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GUIDELINES FOR TAPE TO FILM TRANSFERS USING THE PAL VIDEO-FORMAT (1)

SWISS EFFECTS guarantees that its proprietary printing system will transfer all relevant material from video-tape with high quality 2K-resolution. Considering these guidelines during all production stages will substantially improve the quality of the transfer.

Production

- Keep the film format in mind:

The video format 4:3 can be reproduced on film without image loss as the full format 1:1,33 (less common) or in an aspect ratio of 1:1,66 with black borders left and right.

This video format can also be projected in the two cinema formats 1:1,66 or 1:1,85, but there will be some image loss at the top and the bottom of the frame.

The video format 16:9, which corresponds with an aspect ratio of 1:1,77, can be projected in the cinema only in the formats 1:1,66 or 1:1,85, with a slight loss of image at the top and bottom or at the sides of the frame (see: Picture Formats).

- For the formats 1:1,66 and 1:1,85 using the anamorphic video format 16:9 will result in a substantial increase in image quality.
- Keep in mind that the image will be cut by about 2.5% on all sides by the film projector (the so-called "projection cache"). This is especially important for the positioning of titles and subtitles.
- Choose the video format that best meets your needs. We have ranked them in 3 levels of quality. Within these categories, the differences are minimal and depend on your subjective judgment:
- What you see in the viewfinder of your camera can be quite different from the whole video picture. We strongly recommend to check your camera viewfinder with a professional Monitor (Underscan-Monitor)

1. Good	2. Better	3. Best
SVHS HI-8	Beta SP M II DVC-Pro 25 DV-Cam DV Digital 8	D1, D5, DCT Digi Beta DVC-Pro 50 Digital S Beta SX

Not taken into consideration in this ranking are the respective camera types, which can substantially affect the picture quality. For example, the older Beta SP cameras deliver a less satisfactory result than some of the new DV cameras.

Camera Adjustment:

- Lower the detail setting.
- Switch on the DCC (dynamic contrast control).
- The shutter speed should not be faster than 1/50, as differences in field sharpness affect the quality of the field interpolation during transfer.
- Switch off the digital zoom whenever possible.
- Try not to use electronic picture stabilizers, only optical ones.
- Note our suggestions on camera set-ups for specific shot types.



T A P E T O F I L M T R A N S F E R

GUIDELINES FOR TAPE TO FILM TRANSFERS USING THE PAL VIDEO-FORMAT (1)

- Avoid rapid camera movements with stationary objects. As with film cameras, this can cause a shutter or smearing effect visible only after the transfer to film.

Don't hesitate to contact one of our specialists for advice or possible tests, in order to choose the best set-up for shooting and avoid unpleasant surprises.

Post-Production

- For post-production, choose an uncompressed component system (Beta-SP, M II), in the digital range if possible (Digi-Beta, D1, D5, DCT). The D2 system is not suitable for the transfer process.
- Old analogue and amateur formats (VHS, HI-8, Beta-Max, Umatic) should be transferred in Y-C format with TBC's and Noise Reduction onto a digital component format. The "Prisma" from Snell & Wilcox is particularly good at converting this signal.
- Animation and speed changes (slow and fast motion), as well as moving titles, must be produced in frame mode (frame integrity).
- During colour grading watch out that you don't crush the levels (in black and white). For changes in contrast, we recommend working with the gamma value.
- To achieve a saturated and "film-like" black we recommend to NOT crush the blacks in production or post but to keep the contrast in the shadow areas soft in order to adjust the blacks during color correcting at the negative to print stage. In general this gives better results while keeping the most information possible on your video material.
- Please note: because images are greatly enlarged during cinema projection, all effects are much more visible on the cinema screen than on the monitor.
- Even with carefully colour-graded video masters, further colour-timing of the film negative is necessary. In some cases, a second corrected print will be necessary. We recommend doing a test, so that changes occurring during post-production can be examined on the cinema screen and the necessary changes made in time.

Clients have the option of downloading a special EDL program (EXCEL-Macro) which makes it possible to generate a sample frame version of your original edit which contains 2 - 10 frames of each shot. This can help simplify colour timing in the film lab. Some knowledge of computers is required for using this program.

- Put sync marks for image and sound tracks ("start" frame and sound beeps) on each reel, and preferably at the end of the reel as well:
 - - sync mark at TC 00:00:58:02
 - - program start at TC 00:01:00:00
- The maximum usable length of a film reel is 590 m, which corresponds to a program length of 20 minutes on 35 mm and 52 minutes on 16 mm.

PLEASE NOTE:

The standard running speed for film projection (24 fps) extends the length of a transferred video by 4%. This does not effect the pitch of tone.



GUIDELINES FOR TAPE TO FILM TRANSFERS USING THE NTSC VIDEO-FORMAT (2)

SWISS EFFECTS guarantees that its proprietary printing system will transfer all relevant material from video-tape with high quality 2K-resolution. Considering these guidelines during all production stages will substantially improve the quality of the transfer.

Production

- Choosing the correct picture format i.e. framing. The following formats are possible for the cinema: 1:1.66 and 1:1.85 (see Info Sheet).
- The video-format 16:9 (1.77 anamorphic) enables a much better picture quality.
- Choosing the right videotape formats: We differentiate between 3 levels of quality. Within these respective levels, the differences are minimal and are therefore also subjectively assessed.
- Keep in mind that the image will be cut by about 2.5% on all sides by the film projector (the so-called "projection cache"). This is especially important for the positioning of titles and subtitles.

1. Good	2. Better	3. Best
SVHS HI-8	Beta SP M II DVC-Pro 25 DV-Cam DV Digital 8	D1, D5, DCT Digi Beta DVC-Pro 50 Digital S Beta SX

Not taken into consideration are the respective camera-heads, all of which can substantially affect the picture quality. The older Beta-SP cameras, in particular, deliver a less-acceptable result than today's new DV cameras.

Aligning the video-camera:

- Lower the detail setting
- Switch on the DCC (dynamic contrast control)
- The shutterspeed should not be faster than 1/60
- Switch off the digital zoom
- Don't use the electronic picture stabilizer (the optical stabilizer is okay).



GUIDELINES FOR TAPE TO FILM TRANSFERS USING THE NTSC VIDEO-FORMAT (2)

- See the Info Sheet for specific information about the different camera types

Making a pre-production consultation with Swiss Effects technicians and/or test transfers using the desired setup helps find a good camera exposure and avoids unpleasant surprises.

- For still wide-angle shots: using the EVR (enhanced vertical resolution) is an option with certain cameras.
- The camera movement should not be too fast in places where the object is stationary or moving in the opposite direction. Otherwise, as with film-cameras, this will give a shutter or smearing effect visible only after the transfer to film.
- Using the 50 Hz PAL format provides a noticeably better quality.

Postproduction

- The entire post-production should take place on an uncompressed digital component system. A single compression up to a maximum of 1:2 can not be visually perceived. D2 is not suitable for post-production.
- Every successive analogue copying-process entails a loss of quality.
- Old analogue and amateur formats (VHS, HI-8, Beta-Max, Umatic) should be transferred in Y-C format with TBC's and Noise Reduction onto a digital component format. The "Prisma" from Snell & Wilcox is particularly good at converting this signal.
- Changes to speed (speed up/speed down) could lead to undesired jerky movements on the transfer.
- When you change the contrast of a signal-don't crush the levels. Change the gamma values instead.
- Please note that because of the larger size of the picture in the cinema, almost all the effects increase in their intensity.
- The maximum length of each film reel is 20 minutes and 30 seconds. Cut points should be chosen where there is a clear change, it's dramatically logical and should not have any ongoing ambient sound or music.

Transfer

- To guarantee synch-sound, the sound will be transferred by us onto a coded DAT even if we are not producing the sound release negative.
- Moving titles, especially roll titles, are in most cases not suitable for transfer and should be made separately on film. We can provide this service.
- With special wishes for contrast, color saturation etc., it pays to make a test tape of the most important sequences in advance so that different variations can be transferred.
- Even with a high quality color-graded Video Master, it is often necessary to do color grading in the film-lab. A second print may be necessary.
- Please note that as film is projected at 24fps and NTSC video is shot at 30fps, there is a 4% increase in film length over video length. This does not affect the pitch of tone.



TAPE TO FILM TRANSFER

INFO SHEET TAPE TO FILM TRANSFER CAMERA-SETUP (3)

Sony DRC VX 1000
 and VX 9000
 DSR 200

SHUTTER OFF
 D ZOOM OFF

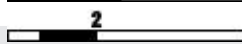
Custom Set-up:

SET ON

COLOUR LV



SHARPNESS



WB SHIFT



AE SHIFT



GAIN SHIFT

- 3 db

SONY DVV D600
 DVW 700 (LEVEL 1/9)

	Min.	Max.
DETAIL LEVEL	-8	-30
V DTL LEVEL	0	0
H DTL FREQ	0	4
V DTL BLACK CLIP	0	0
DTL WHT CLIP	0	3
DTL BLACK CLIP	0	18
CRISPENING	0	0
LEVEL DEPEND	0	0
KNEE APERTURE	0	-3
APERTURE LEVEL	0	+2

SONY PD 100
 VX 900

	Min.	Max.
MASTER GAIN	0	0
H DTL LEVEL	8	3
V DTL LEVEL	8	5
DTL CORING	2	2
H DTL FREQ	5	5
DARK DTL	0	2

PANASONIC AJ-D900
 and some other
 DVCPRO cameras
 (L/M/H SETTING Screen)

	H "HIGH"	HH "HIGHHIGH"
DTL LEVEL	-15	-50
DTL FREQ		
VDTL LEVEL	0	0
BLACK STRECH	0	+8
M BLACK	0	-1
M GAMMA	0	+5
DL (DynaLatitude)	ON and sensitivity on "LOW"	

CANON XL1 No adjustment possible.
 Do not use the 16:9 mode.

Sony DRS 500 WSP No adjustment possible

INFO SHEET TAPE TO FILM TRANSFER VIDEO-FORMATS FOR THE CINEMA SCREEN (4)

Original Format 1:1,33 (4:3)
Film Format cut out = 1:1,66



Original Format 1:1,33 (4:3)
Film Format 1:1,66 mit curtain



Original Format 1:1,77 (16:9)
Film Format cut out = 1:1,85



Original Format 1:1,77 (16:9)
Film Format 1:1,85 mit curtain



Original Format 1:1,77 (16:9)
Film Format cut out = 1:1,66





TAPE TO FILM TRANSFER

TAPE TO FILM TRANSFER (TECHNICAL SUPPLEMENT)

Please fill out this supplement as accurately as possible and fax to ++41 1 307 10 19. In doing so you assist us in making a tape to film transfer of optimal quality. If something is unclear please see our information sheet(s) on tape to film transfers. We are happy to answer any further questions you may have.
Please contact Jerry Poynton, New York, Tel. (212) 727 36 95

General Information:

Production: _____ Film title: _____
Contact address: _____ Duration: _____ (min./sec.)
ZIP Code/ Town: _____ Director: _____
Street: _____ Photography: _____
Telephone: _____ Fax: _____
E-mail: _____

35 mm 16 mm S 16mm color b/w Test: yes no

Work to do:

Picture Negative Optical Soundnegative Print with sound Print without sound

Projection format (see information sheet):

1:1,85 1:1,66 1:1,37 Curtain 1.66 Curtain 1.85 Scope

Sound:

Mono Dolby Stereo others: _____

Additional title work: yes no

Additional information _____

Technical Details:

Delivered Format:

Digi Beta Beta SP DV CAM DV D1 _____
 4:3 16:9 NTSC PAL

Sound:

DAT on videotape Syncmarc: on picture on sound
 Mono DOLBY SR other

Recording:

Track 1 _____ Track 2 _____ Track 3 _____ Track 4 _____

Camera format(s):

Digi Beta Beta SP Beta SX DVC Pro DV CAM mini DV
 Hi-8 S-VHS VHS others _____
 NTSC PAL Film to Tape

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TAPE TO FILM TRANSFER

TAPE TO FILM TRANSFER (TECHNICAL SUPPLEMENT)

Camera type: _____

Camera was adjusted according to Swiss Effects recommendations yes no

Other sources used:

Film to Tape

Output from nonlinear editing system Which one: _____

Details for title work

- | | | |
|----------------------------------|---------------------------------------|--|
| Produce title separately on film | <input type="radio"/> yes | <input type="radio"/> no |
| Title design by Swiss Effects | <input type="radio"/> yes | <input type="radio"/> no |
| | <input type="radio"/> color | <input type="radio"/> b/w |
| | <input type="radio"/> rolling credits | <input type="radio"/> title on picture |

Delivery of title on: _____

Details for reel breakdown

(The max. reel length consists of 590 m which corresponds to 20' on 35mm and 52' on 16mm.)

Reel breakdown: Syncmarc	TC in	TC out	Length
1. Reel	_____	_____	_____
2. Reel	_____	_____	_____
3. Reel	_____	_____	_____
4. Reel	_____	_____	_____

Remarks:



HI-RES-PRINT

INFORMATION FOR DIGITAL PROCESSING COMPUTER DATA FORMATS (1)

Data Formats:

Preferred

Bitmap (Win) 8 Bit (.bmp)
TIFF 8/10/12/16 Bit (.tif)
SGI 8/10/12/16 Bit (.rgb)
Kodak 10 Bit log. (.cin)

Acceptable

Wavefront 8/16 Bit (.rla)
Wavefront (.rlb)
Alias (.als)
JPEG (.jpg)
Softimage (.pic)
Vista (.vst)
Targa (.tga)
Pict (Macintosh) (.pct)

All formats are generally uncompressed. Other formats and/or compression available upon request. Colour depth (in bits) is given for each colour channel.
For example: "SGI 10 bit RGB" means: 10 bits red, 10 bits green, 10 bits blue, i.e. 30 bits of colour depth. If no other information is given, formats have 8 bits of colour depth per channel.

Data Carriers

Fast SCSI-Harddisk	(DOS/UNIX/MAC)
JAZ	(DOS/MAC)
CD	(ISO 9660)
DLT IV	(20/40 GB) (CI-transfer / tar) (10% surcharge)
8mm EXABYTE	(without Datacompression / tar) (10% surcharge)
4mm DAT	(tar) (10% surcharge)
Syquest 44 MB	(DOS / Mac)

Labelling the images

Image names must appear as follows:

- 3 letters = job name
- 4-digit number (starting with the number 1) = image number
- period
- format description = 3 characters

e.g. ABC0001.tif

Image labels and path names must not contain any other characters, symbols or empty spaces.



HI-RES-PRINT

INFORMATION FOR DIGITAL PROCESSING PICTURE FORMATS - FILM (2)

Picture formats - Film

Format	4K	MB	2K	MB	1K	MB	Aspect Ratio	Pixel Ratio
Academy	3656 x 2664	27,9	1828 x 1332	7,0	914 x 666	1,75	(1:1,372)	1:1
Cinemascope	3656 x 3112	32,6	1828 x 1556	8,1	914 x 778	2,04	(1:2,35) (1:1,175)	1:2
1:1,66	3656 x 2200	23,1	1828 x 1100	5,8	914 x 550	1,44	(1:1,66)	1:1
1:1,85	3656 x 1976	20,7	1828 x 988	5,2	914 x 494	1,30	(1:1,85)	1:1
Super 35	4096 x 3112	36,5	2048 x 1556	9,1	1024 x 778	2,28	(1:1,316)	1:1
VistaVision	4096 x 6144	72,0	2048 x 3072	18,0	1024 x 1536	4,50	(1:1,50)	1:1
Super 16			2048 x 1240	7,3	1024 x 620	1,80	(1:1,652)	1:1
16 mm			1728 x 1240	6,1	864 x 620	1,53	(1:1,394)	1:1

The values given in MB are approximate for 8-bit data and vary according to data format and colour depth.
 See also our "Format-Reference"

Film stock

All standard positive and negative film emulsions.

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SCANNING

FILM SCANNING WITH KODAK GENESIS INFO SHEET (1)

Instructions for Delivery:

Film negative on reels - no longer than 120 meters, please - and accompanied by an identical work print. In addition: a list with frame numbers, if the starting frame is clearly recognizable, or the exact edge numbers.

The frames can also be indicated on the work print.

Data formats:

Preferred

Bitmap (Win) 8 Bit (.bmp)
TIFF 8/10/12/16 Bit (.tif)
SGI 8/10/12/16 Bit (.rgb)
Kodak 10 Bit log. (.cin)

Acceptable

Wavefront 8/16 Bit (.rla)
Wavefront (.rlb)
Alias (.als)
JPEG (.jpg)
Softimage (.pic)
Vista (.vst)
Targa (.tga)
Pict (Macintosh) (.pct)



SCANNING INFO SHEET PICTURE FORMATS FOR FILM (2)

Picture formats - Film

Format	4K	MB	2K	MB	1K	MB	Aspect Ratio	Pixel Ratio
Academy	3656 x 2664	27,9	1828 x 1332	7,0	914 x 666	1,75	(1:1,372)	1:1
Cinemascope	3656 x 3112	32,6	1828 x 1556	8,1	914 x 778	2,04	(1:2,35) (1:1,175)	1:2
1:1,66	3656 x 2200	23,1	1828 x 1100	5,8	914 x 550	1,44	(1:1,66)	1:1
1:1,85	3656 x 1976	20,7	1828 x 988	5,2	914 x 494	1,30	(1:1,85)	1:1
Super 35	4096 x 3112	36,5	2048 x 1556	9,1	1024 x 778	2,28	(1:1,316)	1:1
VistaVision	4096 x 6144	72,0	2048 x 3072	18,0	1024 x 1536	4,50	(1:1,50)	1:1
Super 16			2048 x 1240	7,3	1024 x 620	1,80	(1:1,652)	1:1
16 mm			1728 x 1240	6,1	864 x 620	1,53	(1:1,394)	1:1

The value given in MB are approximate for 8-bit data and vary according to data format and colour depth.

Film-Scan (Kodak Genesis)

Format	4K	2K	1K
Academy	X	X	X
Cinemascope	X	X	X
1:1,66	X	X	X
1:1,85	X	X	X
Super 16		X	X
16 mm		X	X

Film stock

- In general, all Kodak and Fuji emulsions.
- Other emulsions upon request.



INFORMATIONEN FOR PRINTING DIGITAL IMAGE DATA FROM VIDEO / FILM (3)

Examples based on standards for half-tone printing of video and film images.

Medium	Resolution	Pixeldimensions	Dimensions in cm <small>(54' half-tone screen (lpcm) / QF 2)</small>
Video	D1	768 x 576	7,1 x 5,3
16mm	2K	1728 x 1240	16,0 x 11,5
S16	2K	2028 x 1240	18,8 x 11,5
35mm (1:1,66)	2K	1828 x 1100	16,9 x 10,2
35mm (1:1,66)	4K	3656 x 2200	33,9 x 20,4

Please Note:

- If you wish to retouch or enhance these images, we recommend consulting a lithographer experienced in these techniques.
- Depending on the material delivered, video lines or film grain can significantly detract from the quality of the images. The source material (ex: original / dupe negative / positive) can also greatly affect image quality.
- For film, the highest resolution currently possible is 4K (4000 ppi).

Output size of computer-processed images for printing at 100% output size is calculated as follows:

$$\frac{\text{Image height or width in pixels}}{(\text{half-tone screen width (cm)} \times 2.54 \times \text{QF})} = \text{Image height or width in inches}$$

(x 2.54 = image height or width in cm)

(half-ton screen = Lines per inch)

Or:

$$\frac{\text{Image height or width in pixels}}{(\text{half-tone screen width (in cm)} \times \text{QF})} = \text{Image height or width in cm}$$

The quality factor QF should be equal to 2. For half-tone screen widths over 133 lpi (approx. 54 lpcm) a QF of 1.5 may be sufficient (lpi = half-tone screen width in lpcm x ~2.54).

Calculation example using a video image

Pixel dimensions 768 x 576

Printing with a 60' half-tone screen
 (300 lpi / ~ 60 lpcm QF 2):

$$\begin{aligned} 768 / (60 \times 2) &= 6,4 \text{ cm} \\ 576 / 120 &= 4,8 \text{ cm} \end{aligned}$$

Printing with a 54' half-tone screen
 (266 lpi / ~ 54 lpcm QF 2):

$$\begin{aligned} 768 / (54 \times 2) &= 7,1 \text{ cm} \\ 576 / 108 &= 5,3 \text{ cm} \end{aligned}$$

For printing, the resolution of one frame of video without interpolation is only sufficient for the above proportions. However, depending on the content of the image, the frame may be enlarged through interpolation.



PICTURE FORMATS (1)

Picture - Formats Video

Format / Aspect Ratio	CCIR 601	MB	Active Pixels	Square Pixel	MB	Pixel Ratio	Active Ratio
Pal 4:3/(1:1,33)	720 x 576	1,2	720 x 576	768 x 576	1,27	1:1,06	768 x 576
16:9 Anamorphic (1:1,77)	720 x 576		720 x 576	1024 x 576	1,69	1:1,42	1024 x 576
1,66	720 x 576		720 x 460	768 x 576		1:1,06	768 x 460
1,85	720 x 576		720 x 415	768 x 576		1:1,06	768 x 415
1,77 (16:9)	720 x 576		720 x 432	768 x 576		1:1,06	768 x 432



INFORMATION FOR DIGITAL PROCESSING COMPUTER DATA FORMATS (2)

Data Formats:

Preferred

Bitmap (Win) 8 Bit (.bmp)
TIFF 8/10/12/16 Bit (.tif)
SGI 8/10/12/16 Bit (.rgb)
Kodak 10 Bit log. (.cin)

Acceptable

Wavefront 8/16 Bit (.rla)
Wavefront (.rlb)
Alias (.als)
JPEG (.jpg)
Softimage (.pic)
Vista (.vst)
Targa (.tga)
Pict (Macintosh) (.pct)

All formats are generally uncompressed. Other formats and/or compression available upon request. Colour depth (in bits) is given for each colour channel.
For example: "SGI 10 bit RGB" means: 10 bits red, 10 bits green, 10 bits blue, i.e. 30 bits of colour depth. If no other information is given, formats have 8 bits of colour depth per channel.

Data Carriers

Fast SCSI-Harddisk	(DOS/UNIX/MAC)
JAZ	(DOS/MAC)
CD	(ISO 9660)
DLT IV	(20/40 GB) (CI-transfer / tar) (10% surcharge)
8mm EXABYTE	(without Datacompression / tar) (10% surcharge)
4mm DAT	(tar) (10% surcharge)
Syquest 44 MB	(DOS / Mac)

Labelling the images

Image names must appear as follows:

- 3 letters = job name
- 4-digit number (starting with the number 1) = image number
- period
- format description = 3 characters

e.g. ABC0001.tif

Image labels and path names must not contain any other characters, symbols or empty spaces.

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VIDEO

VIDEO STILLS (3)

With the Digital Disk Recorder we are able to "grab" high-quality stills from videos and save them in all the computer formats listed below.

Instructions for delivery:

A time-code list of the desired images is necessary. Without the list, clients will be charged for the time spent searching for the images.

Data formats:

Preferred

Bitmap (Win) 8 Bit (.bmp)
TIFF 8/10/12/16 Bit (.tif)
SGI 8/10/12/16 Bit (.rgb)
Kodak 10 Bit log. (.cin)

Acceptable

Wavefront 8/16 Bit (.rla)
Wavefront (.rlb)
Alias (.als)
JPEG (.jpg)
Softimage (.pic)
Vista (.vst)
Targa (.tga)
Pict (Macintosh) (.pct)



INFORMATIONEN FOR PRINTING DIGITAL IMAGE DATA FROM VIDEO / FILM (4)

Examples based on standards for half-tone printing of video and film images.

Medium	Resolution	Pixeldimensions	Dimensions in cm (54' half-tone screen (lpcm) / QF 2)
Video	D1	768 x 576	7,1 x 5,3
16mm	2K	1728 x 1240	16,0 x 11,5
S16	2K	2028 x 1240	18,8 x 11,5
35mm (1:1,66)	2K	1828 x 1100	16,9 x 10,2
35mm (1:1,66)	4K	3656 x 2200	33,9 x 20,4

Please Note:

- If you wish to retouch or enhance these images, we recommend consulting a lithographer experienced in these techniques.
- Depending on the material delivered, video lines or film grain can significantly detract from the quality of the images. The source material (ex: original / dupe negative / positive) can also greatly affect image quality.
- For film, the highest resolution currently possible is 4K (4000 ppi).

Output size of computer-processed images for printing at 100% output size is calculated as follows:

$$\frac{\text{Image height or width in pixels}}{(\text{half-tone screen width (cm)} \times 2.54 \times \text{QF})} = \text{Image height or width in inches}$$

(x 2.54 = image height or width in cm)

(half-ton screen = Lines per inch)

Or:

$$\frac{\text{Image height or width in pixels}}{(\text{half-tone screen width (in cm)} \times \text{QF})} = \text{Image height or width in cm}$$

The quality factor QF should be equal to 2. For half-tone screen widths over 133 lpi (approx. 54 lpcm) a QF of 1.5 may be sufficient (lpi = half-tone screen width in lpcm x ~2.54).

Calculation example using a video image

Pixel dimensions 768 x 576

*Printing with a 60' half-tone screen
(300 lpi / ~ 60 lpcm QF 2):*

$$\begin{aligned} 768 / (60 \times 2) &= 6,4 \text{ cm} \\ 576 / 120 &= 4,8 \text{ cm} \end{aligned}$$

*Printing with a 54' half-tone screen
(266 lpi / ~ 54 lpcm QF 2):*

$$\begin{aligned} 768 / (54 \times 2) &= 7,1 \text{ cm} \\ 576 / 108 &= 5,3 \text{ cm} \end{aligned}$$

For printing, the resolution of one frame of video without interpolation is only sufficient for the above proportions. However, depending on the content of the image, the frame may be enlarged through interpolation.



INFORMATION ON TITLING AND LOGOS (1)

For pre-existing titles and logos, please note the following:

Data Format

Digital delivery: preferred are Illustrator files or bitmap images with sufficient resolution (see Picture Formats).

- Do not send Freehand files.
- QuarkXPress files can only be used in conjunction with the rostrum camera process.

Title Cards

Title cards can be delivered on single pages (A4 / 210 x 297 mm). They can also be positioned one below the other on one 25 cm wide sheet, at equal distances of at least 3 cm (left and right margins should also be at least 3 cm). The length of the sheet is then determined by the number of titles.

Each title card should be bordered by a frame line indicating the proportions of the desired aspect ratio (ex: 1:1.66 or 1:1.85) in order to determine the correct position of the title within the frame (see Download). The frame line will not be recorded!

We recommend using white titles on a black background.

Roll Titles

At the top and bottom of each title, a rectangle should appear indicating the proportions of the aspect ratio as well as the middle of the frame (see Download). Like title cards, roll titles may be white on a black background. A black border of at least 5 cm should surround the title.

Timing

For both title cards and roll titles, indications regarding timing are necessary:

e.g.

- Fade in 8 frames
- Title length on screen 72 frames
- Fade out 8 frames
- (Black) Frames between titles: 6 frames

The information about timing should always be given in frames, to avoid problems with 24/25 fps.

Safety

For film and video titles (unlike paper printing) particular attention must be paid to the safety area around the titles. The safety area for pictures is usually a border of 5% of the aspect ratio. For titles, the safety area must be a further 5 to 10% larger. Film titles for the 1:1.66 format should appear within a safety area corresponding to the format 1:1.85 (see the sample page for digital titles).

This means that film titles for digital film printing in 1:1.66 format require the format 1828 x 1100 pixels/dots. The format 1:1.85 requires 1828 x 988 pixels. After subtracting 10% for the safety area, the result for both 1:1.66 and 1:1.85 is a usable surface of 1645 x 889 pixels, which should not be exceeded unless there is a particular reason for doing so.

Titles for the rostrum should be treated the same way.

Colors

Printing on film is not like printing with the printing press. With the additive color process (ex: monitors, film printer, rostrum) all the colors together produce white. With the subtractive color process (ex: printing) all the colors together produce black. In other words, the colors do not react the same way in the additive as in the subtractive process. For this reason, it is physically impossible to reproduce the exact hue of a printed sample on film.

Monochrome titles must be delivered white on black. We recommend also including a color reference (also in print form).

The fine color balance will be done during the color timing in the film lab. Some colors are phototechnically unusable. Red, in particular, results in fuzzy titles. For this reason, red (especially very warm tones) should not be used for titles - especially for Super16 blow-ups! (see below!)

Fonts

All fonts should always be delivered with the titles as computer data. If not, the type must be converted into outlines, and no adjustments will be possible.

Very fine typefaces like Bodoni, various classical typefaces or typefaces that are narrow or with very fine serifs should be avoided, or tested in advance.

S16 Blow-up

When titles are designed for direct blow-up, several things must be taken into account:

- Avoid red titles, because they have a tendency to appear fuzzy and out of focus (for technical reasons)
- Use large and clear typefaces. Fine serif typefaces are unusable.
- We suggest producing Super16 titles directly on 35mm.



INFORMATION FOR DIGITAL PROCESSING COMPUTER DATA FORMATS (2)

Data Formats:

Preferred

Bitmap (Win) 8 Bit (.bmp)
TIFF 8/10/12/16 Bit (.tif)
SGI 8/10/12/16 Bit (.rgb)
Kodak 10 Bit log. (.cin)

Acceptable

Wavefront 8/16 Bit (.rla)
Wavefront (.rlb)
Alias (.als)
JPEG (.jpg)
Softimage (.pic)
Vista (.vst)
Targa (.tga)
Pict (Macintosh) (.pct)

All formats are generally uncompressed. Other formats and/or compression available upon request. Colour depth (in bits) is given for each colour channel.
For example: "SGI 10 bit RGB" means: 10 bits red, 10 bits green, 10 bits blue, i.e. 30 bits of colour depth. If no other information is given, formats have 8 bits of colour depth per channel.

Data Carriers

Fast SCSI-Harddisk	(DOS/UNIX/MAC)
JAZ	(DOS/MAC)
CD	(ISO 9660)
DLT IV	(20/40 GB) (CI-transfer / tar) (10% surcharge)
8mm EXABYTE	(without Datacompression / tar) (10% surcharge)
4mm DAT	(tar) (10% surcharge)
Syquest 44 MB	(DOS / Mac)

Labelling the images

Image names must appear as follows:

- 3 letters = job name
- 4-digit number (starting with the number 1) = image number
- period
- format description = 3 characters

e.g. ABC0001.tif

Image labels and path names must not contain any other characters, symbols or empty spaces.



INFORMATION FOR DIGITAL PROCESSING PICTURE FORMATS FILM & VIDEO (3)

Picture formats - Film

Format	4K	MB	2K	MB	1K	MB	Aspect Ratio	Pixel Ratio
Academy	3656 x 2664	27,9	1828 x 1332	7,0	914 x 666	1,75	(1:1,372)	1:1
Cinemascope	3656 x 3112	32,6	1828 x 1556	8,1	914 x 778	2,04	(1:2,35) (1:1,175)	1:2
1:1,66	3656 x 2200	23,1	1828 x 1100	5,8	914 x 550	1,44	(1:1,66)	1:1
1:1,85	3656 x 1976	20,7	1828 x 988	5,2	914 x 494	1,30	(1:1,85)	1:1
Super 35	4096 x 3112	36,5	2048 x 1556	9,1	1024 x 778	2,28	(1:1,316)	1:1
VistaVision	4096 x 6144	72,0	2048 x 3072	18,0	1024 x 1536	4,50	(1:1,50)	1:1
Super 16			2048 x 1240	7,3	1024 x 620	1,80	(1:1,652)	1:1
16 mm			1728 x 1240	6,1	864 x 620	1,53	(1:1,394)	1:1

The values given in MB are approximate for 8-bit data and vary according to data format and colour depth.

Picture formats - Video

Format / Aspect Ratio	CCIR 601	MB	Active Pixels	Square Pixel	MB	Pixel Ratio	Active Ratio
Pal 4:3/(1:1,33)	720 x 576	1,2	720 x 576	768 x 576	1,27	1:1,06	768 x 576
16:9 Anamorphic (1:1,77)	720 x 576		720 x 576	1024 x 576	1,69	1:1,42	1024 x 576
1,66	720 x 576		720 x 460	768 x 576		1:1,06	768 x 460
1,85	720 x 576		720 x 415	768 x 576		1:1,06	768 x 415
1,77 (16:9)	720 x 576		720 x 432	768 x 576		1:1,06	768 x 432

Please note:

“Square pixel” or “pixel ratio” means that the work on the computer is based on square pixels. However the pixel ratio for work carried out on video or film is different. The PAL 4:3 format has pixels that are wider than they are high. This is even more pronounced with 16:9. When doing title work on the computer make sure that the width of your date is either 768 or 1024 pixels.