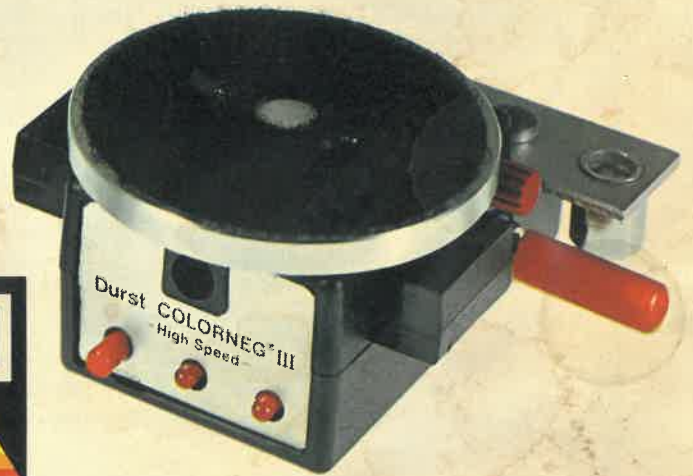


# Durst® Colorneg® III HS Analyser

Operating manual



# Durst guarantee certificate

We guarantee this COLORNEG® III HS analyser against all defects in materials and workmanship in accordance with current engineering standards. The guarantee is valid for

**ONE YEAR**

from date of purchase. In case of a complaint, the unit must be properly packed and sent carriage paid to the nearest authorised service agency in your country. Enclose this guarantee certificate and a brief description of the fault.

We shall at our option fully repair or exchange the unit and parts thereof. There is however no obligation to replace, take back or adapt the unit.

This guarantee does not cover consequential damage resulting from failure of the unit. Nor does it cover damage caused by incorrect handling or storage, damage in transit, through unauthorised modifications nor normal wear and tear.

Date of purchase: .....

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## General note

The Durst COLORNEG® III High Speed (COLORNEG® III HS) is an electronic analyser for colour negatives using two separate instruments for assessing the colour and negative density.

The density measuring unit — the LUXONEG® exposure meter — is also very useful in enlarging black-and-white negatives and transparencies.

To operate the COLORNEG® III HS you need two type PX 23 batteries of 5.6 volts. These are not supplied with the analyser. The analyser can be used with the Durst M 301, A 300, M 601, M 605, M 700 and M 800 enlargers — with lenses of 50 to 105 mm in focal length. To mount the analyser on the Durst A 300 enlarger a COLNIDAP 300 adapter is available as an accessory.

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The original packing contains the following components of the COLORNEG® III HS:  
1 COLORNEG® III HS colour analyser (1)  
2 COLNIDAP adapter brackets:  
Types 2532 and 39 (2)  
1 Extra filter slide (3)

— **Never touch the filters with your fingers!**

2 Shafts (4) with nuts and locking washers  
2 Clamps (5)  
1 LUXONEG® exposure meter (6)  
1 Diffuser (7)

### Important

If the mains supply is subject to frequent voltage fluctuations, operate the enlarger via a voltage stabiliser to avoid wrong readings when working with the analyser.



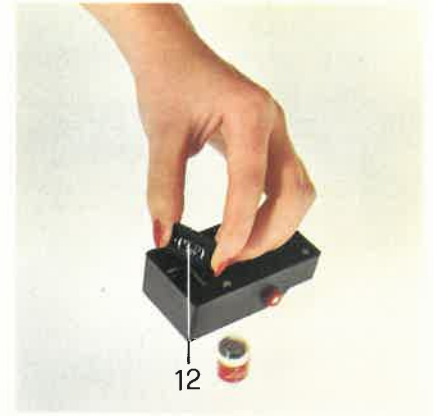
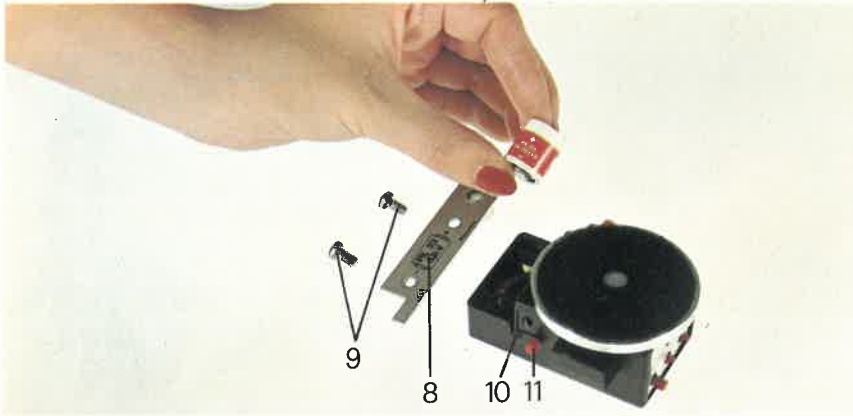
## Inserting the battery in the COLORNEG® III HS and LUXONEG®

Unscrew the two screws (9) and lift off the battery cover (8), then insert a 5.6 volt PX 23 battery. Check correct polarity. When refitting the cover (8) also check that the polarity indications match.

**Battery check:**  
If the signal lamp (10) does not light up on pressing the button (11) or if its brightness fades visibly after 2 to 3 seconds, replace the battery. Open the battery cover (12) and

remove for easier insertion of the 5.6 volt PX 23 battery.

**Battery check:** If the signal lamps become very faint or invisible, replace the battery.



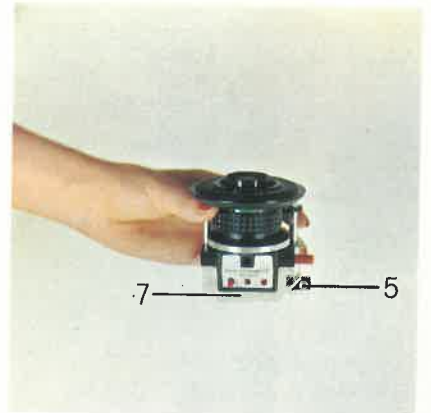
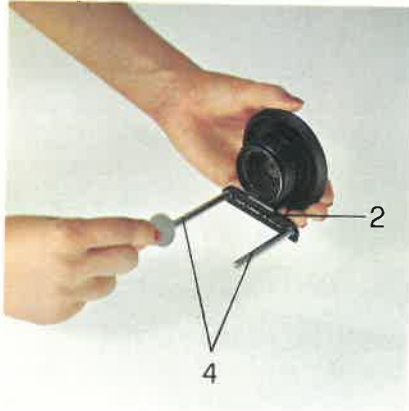
# Mounting the COLORNEG® III HS on the Durst M 301, M 601, M 605, M 700 and M 800 enlargers

Select the COLNIDAP 2532 or 39 adapter (2) to match the lens mount diameter and screw into the lens panel together with the lens.

Screw the shafts (4) to the COLNIDAP bracket (2) with the nuts and locking washers and tighten with a coin.

Push the COLORNEG® III HS onto the right-hand shaft so that the **felt pad is in contact with the lens**.

Then push the diffuser (7) with the spacing sleeve facing upwards onto the same shaft and secure with a retaining clamp (5).



Mount the lens complete with the attached COLORNEG® III HS on the enlarger.

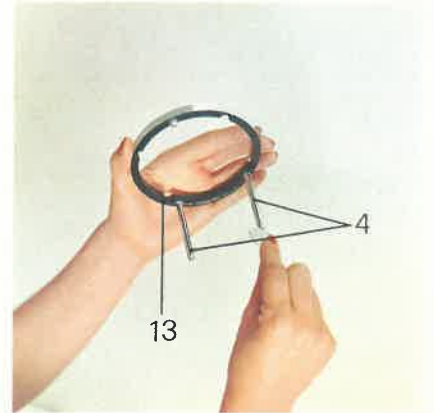
**Check that the lens panel is correctly located. Adjust the height of the red filter so that it does not interfere with centering the analyser below the lens.**

## Mounting the Durst COLORNEG® III HS on the Durst A 300 enlarger

To mount the Durst COLORNEG® III HS you need the COLNIDAP 300 adapter, available as an accessory.

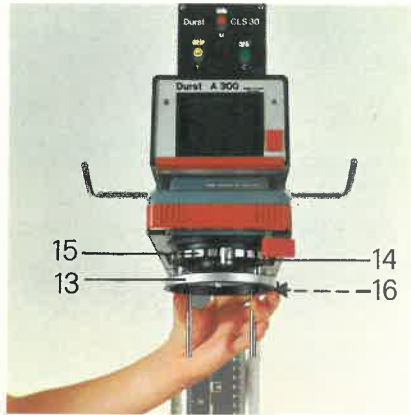
Screw the shafts (4) with the locking washers and washers to the COLNIDAP 300 (13) adapter.

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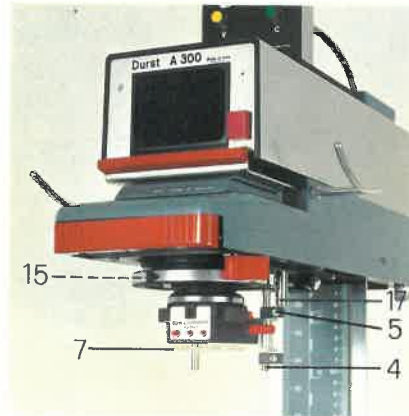


Move the enlarger head to the top of the column, unscrew the threaded collar (14), mount the COLNIDAP 300 (13) over the lens barrel (15) and clamp with the screw (16).



Push first a clamp (5), then the COLORNEG® III HS and the diffuser (7) onto the right-hand shaft and then secure with a second clamp.

**The felt pad must be in contact with the lens.**



Secure the upper clamp (5) with the screw to the right of the shaft (4).

This prevents the COLORNEG® III HS from swinging out into the way of the lens carrier rails (17). That could otherwise damage the analyser if it is swung away from the lens while the enlarger head is being raised and lowered.

**Check that the adjustable lens tube (15) is engaged.**

## The right negative for programming the COLORNEG® III HS

The operating principles of a colour analyser resemble those of computer engineering — especially the need for programming or calibrating the analyser before use. This involves the filter and exposure values required for a perfect 18×24 cm or 8×10 inch colour enlargement. What counts is not the attraction of the picture but its colour balance.

**The negative used should have as uniform a mix of different colours as possible. It should have been taken with correct exposure by slightly hazy sunlight. Street scenes and fancy dress parades provide ideal calibrating negatives for programming the analyser.**

12 Avoid exposures made by early morning or late evening sunlight as the predominant redness of a light yields

false calibration. Also; the picture must not have large dominant colour areas, such as blue sky or large shadow portions. The only colour that may predominate is grey. The negative being used must show different colours distributed as evenly



Suitable calibrating negative

as possible and must have been rightly exposed by slightly veiled sunlight. Photographs of street scenes and national festivals represent the ideal negative for calibrating, that is for programming the analyser.



Unsuitable calibrating negative

## Preparing a colour enlargement to programme the COLORNEG® III HS

- Insert the standard or calibrating negative — with the emulsion slide down — into the negative carrier. The light from the enlarger must go only through the negative, so use glassless format masks (available as accessories) in place of the negative carrier glasses. On the M 301 enlarger also cover up the apertures of the format mask with black adhesive tape.
- Set all filters in the colour mixing head to zero.
- Switch off the room lighting and switch on the enlarger lamp.
- Fully open the enlarger lens aperture.
- Set the enlarger to an 18×24 cm or 8×10 inch enlargement and focus the image.
- Close the enlarging lens by two full lens stops.
- Switch off the enlarger lamp.
- Insert a sheet of colour paper in the masking frame and make an exposure series with a range of times (for instance 4, 8, 16 and 32 seconds) of a portion of the enlarged image. The Durst COMASK CM masking frame for 18×24 cm or the COMASK IN for 8×10 inch prints are ideal for this as they permit four exposures on one sheet of paper.
- Process and dry the exposed print, following the prescribed procedure of the processing kit.

With these four test exposures you can now establish a correct exposure time to match either one of the actual exposures or an intermediate value between two of them. Suppose that the correct exposure was 12 seconds.

However your test exposures will probably also show a colour cast which you have to eliminate by appropriate filtering of the enlarger light.

### **To neutralise a colour cast use a filter of the same colour**

Any lack of a colour component in the colour mixing head is provided by introducing two of the three filter colours. Yellow and magenta together yield red, magenta and cyan together yield blue, yellow and cyan produce green. Mixing all three filter colours only yields grey, i.e. neutral density which has no colour filtering action but only increases the exposure time.

**So use only one or a combination of two filter colours for correction — never all three.**

Moreover, to eliminate a colour cast the filter density must match the density of the cast. The stronger the cast, therefore, the higher must be the filter setting.

Too high a filter setting, i.e. excessive filtration, produces a colour cast complementary to the filter colour. In this case reduce the filter density of the colour complementary to the cast. Blue is complementary to yellow, green to magenta and red to cyan.

All this sounds much more complicated than it really is: Simply follow the table below which sums up the relationships.

Intermediate tones are obtained by different proportions of the two filter colours. For instance more yellow and less magenta yields orange. (Resin-coated or PE papers nearly always need only yellow/magenta filter settings.)

You are unlikely to arrive at the

correct filter settings on the first attempt. You can eliminate the colour cast found only by making a further exposure series again (use the CO-MASK multiprint masking frame) and different filter settings. Preferably start with larger filter steps and switch to smaller steps until the print appears correctly balanced.

To permit comparison of filter tests, they must match in image density. Filters absorb light. The higher the filter setting, the less light reaches the enlarger baseboard.

**When you change the filter setting, you must also adjust the exposure time or the lens aperture.**

That is what the LUXONEG® exposure meter is used for. Once it is programmed for the correct exposure time, the LUXONEG® always yields the same image density, irrespective of the filter values set.

Colour cast	Increase filter setting of	or reduce filter setting, if present, of
Yellow Magenta Cyan Blue Green Red	Yellow Magenta Cyan Magenta + cyan Yellow + cyan Yellow + magenta	Magenta + cyan Yellow + cyan Yellow + magenta Yellow Magenta Cyan

## Programming the LUXONEG® exposure meter

**Before using the unit, expose it to bright light for about 15 minutes to activate the measuring cell.**

Programme the LUXONEG® in complete darkness. The standard or calibrating negative remains in the negative carrier. Do not change the lens stop, exposure time or magnification.

Switch on the enlarger light and swing the diffuser (7) in front of the lens.

Place the LUXONEG® on the masking frame so that the meter cell (18) is centered as accurately as possible below the lens. Press the red button (19) — one of the two signal lamps (20) will light up. Now turn the speed setting knob (21) in the direction of the lamp that is out. Turn slowly from one

click stop to the next. At some point the second lamp will light up — usually between two click stops, more rarely exactly on one click stop. Let the speed setting knob (21) engage at the nearest click stop to the point where both lamps (20) remain alight.

(You can easily establish this position by repeatedly turning the knob back and forth.)

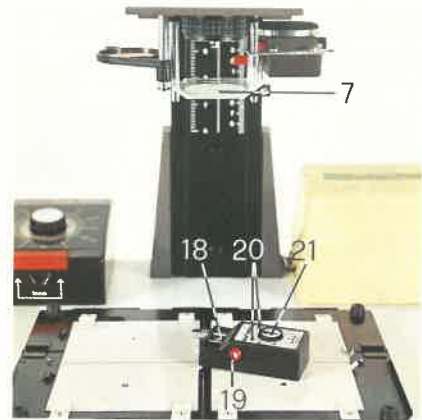
Open or stop down the lens aperture until both lamps remain alight together.

Your LUXONEG® is now programmed.

Note that the slight adjustment of the lens aperture slightly changes the original exposure time. So make a new test exposure with this aperture setting and set the new exposure time on your exposure timer.

**The figures on the LUXONEG® are merely reference values — they indicate neither lens stops nor exposure times.**

New enlarging papers rarely need reprogramming. Page 18 describes operation with the LUXONEG®.

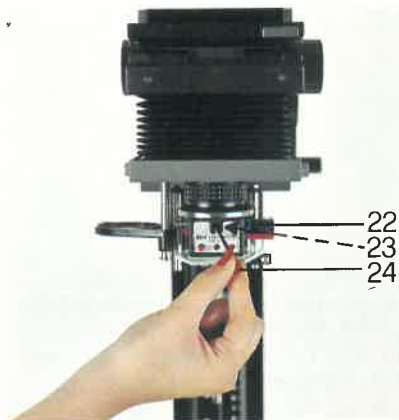


## Programming the COLORNEG® III HS colour analyser

- As soon as you have a correctly filtered and exposed enlargement of the calibrating negative, you can programme the analyser.
- Leave the calibrating negative in the negative carrier, and set the correct filter values — established for the correct enlargement — on the colour mixing head.
- Keep the magnification unchanged.
- Now fully open the lens aperture and swing the COLORNEG® III HS in front of the lens.
- 16 — Switch on the enlarger lamp.

The filter slide (22) engages at three points. Push it to the right (yellow engagement point) and unscrew the calibrating screw (23) with the screw driver (24) as far as you can without obstructing the movement of the filter slide. (The screw driver is

located at the side in the COLORNEG® III HS.) Press the red balancing button (25) — one of the two lamps (26) will light up. Now turn the speed setting control (27) until both lamps remain alight. After this balancing operation let go of the button (25).



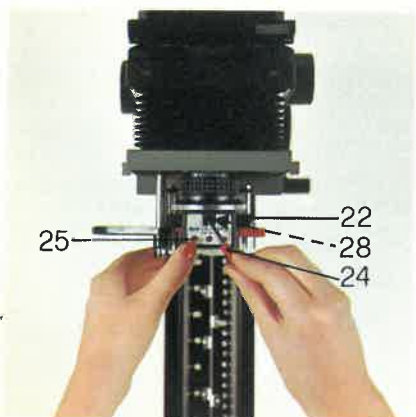
Next push the filter slide (22) to the central magenta engagement point. Again press the red button (25) and turn the calibrating screw (28) with the screw driver (24) until both signal lamps light up together. Finally move the filter slide (22) to the left-hand engagement point (cyan), press the

red button (25) and balance the two signal lamps with the cyan calibrating screw (29). Recheck balance in all three positions and if necessary readjust the sensitivity control (yellow) or the calibrating screws (magenta and cyan). Always keep to the same sequence:

First the yellow, then the magenta and finally the cyan engagement points. The signal lamps must light up together in all three positions.

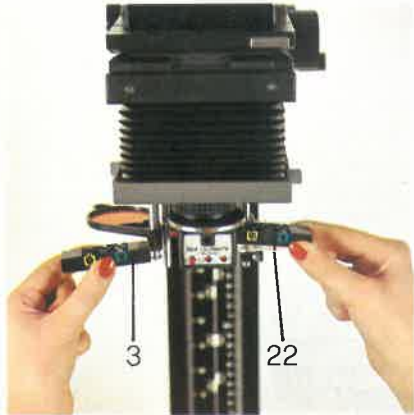
If it should prove impossible to balance yellow with the sensitivity control, balance it with the calibrating screw and balance magenta with the sensitivity control. In this case first unscrew the magenta calibrating screw as far as you can without blocking the movement of the filter slide. Then calibrate yellow and cyan with the calibrating screws.

After this balancing operation with the two signal lamps for yellow, magenta and cyan, the COLORNEG® III HS is calibrated for the film type, the paper emulsion, the enlarger lamp, processing chemistry and the lens. If you change or modify any one of these five factors, make a new colour enlargement and reprogramme the analyser with the changed filter values.



The filter slide (22) is interchangeable, so while you are at it, you can calibrate the COLORNEG® III HS for a second film type or a second paper emulsion by inserting the spare filter slide (3) supplied with the unit.

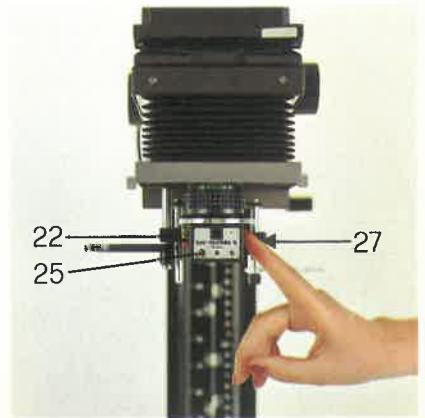
**Never touch the filters of the filter slide with the fingers.**



## Using the programmed COLORNEG® III HS and LUXONEG®

- Switch on the enlarger lamp.
- Remove the calibrating negative from the negative carrier and insert an unknown negative.
- Set the filter scales in the colour mixing head to zero.
- Crop the projected image as required and focus sharply, then swing the COLORNEG® III HS in front of the lens. Keep the lens aperture fully open.

- Now move the filter slide (22) to the left-hand (cyan) engagement point, press the red button (25) and turn the sensitivity control (27) until both lamps light up and stay alight together.





Next move the filter slide (22) to the centre (magenta) engagement point, again press the red button (25) and adjust the magenta filter setting on the enlarger head (30) until both signal lamps light up together.



Finally move the filter slide fully to the right to the yellow point, press the button (25) and balance the two signal lamps by adjusting the yellow filter setting (31) of the enlarger.

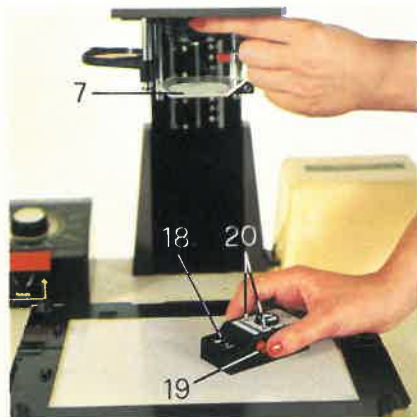


Repeat this measuring procedure and balance the lamps with the filters in position in the same sequence: cyan with the speed control, magenta and yellow with the appropriate filters on the colour mixing head. The signal lamps must light up together in each of the three positions.

If you have to eliminate a heavy blue-green cast by cyan filtering, you are likely to find that either the magenta or the yellow filter control has reached zero without reaching a balance point on the colour analyser.

In this case balance with the filter slide in the centre position (magenta) and with the magenta filter of the colour head set to 00. Balance this with the sensitivity control and then balance by adjusting the enlarger filter settings for yellow and cyan with the filter slide at the right-hand and left-hand points respectively.

Now swing the COLORNEG® III HS out of the way, place the diffuser (7) in front of the lens and place the LUXONEG® — with the measuring cell (18) centered as accurately as possible below the lens — on the masking frame. Press the red button (19) and adjust the lens aperture



until both signal lamps stay alight together.

You have now matched the light intensity to the exposure time of the test print used for programming and you can leave this time set on the exposure timer.

Finally, expose the print with the filter settings and aperture obtained in this way and process.

If you want to make a very much bigger enlargement, you may well find it impossible to balance the LUXONEG® even at the full lens aperture. In that case increase the speed setting of the LUXONEG® by a full step (e.g. from 4 to 8) and on the exposure timer set double the exposure time used for programming the LUXONEG®. Balance again with the lens aperture. A full step (two click stops) on the LUXONEG® increases the sensitivity by one lens stop; and one lens stop is equivalent to double the exposure time.

If on the other hand you want to make a very much smaller enlargement, you may then find it impossible to reach a balance point even at the smallest lens aperture. In this case reduce the speed setting on the LUXONEG® by a full step, for instance from 4 to 2, and similarly halve the exposure time set on the timer. Now again balance with the lens aperture adjustment.

The LUXONEG® also permits spot readings. Do this preferably with a shadow area that still shows detail. The LUXONEG® is then also programmed without the diffuser. Spot readings call for greater accuracy and plenty of experience; for that reason diffused-light readings with a diffusing screen are preferable.

The LUXONEG® can also be used when enlarging black-and-white negatives or colour transparencies.

## ...can you expect from a colour analyser?

Basically an analyser on its own is not capable of yielding a picture that ideally satisfies all your preferences. The analyser can only measure negatives in accordance with the calibrated settings and generally yields results that closely match your individual preference. But in some cases you will have to correct the readings obtained.

That applies especially to negatives with large dominant colour areas, for instance shots of people on a big lawn or seascapes underneath a blue sky — all of which tend to mislead an analyser. In this case you have to carry out the colour correction starting with the measured filter settings, without freshly analysing. The expo-

sure correction of the modified filter setting is of course still obtained with the LUXONEG®.

The analyser cannot replace knowledge and experience of colour casts and how to correct them. But a

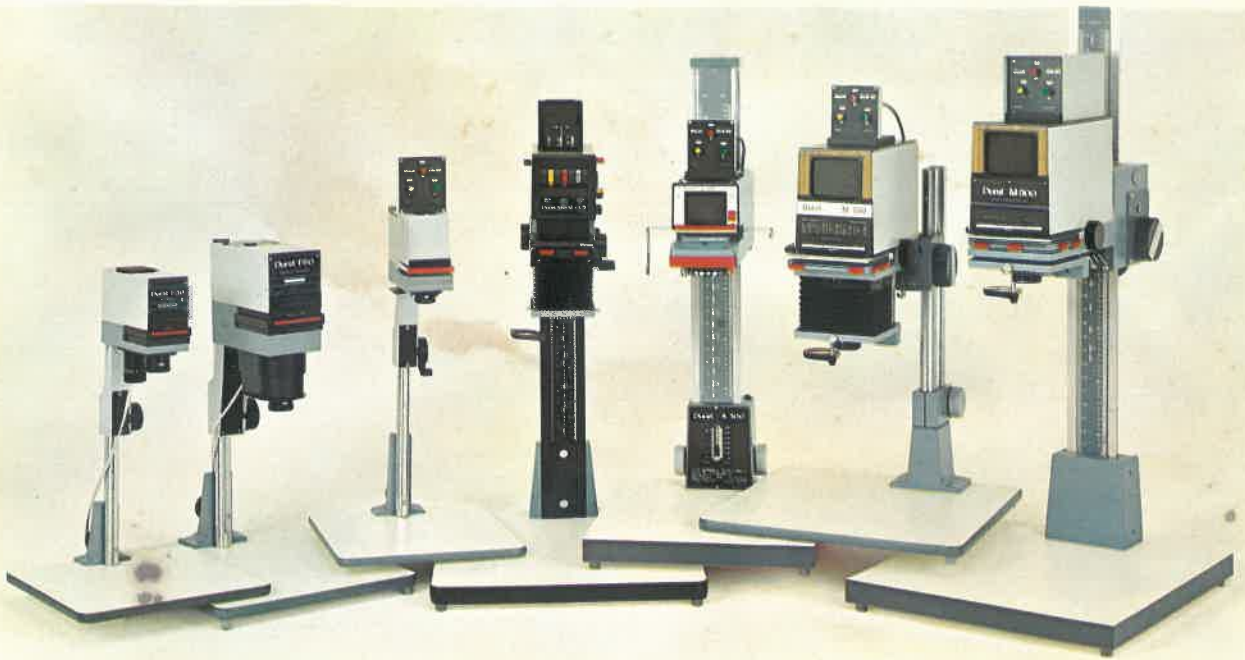
correctly calibrated analyser is a significant aid to reach the ideal result much quicker.

The most important part of successful analyser operation is correct calibration or programming of the analyser.

Shot with dominant blue colour



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





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