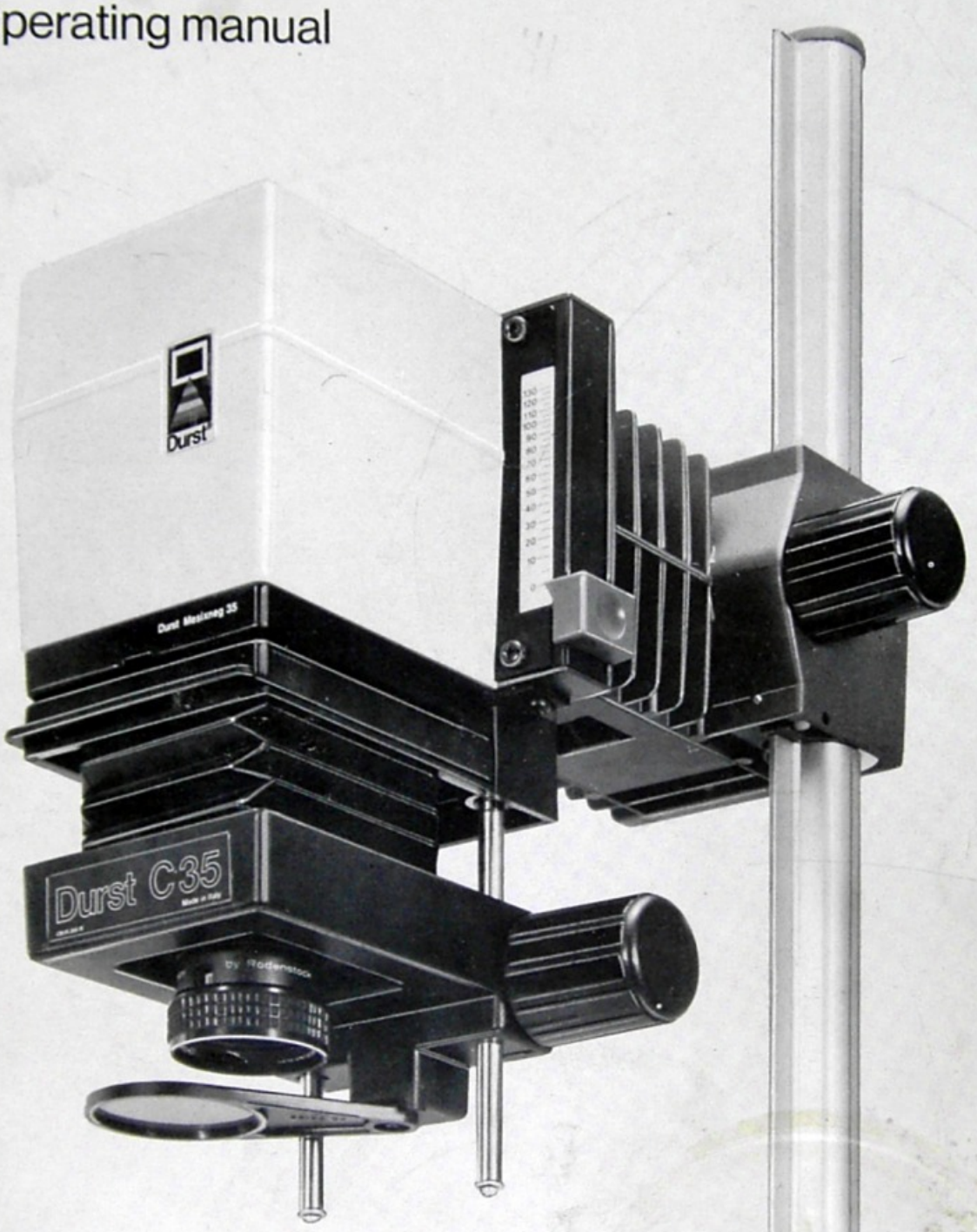
Durst C 35

Operating manual



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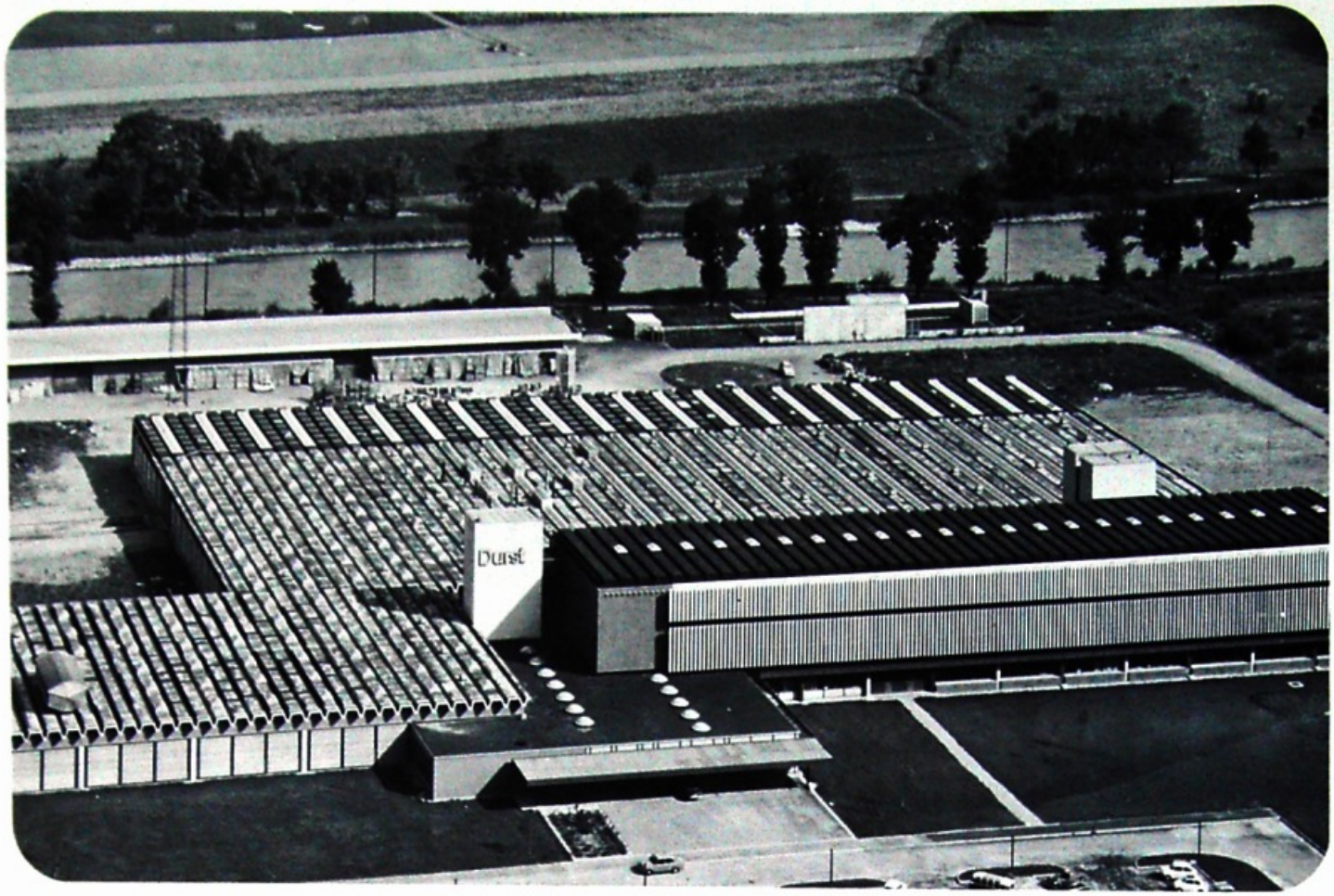

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We are pleased that you have chosen the Durst C 35 enlarger. This is a quality product by a firm that has for forty years specialised in designing and making enlargers for every photographic application. We are sure that it will give you first-rate results and that you will find it a pleasure to use. With the Durst C 35 you have an enlarger made to strict Durst quality standards, fully up to date in design and engineering.

This instruction manual aims to familiarise you clearly with the Durst C 35. But it can do so only if you make full use of it.

So do take the time to study this manual thoroughly. It will be worth your while.

Keep this instruction manual carefully for later reference or information on specific points.

We wish you much fun and success in your home enlarging.

Durst Inc. Bolzano, Italy

Contents

1.0.0 General note

The Durst C 35 is a compactly designed high-performance amateur enlarger for 35 mm films (24×36 mm format) with sensible convenience features for easy operation.
If you also want to enlarge 6×6 cm or 2¼×2¼ inch films, a conversion kit is available consisting of a mixing box for the 6×6 cm size, a 6×6 cm negative carrier and a 75 mm NEOTARON f/4.5 lens (Order code MEKIT 65).

The basic C 35 enlarges 24×36 mm films. With the universal MESIXNEG 50 negative carrier (available extra) you can also enlarge films of the following formats: (with the correct insert)
8×11 mm (Minox)
13×17 mm (Pocket format No. 110)
18×24 mm (Half-frame)
26×26 mm (No. 126)
and mounted 5×5 cm (2×2 inch) slides.

As the basic unit is already equipped with a colour mixing head, it is fully suitable for colour as well as black-and-white and meets all requirements for high-quality enlarging.

2.0.0 The outfit

2.1.0 Checking out

The Durst C 35 is supplied in a special break-resistant package.
To make this instruction manual clearer, all components and main operating controls are numbered.

2.2.0 Components and controls

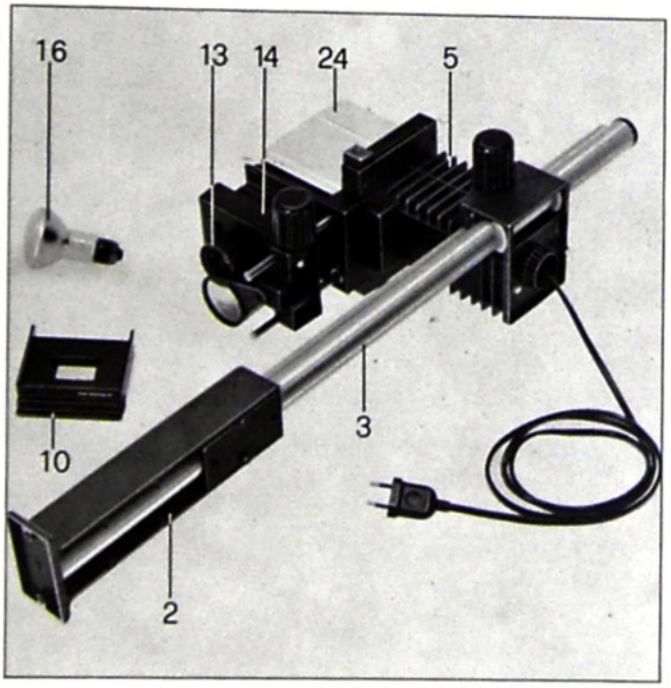
(1) Baseboard
(2) Column base
(3) Column
(4) Bolts to secure column to column base
(5) Enlarger head
(6) Mains lead with plug
(7) Bolts to secure baseboard
(8) Backing plate
(9) Hexagonal spanner
(10) Negative carrier
(11) Negative carrier stage
(12) Film stop pins
(13) Lens
(14) Lens panel
(15) Red filter
(16) Special 55 watt projection lamp
(17) Lamp fitting
(18) Lamp holder
(19) Cover plate
(20) Milled screws to secure cover plate
(21) Vertical adjustment knob
(22) Focusing knob
(23) Heat filter
(24) Mixing box
(25) Crosshead screws
(26) Holes in enlarger head for mounting mixing box
(27) Filter drawer
(28) Supplementary filters
(29) Sliding control and scale for yellow
(30) Sliding control and scale for magenta
(31) Opal plate with moulded-in ultraviolet filter

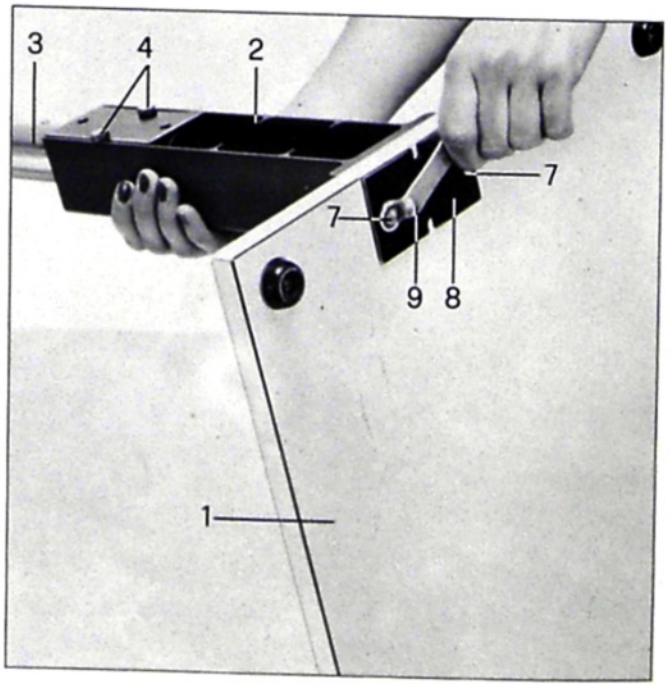
2.3.0 Assembly

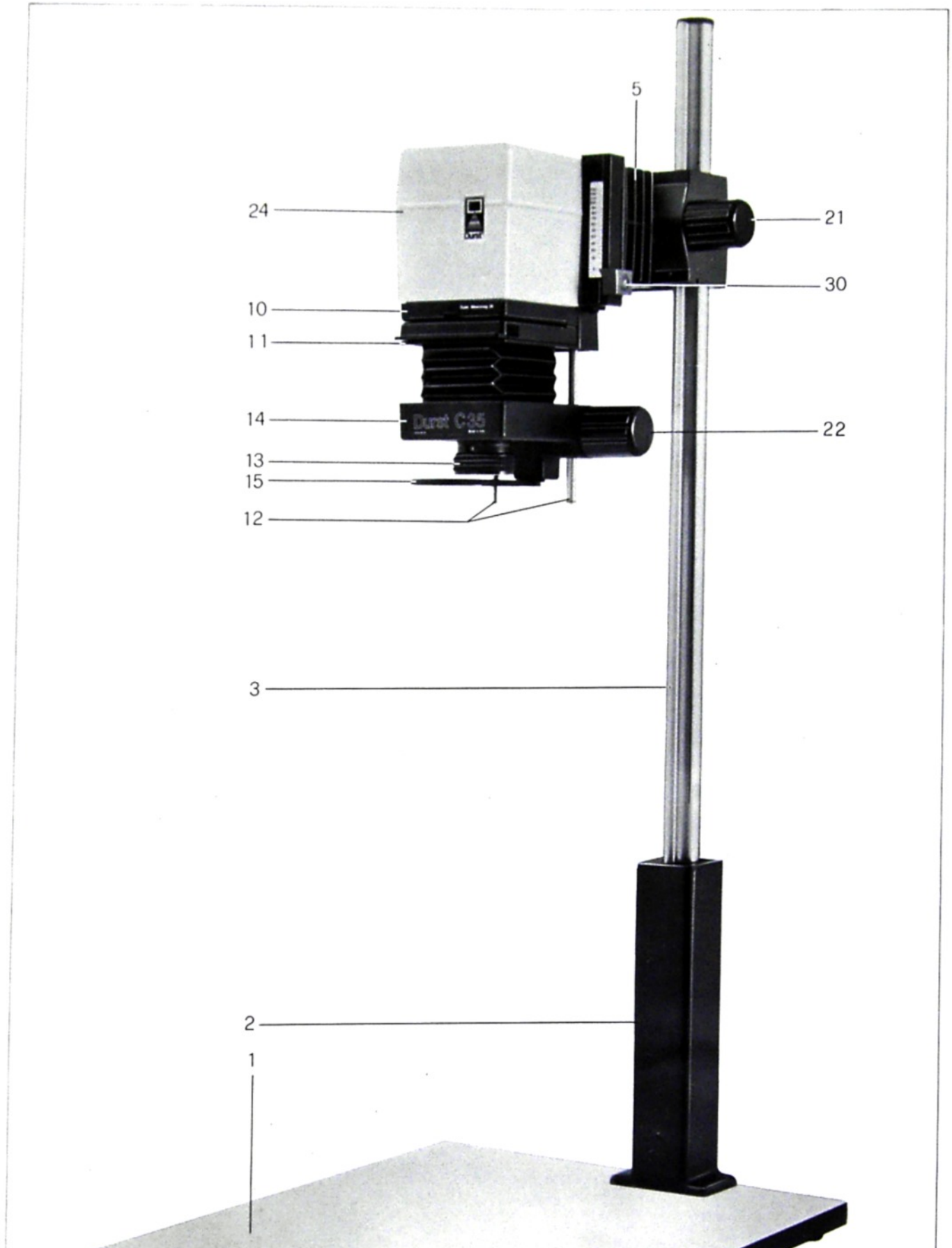
The column base (2), column (3), the enlarger head (5) and mixing box (24) are pre-assembled at the factory. Also, the lens (13) is already mounted in the lens panel (14).
You therefore only have to fit the baseboard and the lamp (16) and insert the negative carrier (10).

2.3.1 Mounting the baseboard

Place the baseboard (1) with the rubber feet down on a table. Locate the column base (2) with the column, enlarger head and mixing box over the holes so that the two reinforcing ribs of the column base face towards the rear. Place the backing plate (8) in position and push the bolts (7) through the backing plate and the baseboard, then screw tight into the column base with the hexagonal spanner (9) supplied. The column (3) is vertically adjustable in the column base. The maximum magnification (see section 5.4.0 – Setting the magnification) is only available with the column fully raised. To raise the column, slack off the two bolts (4) in the back of the column base, pull the column upwards and secure by screwing the two bolts tight again.



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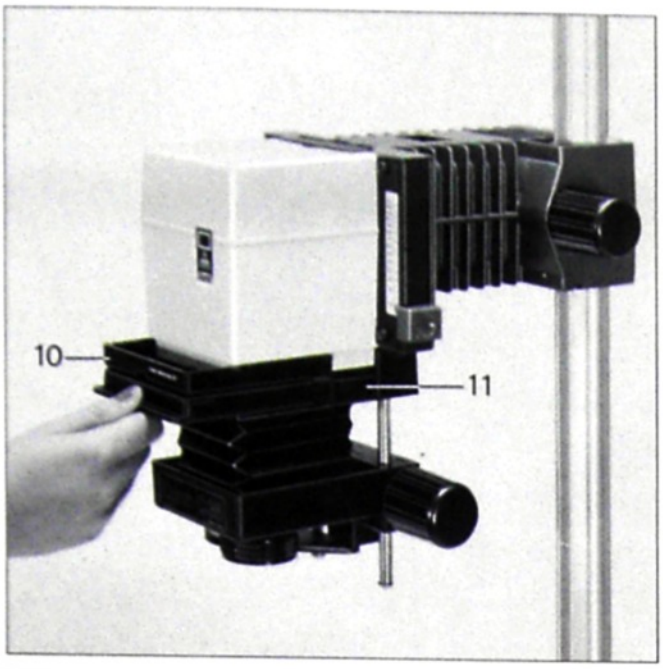
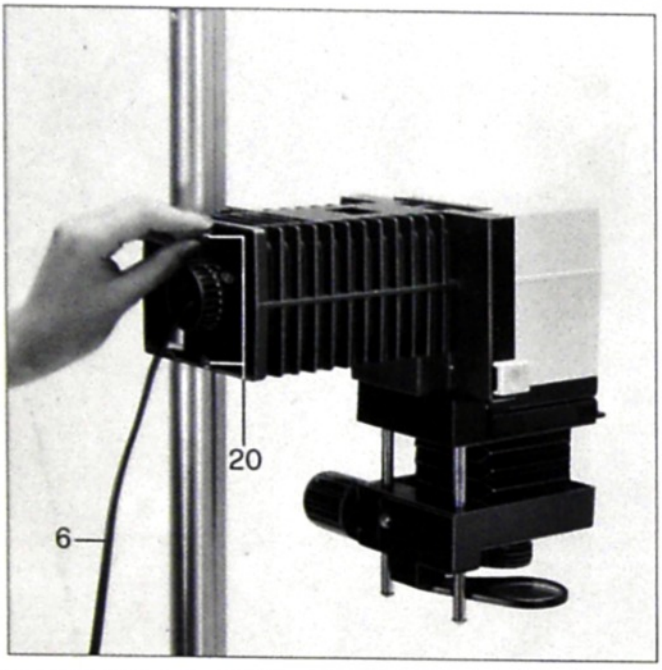
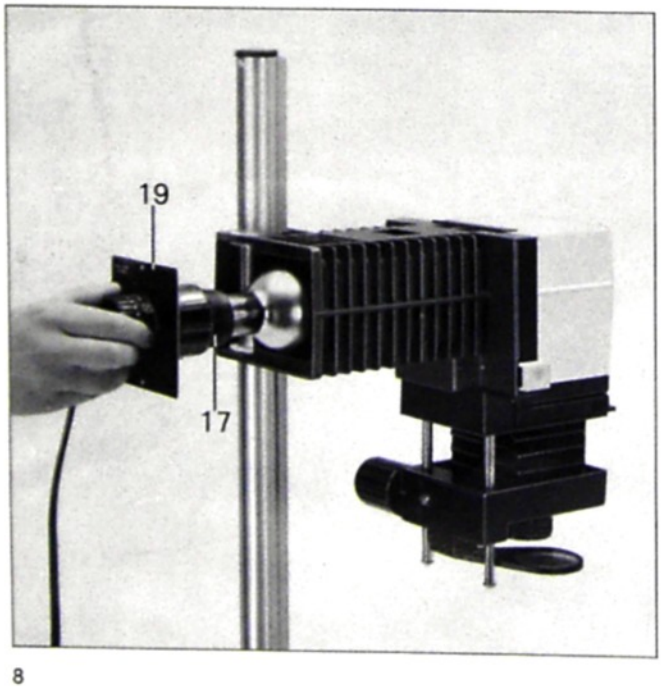






2.3.2 Inserting the negative carrier

Slightly depress the negative carrier stage (11) and fully push the carrier (10) into the enlarger head.
Special note: always remove the negative carrier before removing the mixing box. Otherwise you could easily pull out the carrier with the mixing box and possibly drop it on the floor.

2.3.3 Fitting the special projection lamp

Unscrew the milled screws (20), remove the cover plate (19), insert the lamp fitting (17) in the cover plate (19) and screw the lamp into the fitting. Then push the lamp into the enlarger and secure the cover plate (19) with the milled screws (20). As the lampholder is movable within the cover plate, you can adjust the lamp position with the lamp switched on (see section 5.2.0).

2.4.0 Connecting a timer

Plug the mains lead (6) of the enlarger into the socket of the exposure timer and the lead from the timer into a mains supply socket.

3.0.0 Features

Durst enlargers offer the amateur a wide range of features and advantages that become evident in various details. Before dealing with operation, here is a description of the specific product features of the Durst C 35.

3.1.0 Features of the basic unit

3.1.1 The baseboard

The Durst C 35 has a solid baseboard with a usable 38×40 cm (15×15.8 inch) area.

3.1.2 The column base and column

The high aluminium diecast column base and the round tubular column with guide rail provide good rigidity. For maximum magnification you can raise the column in the column base (see section 2.3.1).
Giant enlargements are possible by floor projection.

3.1.3 Vertical adjustment

Raise or lower the enlarger head by turning the knob (21). This friction drive ensures precise adjustment.

3.1.4 The lamphouse

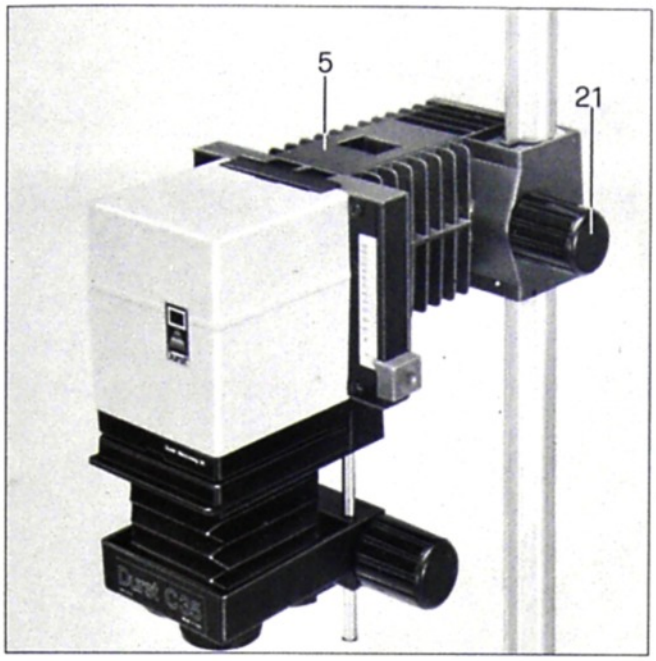
The lamphouse is an aluminium diecasting with prominent cooling fins. This rapidly and efficiently dissipates the heat generated by the lamp.

3.1.5 The ventilation openings

The top of the enlarger head (5) carries three ventilation openings. To allow circulation of the hot air from the lamp, keep these openings unobstructed when using the enlarger.

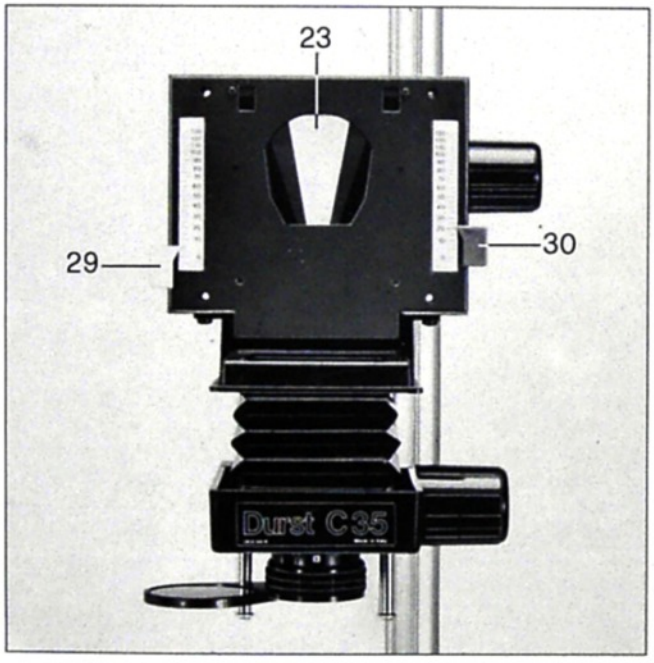
3.1.6 The heat filter

The light opening of the lamphouse carries a heat filter (23) which keeps most of the heat radiation generated by the lamp away from the colour filters and the negative carrier.



3.1.7 Filter control

The filter unit, mounted at the light opening of the lamphouse, consists of a yellow and a magenta filter in a high-quality heat resistant material. The sliding controls (29 and 30) move these filters continuously into the light path to yield densitometric filter settings from 0 to 130.
Thanks to the self-luminous filter scales you can set the filters in the darkroom even with the room lighting switched off. That facilitates test exposures for filter evaluation.
For black-and-white enlarging set the yellow and magenta filters to zero. The colour enlarger is then equally suitable for black-and-white work (see section 6.2.0).



3.1.8 The filter drawer

If occasionally enlargements show a cyan cast, you can insert separate cyan filters (28) in the filter drawer (27). These supplementary filters of densities 15, 30 and 50, supplied with the enlarger, can be used singly or in combination.

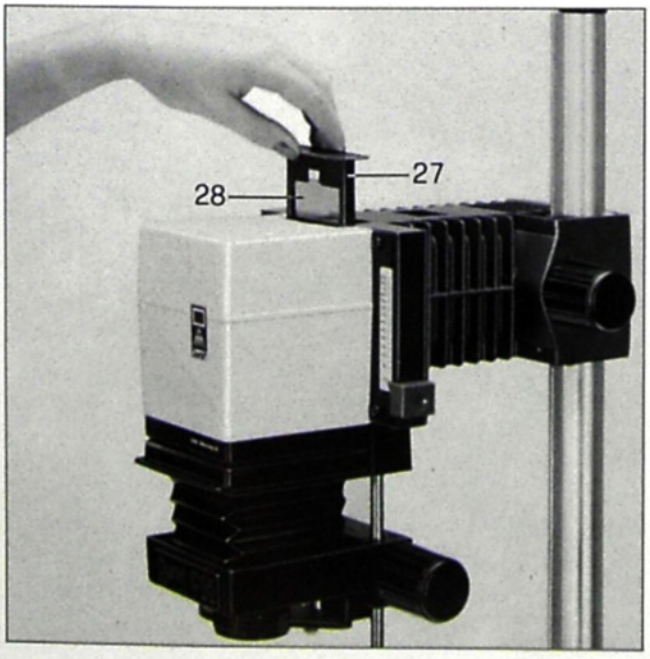
3.1.9 The light source

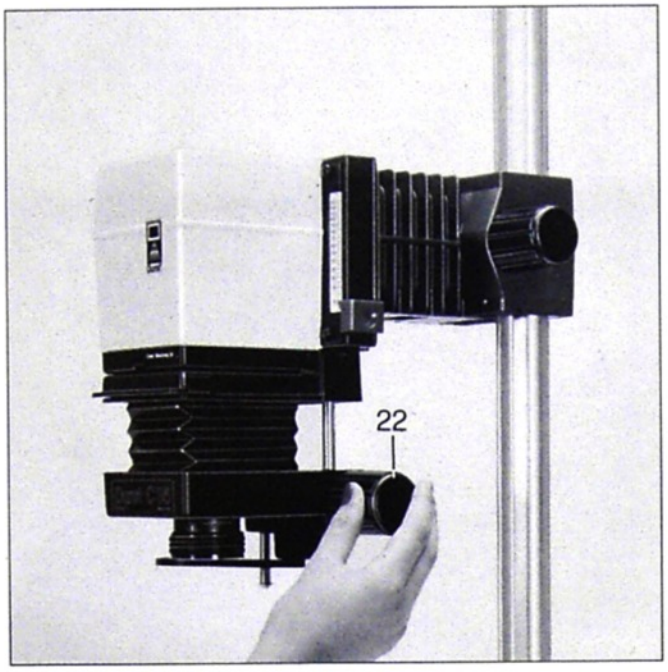
The light source of the Durst C 35 is a special 55 watt projection lamp included with the enlarger. This offers the following advantages:
(1) Constant high colour temperature, important for colour enlarging.
(2) The projection lamp operates at the mains voltage and thus needs no transformer.

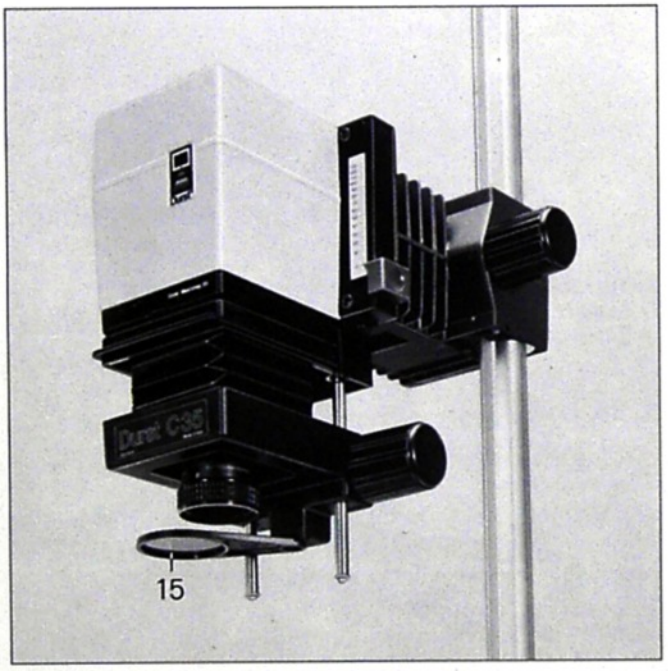
Important: Do not use any other lamp. The special Durst projection lamp is available to order from photo dealers (Code: MELAMP 55).

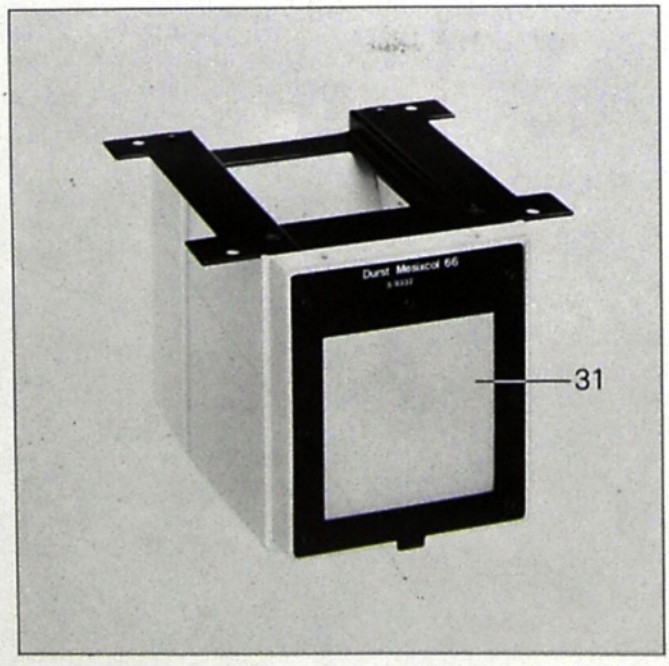
3.1.10 The negative carrier

The basic outfit of the C 35 includes a film carrier to take 24×36 mm negatives or transparencies. A universal negative carrier (see section 4.2.0) is available extra for enlarging smaller film formats and mounted slides.









3.1.11 Focusing

Focus the image by raising or lowering the lens plane with the friction-driven focusing knob (22).

3.1.12 The lens

The enlarger is supplied with a high speed three-element 50 mm NEOTARON f/2.8 lens.
The table below shows the maximum negative size that can be handled, the linear magnifications and the maximum print size obtainable on the baseboard.

Lens	Maximum film	Linear magnification		Maximum print size on baseboard
		Min.	Max.	
50 mm NEOTARON f/2.8	24×36 mm	1.5×	13.3×	30×46 cm (11.8×18.1 inches)

3.1.13 The red filter

The red filter (15) permits observation of the image, projected on black-and-white enlarging paper on the baseboard, while the enlarger is switched on.
It is used exclusively for black-and-white work; it is not suitable for colour enlarging.

3.2.0 Features of the mixing box

3.2.1 The mixing box and diffused lighting system

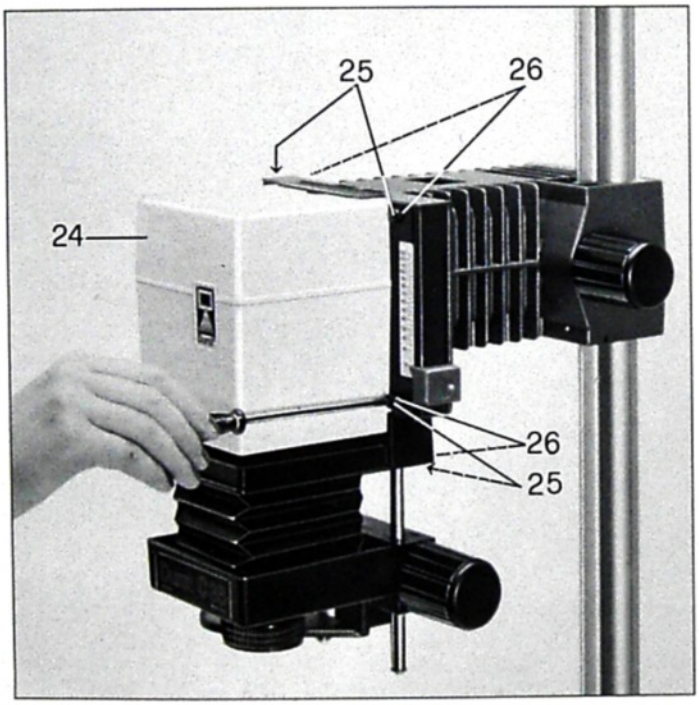
The high intensity light of the special projection lamp is coloured to a greater or lesser extent by the colour filters that may be moved into the light path. The filter adjustment is stepless. Multiple reflection then thoroughly mixes this light in the mixing box whence it emerges as a diffused light flood. This source and diffused light offer significant advantages:
(1) Optimum even illumination at all magnifications.
(2) Reduced retouching and spotting, as the lighting subdues scratches, fingerprints and dust marks.
While the advantages of diffused lighting used to be specially emphasised for colour, they are equally useful in black-and-white enlarging.

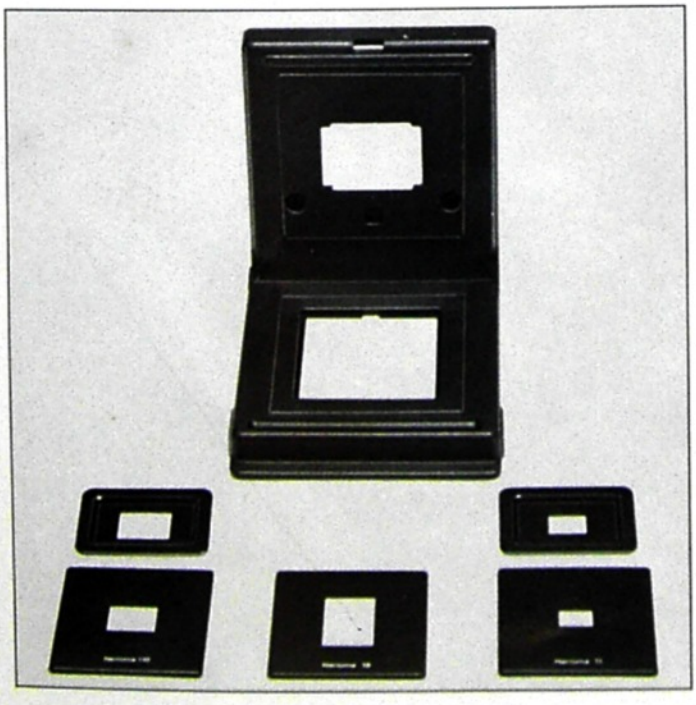
3.2.2 The ultraviolet filter

The opal plate at the exit end of the mixing box has a composition that at the same time also acts as an ultraviolet-absorbing filter (31).

3.3.0 Comparison of Durst, Kodak and Aga filter values

Filter settings		
Durst densities	Kodak CC/CP densities	Agfa densities
0	0	0
10	15	20
20	30	40
30	45	60
40	60	80
50	75	100
60	90	120
70	105	140
80	120	160
90	135	180
100	150	200
110	165	220
120	180	240
130	195	260





4.0.0 Accessories

4.1.0 The conversion kit for 6×6 cm films

As indicated at the beginning, a conversion kit is available for enlarging films up to 6×6 cm or 2¼×2¼ inches. The kit consists of a 6×6 cm mixing box, a 6×6 cm negative carrier and a 75 mm NEOTARON f/4.5 lens (Order code: MEKIT 65).

4.1.1 Fitting the conversion kit

Remove the negative carrier and filter drawer, unscrew the four crosshead screws (25) and remove the mixing box (24) of the C 35. Replace this by the mixing box of the MEKIT 65.
Replace the crosshead screws in the holes (26) and screw tight. Then fit the MEKIT 65 negative carrier and the filter drawer.

For enlarging 6×6 cm films you need the 75 mm lens included in the MEKIT 65 kit.
The 75 mm NEOTARON f/4.5 lens yields the following magnifications and print size:

Lens	Maximum film size	Linear magnifications		Maximum print size
		Min.	Max.	
75 mm NEOTARON f/4.5	6×6 cm (2¼×¼ in.)	1.6×	8.2×	44×44 cm (17.3×17.3 in.)

4.2.0 The universal negative carrier

A universal negative carrier (Code: MESIXNEG 50) is available extra. It directly takes mounted 5×5 cm (2×2 inch) slides.
The following accessory format masks, also available extra, are used with different film sizes:

26×26 mm (No. 126)	Code: NERIOMA 26
18×24 mm (Half-frame)	Code: NERIOMA 18
13×17 mm (Pocket No. 110)	Code: NERIOMA 110
8×11 mm (Minox)	Code: NERIOMA 11

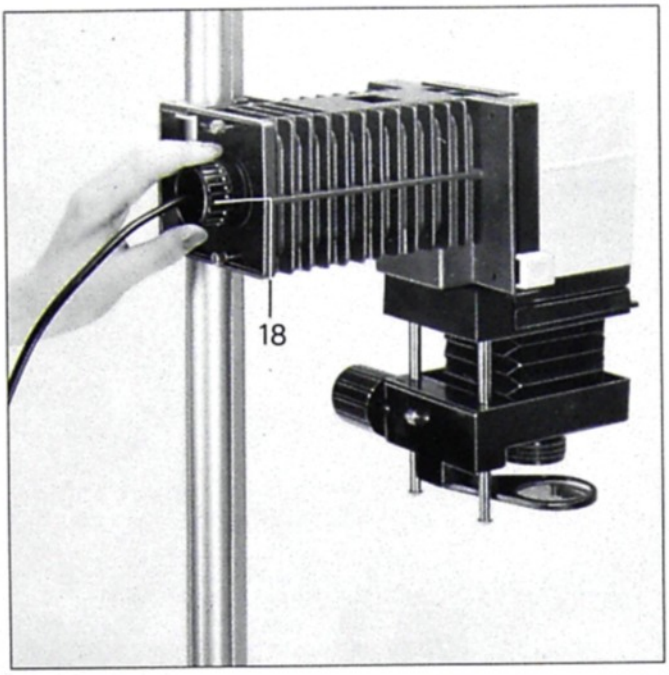
5.0.0 Practical hints

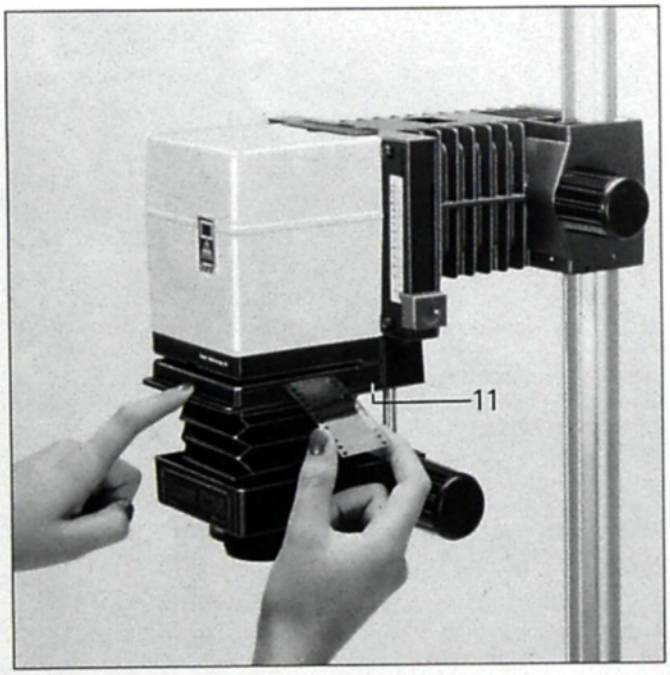
5.1.0 Clean negatives

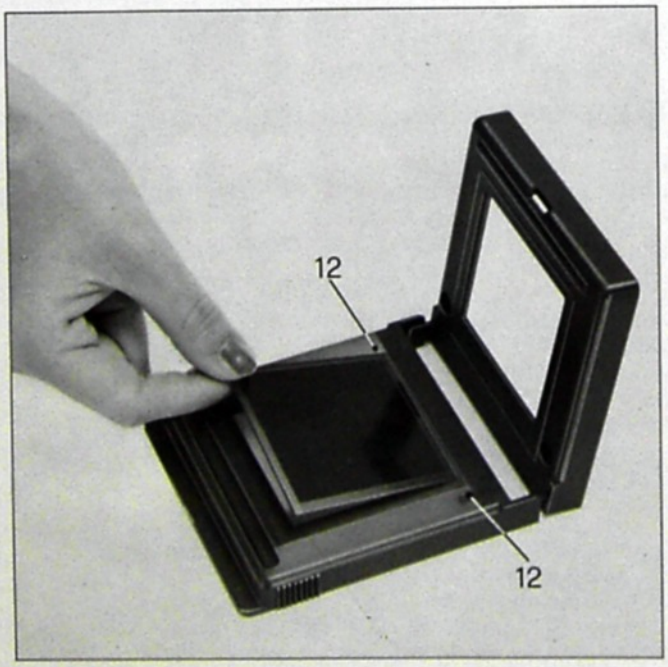
Dust and finger prints on negatives show up disturbingly on enlargements. So before enlarging preferably clean dirty negatives with a camel-hair brush or the Durst MULTISTAT static neutraliser and a fluffless cloth.
Wipe off finger prints by gently rubbing with a fluffless cloth. Remove obstinate dirt with a film cleaning fluid. Insert negatives in the carrier only when they are completely dry. Always clean negatives very carefully to avoid scratching the emulsion surface.

5.2.0 Centering the lamp

Before inserting the negative, check for even illumination on the baseboard.
If on switching on the enlarger lamp the baseboard illumination appears uneven, this can be corrected by rotating and moving the lamp.







To do this, first push the lampholder (18) with the lamp fully into the enlarger so that the white marking ring of the holder is just visible. The slowly withdraw the lampholder and lamp and if necessary rotate it until all shadows disappear.

5.3.0 Inserting film strips and single negatives

To insert single negatives, withdraw the negative carrier from the enlarger head. Locate the negative accurately so that the whole image area is within the carrier opening. Then close the negative carrier and insert it in the enlarger head.
To insert film strips, push down the lower section of the negative carrier against the carrier stage (11) to permit insertion of this strip from the front.

The strip is correctly aligned when it abuts the stop pins (12). On releasing the bottom of the negative carrier, the latter closes automatically and securely holds the film strip.

5.4.0 Setting the magnification

Now set the required magnification.
Do this by raising or lowering the enlarger head with the vertical adjustment knob (21). The higher up the head, the larger the image.

5.5.0 Focusing

Focus the image sharply – with the lens at full aperture – by turning the focusing knob (22) on the enlarger head.
Focus on the masking frame placed on the baseboard, loaded with a sheet of white paper of the same size and thickness as the enlarging paper to be used.

Turn the focusing knob until the image projected on the baseboard appears sharpest. After focusing you may have to readjust the image size and carry out a final fine focusing adjustment.

5.6.0 Exposure

After focusing and possibly measuring the exposure, expose the enlargement:
Stop down the lens to the working aperture and set the exposure time – previously established by test exposures – on the timer. Switch to darkroom safelighting, place the enlarging paper in position and expose.

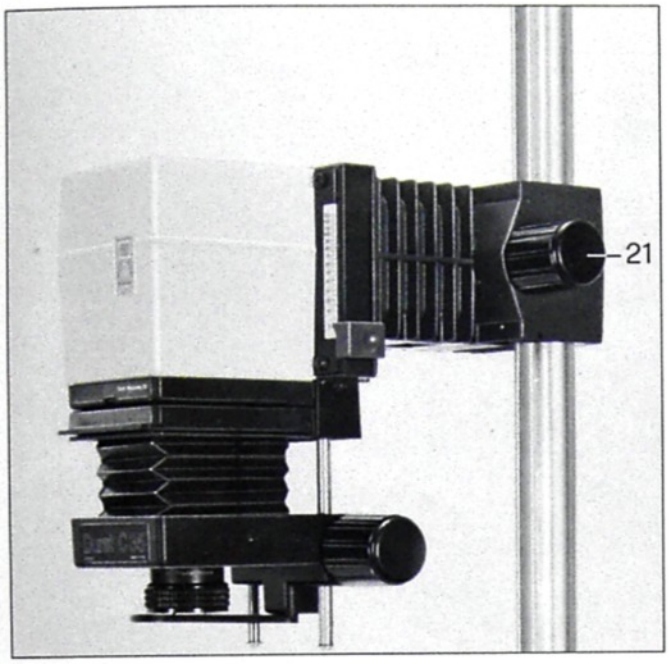
5.7.0 Part enlargements (cropping)

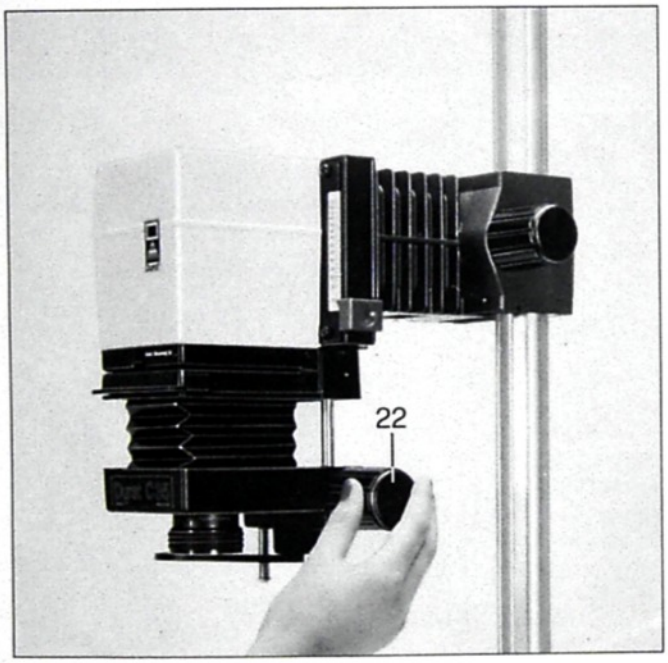
Even expert photographers do not always manage to frame the exact field of view they want during the camera exposure. Precise framing is possible only during enlarging.

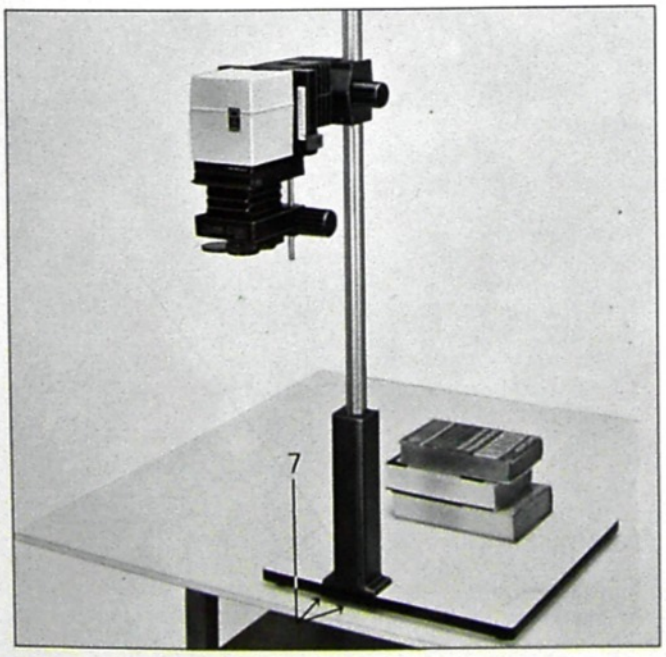
That way you can often obtain several interesting enlargements from one negative or transparency.

5.8.0 Giant enlargements

For giant enlargements project on the floor. For this purpose unscrew the bolts (7), turn the column base and column with the enlarger head round through 180° and refit and tighten the bolts. Stabilise the baseboard with suitable weights to stop the enlarger from toppling over.







6.0.0 Enlarging in colour and black-and-white

6.1.0 Colour enlargements

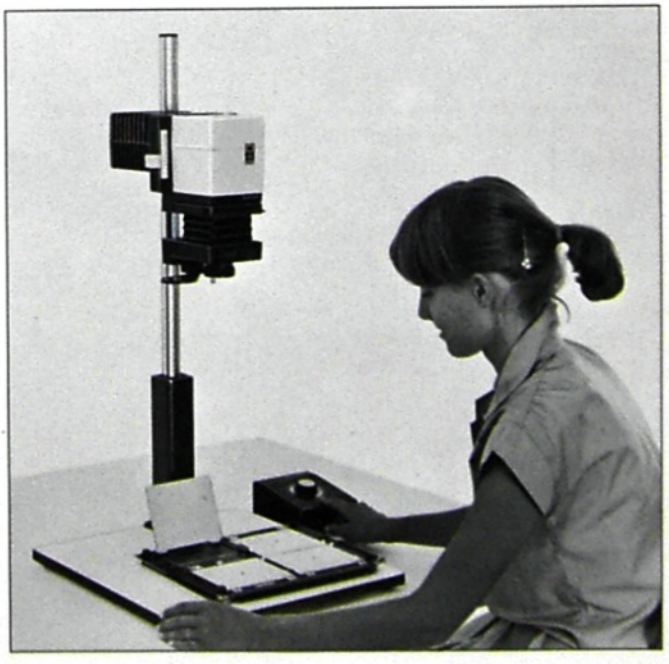
6.1.1 Basic requirements

Any room is suitable that can be adequately blacked out. As photochemical processes require constant temperature, preferably work in a room where the temperature remains constant between 20 and 25°C (68 and 77°F). If the room is colder, the solutions and processing drums may need warming up. The nearer the room temperature is to the process temperature, the simpler it becomes to maintain the correct process temperature. Always develop colour prints in a daylight processing drum.
At first preferably keep to one make, type and batch of paper. Different papers, even with the same exposure conditions, usually yield different results. It is therefore advisable to lay in a sufficient stock of colour paper. Keep the paper in a refrigerator (but not in the freezer compartment) until required. Remove the paper from the refrigerator at least 2 hours before use. Closely follow the paper manufacturer's instructions concerning storage. Mix the solutions required for the print process the day before and fill into brown bottles, closed airtight with plastic or rubber stoppers.

6.1.2 Colour prints from colour negatives

The steps of making a colour enlargement start with the basic print. For this proceed as follows:

a) Place the negative, emulsion side down, into the negative carrier.
b) Set both filters to zero. Remove any filter from the filter drawer.
c) Switch off the room lighting and switch on the enlarger lamp.
d) Select the magnification and focus the image sharply – with the enlarger lens at full aperture.
e) Stop down the enlarger lens by two stops.
f) Switch off the enlarger light.
g) Make a test exposure to establish the correct exposure time, using the Durst COMASK multi-print masking frame or the Durst test strip holder.



Process, rinse and dry the test strip. Then select the section on it that has received the correct exposure and set this time on the exposure timer.

This basic print indicates the correct exposure time, but in 99 cases out of 100 it will also show a colour cast. You now have to get rid of this cast by correct filter control.

Two filter colours are available for this purpose:
1. Yellow (Y)
2. Magenta (M)

Rule 1:
A colour cast in an enlargement is neutralised by a filter or filter combination of the same colour.

Colour cast	Filter correction required	
Yellow	Plus yellow	
Magenta		Plus magenta
Cyan	Minus yellow	Minus magenta
Red	Plus yellow	Plus magenta
Blue	Minus yellow	
Green		Minus magenta

If the available filter settings are insufficient to correct the colour cast, you may have to use an appropriate supplementary filter in the filter drawer (see section 3.1.8.).

The colour casts listed below may also be eliminated by combinations involving the cyan filters (C):

Colour cast	Supplementary filter
Cyan	Cyan
Blue	Cyan plus magenta
Green	Cyan plus yellow

Rule 2:
Always use only two of the three filter colours for control; the third filter colour together with the other two creates grey which does not modify the filter effect but only increases the exposure time required.

Rule 3:
The stronger the colour cast, the higher must be the correcting filter value.

Rule 4:
The higher the filter value, the longer the exposure time. This applies especially to magenta and cyan filters.

Rule 5:
Always note the filter values, exposure time and lens aperture on the back of every test and every print.

Rule 6:
Preferably assess print colours by daylight or a matched daylight type source.

Notes to Rule 4
To ensure correctly exposed subsequent prints with different filter settings, the exposure time needs recalculation whenever filter settings are changed.

Use the filter factors listed in the table below by substituting them in this equation:

$$T\ (new) = T\ (old) \times \frac{(F_1 \times F_2)\ new}{(F_1 \times F_2)\ old}$$

where:
T (new) = new exposure time
T (old) = old exposure time
$(F_1 \times F_2)$ new = new filter factors
$(F_1 \times F_2)$ old = old filter factors

Filter factors

Filter setting	Yellow	Magenta
00	1.00	1.00
10	1.06	1.15
20	1.10	1.35
30	1.15	1.56
40	1.20	1.77
50	1.25	2.02
60	1.30	2.30
70	1.35	2.60
80	1.39	3.00
90	1.44	3.40
100	1.48	3.80
110	1.52	4.25
120	1.56	4.70
130	1.60	5.15

Supplementary filter	Factor
15 (Cyan)	1.26
30 (Cyan)	1.66
50 (Cyan)	2.20

Practical examples

Example 1:	Y	M
New filter settings:	20	40
Old filter settings:	20	10

If the old exposure time was 10 seconds, what is the new exposure?
Find the filter factors of the new and the old filter settings from the table and substitute them in the equation:

$$T\ (new) = T\ (old) \times \frac{(F_1 \times F_2)\ new}{(F_1 \times F_2)\ old} =$$

$$= 10 \times \frac{1.10 \times 1.77}{1.10 \times 1.15} = 15.3 \text{ seconds}$$

Example 2:	Y	M
New filter settings:	20	00
Old filter settings:	20	10

If the old exposure time was 20 seconds, what is the new time?

$$T\ (new) = 20 \times \frac{1.10 \times 1.00}{1.10 \times 1.15} = 17.4 \text{ seconds}$$

One important point: Do not change the magnification until you have finished all filter tests. Make a new test exposure every time you change the filter setting, until you have reached the optimum filter combination. Only then make the final enlargement.

This procedure is much simpler and quicker with a colour analyser, for instance the Durst COLORNEG III HS. In particular, the LUXONEG III HS exposure meter helps to cope with changes in magnification.

6.1.3 Colour prints from transparencies

Mounted slides can be placed directly without a mask in the universal negative carrier (available extra – Order code: MESIXNEG 50) in the Durst C 35. When

making enlargements from transparencies, colour analysis with the Durst COLORNEG III HS colour analyser does not offer significant time or material savings. For once you have established the filter settings by a test, they rarely change much with a given paper batch and a given film. Use the LUXONEG III HS exposure meter to establish the image density and hence exposure time.

Processing exposed colour prints
The results depend appreciably on the processing time, temperature and agitation. For perfect colour enlargements these factors must all remain absolutely constant. If one factor changes in the course of processing several prints, the finished pictures will differ in colour balance and contrast.

6.2.0 Black-and-white enlargements

6.2.1 Black-and-white enlargements on fixed-grade papers

For black-and-white enlarging simply move both filter controls to zero and remove any supplementary filter from the filter drawer. The diffused illumination is ideal also for black-and-white, as it largely suppresses dust and scratches on the negative. Any loss of contrast compared with condenser lighting can be compensated by using a harder paper grade.

An important point is that diffused lighting does not in any way affect image sharpness. The latter depends exclusively on the quality of the negative and of the enlarging lens.

Processing exposed black-and-white prints: The most convenient way is with concentrated liquid developers which are usually diluted 1:10 to 1:15 with water. Make up only as much print developer as you need at a time. Preferably do not develop more than 20-25 prints 18×24 cm or 8×10 inches in 1 litre of developer. Follow the recommendations of the chemicals manufacturer. If you use a plain water intermediate rinse or stop bath, renew this after every 10 prints.

As prints continue developing in the water, keep the intermediate rinse down to about 30 seconds. Alternatively use a stop bath made by diluting 5 ml glacial acetic acid with 1 litre of water. This immediately arrests development. Again use for 30 seconds.

Liquid concentrates are also recommended for the fixing bath. Do not fix more than about 20-25 prints 18×24 cm or 8×10 inches per litre of fixer. The fixing bath keeps almost indefinitely, so it is useful to mix a larger amount, e.g. 5-10 litres.

The drying method depends on the paper in use. Note that current resin or plastic-coated papers must not be dried on conventional glazers.
Driers: See enclosed leaflet.

6.2.2 Black-and-white enlargements on variable-contrast papers

Variable-contrast papers (Kodak Polycontrast or Ilford Multigrade) simplify enlarging of black-and-white negatives by needing only a single paper for all contrast grades. The effective paper grade is controlled by the yellow or magenta filter. Check the manufacturer's literature for the filter settings required for the different grades.

7.0.0 Maintenance

Dust is the greatest enemy in the darkroom. When you are not actually using the enlarger, preferably store it either in a closed cupboard or cover it with the SIRIOCUF dust cover. For clean enlargements also clean the lens with a fluffless cloth before every enlarging session.
Occasionally grease the enlarger column with vaseline or mineral oil. If the lens panel slips during focusing, clean the guide rod of the friction drive with alcohol and then slightly grease with mineral oil.

Important: Before replacing the special projection lamp or before any other adjustment inside the enlarger, check that the latter is disconnected from the current supply.

7.1.0 Storage

The Durst C 35 is a compact enlarger and therefore easy to store. After use simply dismantle the unit and keep it in its original foam plastic shipping container.

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

Durst PHOTOTECHNIK

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