Durst Epsilon Plus

Pictures move the world. Pictures get to the heart of things that many words are often not able to say. The Durst Epsilon Plus brings pictures to life. Rich in contrast, clear, succinct, and always in full color. To do so, we use our LED fiber-optic technology, which is among the most advantageous possibilities for the reproduction of digital image data on photographic materials such as paper or film.

The principal is extremely simple: monochrome LEDs produce light and send it by means of a fiber-optic cable and special optics. The LEDs expose the picture at hand pixel by pixel, line by line on the light-sensitive photographic material. The results can be seen: pictures that come alive. Printed photo quality - Durst Epsilon Quality Prints.

Durst Epsilon Plus, the "Medium Format Photo Printer" for Digital Image Production

The Durst Epsilon Plus is a digital photographic printer, equipped with special LED exposure technology and continuous "roll to roll" paper transport, which makes it possible to expose pictures or series of pictures in one piece up to 85 m. (279 ft.) in length.
The digital image and text files are exposed with a resolution of 254 ppi on conventional RA4 photographic material (paper and film). Through the use of roll material, various picture formats are possible up to a maximum roll width of 76.2 cm. (30 in.) and a total length of 85 m. (279 ft.)
A Pentium PC using Windows 2000 handles the control of the exposure equipment and at the same time serves the user as a workstation.

The software and user interfaces have been specially designed for digital image production. A series of practice-related software functions fulfills the high demands and the most varied desires of customers in the digital image production sector.
With its innovative technology, the Durst Epsilon Plus achieves an economically-viable production capacity with the highest image quality and thus makes possible a successful entry into the world of digital image production.

Durst Epsilon Plus - the Greatest Possible Flexibility with Materials, Image Sizes, and File Formats

Much is possible with a Durst Epsilon Plus. In addition to the high quality prints of any size, the well-versed multitalent of Durst also handles special tasks, such as the printing of advertising panels, backlit images, albums, brochures, etc.

The material utilized varies according to use and includes all RA4 photographic papers and transparent materials in different models and sizes.

Tradeshows/Advertising

Large format images in photo-realistic quality bring colors and presence to trade shows, meetings, conferences, seminars, etc.

Paneling

Advertising panels that grab the attention and are resistant to environmental influences are also covered by the Durst Epsilon Plus. Resistant, non-fading RA4 materials, such as paper, flex, trans, and clear, can be printed upon.

Backlighting

Whether at trade shows, exhibitions, or in public places: a professionally set up light box is always at the center of attention. The transparent material makes possible image reproductions with optimal luminous power and a long duration.

Photographic Image Quality
Arouses Emotions and Draws Attention

Photo albums

The Durst Epsilon Plus provide services worth seeing, even with the printing of photo albums, travel albums, wedding albums, and more.
Thanks to the digital image processing, no limits are posed in the creativity of the layout. The high color quality makes sure that the value of these works does not fade through the course of the years.

Direct Exposure of Digital Image and Text Files on Photographic RA4 Material

Epsilon "LED prints" are images with a resolution of 254 ppi continuous tone, which corresponds to 1,250 dpi with an inkjet print, uniting advantages of traditional photography (large color space, favorably priced basic materials, infinitely-variable color palette, three-dimensional representation perception) with the advantages of digital image processing.
Small and large photos are exposed directly from the file on conventional photographic materials without the time-consuming detour of a negative.

The Durst Epsilon Plus offers the greatest flexibility in the processing of different image formats. Images can be produced without limitation on size, from the smallest scale of an illustration to the largest format poster (with automatic division into panels). With user-friendly software, image sectors, PG series, package prints, and panorama pictures are optimally positioned and exposed on the production medium.

Durst Epsilon Plus: Flexible for Many Customers Desires

The typical areas of use for the Durst Epsilon Plus are portrait photography, wedding photography, and business photography, where in addition to the standard image formats and enlargements, image sectors and package prints are also produced. Large image photos, posters, and picture series in the area of industrial and advertising photography are likewise among the daily applications of the Durst Epsilon Plus.

In order to be able to handle these versatile tasks quickly and efficiently, the Durst Epsilon Plus has available a series of special software functions and an easy to understand user interface with icons and pull down menus.

Standard image formats and enlargements

With the Durst Epsilon Plus, digitized image files can be enlarged or reduced without the need for calculation and without reciprocity failures. Various software functions are available to the user for setting the desired image formats.

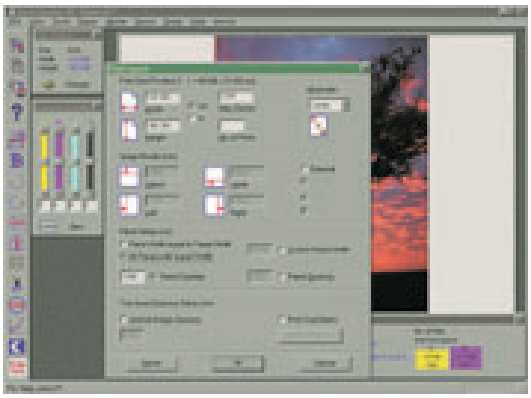
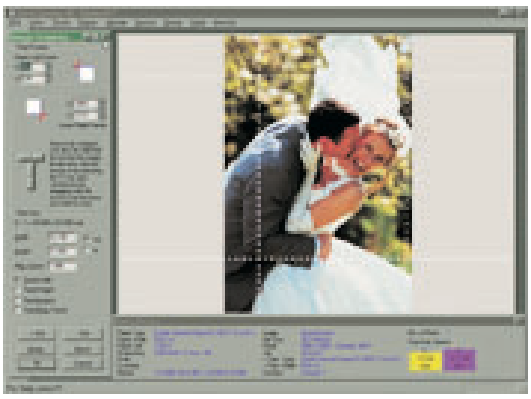


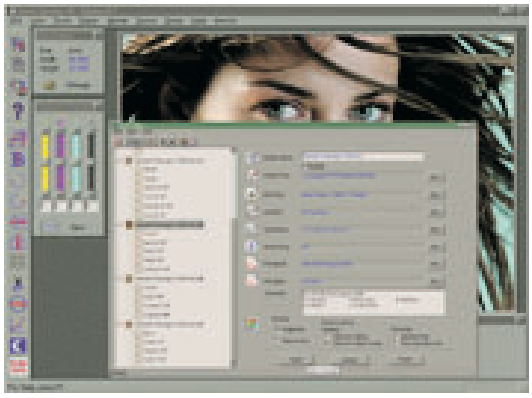
Image Sectoring

Any desired portion of an image can be enlarged as an image sector as needed. The existing pixels are recalculated and introduced by means of a special interpolation procedure (on-the-fly pixel interpretation). By means of this technology, the high image quality of a Durst Epsilon Quality Print remains, even with extreme enlargements



Package Printing
Multiple Prints

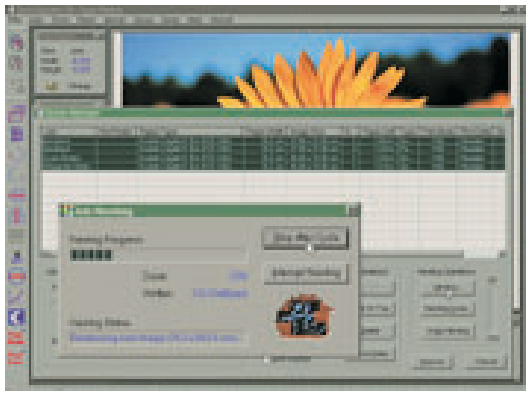
In order to achieve the best possible productivity with series exposures, several images can be exposed next to each other with each paper width. For further optimization, the image can also be rotated as desired. With the special "Package Printing" software, series of the same image with different image formats can be assembled into a package print. With the versatile layout possibilities of the format presets with hot folders, individual packages can be arranged, set up in a space-saving manner, and automatically exposed. Once a package has been made up, it can constantly be "fed" with new images. This makes the automatic workflow speedier and easier, especially in the areas of children's portraits, school pictures, and business photography.



Auto Nesting
Autocutter Barcode Printing*

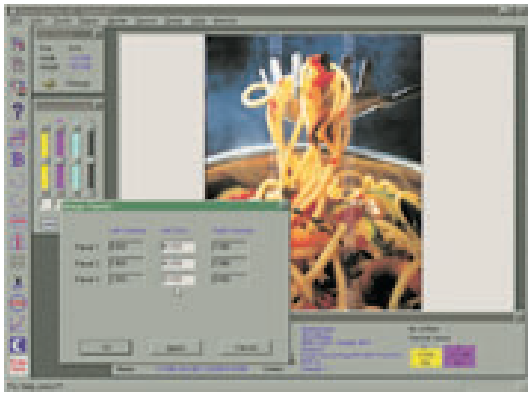
With the Durst Epsilon Plus, different files can be exposed in different image format sizes, even next to each other with the entire width of the role. This is handled by the special "auto-nesting" software, which automatically distributes the images to be exposed over the available roll width in such a way that the waste of material is minimized and the productivity of the equipment is made use of to the best possible degree. This auto-nesting can also be directly activated through hot folders and consequently makes an automated workflow possible. In addition, the Autocutter bar code especially developed by Durst can be printed. It contains all of the information necessary for the automatic cutting of images printed on the role material with the Durst Autocutter 32/62. With this, a rapid and rational processing of the pictures is guaranteed.

* = optional software package



Panel Exposure/Tiling

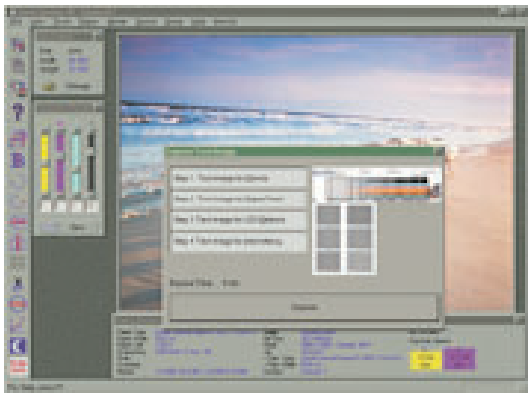
Image sizes that exceed the available roll width are automatically divided into panels and provided with corresponding editing marks. Software for dividing into panels offers various possibilities of settings, such as the division according to the width of the role, all panels with the same width, direct input of the desired panel width, setting of the desired image overlap, and so on.



Options for the Optimal Reproduction of Images

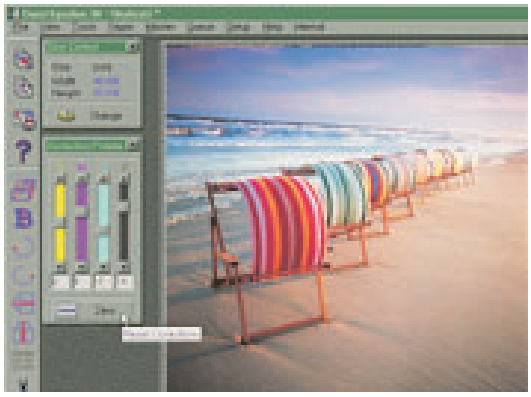
Calibration

The basis for the problem-free reproduction of high-quality images is precise calibration. For that, different test files are printed. These test images are read in through the densitometer and through a flatbed scanner, and the corresponding corrections for density and image quality are automatically corrected in the exposure system. In a few steps, even materials (paper and film) with wide variations are calibrated. With the use of the same material type or for quality controls in between, a quick recalibration suffices.



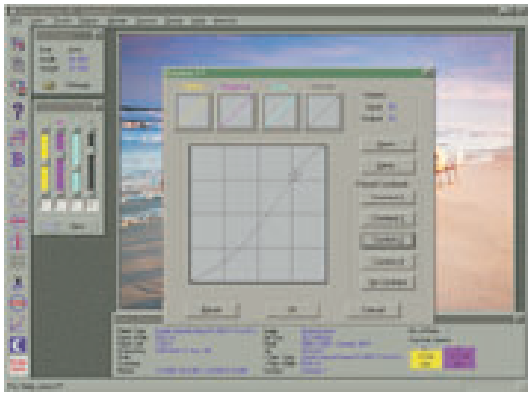
Color and Density Correction

The image processor of the output device is not and should not be an image processing station; nevertheless, slight color and density corrections are often necessary. These are feasible by means of sliding controls (Y-M-C and D) or through direct input in the area of +/- 30 D, although the changes are not displayed on the monitor.



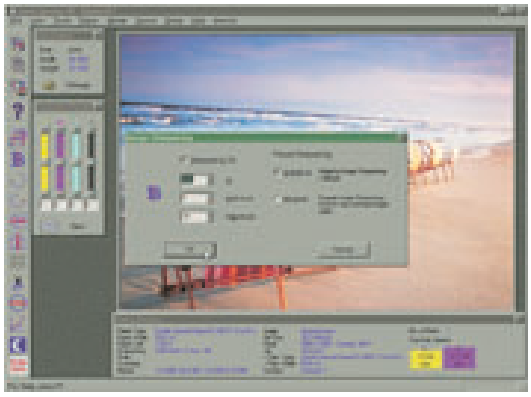
Contrast Correction

Contrast corrections in color (Y-M-C) and density (D) may also be carried out as desired. In this area as well, the inputs may be implemented directly into the contrast curves. Each selected curve can be individually saved and called up again as needed.



Correction Possibilities of Image Sharpness

The human eye often tends to perceive scanned or digital images as "soft" or unclear. For that reason, the Durst Epsilon Plus has available a special function for the adaptive sharpening of digital images. In this process, differences between bordering pixels are enhanced, without affecting flat, homogenous areas. The result is images with significantly better image sharpness.



Data Handling and Work Flow

The Durst Epsilon Plus has several software functions available which, in combination with a network connection with the equipment, make possible a speedy and efficient work flow and data flow in the laboratory.

Image and text files can be directly transferred (over a network or with data storage devices) to the image processor of the Durst Epsilon Plus. Supported file formats are: TIFF, JPEG, BMP, PPM, and PostScript Level 2 and Level 3 (PS, EPS, and PDF files).

Color Management

The Epsilon Color Management Software permits the use of ICC profiles for TIFF, PostScript, and PDF files and also contains Praxisoft Pantone color management. This software makes possible the precise matching of Durst Epsilon Plus images with other output devices. The Epsilon Color Management Software also contains generic ICC input profiles, as well as ICC output profiles for the most varied of paper and transparency materials.

PostScript RIP Level 2 Level 3

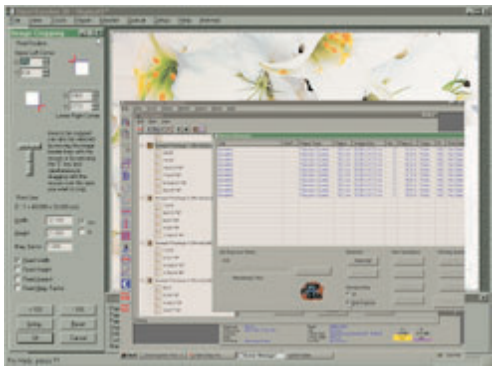
PS, EPS, and PDF files (with integrated CMYK, RGB, and grayscale images/graphics) can be directly ripped with the Cheetah RIP installed directly on the image processor by Durst Dice America to the desired output size of the image. In so doing, CMYK files are automatically converted into RGB data. If necessary, the image file can also simultaneously be rotated; this represents an additional savings in time.

Queue Manager

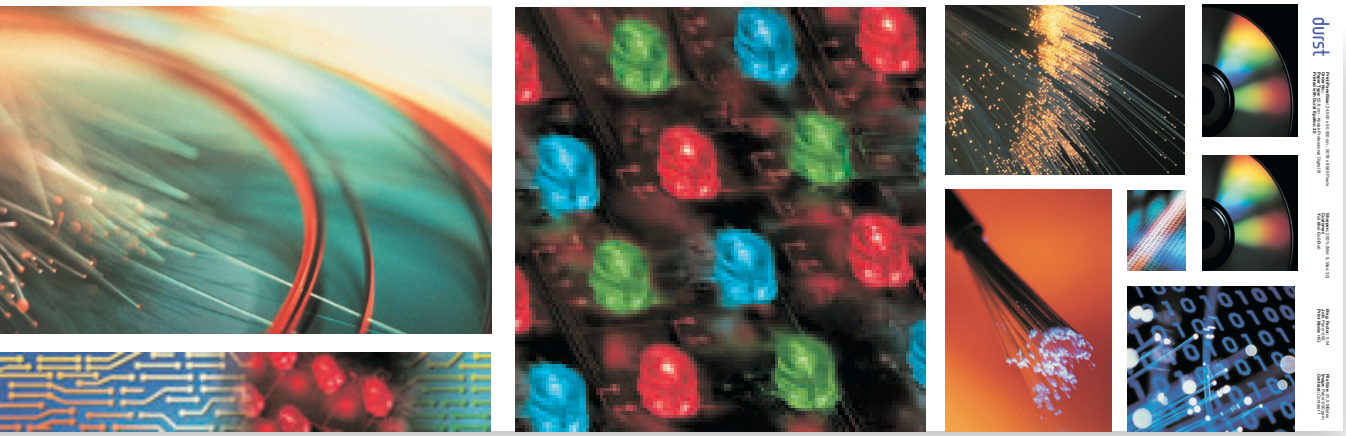
The Durst Epsilon Plus is especially suitable for an automated work flow, that is, for the automatic printing of the prepared files. The prepared orders to be exposed are placed in the queue, and are exposed next to each other, while thanks to multi-tasking, new images and orders can already be prepared on the workstation. The remaining length of the material is then calculated and displayed for every order. Because of its large take-up device, the Durst Epsilon Plus can print an entire roll of material up to 85 m. (279 ft.) in length straight through, all the way to the end of the roll, without supervision.

Autospooling with the Hotfolder Function

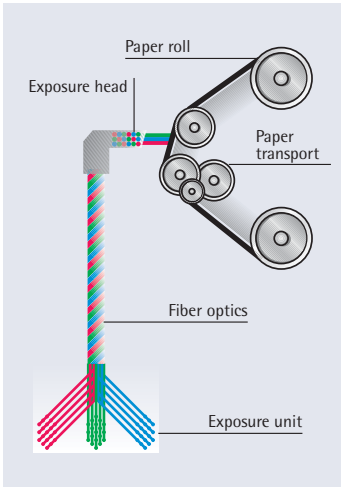
The autospooling software makes possible a fully automatic and unsupervised exposure of image files that are sent to the image processor of the Durst Epsilon Plus. If the autospooling function is activated, the files that are sent over the network to the hot folders of the image processor are automatically provided with the exposure parameters (sharpness, contrast, output format, autonesting, and so forth) that were preset in the hot folders and placed in the queue. In the event that the "Autoexpose" function is activated, these files are automatically exposed.



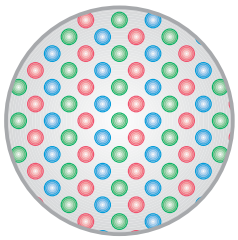
LED Fiber-Optic Technology



Fiber optics
The eyes of bees are composed of approximately 9,000 facets or lenses. In fractions of a second, they capture images and transfer them over the nerve fibers to the brain, where the individual images are reassembled into a total image. The glass fibers of the Durst Epsilon Plus have similar functions – they transfer the light of the LEDs punctually and per color onto the photographic paper and reassemble the image that had been digitally disassembled back into an analog total picture. Such glass fibers, which were first developed around 1970, are composed of an inner core with a high refractive index and a covering with a low effective index. The total reflection between the two materials prevents the "escape" of light, which is conducted through the inner core up until the exit at the end of the fiber.

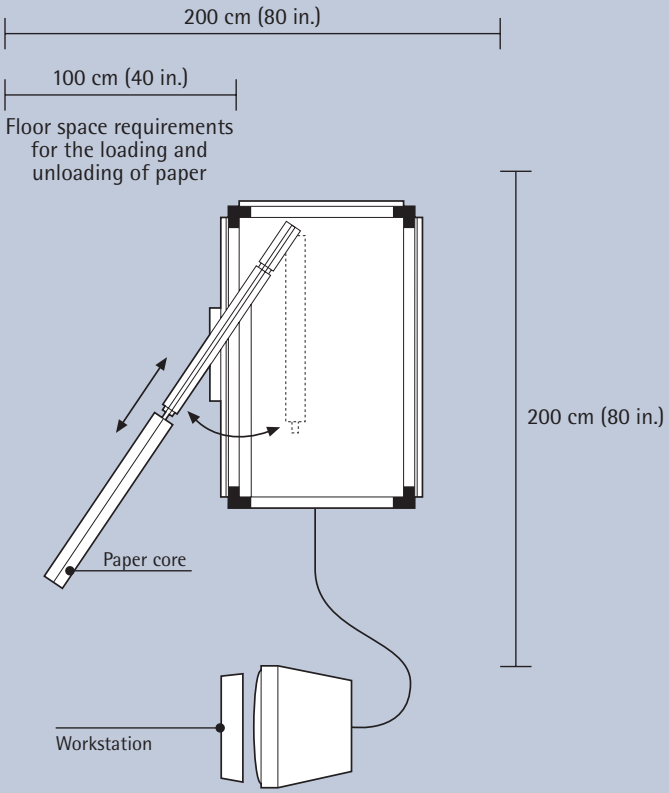


LEDs
LEDs (light emitting diodes) are special semiconductor diodes which convert current directly into light. LEDs emit only monochromatic light, and the color of the light is dependent upon the substrate and the phosphide emitting layer.
LEDs are extremely robust, demonstrate a lifetime of 100,000 hours, and use up to 80 percent less energy compared to incandescent bulbs.

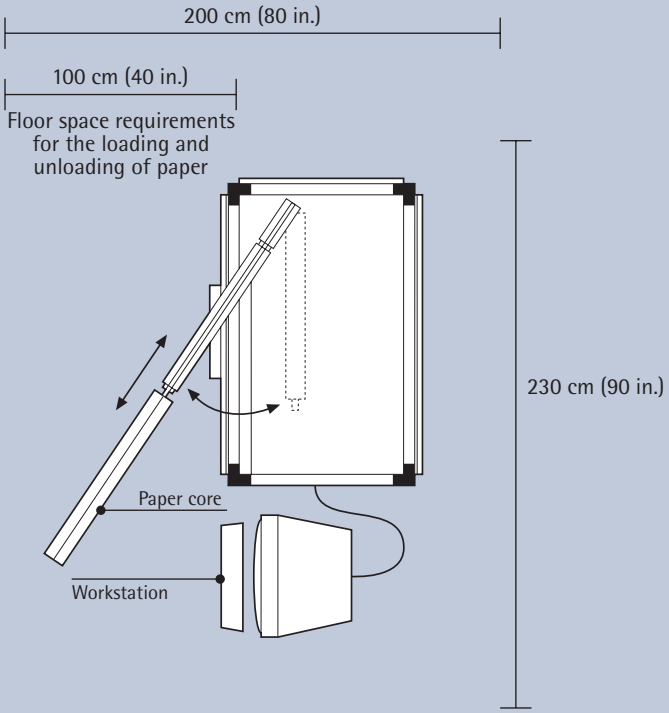


Floor Space Requirements / Installation Possibilities

Recommended installation variations:
Printer in the darkroom and workstation in the light room



Complete system in the darkroom



Technical Information

1. General Specifications

Power supply:
115 VAC ±10%,
single phase/50-60 Hz
(100-120 VAC), or
230 V AC ±10%,
single phase/50-60 Hz
(200-240 VAC)

Power Usage:
max. 500 VA

Dimensions:
Width:
about 95 cm (37 in.)
Length:
about 140 cm (55 in.)
Height:
about 165 cm (65 in.)

Floor space requirements:
about 2 x 2 m
(4 m²)/80 x 80 in.

Weight:
approx. 400 kg
(880 lb)

Safety and Standards Specifications :
CE, GS, UL, CSA

2. Specifications for the Image Reproduction

Exposure System:
Fiber optic LED exposure technology (RGB) with continuous exposure from roll to roll

Lifetime of the LEDs:
approx. 100.000 h

Image quality:
Photographic image quality from digital files

File formats:
- Grayscale -RGB-TIFF, PPM, JPEG, and BMP
- PostScript Level 2/ Level 3 (PS, EPS, PDF incl. CMYK, RGB, and grayscale images) only Type 1 fonts

Raster Image Processor (RIP):
Integrated Cheetah-RIP from Durst Dice America

Colors:
16.7 million colors

Color depth:
39 Bit

Color gradations:
256 RGB color gradations

Resolution:
254 ppi continuous tone, on-the-fly pixel interpolation

Processable materials:
RA4 photographic material
RA4 transparency materials

Linear output speed:
- approx. 110 mm/min = 5 sq. M./h

Please note:
The output speed can change according to the material used.

Production capacity:

Image format	Roll width	Number of adjacent pictures	Number of pictures/hour	Number of pictures/day (8h.)
13 x 18 cm (5 x 7 in.)	76 cm (30 in.)	6 horizontal	214	1.709
20 x 25 cm (8 x 10 in.)	76 cm (30 in.)	3 vertical	100	800
30 x 40 cm (12 x 16 in.)	61 cm (24 in.)	2 horizontal	42	333
50 x 76 cm (20 x 30 in.)	76 cm (30 in.)	1 vertical	13	105
76 x 100 cm (30 x 40 in.)	76 cm (30 in.)	1 horizontal	7	56

The capacity can vary depending upon the material used.

3. Material and Transport Device

Material supply:
Single position roll supply (height of the loading device approx. 130 cm./51 in.)

Take-up device:
Automatic material take-up system that swings out, with automatic cutting device

Material loading capacity:

Roll width cm/in.	Roll length m/ft
30.5 cm (12 in.)	85 m (279 ft)
50.8 cm (20 in.)	85 m (279 ft)
61 cm (24 in.)	50 m (164 ft)
76.2 cm (30 in.)	50 m (164 ft)

Maximum roll length of the exposed material:
85 m (279 ft)

Minimum image length:
1 cm (0.4 in.)

Minimum material feed:
about 40 cm. (15.7 in.) including the exposed area

Unused material (waste) during loading and after every cut:
approx. 2 cm. (1 in.)

4. Workstation

Image processor:
Pentium Processor 2,0 GHz

RAM:
512 MByte

Hard disk:
80 GByte

Disk drives:
- CD-ROM
- 3,5" diskette drive

Operating system:
Windows 2000 Workstation with FTP Services (service programs)

Monitor:
19" color monitor

Graphics adapter:
32 Bit for the display of True Color, 32 MByte

Network protocol:
TCP/IP

Interfaces:
- USB for connection to external devices
- Fast Ethernet connection (100 Base T) for the network
- RS 232 (for online Densitometer use)

5. Environmental conditions

Temperature range:
+15 °C to 30 °C
(+59 °F to 86 °F)

Relative humidity:
25 to 80%

Light:
The workroom must be darkened during the loading and unloading of material.

durst

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Durst products are constantly being updated to the newest state of the art. For that reason, illustrations and descriptions are not binding.

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