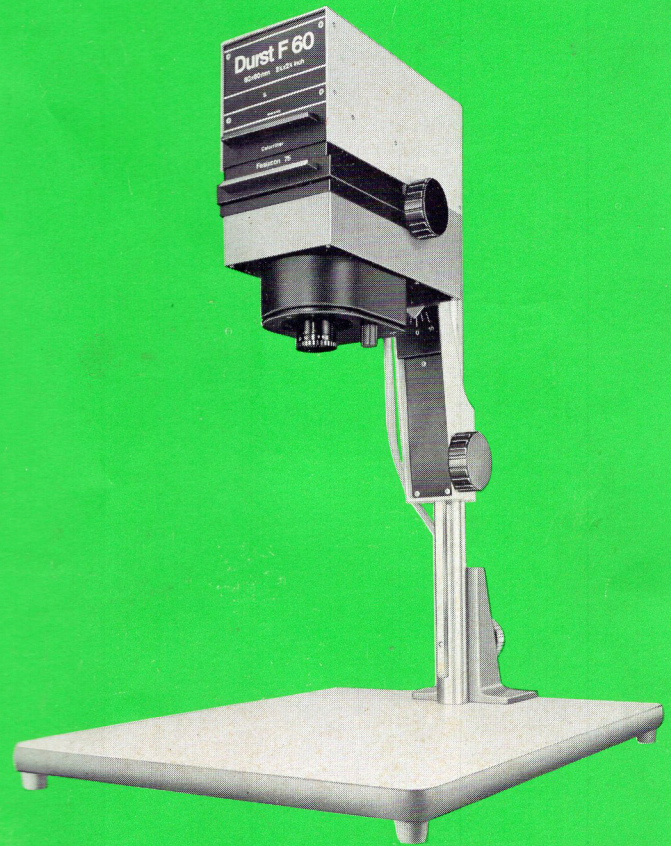


Durst F60

Operating Instructions



Durst®

With the Durst F 60 you have chosen the product of a firm which has over 35 years of specialised experience in making enlargers for all photographic applications. That means that with every Durst product you are assured of the most up-to-date technology and world-famous Durst quality.

This manual tells you clearly and simply how to use your enlarger. Please read it thoroughly and carefully: that way you will avoid errors in operation and be sure of good results.

Keep this booklet safely for future reference if you should ever want to go into more detail on any specific point.

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1.0.0. General

The F 60 is an efficient amateur enlarger of compact design for negative sizes up to 2¼ x 2¼ inches (6 x 6 cm), with a special negative carrier (available as an accessory) for 24 x 36 mm negatives. The basic outfit is complete and ready for use without further accessories. The F 60 provides full individual control of every enlargement — black-and-white or colour. The step-by-step guide of section 8.0.0. includes hints for beginners.

2.0.0. The outfit

2.1.0. Checking out

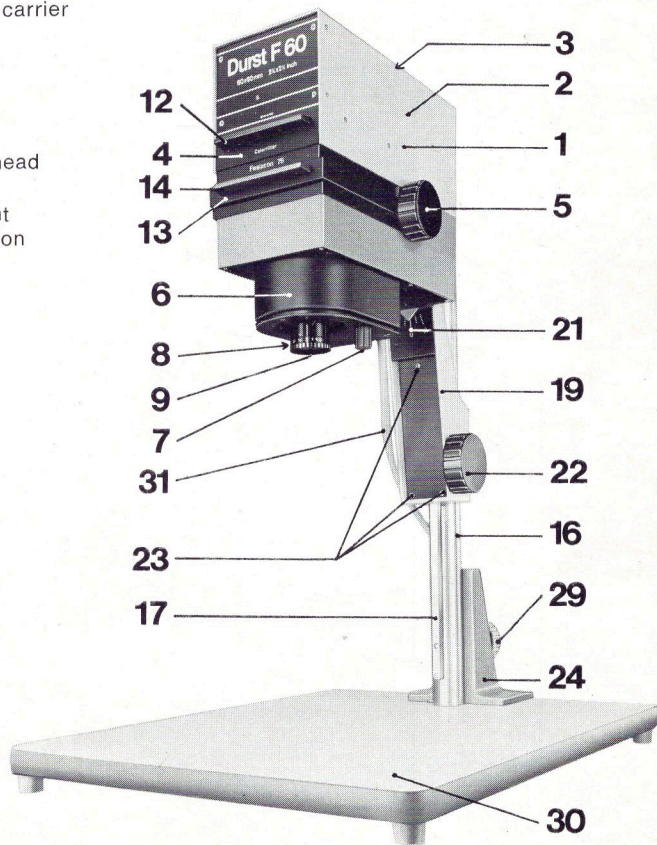
The Durst F 60 is supplied in a special protective packing. Before assembly wipe all components carefully with a cloth.

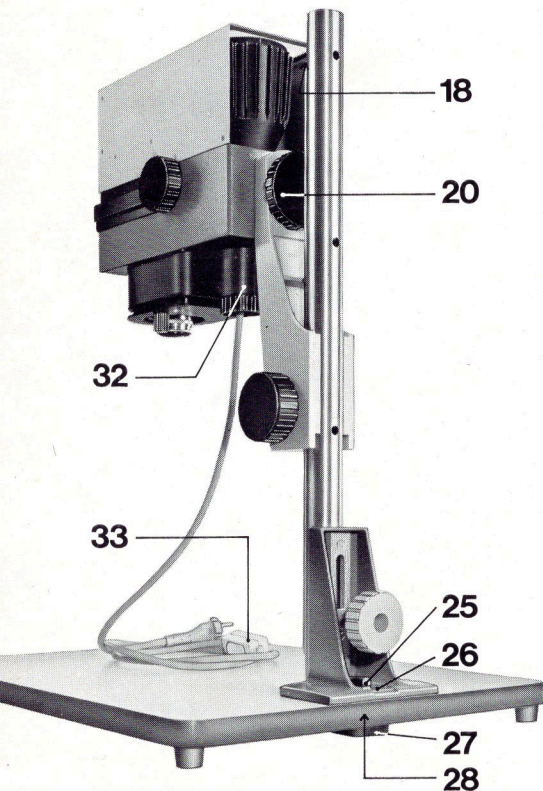
Note: Unpack the enlarger head carefully so that the filter drawer does not drop out. First check that everything is there. To make the assembly instructions clearer, all components and the main controls are numbered. The separate units to be assembled are in addition marked ●.

2.2.0. Components and operating controls

- 1. Enlarger head
- 2. Lamphouse
- 3. Lamphouse cover
- 4. Condenser with filter drawer
- 5. Focusing knob
- 6. Extending lens tube
- 7. Operating knob for red filter
- 8. Lens carrier

- 9. Lens (if ordered)
- 10. Threaded adapter ring
- 11. Spacing rings
- 12. Filter drawer
- 13. Negative carrier
- 14. Opening ledge of negative carrier
- 15. Guide pins
- 16. Column
- 17. Guide rail
- 18. Upper limit stop
- 19. Carrying arm
- 20. Locking knob of enlarger head
- 21. Tilt scale
- 22. Knob for vertical movement
- 23. Adjustment screws of friction drive
- 24. Column base
- 25. Bolt
- 26. Washer
- 27. Wing nut
- 28. Washer
- 29. Locking knob with washer
- 30. Baseboard
- 31. Supply lead
- 32. Lamp holder
- 33. Switch in lead





2.3.0. Assembling the enlarger

2.3.1. The baseboard

Place the baseboard (30) on the table with the rubber feet downwards. Locate the column base (24) over the holes, with the reinforcing ribs to the back.

Push the bolt (25) from above through the washer (26) and the holes of the column base and the baseboard and secure it with the wing nut (27) on top of the washer (28).

The edge of the column base must be parallel to the edge of the baseboard to centre the projected image correctly in the middle of the baseboard.

2.3.2. The column

Fit the column (16) from the front with its threaded shaft going into the slot of the column base. Place the washer (28) over the threaded shaft and screw the locking knob (29) in position. The column can now be secured at the required height with the knob (29).

2.3.3. The enlarger head

Mount the enlarger head (1) on the carrying arm (19) by screwing the locking knob (20) into the hole at the rear of the enlarger head. The engagement stop on the enlarger head must fit into the groove on the carrying arm; then the locking knob can be fully tightened.

2.3.4. The lens

Lenses with an M 39 thread screw directly

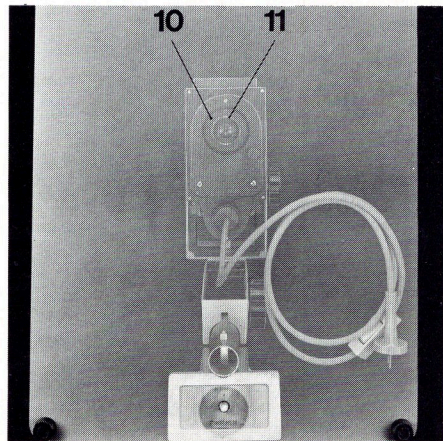
into the lens carrier (8). Screw the lens fully home. Lenses with an M 25 thread need an adapter ring (10). Place one or both spacing rings (11) as required between the lens carrier and the adapter to ensure that the aperture scale faces to the front when the lens is fully screwed in.

2.3.5. The lamphouse

Introduce the lampholder (32) with the lead from underneath into the lamphouse (2). Remove the lamphouse cover (3) and screw a 75 to 150 watt opal lamp into the lamp fitting. Then replace the lamphouse cover.

2.3.6. The negative carrier

Fully push in the negative carrier (13),

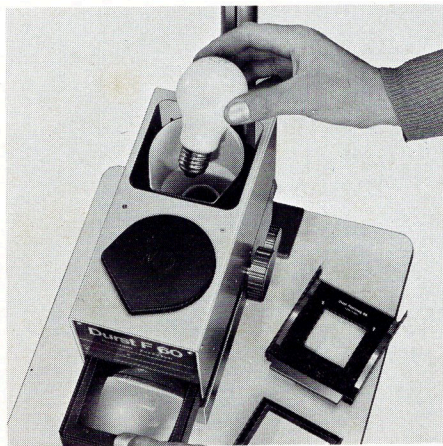


with the opening ledge (14) facing upwards, into the enlarger head.

3.0.0. Features

3.1.0. The lighting system and light source

With the lamp correctly centered, the reflex lighting system of the F 60 yields very even illumination. To centre the lamp, push the negative carrier, without negative, fully into the enlarger head. Open the lens to its full aperture and switch on the enlarger lamp. Adjust the lamp holder vertically and sideways until the projected area on the baseboard appears evenly illuminated. Then stop down the lens diaphragm by 1 to 2 stops.



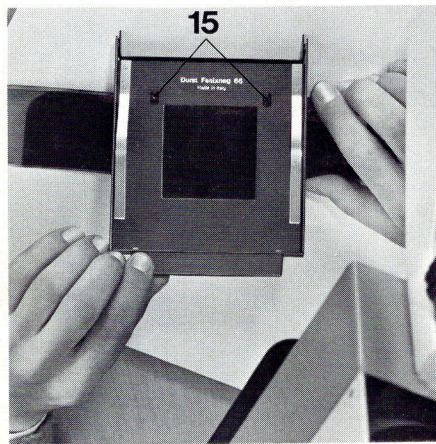
3.2.0. The condenser system

The condenser is built in above the negative carrier. When using a 50 mm lens replace the standard condenser (designed for 75-80 mm lenses) by the alternative FESIXCON condenser (see accessories).

3.3.0. The negative carrier system

The basic outfit includes a hinged book form carrier for 2 1/4 x 2 1/4 inch (6 x 6 cm) negatives. An alternative negative carrier is available separately for 24 x 36 mm negatives (see accessories).

To insert single negatives, first remove the negative carrier from the enlarger head. Pushing the carrier into the head presses the top and bottom sections



together to hold the negative securely without slipping.

To insert a film strip, slightly raise the opening ledge (14) of the carrier. The film strip can now be pushed in from the front. It is correctly located when it butts against the guide pins (15). On releasing the opening ledge, the film strip is held completely flat. To advance the film, again slightly raise the opening ledge; this avoids damage to the film. Insert the negatives into the carrier always with the matt emulsion side downwards.

3.4.0. Enlargement sizes

To adjust the size of the enlargement raise or lower the enlarger head by turning the knob (22). The higher the



head on the column, the larger the projected image.

3.5.0. Focusing

Focus with the knob (5) at the right of the enlarger head. The image must of course be sharp before exposing the print. Place the masking frame or paper holder on the baseboard and insert a sheet of white paper (not enlarging paper) of the same size and thickness as the enlarging paper to be used. Fully open the lens aperture and switch on the lamp. First adjust the image to the required size, then focus. After focusing, a readjustment of the image size (and refocusing) may be necessary.

3.6.0. Correcting converging verticals

Converging verticals can be corrected with the F 60 by inclining the enlarger head in the appropriate direction. First release the locking knob (20), then tilt the enlarger head until the verticals of the projected image appear exactly parallel. Tighten locking knob with the head in this position and make the enlargement. The scale (21) shows the exact degree of tilt for future reference, e.g. when making further enlargements from the same negative (see also section 4.5.0.).

3.7.0. The filter drawer

The condenser mounting also incorporates the filter compartment (4) for $3\frac{1}{2} \times 3\frac{1}{2}$ inch (9 x 9 cm) colour correction filters.

3.8.0. The red filter

With black-and-white enlargements the red filter permits observation of the image with the enlarger switched on and the enlarging paper in position. Turn the knob (7) to swing the red filter into the optical path.

4.0.0. Enlarging in practice

4.1.0. Clean negatives

Dust and fingerprints on negatives show up disturbingly in enlargements. Therefore clean dirty or soiled negatives beforehand. Remove dust particles with a camel hair or anti-static brush. To get rid of fingerprints, gently wipe with a fluffless cloth. Obstinate dirt can

be removed with a suitable film cleaning solution.

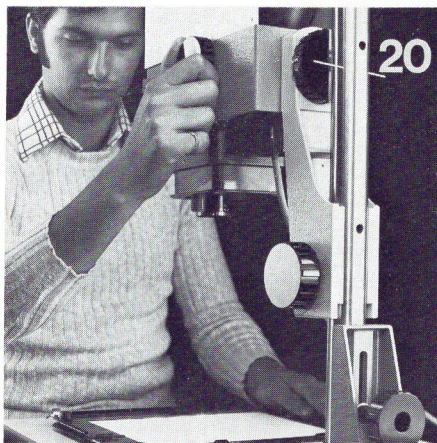
Negatives must be completely dry before insertion in the negative carrier. Always clean very carefully to avoid scratching the emulsion.

4.2.0. Enlarging exposure

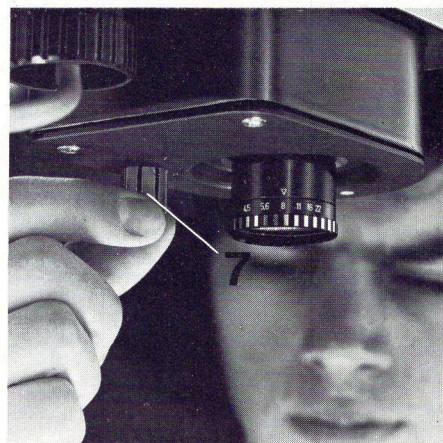
After some practice it becomes fairly easy to estimate the correct exposure reasonably accurately.

An average exposure time is around 10 seconds.

With bigger enlargements an exposure test is advisable: After focusing, stop down the lens by two stops. Cover the paper in the masking frame with a sheet of opaque card. Switch off the enlarger



Focusing

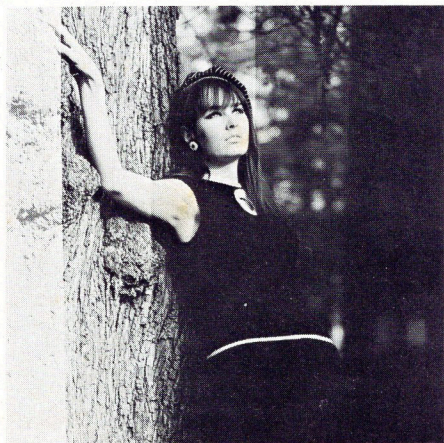


Red filter

lamp and swing the red filter out of the light path. Withdraw the card slightly so as to expose a 1 inch wide strip of the paper for 2 seconds. Move the card by an inch at a time for further 4 to 5 test exposures of 4, 8, 12, 16 and 24 seconds respectively. Each of these successive exposures increases the exposure time of the previous strip by the additional time. This yields a test print consisting of progressively exposed strips. (The first strip receives the longest exposure.)

From the developed print it is then easy to establish the optimum exposure time for the full enlargement.

This test print thus makes correct exposures easy.



6 8 10 12 14 sec.

4.3.0. Cropping

Even an expert photographer does not always manage to frame the image exactly during the camera exposure. Only enlarging permits really exact framing. This way you can often obtain several different interesting enlargements from one negative. Mask down the required image area either with the sliding masks of the paper holder or with strips of cardboard.

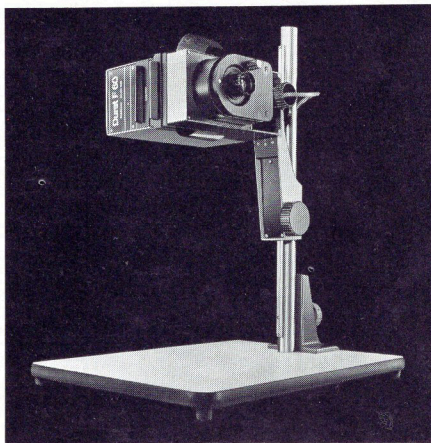
4.4.0. Giant enlargements

For big enlargements on the baseboard release the locking knob (29) and raise the column by a couple of inches. That way the masking frame can be pushed right up against the column base for

the camera when taking the picture. If for instance you shoot a high building maximum magnification. Giant enlargements are possible by projection on the floor or on the wall.

For projection on the floor slack off the securing screw of the column base and turn the whole column through 180°. Stabilise the baseboard (with weights etc.) to prevent the enlarger from tipping over. For projection on the wall slack off the locking knob (20) and tilt the enlarger head through 90°. The enlarger head engages in the horizontal position. Then tighten the locking knob again.

When estimating exposure times for giant enlargements, remember that the light intensity on the projection surface decreases in proportion to the square of the distance. (For example with a normal exposure time of 10 seconds, doubling the distance increases the exposure to 40 seconds or 4 times what it was before.) The exposure time can be reduced by opening the lens aperture; however the lens does not necessarily produce the sharpest image at full aperture.



Projection on the wall

4.5.0. Distortion control

Converging verticals are caused by tilting from street level by pointing the camera up against the sky, the verticals converge in the negative. You can correct this undesirable effect by tilting the enlarger head.

To keep the image sharp overall with the enlarger head tilted, stop down the lens by 2 stops or more for increased depth of focus. If a tilt of 20° is insufficient to straighten out converging verticals, raise the masking frame (by placing an object underneath it) at the side towards which the verticals diverge. This counter tilt has the same effect as increasing the tilt of the enlarger head. This method of correction is limited by

the depth of focus of the lens and the varying degree of exposure across the image being corrected. The tilt of the enlarger head and also the counter tilt of the masking frame progressively increase the light intensity (and hence the exposure) of the image across the paper. To compensate this, shade this part of the image during the exposure.

4.6.0. Camera support

After removing the enlarger head the unit can also serve as a camera support. The screw thread of the locking knob (20) fits 3/8 inch tripod bushes as provided on many cameras. An adapter is required for cameras with 1/4 inch tripod bush. The carrying arm, column and baseboard

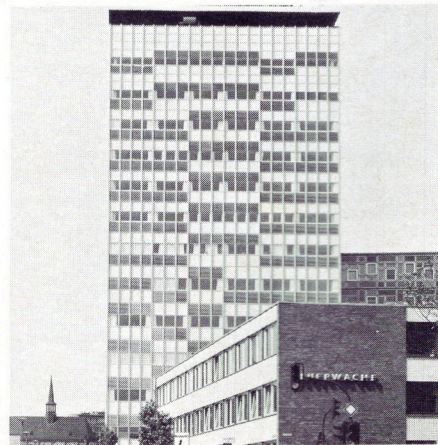
now form a rigid support which makes an ideal copying stand.

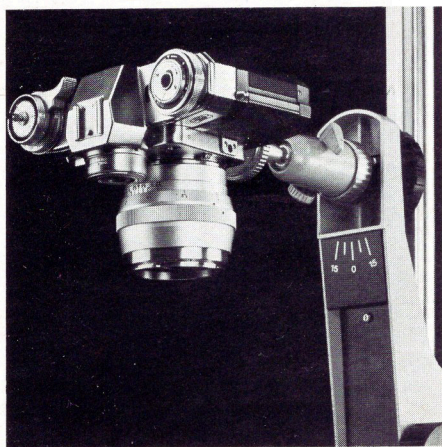
4.7.0. Colour enlargements

The F 60 is also suitable for colour enlarging. The reflex lighting system protects the colour negative against harmful heat. The filter compartment holds correction filters in the ideal position, namely between the light source and the negative — and hence before the image-forming light path. This prevents scratches, fingerprints and other flaws on the filter from recording on the print.



Distortion control

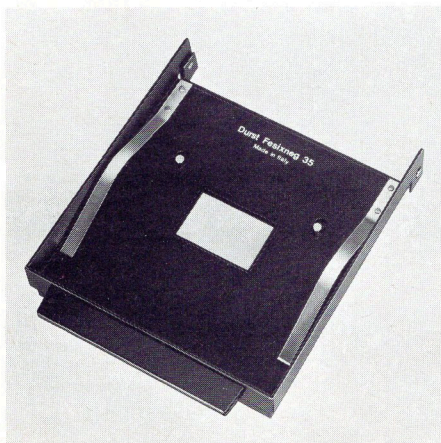




5.0.0. Accessories

5.1.0. The special negative carrier

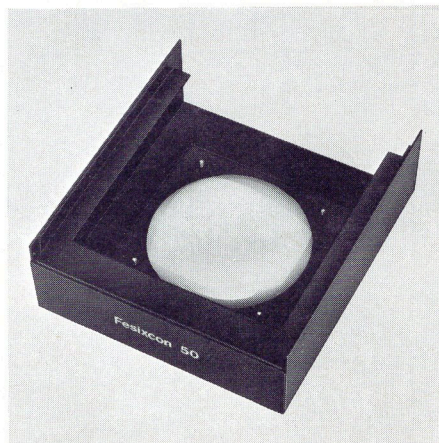
The special FESIXNEG 35 negative carrier is available for 24 x 36 mm negatives.



Durst FESIXNEG 35

5.2.0. The alternative condenser

When using a 50 mm lens, replace the standard FESIXCON 75 condenser by the FESIXCON 50 condenser.

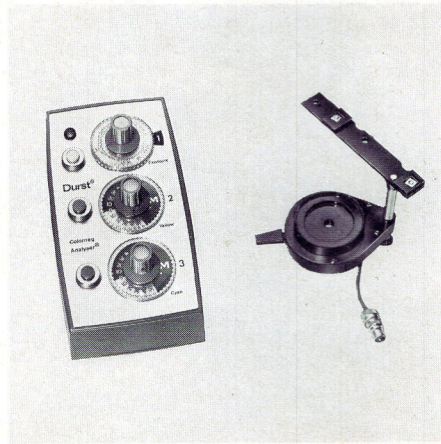


Durst FESIXCON 50

5.3.0. The colour analyser

The Durst COLORNEG Analyser rapidly and precisely establishes the required filtration when enlarging colour negatives. After calibration with a standard negative, this analyser measures both the density of the colour negative (to establish the exposure time) and the colour quality to determine the required filter setting. Control knobs set the colour balance. The appropriate filter value is read off once an indicating lamp lights up, and shows which filters you must place in the filter drawer.

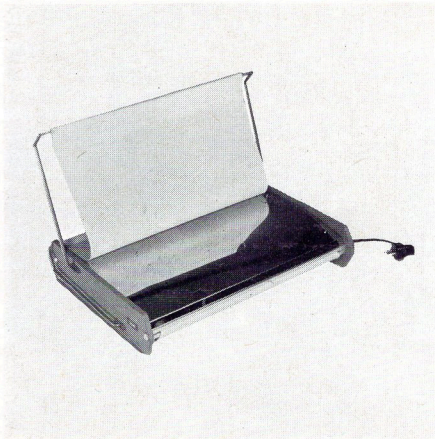
The Analyser is supplied with an adapter for mounting the measuring probe.



Durst Colorneg Analyser

5.4.0. The print drier

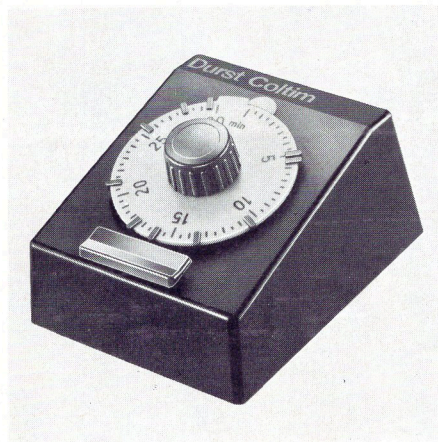
This double sided drier has an adjustable thermostat for precise temperature control while drying colour prints up to the 12 x 15³/₄ inch (30 x 40 cm) size.



Durst Dutro

5.5.0. The processing timer

The programming Durst COLTIM timer is a mechanical precision timer and is indispensable for all colour film and paper processing in the darkroom. The total running time of 30 minutes can be subdivided into any desired time intervals. The programming dials are removable; with additional pre-programmed dials the COLTIM can thus be used for a number of different processes.

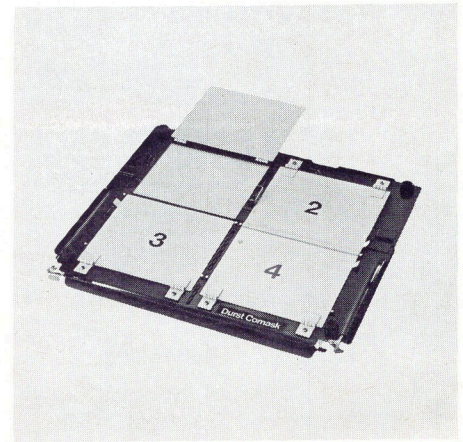


Durst Coltim

5.6.0. The multiple exposure paper holder

The Durst COMASK multiple exposure paper holder uses a single standard paper size of 7 x 9¹/₂ inches (18 x 24 cm) for all print sizes from 3¹/₂ x 4³/₄ inches (9 x 12 cm) up to 7 x 9¹/₂ inches (18 x 24 cm). That way colour enlargements are always made on paper of the same emulsion batch number, making constant recalibration of the colour analyser unnecessary. It yields the following print sizes, using part exposures for prints smaller than 7 x 9¹/₂ inches:

- 1 print 7 x 9¹/₂ inches (18 x 24 cm), or
 - 2 prints 4³/₄ x 7 inches (12 x 18 cm), or
 - 4 prints 3¹/₂ x 4³/₄ inches (9 x 12 cm), or
 - 1 print 4³/₄ x 7 inches (12 x 18 cm) plus
 - 2 prints 3¹/₂ x 4³/₄ inches (9 x 12 cm).
- This solidly constructed masking frame



Durst Comask

ensures optimum results and is supremely easy to use.

6.0.0. Maintenance

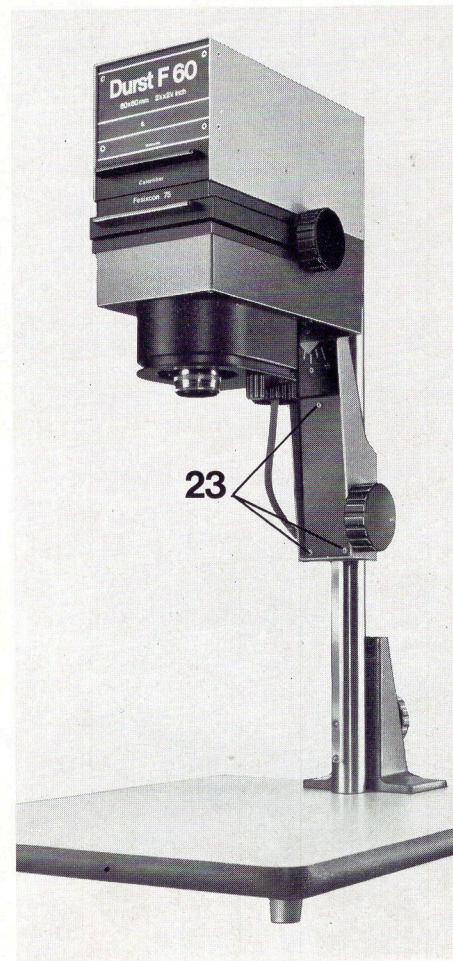
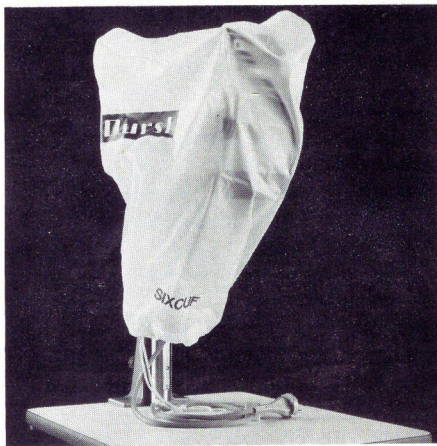
As already noted, dust is a nuisance in enlarging.

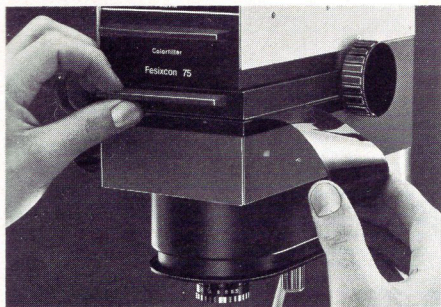
When the enlarger is not in use, either store it in a closed cupboard or cover it with the SIXCUF dust cover. However, for flawless enlargements best clean the condensers and lens with a fluffless cloth before every enlarging session. From time to time lubricate the enlarger column with vaseline or mineral oil.

The vertical enlarger head movement was carefully adjusted at the works for medium tightness. But you can also tighten the movement further or slack it off to suit your personal preference. To do this tighten or slack off the screws (23) on the carrying arm. On no account attempt any other adjustment or servicing.

7.0.0. Storage

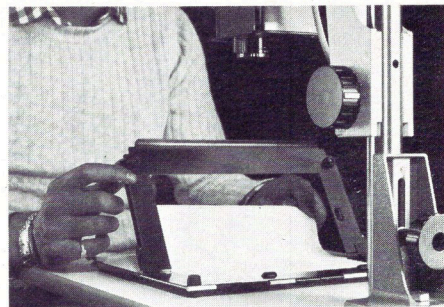
The F 60 is conveniently compact and therefore easy to store. After use the enlarger can be dismantled into the parts in which it was supplied, so keep the foam plastic box for storing the enlarger.



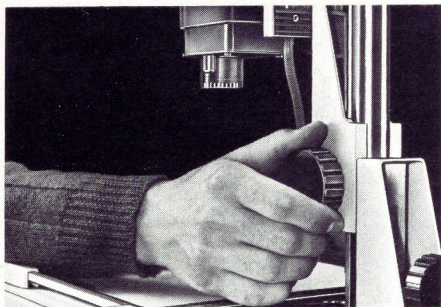


8.0.0. Simple enlarging step by step

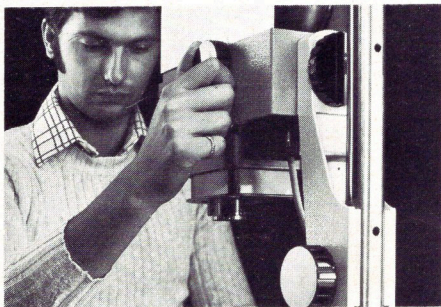
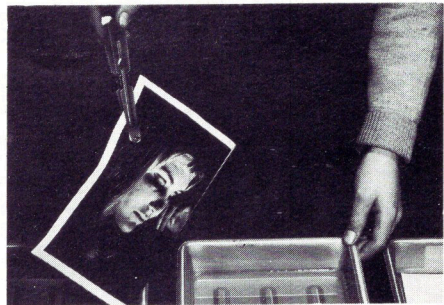
1. Place the negative with the emulsion side downwards in the negative carrier. (Inserting it with the emulsion side up yields laterally reversed pictures.) Switch on the darkroom lamp (orange safelight).



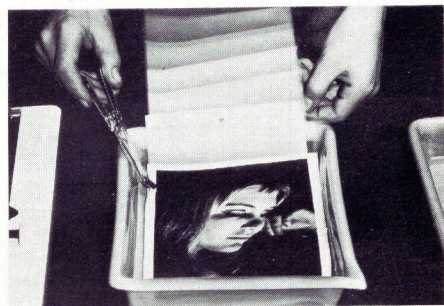
2. Fully open the lens aperture and raise or lower the enlarger head on the column to bring the projected negative or the part of it you want to the required size on the masking frame.



3. Accurately focus the projected image for maximum sharpness. Stop down the lens to obtain an exposure time of about 10 seconds for a properly exposed print. Switch off the enlarger lamp and put a sheet of enlarging paper (emulsion side up) in the masking frame. The masking strips produce a white margin on the print, hold the paper flat and can be adjusted to crop the picture in any way you want.

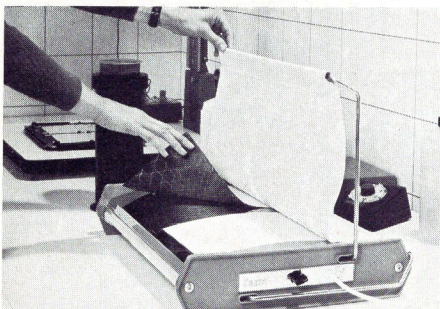


4. Expose by switching the enlarger lamp on and off. Find the correct exposure by a stepped exposure series on a test sheet. Develop this test print for the time recommended by the paper manufacturer. The test should then include a correctly exposed strip to indicate the required exposure time.





5. Develop the exposed enlargements as indicated by the paper manufacturer. Usually a development time of 1½-2 minutes is recommended. Gently move the print in the developer to bring constantly fresh solution into contact with the print surface.



6. Use forceps to lift the print out of the developing dish, dip it for a few seconds in a water rinse (centre dish), then place in the fixer with the emulsion side down. Keep it there for about 10 minutes, moving the print from time to time, to dissolve away all unexposed silver salts. White light can be switched on once the print has been in the fixer for half a minute.



7. Wash the print for about an hour in running water or in at least 8 changes of water. The washing time can be appreciably reduced by a hypo eliminator bath.

8. Wipe off excess water and place the enlargement on a clean towel, leaving it to dry overnight. For glossy prints dry the paper in a glazer which is also suitable for rapid drying (about 10 minutes).

9. The finished print. You can be proud of your masterpiece. Making your own enlargements gives you scope for individual creative control.

Descriptions and illustrations not binding

9.0.0. Trouble shooting chart for black-and-white enlargements

Problem	Cause	Remedy
<i>No image on paper</i>	<ol style="list-style-type: none"> 1. Paper was inserted in easel emulsion side down 2. Exposure made through the red filter 3. Exposure time was much too short. 	<ol style="list-style-type: none"> 1. <i>Insert paper emulsion side up</i> 2. <i>Be sure red filter is out of line with lens</i> 3. <i>Check means of timing for accuracy</i>
<i>Image not sharp</i>	<ol style="list-style-type: none"> 1. Negative not sharp 2. Enlarger not focused accurately 	<ol style="list-style-type: none"> 1. <i>Check negative with magnifier</i> 2. <i>Re-check focussing with fine focus knob. Use rangefinder on M 300 and M 600</i>
<i>Print too dark</i>	Paper received too much exposure	<ol style="list-style-type: none"> 1. <i>Close down lens opening</i> 2. <i>Use less time during exposure of light to paper</i>
<i>Print too light</i>	Paper did not receive enough exposure	<ol style="list-style-type: none"> 1. <i>Open up lens opening</i> 2. <i>Use more time during exposure of light to paper</i>
<i>Print lacks brilliance</i>	Flat negative, not enough contrast	<ol style="list-style-type: none"> 1. <i>Change to next highest contrast grade of paper</i> 2. <i>Change variable contrast filter to next highest number</i>
<i>Too much contrast</i>	Negative has dense black areas and weak shadow tones. It is overexposed, overdeveloped, or possibly both	<i>Change to lower contrast of paper. Change variable contrast filter to next lower number</i>
<i>Blacks are "mottled"</i>	Print has received too much exposure and has been removed from developer too soon	<i>Reduce exposure time or close down lens opening so that print requires proper 1-1/2—2 minutes in developer</i>
<i>Brown or purple stain</i>	Chemical stain	<ol style="list-style-type: none"> 1. <i>Do not use tongs from short-stop or fixer bath in developer tray</i> 2. <i>Make sure short-stop is active</i> 3. <i>Drain prints before entering short-stop and fixer</i>
<i>Yellow stain</i>	Lack of agitation in fixing bath. Part of print has been above surface, or adhered to another print	<i>Refix print until stain disappears. Re-wash</i> <i>NOTE: The remedy is not 100% effective</i>
<i>Paper totally black</i>	Paper has been exposed to white light. Indication of total exposure rather than over exposure when printing is that paper will be black to the very edge	<i>Close package tightly or place paper in drawer when turning on room lights. Keep paper away from enlarger while making print exposure</i>

Addresses of the Durst distributors

Please send the completed voucher 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 own country

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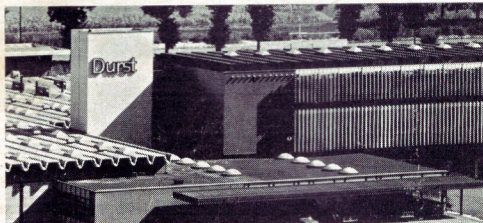
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