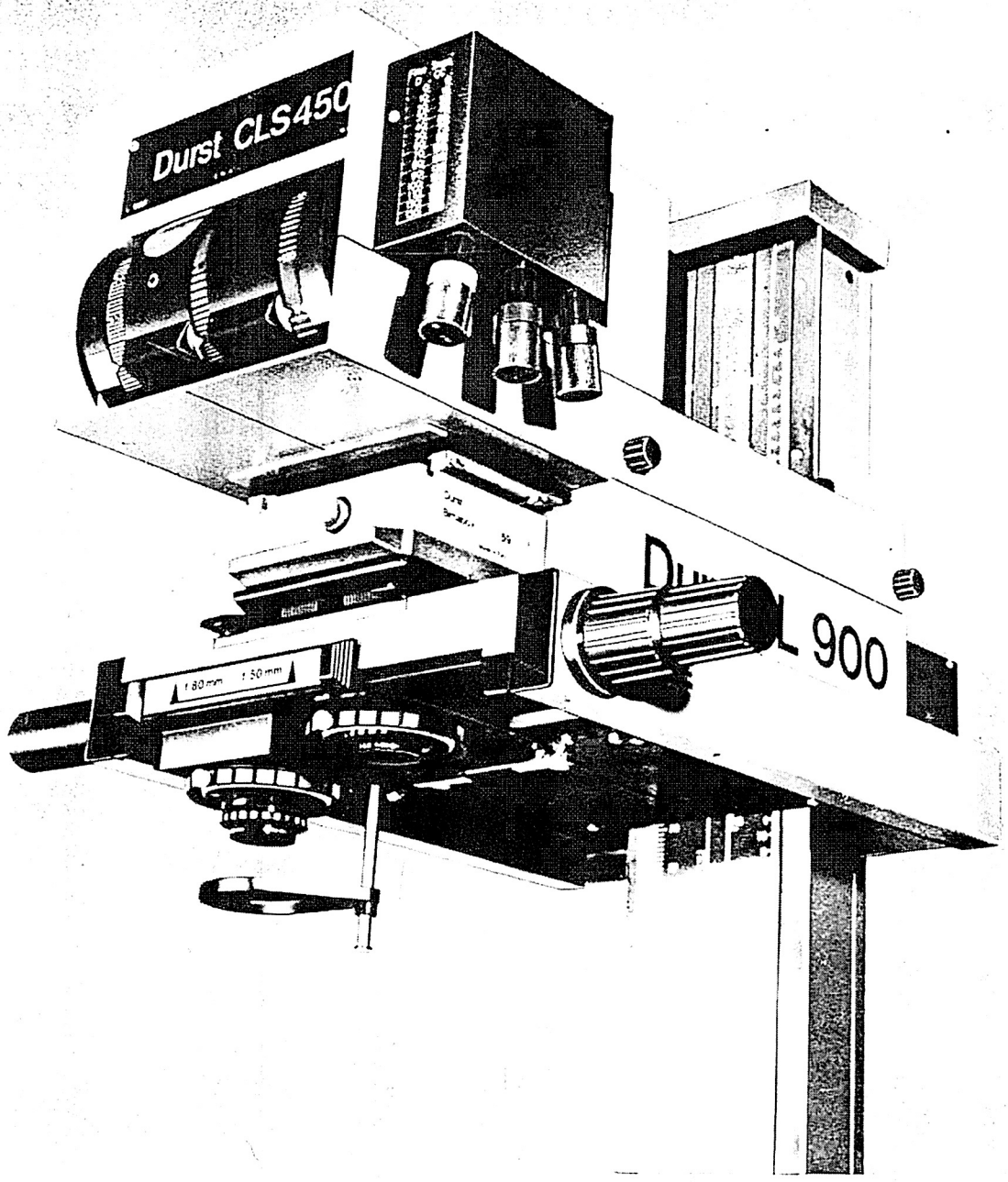
Durst Laborator 900

Operating Instructions



Durst®

Zusatzblatt zur Bedienungsanleitung Durst L 900

ACHTUNG:

Das 1:4/50 mm RODENSTOCK Objektiv darf nur dann in den Objektivschlitten eingesetzt werden, wenn der Schlitten in der Position des 50 mm Objektives ist.
Ansonsten wird ein Umschwenken auf das 80 mm Objektiv verhindert.

Addendum to the Durst L 900 operating instructions

ATTENTION:

The 1:4/50 mm RODENSTOCK lens should only be inserted into the lens slide when the slide is at the 50 mm lens position. Otherwise it's impossible to pivot onto the 80 mm lens position.

Feuille supplementaire aux mode d'emploi du Durst L 900

ATTENTION:

L'objectif 1:4/50 mm de RODENSTOCK ne peut s'insérer dans le chariot de l'objectif que si le chariot se trouve à la position de l'objectif de 50 mm. Autrement il est impossible de pivoter à la position de l'objectif de 80 mm.

Aggiunta alle istruzioni d'uso Durst L 900

ATTENZIONE:

L'obiettivo RODENSTOCK da 1:4/50 mm può essere inserito nell'apposito carrello solo quando questi si trova nella posizione dell'obiettivo da 50 mm.
Altrimenti viene impedito il cambio all'obiettivo da 80 mm.

Hoja adicional a las instrucciones para el uso Durst L 900

ATENCION:

El objetivo RODENSTOCK de 1:4/50 mm solo puede ser colocado en el carro del objetivo, cuando éste se encuentre en la posición del objetivo de 50 mm.
De lo contrario es impedido el cambio al objetivo de 80 mm.

Zusatzblatt zur Bedienungsanleitung LABORATOR 900

Anleitung für den Umbau des CLS 450

Ab CLS 450 - Serie 9315 (November 1978) ist der Farbmischkopf mit verschiedenen Streuschächten versehen.
Vor dem Aufsetzen des Farbmischkopfes auf dem LABORATOR 900 ist folgender Umbau vorzunehmen:

1. CLS 450 auf den Kopf stellen
2. Öffnen der beiden Kreuzschlitzschrauben und entfernen des mit »L 1200« gekennzeichneten Streuschachtes
3. Einführen des Streuschachtes, der mit »L 900« gekennzeichnet ist, unter das schwarze Gehäuseblech des CLS 450 (geliefert mit COLIDAP 900)
4. Gegenschrauben und befestigen mit dem weißen Rähmchen und den beiden Kreuzschlitzschrauben
5. Austausch der unteren Streuscheibe am BIMABOX 69 gegen die mitgelieferte Streuscheibe.

Addenda - LABORATOR 900 Instruction Manual

Instructions for conversion of CLS 450

As of Series 9315 (November 1978) the CLS 450 colour head is supplied with different light mixing shafts.
Before installing this colour head on LABORATOR 900, the following changes become necessary:

1. Turn around CLS 450 so that it comes to rest on its top
2. Undo the two Phillips-head screws and remove the light mixing shaft designated with »L 1200«
3. Insert the »L 900« light mixing shaft underneath the black CLS 450 housing (supplied with COLIDAP 900)
4. Fasten light mixing shaft, including the small white frame, and secure with the two Phillips-head screws
5. Remove lower diffusing disc of BIMABOX 69 and insert diffusing disc supplied.

Addendum au mode d'emploi LABORATOR 900

A partir de la série 9315 de la CLS 450 (novembre 1978), la tête couleur est munie de différentes boîtes de diffusion.

Avant de monter la tête couleur sur le LABORATOR 900, effectuer la conversion suivante:

1. Poser la CLS 450 la tête en bas
2. Ouvrir les deux vis à empreinte cruciforme et enlever la boîte de diffusion portant l'inscription »L 1200«
3. Introduire la boîte de diffusion portant l'inscription »L 900« sous la tôle noire du boîtier de la CLS 450 (fournie avec COLIDAP 900)
4. Contre-visser et fixer avec le petit cadre blanc et les deux vis à empreinte cruciforme
5. Remplacement des deux écrans diffuseurs inférieurs de la BIMABOX 69 par l'écran diffuseur fourni avec l'ensemble.

Foglio aggiuntivo alle istruzioni d'uso LABORATOR 900

Istruzioni per la modifica della testa a colori CLS 450

A partire dalla serie no. 9315 (novembre 1978) la testa a colori Durst CLS 450 è dotata di due diverse scatole di miscelazione.
Prima di montare la testa a colori sul Durst LABORATOR 900 è necessario eseguire la seguente modifica:

1. Capovolgere la testa a colori Durst CLS 450
2. Svitare le due viti con testa a croce e togliere la scatola miscelatrice contrassegnata »L 1200«.
3. Infilare la scatola miscelatrice contrassegnata »L 900« sotto la lamina nera della cappa della testa a colori Durst CLS 450 (fornita con il COLIDAP 900).
4. Avvitare e fissare mediante il telaio bianco e le due viti con testa a croce.
5. Sostituire il vetro diffusore inferiore del BIMABOX 69 con il vetro diffusore fornito assieme alla testa a colori.

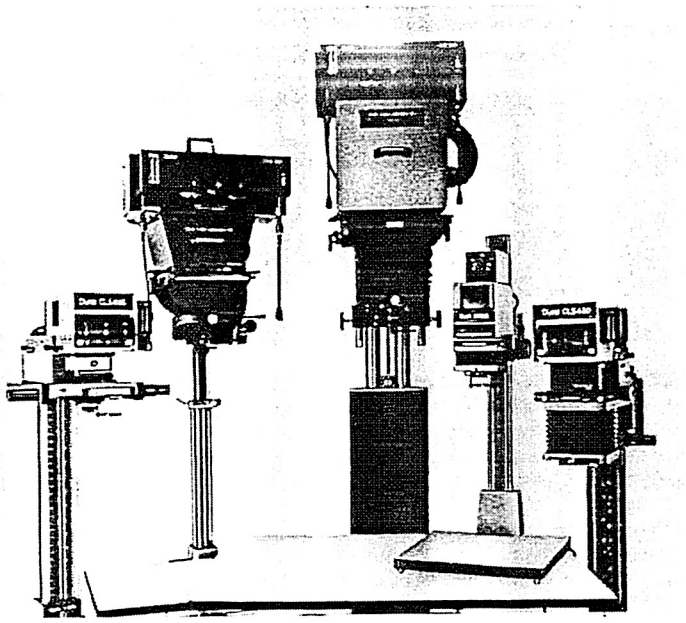
Hoja adicional de las instrucciones de uso LABORATOR 900

Instrucciones para la modificación del CLS 450

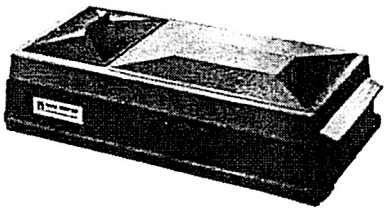
A partir del CLS 450 - serie 9315 (noviembre 1978), el cabezal mezclador de colores está provisto de cajas mezcladoras diversas.
Antes de colocar el cabezal mezclador de colores al LABORATOR 900 es necesario efectuar las modificaciones siguientes:

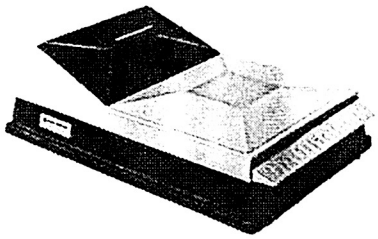
1. Poner al revés el CLS 450
2. Destornillar los dos tornillos de estrella y sacar la caja mezcladora contraseñada con »L 1200«
3. Introducir la caja mezcladora contraseñada con »L 900« debajo de la chapa del chasis negra del CLS 450 (suministrado con COLIDAP 900)
4. Contratornillar y fijar por medio del marco blanco y de los dos tornillos de estrella
5. Cambiar el disco de dispersión inferior en la BIMABOX 69 con lo entregado.

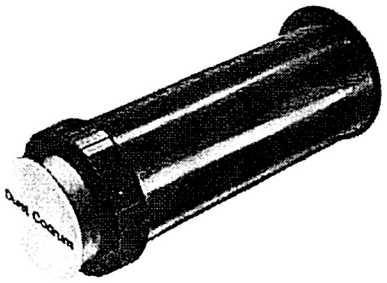
Summary of Durst accessories range



e Durst equipment range covers more than 10 enlargers for professional applications and for enlarging all negative sizes from 24 x 36 mm to 20 x 25 or 24 x 24 cm (8 x 10 or 9½ x 9½ inches). In addition there are colour mixing heads, colour analysers, processors and a wide range of darkroom accessories for the professional photographer with his own darkroom and for professional processing laboratories.







Durst RCP 20

The Durst RCP 20 is a continuous table-top processor for resin coated (RC or PE) black-and-white and colour papers.

.e fully automatic processing sequence covers operations up to and including the bleach-fix stage. The unit runs at a constant speed and hence with controlled action time of the developer, stop-bath and bleach-fix. The solution capacity of the RCP 20 is sufficient for batch of about fortyfive 20 x 25 cm 8 x 10 inch prints. With continuous ..eding you can process up to 20 prints 20 x 25 cm (8 x 10 inches) an hour — or a correspondingly larger number of smaller sizes. For washing we recommend the Durst print washer and for drying the Durst RC 3400 drier.

Durst RCP 40

The Durst RCP 40 continuous table-top processor is similar to the RCP 20 but takes a maximum print size of 40 x 50 cm (16 x 20 inches).

Its heavy-duty mechanical construction, larger solution volume and greater processing capacity make it ideal for more advanced professional requirements. The solution capacity of the RCP 40 can develop about 45 prints 40 x 50 cm (16 x 20 inches). With continuous feeding you can develop up to 20 prints 40 x 50 cm (16 x 20 inches) in an hour, or 40 prints 20 x 25 cm (8 x 10 inches) or a still larger number of smaller sizes.

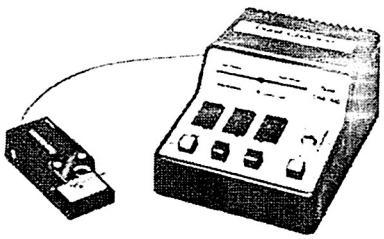
For drying we recommend the Durst RC 5600 drier.

CODRUM print processing drum

This drum facilitates handling of all colour print materials up to 18 x 24 cm and 8 x 10 inches. Processing in the CODRUM takes place by daylight.

The drum is warmed up and moved about, and the solutions changed, by hand.

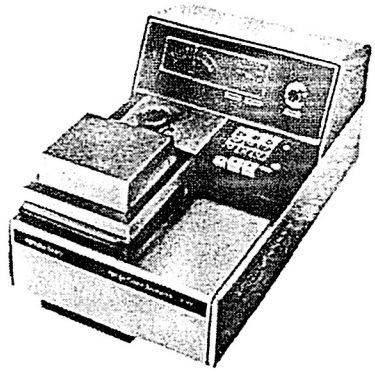
After loading the Codrum is rolled evenly to and fro for the indicated development time. Color development requires specified temperatures which are obtained by pre-warming of the drum in warm water. The material of the CODRUM maintains the required temperature for the duration of the process.



Durst CNA 100 colour analyser

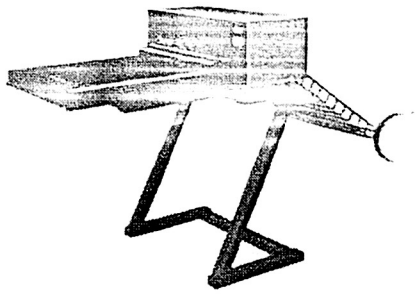
The Durst CNA 100 is a colour analyser for establishing filter setting and exposure times for colour enlargements and transparency duplication. Measurement — by spot or full-area readings — takes place on the enlarger baseboard, using a photodiode which ensures a degree of reproducibility rarely available with conventional measuring instruments.

The response linearity of the photo diodes ensures perfect and precise filter and exposure readings with all colour materials. The stored values are displayed digitally and permit precise resetting for repeat work.



Minolta/Durst NEGA Colour Analyzer 101 and 301

A single reading measures the filter settings and exposure time required for an enlargement and shows them on a scale.
Models 101 and 301 differ in their reading method:
Model 301: Spot readings (1,2 or 3 mm reading area)
Model 101: Full-area integrated readings
Both models can be used for all negative sizes from 35 mm up to 10 x 12.7 cm (4 x 5 inches). Reducing masks also permit small-area integrated readings.
Interchangeable memory modules with three channels each can store data for a number of alternative negative or paper emulsion characteristics.
The unit is particularly suitable for setting up a central measuring station in the processing laboratory.

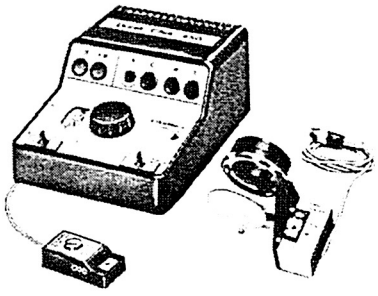


Durst RC 5600

The continuous RC 5600 drier is intended for drying plastic coated papers and can take prints up to a nominal width of 52 cm (20.5 in.). The basic RC 5600 is a table unit where hot air drying only starts after the paper has run through four sets of rollers that squeegee off the water film from the wet paper.

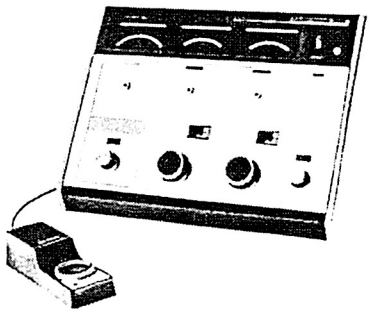
A triple switch controls the paper transport and blower, heating stage 1 and heating stage 2. The throughput rate is infinitely variable.

The Durst drier is intended for large scale in-line operation and can be equipped with a stand and a feed-in unit with drip through.



Durst CNA 450 colour analyser

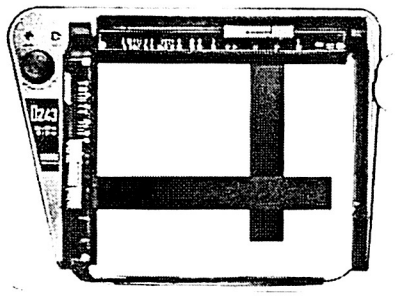
The Durst CNA 450 is a colour analyser and control unit with built-in timer.
It can be used for establishing filter settings and exposure times with the Durst M 800, LABORATOR 900, LABORATOR 1000, LABORATOR 1200, CE 1000, LABORATOR 138 S, G 139, SM 183, LABORATOR 184 and LABORATOR 1800 colour enlargers.
Colour analysis takes place by either full-area or reduced-area integrated readings. A measuring probe establishes the exposure time by readings on the projection surface. Exposure times can be measured by spot readings or diffused light.



Minolta/Durst Color Translator

This colour analyser reads integrated values in the projection plane of the colour enlarger. Four photo diodes in the colour translator measuring probe provide uniform sensitivity over the whole spectral range. The unit can store data of a number of emulsions and yields rapid exposure time and filter value readings.

Its robust design and advanced semiconductor technology ensure straightforward operation and precisely repeatable results.

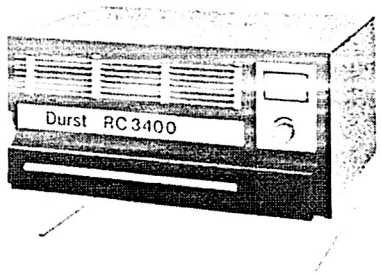


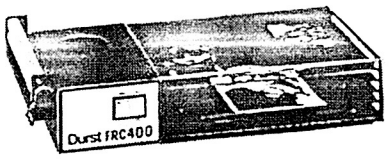
Masking frame

The Durst 243 masking frame takes prin sizes up to 24 x 30 cm or 10 x 12 inches. It consists of a rigid cast frame with independently adjustable masking strips.

These masking strips and a paper stop — adjustable by a milled knob — yield any margin width from 4 to 35 mm.

The frame is easily switched from inch to metric print sizes. At extra cost it is also available with a plastic laminated baseboard.





Durst RC 3400

The RC 3400 is a continuous drier for all plastic coated papers, taking print widths up to 32 cm (12.6 inches). Before the drying stage the paper runs through a squeegee system where two rollers remove all surplus water.

A triple switch controls the paper transport and fan, heating stage for 75° C with 800 watts output and heating stage 2 for 95° C with 1200 watts output.

The run-through speed is infinitely variable. For optimum drying of prints the temperature and run-through speed should be appropriately matched.

The Durst RC 3400 can easily dry 100 prints up to 18 x 24 cm or 8 x 10 inches per hour.

Durst FRC 400

The Durst FRC 400 dries all plastic coated printing papers. This up-to-date drying unit is extremely easy to use and needs virtually no maintenance. A squeegee unit with hand crank first removes excess water. The prints are then placed on grids for drying in the drying section.

A transparent plastic cover keeps in the heat. The unit dries up to four enlargements 30 x 40 cm or 12 x 16 inches — or larger numbers of smaller prints.

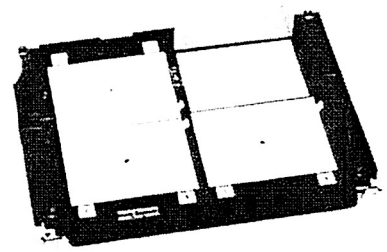
At 90° C prints dry in about 5 minutes. The unit needs no maintenance and no special care apart from keeping it clean.

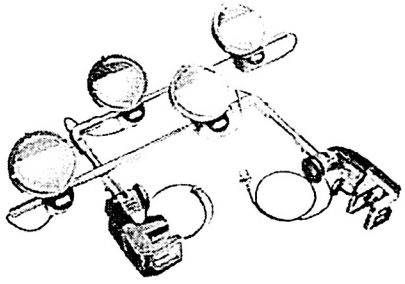
Durst UT 100 cabinet drier

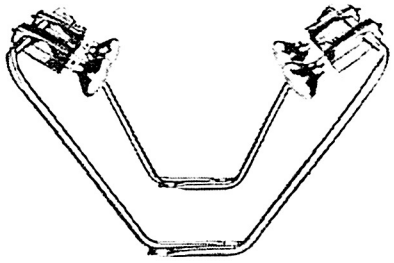
The UT 100 cabinet drier is a dual-purpose unit for drying all films as well as all resin or plastic coated papers. The UT 100 system uses one blower unit with different drying cabinets:

1. Plastic 26 x 20 x 170 cm (10.2 x 7.8 x 67 inches) suspension cabinet for roll films and prints up to 18 x 24 cm and 8 x 10 inches.
2. Plastic 55 x 35 x 75 cm (21.7 x 13.8 x 29.3 inches) suspension cabinet for sheet films and plastic coated papers. (In preparation.)

The unit takes 10 to 12 roll films which require about 10 minutes drying time with heating stage 1 switched on. The compact design and low weight make the unit portable and hence usable anywhere.







Durst COMASK multi-print frame

This multi-print frame can make part exposures of the following standard print sizes:
One print 8 x 10 inches, or
2 prints 5 x 7 inches, or
4 prints 4 x 5 inches, or
1 print 5 x 7 inches plus 2 prints 4 x 5 inches.

The use of a single sheet of standard 10 inch colour paper has the advantage that changing the print size requires no recalibration of the colour analyser to papers of different emulsion batches. An alternative version subdivides 18 x 24 cm sheets into corresponding sub-formats.

RILU copying lighting unit

This is ideal for glare-free illumination. Two plated support arms carrying two reflectors each are mounted on the enlarger with powerful clamps.

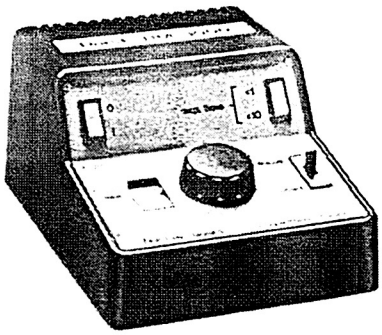
The supporting arms are adjustable in height and locked with clamping screws; they can also be swung out of the way during enlarging. The reflectors take opal lamps up to 150 watts and carry partial diffusers for even illumination of the original; they are individually switchable and adjustable. RILAR extension arms are available for illuminating larger originals beyond 30 x 40 cm or 12 x 16 inches.

CAMFLUD copying lighting unit

This consists of two lamp arms which can carry one or two holders each.

The latter take reflector flood lamps up to 150 watts, are adjustable laterally and rotate about their axis. This permits accurate adjustment of the light angle.

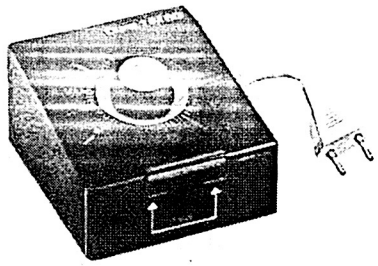
(For the A 300, M 800, A 600 and DA 900 enlargers.)



TIM 1000 electronic exposure timer

The TIM 1000 is a professional timer with fully electronic control. Its absolute precision makes this unit indispensable for all repeat work. The maximum switching capacity is 1000 watts. Times can be set from 2 to 580 seconds; a 10 x changeover switch selects timing ranges of 2 to 58 seconds or of 20 to 580 seconds.

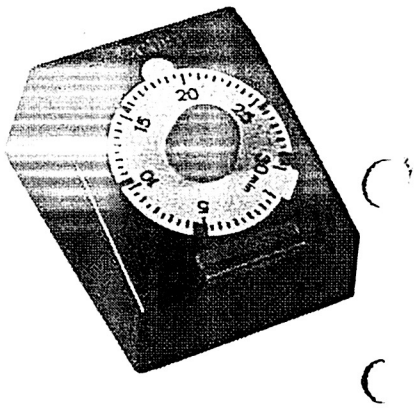
The timing range is sub-divided into 35 logarithmic interval increases or decreases the exposure time by a factor of 1.14 (1/7 lens stop). Other features include a convenient rotating control knob to set the times, an illuminated scale (can be switched off) and cut-out switch.



TIM 60 electronic exposure timer

The Durst TIM 60 is an electro-mechanical timer to control enlarging exposure times. Settings are infinitely variable between 1 and 60 seconds. Times are set by a central knob with built-in return pointer; on releasing, this shows the remaining running time. The phosphorescent dial permits easy reading of the scale even in the dark.

The housing is black high-impact plastic. A single key switches the exposure and the focusing light on or off. With the key up, the enlarger is switched on for focusing; depressing the key triggers the exposure. Switching capacity is 800 watts — 4 amps at 220 to 240 volts or 2 amps at 100 to 110 volts.

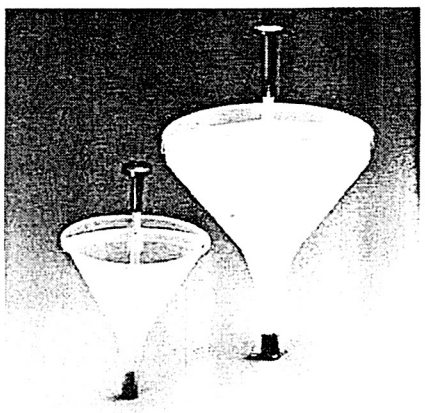


COLTIM programmable processing timer

The Durst COLTIM fills a need in programming colour processes. This reliable timer can now programme all steps of any colour process — film or paper.

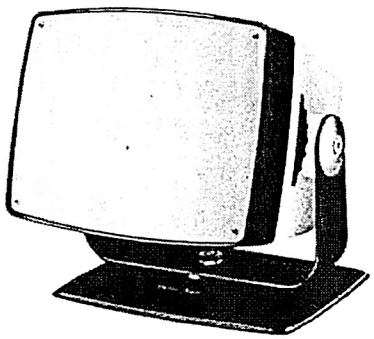
A main advantage is that intervals between individual processing steps can be of any length, for the next step is only triggered by pressing the release key afresh. The COLTIM indicates the end of each processing stage by a distinct bell signal.

The total running time of the mechanical timer system is 30 minutes to permit preprogramming of all film and paper processing sequences.



Measuring funnels

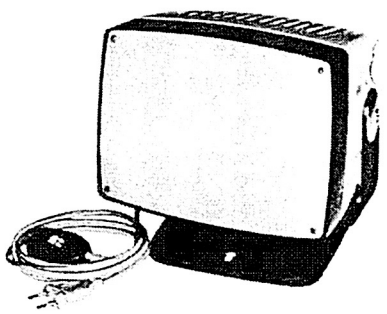
This patented new design is universally useful in the darkroom wherever measurement and filling of liquid is involved. Liquids run through three times faster than with conventional funnels. The funnel automatically closes when the bottle is full. Calibrated scales permit exact charging of solutions into processing tanks. Available in two sizes of 400 and 1500 ml capacity.



SAFIL darkroom lamp

The SAFIL darkroom lamp has a filter turret with five filters — white, orange, light red, olive green and brown — to yield ideal darkroom illumination for processing most commercial black-and-white and colour materials.

The light source is a clear 40 watt bulb. The SAFIL lamp can stand on the bench or be mounted on the wall.



SANAT sodium vapour darkroom lamp

The high light intensity and narrow spectral emission of the sodium vapour lamp for the first time provides optimum illumination in a colour darkroom.

The light source is a 15 watt sodium vapour lamp whose emission band matches the sensitisation gap of colour papers. A dichroic filter accurately limits the emission spectrum. The SANAT lamp makes for more economical and convenient working with colour papers.

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

Durst AG - P.O.Box 445 - 39100 Bolzano/Italy

Our aim is to continue marketing equipment with the most up-to-date technical features to meet the widest possible user requirements. We shall be grateful for your help in answering a few questions. Please detach the completed voucher and send it to the Press and Public Relations department of Durst Inc. I-39100 Bolzano, P.O.Box 445. Italy or to the Durst distributor in your country

Voucher

for Durst Information Service

(please return)

Name (Mr. Mrs. Miss)

First name

Number of house (or apartment/flat)

Street

Town or locality

Post code or zip code

Country

Date of purchase

e.g. if bought in March 1974, put: 0 3 7 4

Serial number of unit

A

Model

Laborator 900

P

A

1. In wich language shall we send you Durst Information?

— German 1 ☐
— English 2 ☐
— French 3 ☐
— Italian 4 ☐
— Spanish 5 ☐

2. What induced you to buy your Durst enlarger?

— recommendation by another owner 1. ☐
— recommendation by a dealer 2. ☐
— demonstration by a Durst sales representative 3. ☐
— demonstration at a fair or exhibition 4 ☐
— reading about it in a periodical 5. ☐
— a Durst advertisement 6. ☐

3. Is this the first Durst product you bought?

— Yes 1. ☐
— No 2. ☐

4. If a professional, what is your field?

— General professional photographer 1 ☐
— Processing laboratory 2 ☐
— Advertising photographer 3 ☐
— Press photographer 4 ☐
— Industrial photographer 5 ☐
— Graphic designer 6 ☐
— Scientific applications 7 ☐

5. How long have you been operating?

— Just started 1 ☐
— One year 2 ☐
— Three years 3 ☐
— Five years 4 ☐
— More than five years 5 ☐

6/12. Which is your main camera type?

6. 35 mm reflex 1. ☐
7. Roll)film ($2^1/_4$x$2^1/_4$ inch) reflex 1 ☐
8. $2^1/_4$x$2^3/_4$ inch (6x7 cm) press or view camera) 1 ☐
9. 4x5 inch or 9x12 cm view camera 1. ☐
10. 5x7 inch or 13x18 cm view camera 1 ☐
11. 8x10 inch or 18x24 cm view camera 1. ☐
12. others 1. ☐

Cut here and return

Important note on the Durst registration card

As in the past, it will always be our aim to market equipment offering the most advanced technical features and meeting widest possible user requirements. Hence we need whatever information we can collect from users. With the Durst registration card we hope to find out more about your work and preferences. In addition we should like to offer buyers and users of our products an improved information service and to tell you about our new items.

Please complete and return the registration card overleaf. We shall then put you on our professional mailing list and automatically send you future news of Durst products and applications.

Thank you for your interest.

Durst AG, Bolzano, Italy
Press and Public Relations Department

B

13/17. What percentage of your enlargements is covered by these print sizes?

13. 8x10 inches or 18x24 cm ☐☐
14. 10x12 inches or 24x30 cm ☐☐
15. 12x16 inches or 30x40 cm ☐☐
16. 16x20 inches or 40x50 cm and 20x24 inches or 50x60 cm ☐☐
17. Larger than 20x24 inches or 50x60 cm ☐☐

18/25. What percentage of your enlargements is made from the following negative formats?

18. 24x36 mm ☐☐
19. 2¼x2¼ inches (6x6 cm) ☐☐
20. 2¼x2¾ inches (6x7 cm) ☐☐
21. 4x5 inches or 9x12 cm ☐☐
22. 5x7 inches or 13x18 cm ☐☐
23. x10 inches or 18x24 cm ☐☐
24. Instant pictures ☐☐
25. others ☐☐

26. What percentage of your enlargements is in colour?

— Estimated percentage ☐☐

C

27. How many enlargers do you own?

— (Please enter number) ☐☐
— More than 50% Durst units ☐
— Less than 50% Durst units ☐
— All Durst units ☐

28. What other makes of enlarger do you use besides Durst?

29. Which photographic periodicals do you subscribe to or read regularly?

(Please indicate titles)

30. Notes

With the LABORATOR 900 you have acquired a high quality product of Durst AG, Bolzano, Italy, which offers top quality and utmost care in workmanship and production control. Thanks to its convenient and reliable operation, this high-class unit will serve you well with all colour and black-and-white enlarging.
Successful operation however depends on precisely following the instructions. This manual thus explains systematically both the assembly and handling of the unit.
Please take the trouble to read this booklet thoroughly. By becoming really familiar with all operations and controls you avoid annoying errors and possible damage.

Durst AG, Bolzano, Italy

Contents

1.0.0. General note

The LABORATOR 900 is a high-performance colour and black-and-white enlarger for the fastidious professional photographer. It is supplied with automatic focusing for a 50 mm and an 80 mm lens. This covers all negative sizes up to 6 x 9 cm or 56 x 73 mm (2¼ x 3¼ inches or 2¼ x 3 inches). The LABORATOR 900 is available to order with either Schneider Componon or Rodenstock Rodagon enlarging lenses. Further, the LABORATOR 900 is supplied to order with the CLS 450 colour mixing head, the BWL 450 diffused lighting unit (for black-and-white enlarging) or the BIMAKIT-BW condenser lighting unit (for black-and-white).
This operating manual covers in detail the basic LABORATOR 900 enlarger as well as the CLS 450 colour mixing head, the BWL 450 diffused lighting unit and the BIMAKIT-BW condenser lighting unit.

2.0.0. Components and controls

2.1.0. The basic enlarger

1) Baseboard
2) Column
3) Enlarger head
4) Column base
5) Hexagonal bolts
6) Reinforcing strips
8) Adjustment panels
9) Lens barrels
10) Milled screws for securing adjustment panels
11) Red filter
12) Hole for fitting red filter
13) Clamping screw of red filter shaft
14) BIMANEG negative carrier
15) Focus Variator panel
16) BIMAGLA negative carrier glasses
17) Clamping strips for negative carrier glasses
19) BINEMA metal mask inserts for glassless enlarging
20) Built-in individually adjustable masking strips
21) Opening bracket of negative carrier
22) Red knob for closing negative carrier
23) Film guide pins
24) Micro register pins
25) Inner milled knob for uncoupling vertical movement
26) Locking knob for vertical movement
27) Outer milled knob for vertical fine adjustment
28) Sliding lens carrier
29) Handle for moving lens carrier
30) Focus Variator knob
31) Focus Variator pointer
32) Focus Variator locking knob
33) Magnification factor scale
34) Centimetre and inch scales
35) Steel tapes
36) Spanner

2.2.0. The CLS 450 colour mixing head

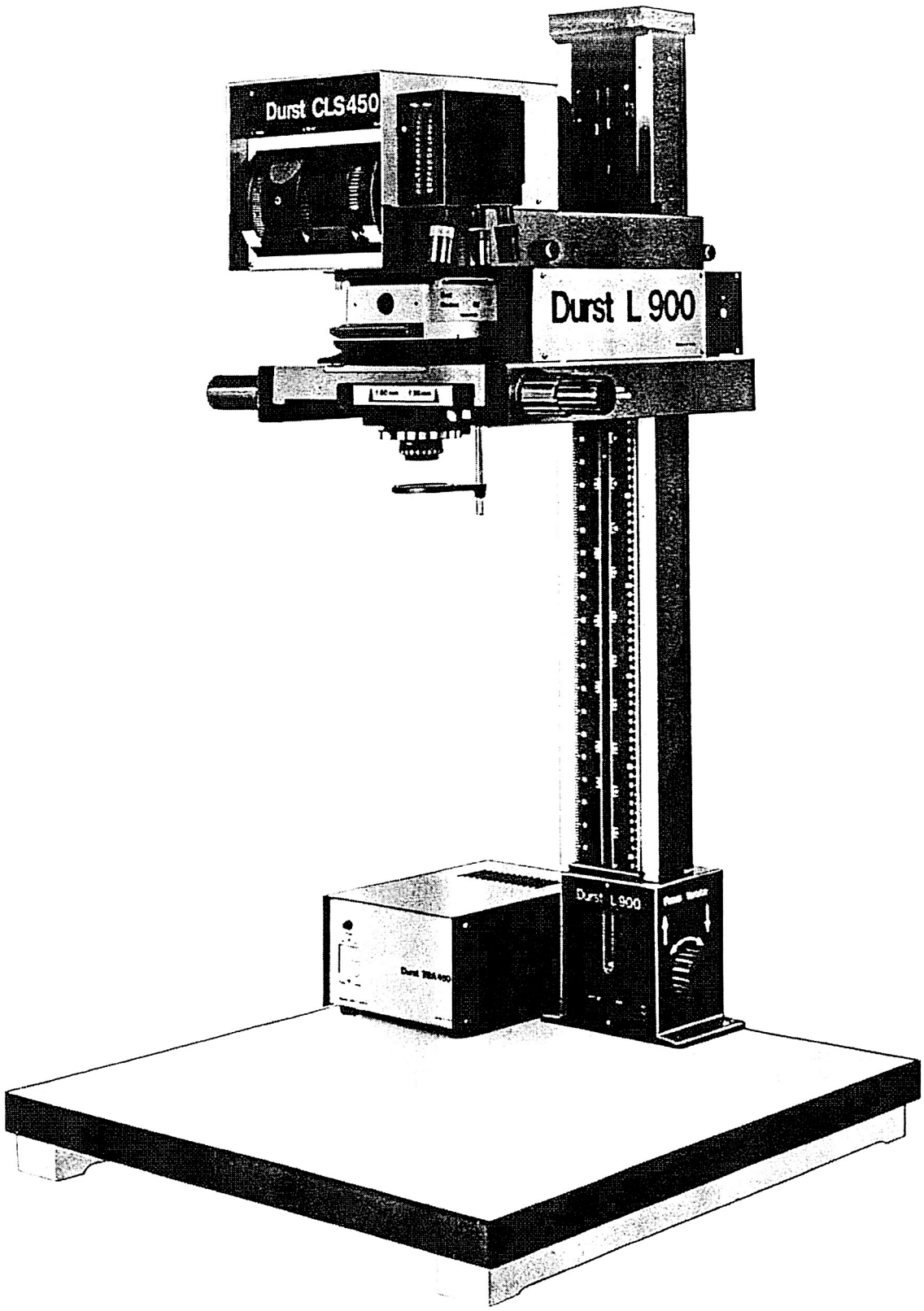
37) COLIDAP 900 adapter
38) Crosshead screws to secure the COLIDAP 900 on the CLS 450
39) Milled screws to secure the CLS 450 on the enlarger head
40) BIMABOX mixing boxes
41) Ground glass screens for BIMABOX
42) Hinged filter holder of mixing boxes
43) Stud of BIMABOX mixing boxes
44) Slots for attaching the mixing boxes
45) Retaining strips for clamping the BIMABOX
46) Lamphouse cover
47) Locking buttons of lamphouse cover
48) Lamp retaining bracket
49) Lamp holder
50) Groove for lamp reflector
51) Connecting lead of colour mixing head
52) Socket for plugging in CLS 450 lead
53) Terminal board
54) Transformer housing
55) Fuse holder
56) Transformer mains supply lead
57) Socket for mains supply lead
58) Connecting lead to timer
58a) Socket for timer connecting lead
59) Earthed Schuko socket for timer mains lead
60) UL socket for timer mains lead
61) Transformer switch
62) Filter setting knobs
63) Extension shafts for filter setting knobs
64) Filter scales
65) Scale lighting switch
66) White light lever
67) Indicating lamp

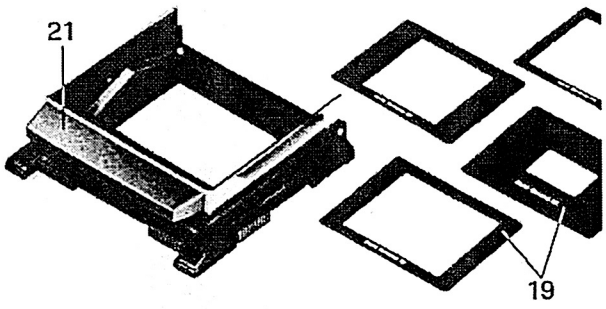
2.3.0. The BWL 450 diffused lighting unit

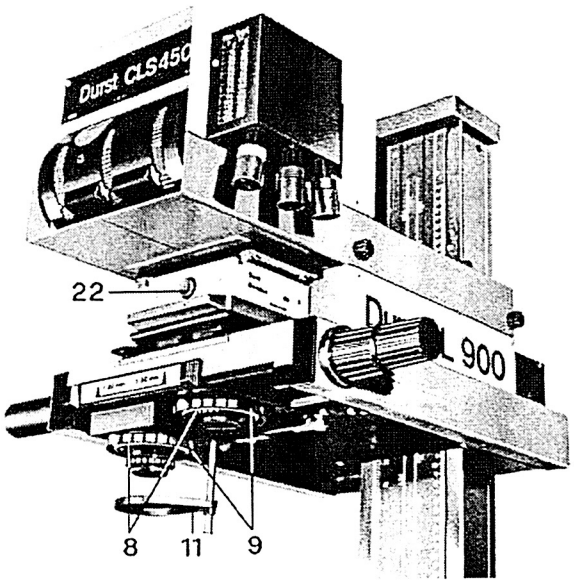
37) COLIDAP 900 adapter
38) Crosshead screws to secure the COLIDAP 900 on the BWL 450
39) Milled screws to secure the BWL 450 on the enlarger head
40) BIMABOX mixing boxes
41) Ground glass screens for BIMABOX
42) Hinged filter holder of mixing boxes
43) Studs for attaching the mixing boxes
44) Slots for attaching the mixing boxes
45) Retaining strips for clamping the BIMABOX
46) Lamphouse cover
47) Locking buttons of lamphouse cover
48) Lamp retaining bracket
49) Lamp holder
50) Groove for lamp reflector
51) BWL 450 connecting lead
52) Socket for plugging in BWL 450 lead
53) Terminal board
54) Transformer housing
55) Fuse holder
56) Transformer mains supply lead
57) Socket for mains supply lead
58) Connecting lead to timer
58a) Socket for timer connecting lead
59) Earthed Schuko socket for the mains lead
60) UL socket for timer mains lead
61) Transformer switch

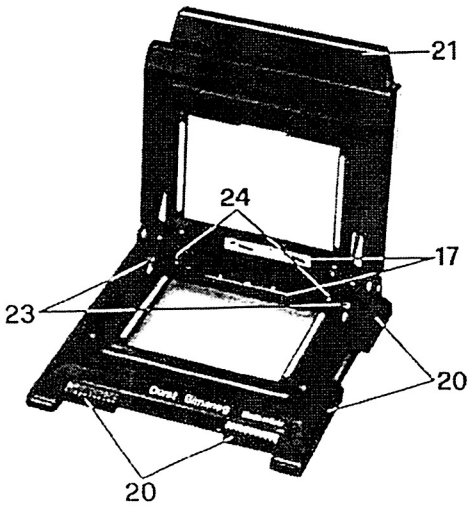
2.4.0. The BIMAKIT condenser lighting unit

68) BIMAHAL adapter
69) BIMACAP lamphouse with deflecting mirror
70) Crosshead screws to secure the BIMAHAL on the lamphouse
71) Milled screws to secure the BIMAKIT-BW on the enlarger head
72) Double BIMACON condenser
73) Stud on BIMACON
74) Slots for attaching the BIMACON
75) Retaining strips for clamping the BIMACON
76) Lamphouse cover
77) Lamphouse cover latch
78) Lamp holder for opal lamp
79) Mains supply lead for opal lamp
80) Hinged cover for lamp holder and lamp centering unit
81) Lateral lamp adjustment knob
82) Vertical lamp adjustment knob
83) Latch of hinged cover
84) Hinged condenser
85) Press buttons to swing in the supplementary condenser
86) Lamp position scale
87) Filter drawer
88) Counterweight spring


Durst CLS450
Durst L 900
Durst L 900







2.5.0. Checking out
The LABORATOR 900 is shipped in a special protective packing. Before assembly carefully clean all components with a cloth.
First check that everything is there. To make the assembly instructions clearer, all items and operational controls are numbered.

3.0.0. Features

3.1.0. Features of the basic enlarger

3.1.1. The negative carrier system
The enlarger is supplied complete with a hinged negative carrier (Order Code: BIMANEG) for all negative sizes up to 6 x 9 cm or 2¼ x 3¼ inches.

The following masks are supplied with the COLIKIT 900 TRA or EST outfit:

BIMASK 69 (6 x 9 cm or 2¼ x 3¼ inches)
BIMASK 72 (56 x 72 mm or 2¼ x 2¾ inches)
BIMASK 66 (6 x 6 cm or 2¼ x 2¼ inches)
BIMASK 35 (24 x 36 mm)

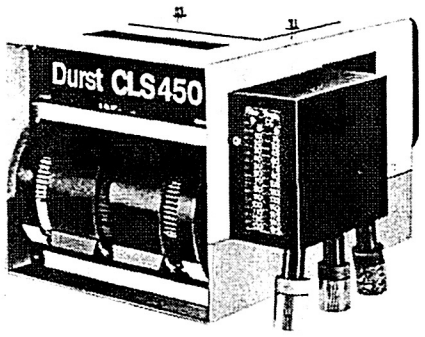
These format masks must be used when enlarging without glasses with the BINEMA metal masks and also when enlarging with negative carrier glasses. Fit the masks by simply pushing them in above the upper negative carrier glass or the upper glassless BINEMA mask.
These additional masks improve illumination.
The negative carrier glasses (Order Code: BIMAGLA) hold negatives absolutely flat. The upper negative carrier glass can be replaced by a coated glass to prevent Newton's rings (Order Code: BIMAGLA AN — available separately). For glassless enlarging the negative carrier glasses are replaced by metal mask inserts (19) (Order Code: BINEMA). When using the pair of glassless BINEMA masks, the position of the negative plane in the carrier is different and a focusing correction is required (a once-and-for-all adjustment). For this purpose move the enlarger head to its top position and rotate the two lens barrels (9) to focus the projected image for maximum sharpness. After this adjustment the LABORATOR 900 is automatically focusing along the whole column when using the BINEMA mask pairs. When enlarging again with negative carrier glasses, return the lens barrels to their engagement stops.
The BINEMA metal masks are available in sizes for 6 x 9 cm (2¼ x 3¼ inch), 6 x 7 cm (2¼ x 2⅞ inch), 6 x 6 cm (2¼ x 2¼ inch) and 24 x 36 mm (35 mm) negatives.
The negative carrier glasses can be removed or fitted on pushing aside the clamping strips (17). In addition the carrier incorporates four individually adjustable masking strips (20) to mask down the image area.
Raising the opening bracket (21) lifts the top section parallel to the bottom section to permit insertion of film strips. Gentle pressure on the red knob (22) of the mixing box closes the negative carrier again and securely holds the film strip in position. The bottom carrier section has two film guide pins (23). These are adjustable for 35 mm and for 6 x 9 cm (2¼ x 3¾ inch) films; to move the pins press them down slightly. Two micro register pins (24) — one of them adjustable — are also built-in for graphic arts jobs requiring accurate register. In that case the film is punched with a register punch (Order Code: MIVALO) available as an accessory.

3.1.2. Lenses
The basic outfit of the LABORATOR 900 includes a 50 mm and an 80 mm lens by either Schneider or Rodenstock, to order. These lenses are factory-set for optimum sharpness; hence neither the screws on the adjustment panels (8) nor the lenses themselves must be reset.

3.1.3. The red filter
The red filter (11) permits observation of the image with the enlarger lamp switched on and the black-and-white

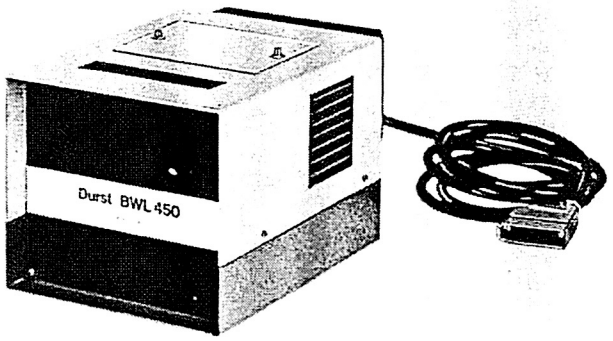
enlarging paper in position (see section 6.0.0.: Enlarging black-and-white negatives). The red filter cannot be used with colour papers.

3.2.0. The CLS 450 colour mixing head
The Durst CLS 450 colour mixing head is equipped with fade-proof dichroic filters that permit infinitely variable adjustment over a filter density range from 0 to 130 (equivalent to approx. 190 in CC filter values).
The interchangeable mixing boxes ensure even illumination of the whole projected image at all magnifications and provide maximum light output.



3.3.0. The BWL 450 diffused lighting unit
The BWL 450 diffused lighting unit is equipped with a 24 volt 250 watt tungsten-halogen lamp with built-in reflector. The interchangeable mixing boxes ensure even illumination of the whole projected image at all magnifications and provide maximum light output.

3.4.0. The BIMAKIT-BW condenser lighting unit
The BIMAKIT-BW condenser lighting unit is equipped with a 250 watt opal lamp. It ensures optimum illumination for black-and-white enlargements if the lamp is correctly centered and the unit used with the BIMACON 80 condenser (with 80 mm lenses) or with the BIMACON 80 condenser plus supplementary condenser (with 50 mm lenses).
In addition, a filter drawer (87) is provided for 12 x 12 cm (4¾ x 4¾ inch) colour or variable contrast filters.



4.0.0. Assembly

4.1.0. Technical data of the basic enlarger
Maximum and minimum magnifications with the LABORATOR 900

Lens (Focal length)	Negative size	Linear magnification with: Projection on baseboard		Projection on floor
		Max.	Min.	Max.
80 mm	6 x 9 cm (2¼ x 3¼ in.) 6 x 7 cm (2¼ x 2¾ in.) 6 x 6 cm (2¼ x 2¼ in.)	1.9x	9.7x	Approx. 18x
0 mm	24 x 36 mm (35 mm)	2.5x	16.0x	* Approx. 33,0x

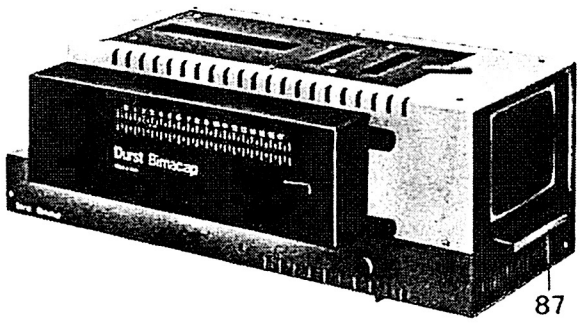
* Floor projection is possible with an adjustable baseboard or bench.

Dimensions and weight:

Maximum height of enlarger head with Focus Variator raised:	1385 mm (55½ in.)
Maximum height of column with Focus Variator raised:	1285 mm (50⅝ in.)
Baseboard size:	80 x 650 x 700 mm (3⅛ x 25⅝ x 27½ in.)
Usable baseboard area:	575 x 650 mm (22⅝ x 25⅝ in.)
Optical axis/column base distance:	303 mm (12 in.)
Gross weight:	Approx. 110 kg (242½ lbs)
Net weight:	51 kg (112½ lbs)

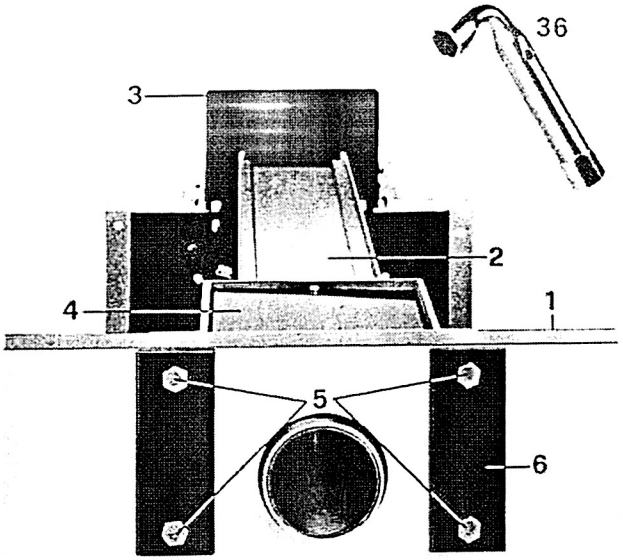
4.1.1. Technical data of the CLS 450 and BWL 450
Both the transformer (Order Code: COLITRA 450) and the electric voltage stabiliser (Order Code: COLISTA 450) can be connected to the following supply voltages:

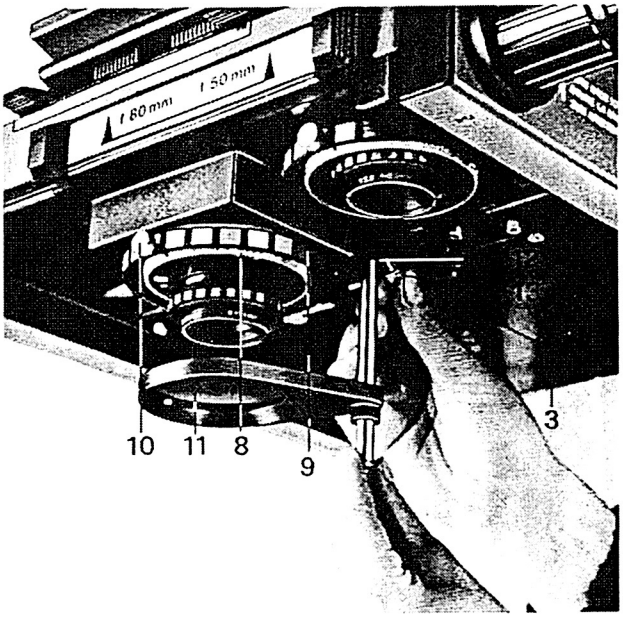
10, 220 and 240 volts, 50-60 Hz
Current consumption: Approx. 300 watts
Net weight: Approx. 7.5 kg (16½ lbs)
The BWL 450 can also be fed from the TRA 80 transformer.

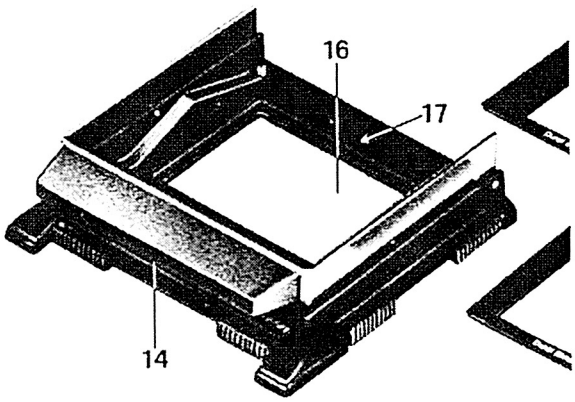


4.1.2. Technical data of the BIMAKIT-BW

Current consumption:	Approx. 300 watts
Net weight:	Approx. 8.0 kg (17⅝ lbs)







4.2.0. Assembly of the basic enlarger

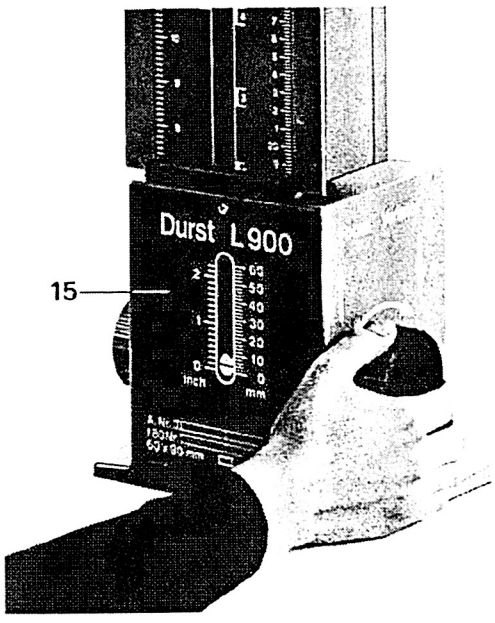
4.2.1. The baseboard, column base, column and enlarger head
Place the baseboard (1) on a table and locate the column (2) together with the enlarger head (3) and column base (4) over the holes in the baseboard so that the four hexagonal bolts (5) can be screwed in from underneath the baseboard with the spanner (36). First however place the reinforcing metal strips (6) underneath.

4.2.2. Fitting the lenses
The correct serial numbers of the lenses are engraved on the Focus Variator panel. If these numbers do not agree with the serial numbers of the lenses themselves, please notify us, quoting the exact numbers.
Secure the lenses with their adjustment panels (8) on the 3-point support of the lens barrels (9) with the milled screws (10). Check that the index point on the adjustment panel is correctly lined up with the lens barrel.

4.2.3. The red filter
To fit the red filter (11) push the red filter shaft into the appropriate hole (12) of the enlarger head (3) and secure with the clamping screw (13).

4.2.4. Fitting the negative carrier
The serial number of the negative carrier (14) supplied with the unit must match the serial number of the enlarger engraved on the Focus Variator panel (15).
If the two do not agree, please notify us, quoting the exact numbers. The negative carrier is normally supplied with two glasses (16) wich are held in position by sliding clamping strips (17). Push the carrier into the enlarger head until it engages in position. To remove the carrier, slightly raise it first.

4.3.0. Assembling the CLS 450 or BWL 450
An adapter (37) (Order Code: COLIDAP 900) is required for the LABORATOR 900 when equipped with the CLS 450 colour mixing head or the BWL 450 diffused lighting unit. Screw the adapter to the CLS 450 or BWL 450 with the four crosshead screws (38) and mount the assembly on the enlarger head with the six milled screws (39).

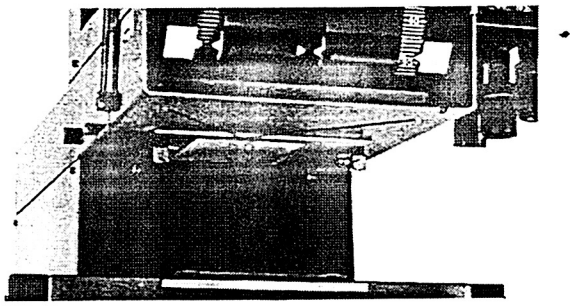


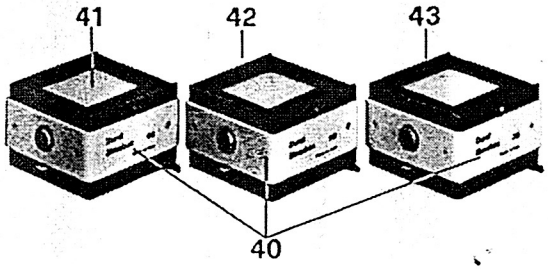
4.3.1. Fitting the mixing boxes

The outfit with the CLS 450 or BWL 450 includes mixing boxes (40) for the following negative sizes: 6 x 9 cm or 2½ x 3¼ inches (Order Code: BIMABOX 69), 6 x 6 cm or 2¼ x 2¼ inches (Order Code: BIMABOX 66) and 24 x 36 mm (35 mm) (Order Code: BIMABOX 35).

nsert the mixing box required by the two studs (43) into the slots (44) provided for the purpose in the base of the COLIDAP 900. The two retaining strips (45) secure the mixing box. A ground glass screen (41) each is supplied with the BIMABOX 69, 66 and 35. This ground glass diffuser should always be used with the BIMABOX 69. Raise the hinged holder (42) and place the ground glass screen (41) on top of the BIMABOX 69 mixing boxes. .t is not absolutely necessary to use the corresponding diffusing screens with the smaller BIMABOX 66 and BIMABOX 35 mixing boxes, but they are still advisable for optimal colour mixing and illumination at all magnifications.

In addition a diffuser of 0.40 density is supplied with each of the BIMABOX 66 and 69 mixing boxes. This diffuser should be used for enlargements where particularly uniform light mixing is essential. The diffuser fits in the mixing boxes in place of the diffusing screen already provided.



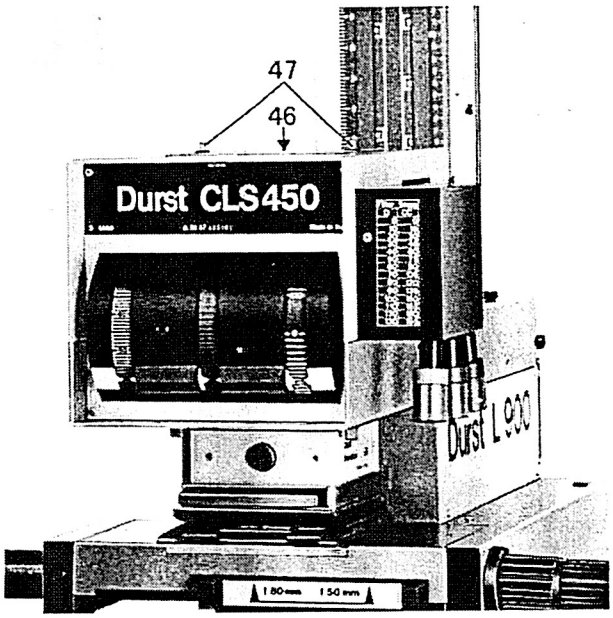


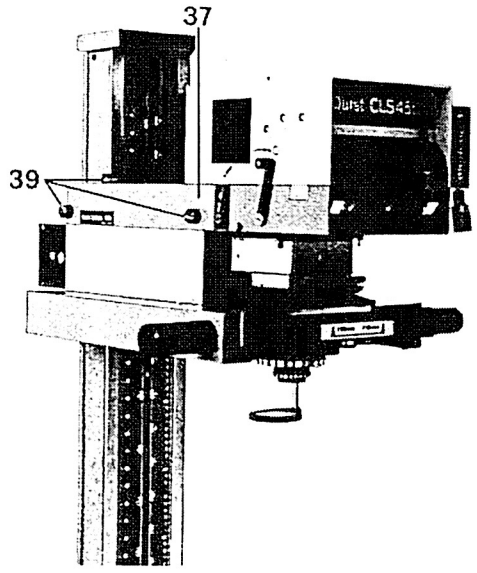
4.3.2. Fitting the lamp in the CLS 450 and BWL 450

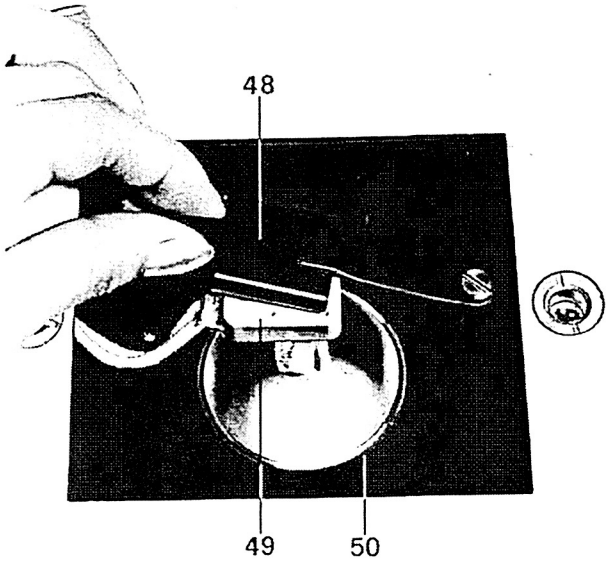
The lamphouse cover (46) is on top of the CLS 450 or BWL 450. Press the two buttons (47) to remove the cover. A retaining bracket (48) visible inside the lamphouse secures the tungsten-halogen lamp. Push this bracket (48) to the left or right to clear the lamp holder (49), then pull up the lamp holder (49) through the opening and fit a 24 volt 250 watt tungsten-halogen lamp with built-in reflector.

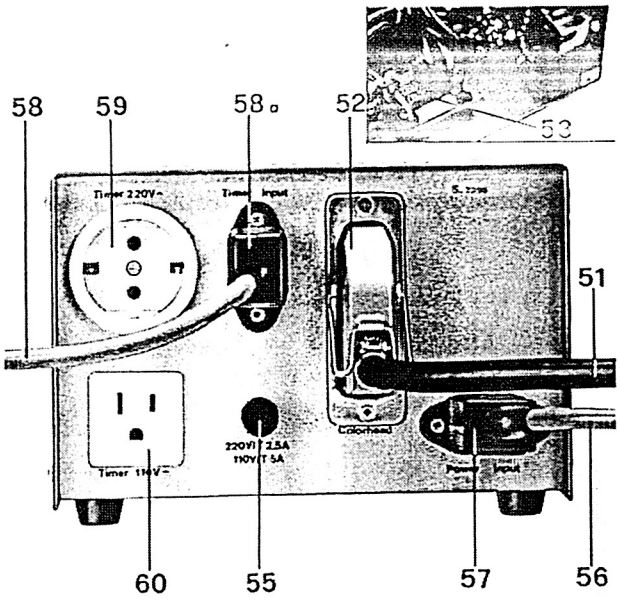
This type of lamp is available either from Durst (Order Code: COLAMP 250) or through the electrical trade. The designation of the lamp made by General Electric is ELC 250 W/24 V. Similar lamps are also available from other manufacturers (e. g. Osram). Use only lamps without centering mark on the reflector.

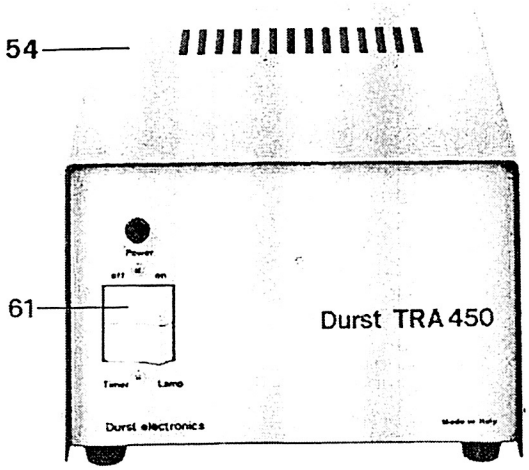
Firmly push the pins of the lamp into the lamp holder. Lower the lamp into the lamphouse so that the front edge of the reflector engages the groove (50) of the guide plate. Clamp down the lampholder with the bracket (48), hen close the lamphouse by replacing the cover (46) and secure by pressing in the two buttons (47).











4.3.3. Connecting the TRA 450 transformer and a timer

Plug the lead (51) from the CLS 450 or BWL 450 into the appropriate socket (52) at the rear of the transformer. This socket is marked "Color head". The transformer is factory-set to the normal input voltage of the country (110, 220 or 240 volts) where it is supplied.

If the transformer is to be connected to a different voltage, set this by replugging the leads on the terminal board (53) provided for the purpose. To do this, first remove the cover (54). Where the transformer is supplied set to an input voltage of 220 or 240 volts, the fuse holder (55) contains a 2.5 amp fuse. A 5 amp fuse is fitted where the transformer is set to a 110 volt mains supply.

Four fuses for 110, 220, 240 volts are normally supplied with the transformer. Then plug the female plug of the mains lead (56) into the socket (57) and plug the other end into a mains supply socket.

Connect the timer to the socket (58a) via a lead (58). The current to the timer is supplied via the earthed Schuko (59) or UL (60) socket or by direct connection to the mains supply.

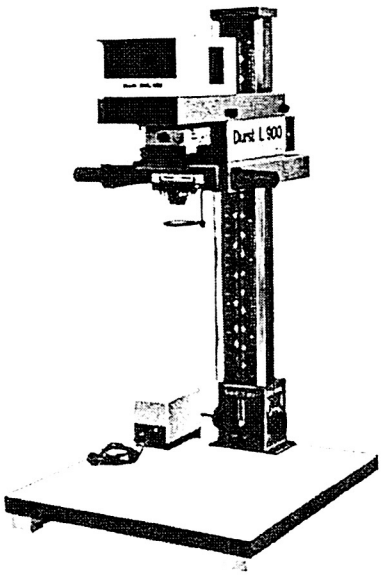
The switch (61) switches the transformer on and off.

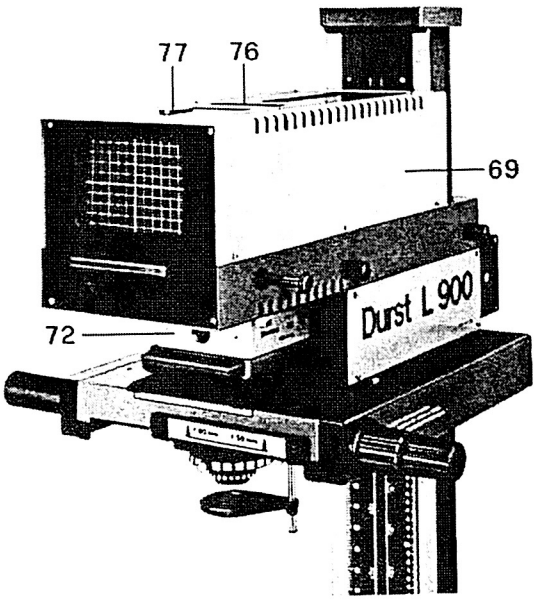
The front of the transformer carries a further switch with two positions marked "Lamp" and "Timer". The "Lamp" position is for continuous light (focusing) while in the "Timer" position the exposure is controlled by the timer connected to the unit.

The version of the CLS 450 or BWL 450 with the TRA 450 does not provide automatic voltage stabilisation for the CLS 450 colour mixing head. This version of the unit should therefore be connected either to a voltage-stabilised mains supply or to a separate voltage stabiliser. This is essential for consistent colour enlargements.

4.3.4. Connecting the EST 450 voltage stabiliser and a timer

The EST 450 is an electronic voltage stabiliser with built-in transformer. It stabilises the light intensity within ±15% with a response speed of 1/200 second. The voltage stabiliser is connected and used in the same way as the TRA 450 (see section 4.3.3.).





4.3.5. Connecting the TRA 80 transformer and a timer
The BWL 450 diffused lighting unit can also be operated via the TRA 80 and a timer.

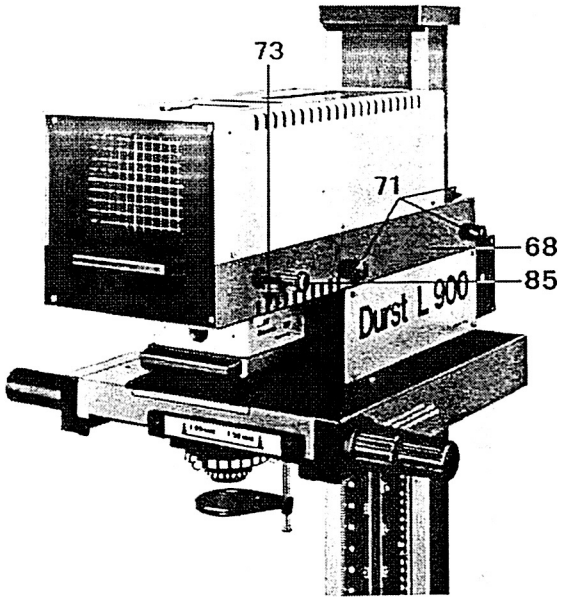
4.3.6. Connecting the COLITRA 450 to prestabilised or regulated power supplies
Experience has shown that commercial magnetic stabilisers with a power rating below 1000 watts are inadequate for absorbing the current surge on switching on the tungsten-halogen lamp in the CLS 450 colour mixing head. This results in a brief cut-out of the supply voltage and chatter of the relays. That in turn appreciably reduces the service life of the relays and of the lamp in the colour mixing head. The same applies to regulated voltage supplies.

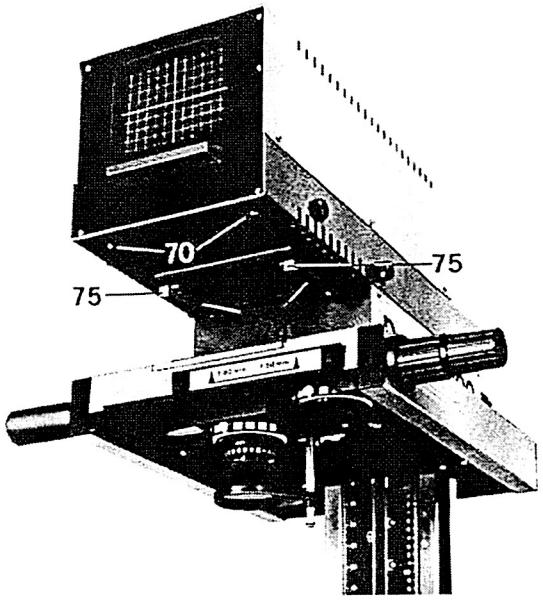
To avoid this, use magnetic voltage stabilisers capable of handling at least 1000 watts and/or improve the electric wiring (short lead with minimum copper wire cross section of 1.5 sq. mm).

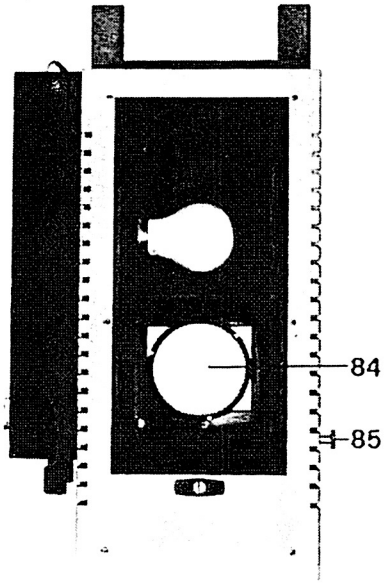
4.4.0. Assembly of the BIMAKIT-BW condenser lighting unit
The condenser lighting unit consists of the following items:

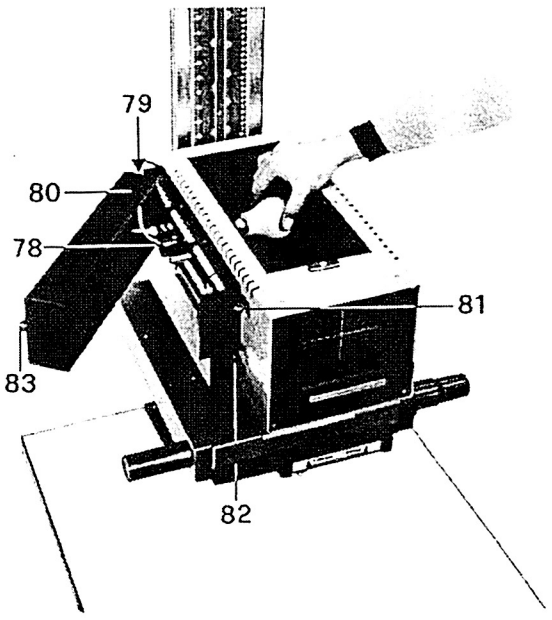
Lamphouse (69) (Order Code: BIMACAP), adapter (68) (Order Code: BIMAHAL) with hinged supplementary condenser (84) and double condenser (72) (Order Code: BIMACON 80).
Secure the BIMAHAL adapter to the BIMACAP lamphouse with the crosshead screws (70) and attach the assembly to the enlarger head with the six milled screws (71).
Mount the lamphouse cover (76) with the deflecting mirror on the lamphouse (69) (Order Code: BIMACAP) and secure with the red rotating latch (77).
Introduce the double condenser (72) (Order Code: BIMACON 80) with the two studs (73) into the slots (74) provided for the purpose in the base of the BIMAHAL.
Secure the BIMACON 80 by sliding back the clamping strips (75).

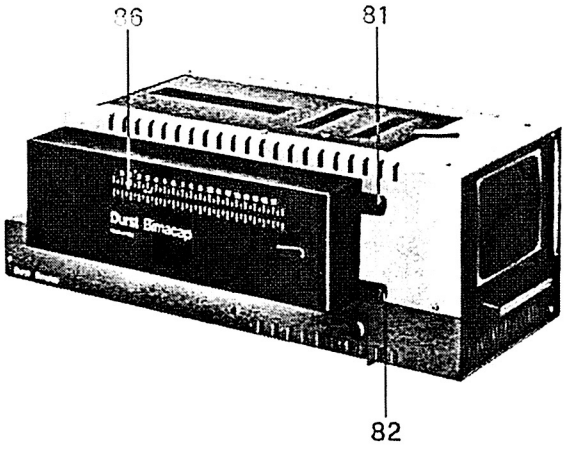
4.4.1. Fitting the opal lamp
Swing aside the hinged cover (80) and push the lamp holder (78) from the left into the opening in the lamphouse.
Remove the lamphouse cover (76) and screw an opal lamp up to 250 watts (Durst DULAMP 250) into the lamp holder.











The lamp can be centered laterally and vertically by turning the knobs (81) and (82) at the left of the BIMAHAL, thus rotating the lamp or moving it in and out.
The scale (86) shows the lamp position after adjustment.

4.4.2. The filter drawer

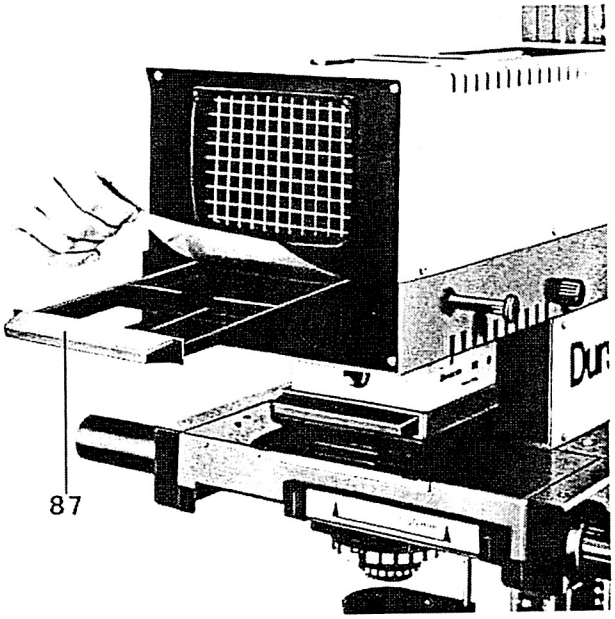
The basic BIMAKIT-BW outfit also includes a filter drawer (87) above the condensers to take single filters up to 12 x 12 cm (4³/₄ x 4³/₄ inches) large.

5.0.0. Operation

5.1.0. Clean negatives

Dust and fingerprints on negatives show up disturbingly in enlargements. Therefore always clean dirty negatives before enlarging them. Remove any dust with a camelhair brush or anti-static brush. Gently clean off fingerprints with a fluffless cloth. Obstinate dirt may be removed with a good-quality negative cleaning fluid. Negatives must always be dry before insertion in the negative carrier.

In every case clean negatives very carefully to avoid scratching the emulsion surface.



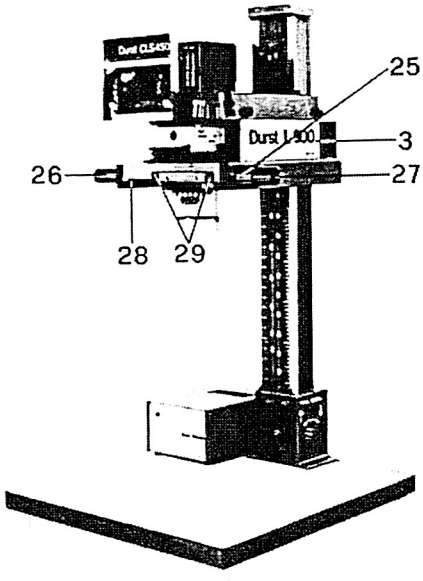
5.2.0. Setting the protected image size

Adjust the required projected image size by raising or lowering the enlarger head; the higher the head, the larger the image. For rapid adjustment turn the inner milled knob (25) to uncouple it. Grip the knob (26) at the other side to raise or lower the enlarger head rapidly to the required level. After locking the inner milled knob (25) turn the outer milled knob (27) for fine adjustment.

5.3.0. The automatic focusing system

When enlarging on the baseboard, the LABORATOR 900 focuses the image automatically. This ensures a sharp projected image in any position of the enlarger head along the column, provided that the correct lens — factory-set for the automatic focusing mechanism — is used.

For correct automatic focusing the sliding lens carrier (28) must precisely engage in either position. To swich lenses always move the carrier by the handle (29), never by the lenses or the barrels themselves.



5.4.0. The Focus Variator

The automatic focusing system is factory-adjusted to the plane of the baseboard. When masking frames or other paper holders are used, the plane of maximum sharpness can be raised to the paper plane of the masking frame with the aid of the Focus Variator.

The Focus Variator of the LABORATOR 900 can raise the image plane by up to 6 cm (2³/₈ inches). Turning the knob (30) raises the column; the pointer (31) shows the exact height of the sharp image plane above the baseboard. Lock the column by the knob (32) opposite the Focus Variator knob.

5.5.0. Magnification scales

The scales (33) on the column show the linear magnifications obtained with the 50 and 80 mm lenses when the enlarger head is in different positions on the column. The cm and

inch scales facilitate resetting the enlarger head to specific positions for repeat enlargements.

5.6.0. Enlarging exposures

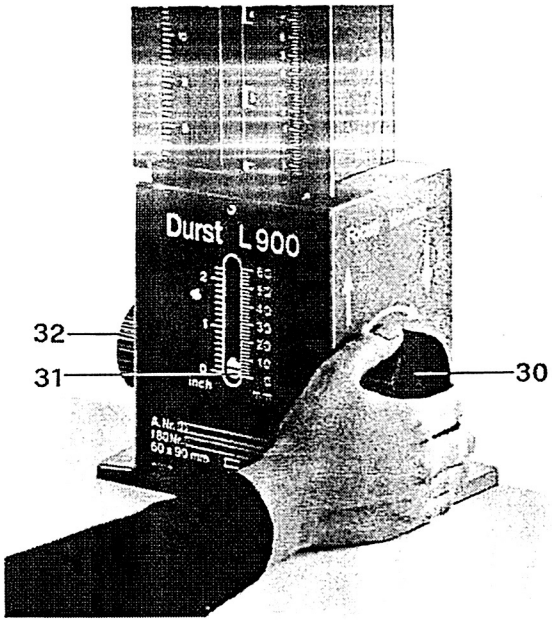
Raising or lowering the enlarger head yields the required enlargement size on the baseboard. Establish the correct exposure time either by making test strips or with suitable exposure measuring systems. Generally, stop down the enlarger lens by two stops to achieve optimum definition and even illumination.

5.6.1. Giant enlargements

If the projected image size obtained on the baseboard is too small, you can also project on the floor. To do this, fully raise the column by turning the Focus Variator knob and then swing the column round through 180°.

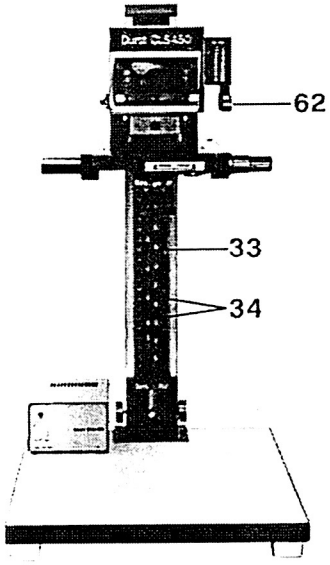
First however weigh down the baseboard or clamp it to the bench with a joiner's cramp. For projection on the floor focus the lens manually by rotating the lens barrel.

When returning to projection on the baseboard, turn the lens barrel back to its original engagement position. The enlarger is now set again for automatic focusing. Also the FEMOWAL wall mounting can be used.



5.6.2. The FEMOWAL wall mounting

The FEMOWAL is a wall fitting for the enlarger and is useful when enlargements bigger than the baseboard are required or when the baseboard is not used for other reasons — for instance with roll paper magazines.



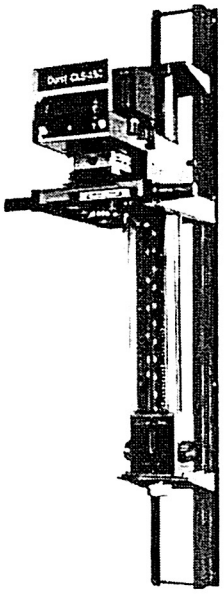
5.7.0. Filter settings on the CLS 450

The filters are adjusted by turning the three knobs (62) at the right-hand side of the colour mixing head.

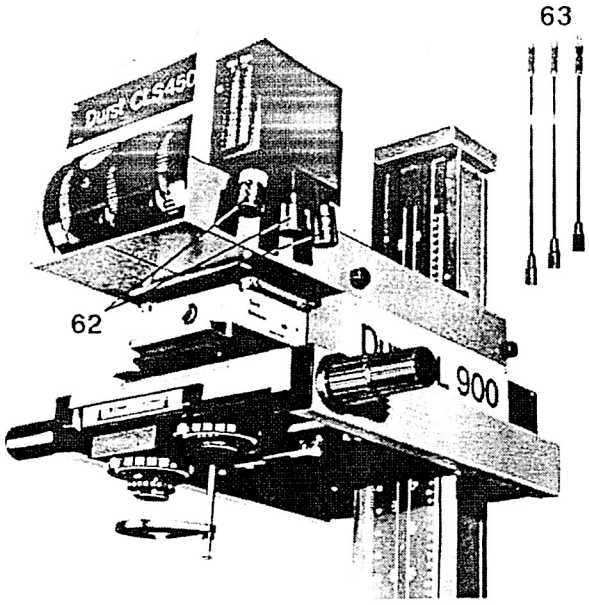
This permits infinitely variable filter settings over a range of density values from 0 to 130. If you have previously worked with colour mixing heads calibraded in CP or CC filter values, you will find that the CLS 450 filters reach appreciably higher effective densities.

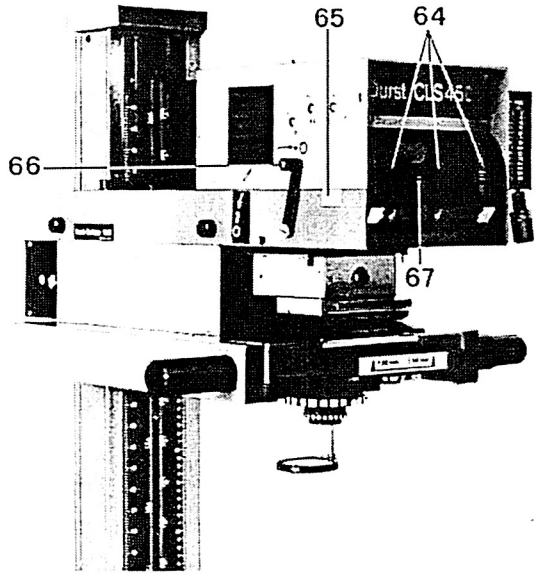
The table below shows comparative values:

Filter values	
Durst densities	CC/CP densities
0	0
10	15
20	30
30	45
40	60
50	75
60	90
70	105
80	120
90	135
100	150
110	165
120	180
130	195



The maximum filter setting of the CLS 450 colour mixing head is thus equivalent to a CC or CP filter density of 195.





The standard outfit of the CLS 450 includes extension shafts (63) for the filter setting knobs. These are simply pushed into the filter setting knobs (62).

5.7.1. The filter scales

The yellow, magenta and cyan filter values can be read off the three scales (64) in the front of the colour mixing head. The filter scales are illuminated for easier reading of the settings. The scale lighting can be switched off with the switch (65) in the left-hand side of the housing.

5.7.2. The white-light setting of the CLS 450

To provide white-light projection on the baseboard even with preselected filters in the light path, the CLS 450 colour mixing head has a white-light setting: you can swing the filters out of the way with the lever (66).

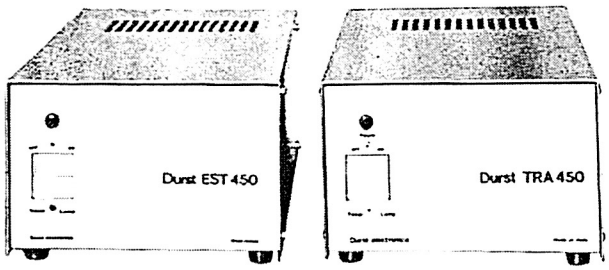
This permits easier observation of the projected negative image, especially when working with high filter densities. The indicating lamp (67) lights up when the filters are moved out of the light path. After focusing (when focusing manually) and adjustment of the image size swing the lever (66) forward again to bring the filters back into the light path. The precision adjustment of the CLS 450 colour mixing head ensures that the filters return exactly to the previously selected settings.

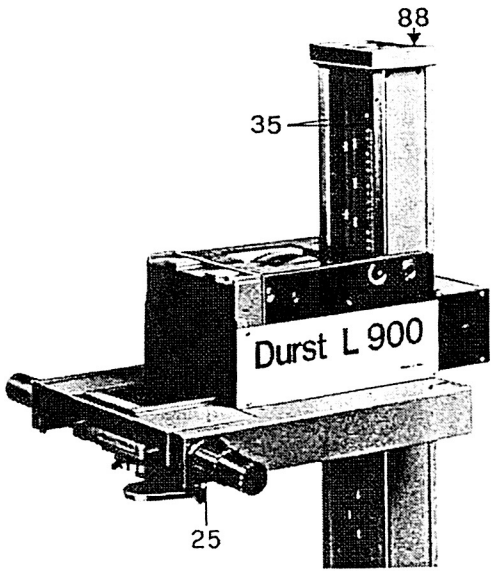
5.7.3. The tungsten-halogen lamp of the CLS 450 and BWL 450

The 24 volt 250 watt tungsten-halogen lamp (Order Code: COLAMP 250) of the CLS 450/BWL 450 has an approximate burning life of 50 hours, subject to slight variations. To change the lamp proceed as described in section 4.3.2.

5.7.4. The cooling blower of the CLS 450 and BWL 450

Switching on the lamp at the same time switches on the built-in blower. Both the TRA 450 and the EST 450 have a built-in overrun relay that keeps the blower running until the temperature around the lamp has dropped to a minimum value.





5.7.5. Infrared and ultraviolet absorbing filters (only with the CLS 450)

The CLS 450 colour mixing head is equipped with both an infrared and an ultraviolet absorbing filter. These filters are essential when working with modern colour materials.

6.0.0. Enlarging black-and-white negatives

The outfit of the LABORATOR 900 with the BIMAKIT-BW condenser lighting unit is ideal for black-and-white enlargements. But you can equallly use the BWL 450 diffused lighting unit or the CLS 450 colour mixing head; in the latter case move the filters out of the light path with the white-light lever (66).

6.1.0. The opal lamp of the BIMAKIT-BW

After some time, deposits may form on the inside of the glass envelope of the opal lamp, leading to uneven illumination. Therefore regularly check all opal lamps for such deposits by holding them up against a bright light.

7.0.0. Care and maintenance

The Durst LABORATOR 900 has been designed for constant heavy duty use with minimum maintenance. It retains its high efficiency even in the most strenuous working conditions. Carefully wipe the steel tapes (35) from time to time with an oily rag.

In use the steel tapes (35) and the self-coiling counterweight spring (88) are subject to constant wear which can lead to cracks along both edges of these components. Therefore regularly check the steel tapes and counterweight spring as follows:

1. Move the enlarger head to its bottom position on the column.
2. Lock the enlarger head on the column by the knob (25).
3. Check the steel tapes and spring for cracks.

   In case of visible damage get a service engineer of our local agency to change the steel tapes (35) and/or counterweight spring (88).

Dedust the negative carrier glasses, condensers and lenses with a chamois leather or better still, with an anti-static brush or cloth. All lens surfaces are anti-reflection coated; so wipe them carefully to avoid scratching the coating.

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