Alliance Graphic Film

How to maintain optimal Recording Film image quality

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Version 7

This troubleshooting guide will help you maintain optimal Recording Film image quality.

The tables below contain most common Recording Film problems as a result of a variety of possible causes. For each cause, an adequate cure is suggested. Quite often problems are the result of a combination of multiple causes, therefor a more indepth troubleshooting might be required.

Please use the 'contact us' links on the Agfa Graphics - Alliance Graphic Film website when you need further assistance.

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Content: Version 7/2014

❖ **Remark:** this guide will be gradually updated with new topics and data

Solving problems on Film: D.max and dot gain issues

Problem	Cause	Cure
1. D.max too low and reduction in dot gain.	1.1 Under-exposure.	Run an engine exposure test. Select the optimum exposure setting. Adapt the exposure setting.
	1.2 Dev. time too short.	Check processor Dev. time and increase as appropriate (under-development will worsen this effect).
	1.3 Dev. replenish rate too low.	Set the correct amount or increase 20%. Correct amount depends on the average imaged area on processed film.
	1.4 Dev. temperature too low.	Use a digital thermometer and increase the temperature appropriately.
	1.5 Dev. level too low.	Check actual pump volume with a measuring glass.
	1.6 No Dev. circulation.	Check circulation in the tank without rack in place. Replace the pump if needed. The strength of the circulation is influenced by specific tank and rack design.
	1.7 Fix. has been spilled in Dev.	Empty de Dev. tank, rince and rebatch.
	1.8 Over dilution of Dev. or replenisher.	Check Dev. label for correct dilution rate and rebatch .
2. D.max too low and no reduction in dot gain	2.1 Film too old.	Check expiry date on the label.
	2.2 Dev. too old.	Check expiry date on the label.
	2.3 Film shelf life conditions.	< 20°C / 68°F and < 60% RH.
	2.4 Dev. shelf life conditions.	< 23°C and no direct sunlight.
	2.5 Dust on mirror and lens.	Clean the optical path of imagesetter on a regular basis.
	2.6 Over dilution of Dev. or replenisher.	Check label for correct dilution rate and rebatch.
	2.7 Fix. has been spilled in Dev.	Empty de Dev. tank, rince and rebatch.
	2.8 Contamination of Dev. with Fix.	If ammonia smell: empty de Dev. tank, rince and rebatch. Check the dry Dev. tank for leaks of Fix.
3. Increase in dot gain with high D.max.	3.1 Over-exposure.	Run an engine exposure test. Select the optimum exposure setting. Adapt the exposure setting appropriately.

	3.2 Dev. temperature too high.	Check: reduce as appropriate.
	3.3 Development time to long.	Check: reduce as appropriate.
	3.4 Dev. and replenisher too Concentrated.	Check the Dev. density with a hydrometer. Ref. ready to use (1+2) at 20°C: G101c: 1,082gr/ml (spread +- 0,005) ACD: 1,096gr/ml (spread +- 0,005) Rebatch Dev. using correct dilution. Check replenishment rate and increase as appropriate.
	3.5 Fix. in very bad condition.	Check Dev. temperature and reduce as appropriate. Rebatch and increase anti-ox. replenishment.
	3.6 Fix. level too low.	Re-batch and apply correct replenishment rate.
	3.7 Film shelf life conditions.	Correct amount depends on the average imaged area on processed film. Check pumps for real rates. < 20°C / 68°F and < 60% humidity.
4. Increase in dot gain with normal D.max but with very poor image quality.	4.1 Film exposed out of focus.	Check if the imagesetter transport path is causing some disruption. Check if the film is placed correctly flat against the drum. Check if the vacuum pump is working properly. Check all airchannels on the drum to be dustfree and not disrupted.
5. D.max slightly too low. Stable dot size and very poor image quality.	5.1 Dev. oxidized.	Switch off processor overnight. Check circulation system for air leaks. Rebatch and increase anti-ox. replenishment. Use a Dev. tank cover to reduce oxidation. Check temperature and reduce appropriately.
	5.2 Dev. replenisher oxidized.	Make sufficient replenisher for one week. Use a floating lid to reduce oxidation.
6. Variations in dot gain and D.max.	6.1 Incorrect film exposure.	Check film exposure settings and run an exposure test: adapt appropriately.
	6.2 Incorrect dilution of Dev.	Apply correct dilution rate.
	6.3 Replenishment rates are not set correctly.	Check manually with a measuring glass that the right volume is being replenished.
	6.4 Incorrect developing time (under-development).	Check developing time with a stop watch and change as appropriate.

	6.5 Variation in side-to-side Dev. temperature.	Check circulation pump is working properly. If not it will need to be replaced. The circulation is influenced by the rack in the Dev. tank.
	6.6 Problem with imagesetter.	Check the following: - Are the optics clean? - Is the Laser system (vacuum) working properly? - Check for failures of the vacuum pump.
	6.7 Output is not a full (100%) black area.	The used file might be corrupted. Visual check (use loupe) of the D.max patch on film: unwanted screening or patterns?
7. Heavy practical density loss in a few days unless high replenishment settings.	7.1 Failing replenishment due to broken pump membranes.	Replace the rubber pump membranes.
8. Density looks allright but measures too low.	8.1 Densitometer not working correctly.	Use a density reference scale to calibrate the densitometer.
D.max = optimum practical density	Dev. = Developer Fix. = Fixer	RH = Relative Humidity

Solving problems on Film: Lines and spots

Problem	Cause	Cure
1. Screen tint showing irregular gray lines in the transport direction.	1.1 Chemistry is weakened, Dev. and Fix.	Re-batch Dev. and Fix., increase replenishment rates and check the pumps.
2. Gray strokes transverse to the transport direction.	2.1 Weakened Dev. combined with a bend roller pair in the Dev. rack, causing developing uneveness.	Re-batch the Dev. and if the problem persists, check each roller pair on a glass plate and replace the bended ones.
3. Fine white lines in gray parts, in write direction of the laser.	3.1 Writing lines due to heavy under-exposure.	Run an engine exposure test and select the optimum setting, adapt the setting.
4. Scratches. (Black scratches appear as black lines in the clear area on processed film) (White scratches tend to give a change in appearance from gloss to matt and image layer damage i.e. white scratch in a high-density area)	4.1 The film may be scratched on the supplied roll. 4.2 Poor pre processing handling techniques. 4.3 Dirty entrance of feed cassette. 4.4 Dirt in the feed cassette or transport mechanism of the imagesetter. 4.5 Badly adjusted processor guides. 4.6 Poor post processing film handling.	Remove the film roll from the imagesetter and process an unexposed sample: check for scratches. Examine unexposed film in room light: check for damaged emulsion surface. Re-evaluate pre process handling of film. Clean the “lip” with adhesive tape. Clean with tape or vacuum cleaner. Examine raw film taken from the feed path of the imagesetter. Scratches occur before or in the Dev.: re-adjust the guides. Re-evaluate post processing film handling.
4. Pepper fog (small black spots, appearing on hard dot films only)	4.1 Over-active Dev. 4.2 Developing time too high. 4.3 Under replenishment. 4.4 Under use of processor causing the Dev. to become oxidized. 4.5 Oxidized Dev. replenisher.	Check the Dev. temperature with a thermometer: reduce if too high Check the developing time and reduce if to long. Check replenishment rates. Check minimum tank turnover per week for the Dev.: If needed, increase the Dev. replenishment setting and / or the level of anti-Ox. rate. Make sufficient Dev. replenisher for a one week period.

	4.6 Low level chemical fog.	Check for Dev. contamination with Fix.
	4.7 Low level light fog.	Check safelight conditions.
	4.8 Film is too old.	Check the expiry date on the label.
	4.9 Film shelf life conditions.	< 20°C / 68°F and < 60% RH.
5. Post processing staining or marking. (Note: some films have a natural post processing colour cast)	5.1 Poorly replenished Fix. Solutions.	Check replenishment rates Film dye removal is dependant on a correct pH, therefore under replenishment may lead to dye staining.
	5.2 Inadequate washing water rincing.	Check the water flow rate is set correctly: increase if appropriate.
	5.3 Excessive Dev. carry-over into the Fix.	Check and optimize the Dev. squeegy rollers.
	5.4 Poorly adjusted silver recovery system.	Extended silver electrolysis may degrade the Fix.
	5.5 Poorly located or degraded safelight may cause slight film fogging.	Check the safelight position and integrity.
	5.6 Exhausted Fix. may cause milky appearance of the film	Re-batch the Fix., increase the replenishment rate
6. Pinholes. (Clear holes in high density film areas, visible on a light table under normal room light conditions)	6.1 Dust on film surface during exposure.	Clean the imagesetter film path. Vacuum clean the supply and input cassette Clean the inside of the drum for internal drum imagesetters. For Camera or Contact applications, ensure that glass and working environment are free of dust.
	6.2 Emulsion pick off during processing.	Clean the processor transport rollers. Ensure the processor dryer temperature is set correctly (optimum setting 45°C or above).
7. Starry night (Small clear spots in high-density areas, not visible on a light table under normal room light conditions)	7.1 Density too low.	D max. >3.80 (depending on film type). If necessary, increase the exposure level. Under exposure will emphasise this problem.
	7.2 Dev. activity too low.	Check processor conditions in function of the weekly film load.
8. Black or brown spots (sludge), washable with water	8.1 Dev. replenishment too low.	Clean the tank and re-batch the Dev. Set Dev. replenishment to the prescribed amount or increase with 20%.
9. Black or brown spots (in clear areas)	9.1 Dev. too concentrated and level too low.	Clean the tank and re-batch the Dev. Set Dev. replenishment to the prescribed

White spots (in black areas). Not washable with water.	High temperature causes high evaporation, creating oily stains to flow on the surface that stick to the incoming film. The developing and fixing is being blocked under the stain.	amount or increase with 20%. Check the temperature and reduce as appropriate. Check the tank turnover per week rule is being met.
10. White spots that turn black after exposure. Not removable.	10.1 Fix. replenishment rate too low.	Re-batch the Fix. Increase the replenishment rate. Correct amount depends on the average imaged area on processed film.
D.max = optimum practical density	Dev. = Developer Fix. = Fixer	RH = Relative Humidity

Solving problems in the processor

Problem	Cause	Cure
1. Crystals on Dev. exit rollers.	1.1 Dev. level too low.	Increase the replenishment rate. Increase the Anti-Ox. rate. Program jog mode at stand-by modus. Check drain hose fitting for leakage.
2. Crystals between roller and plate.	2.1 Crystallisation of Dev.	Clean the tank on a regular basis. Check the temperature.
3. Fix. has a colour: yellow, blue or green.	3.1 Emulsion and backlayer dyes colours the Fix.	Colour is normal and has no influence on processed film result.
4. White slime in Fix.	4.1 Aluminium /gel composite due to extensive hardener.	Use only hardener if drying is insufficient.
5. Crystals on Fix. exit rollers.	5.1 Fix. level too low.	Increase the replenishment rate. Increase the Anti-Ox. rate. Program jog mode at stand-by modus. Check drain hose fitting for leakage.
6. Fix. pH > 6.	6.1 Fix. replenishment rate too low.	Increase replenishment rate. Adjust rate to real blackness ratio of processed film.
7. Ammonia smell in drain.	7.1 Mix of Dev. and Fix.	Inspect hose connections.
8. Ammonia smell in processor.	8.1 Mix of Dev. and Fix.	Inspect tank walls for leakage and crystals.
9. Algea and dirt in water tank.	9.1 Lack of anti-algae product. 9.2 Water level too low.	Clean with hypochloride (bleach) on a regular basis. Check water refreshment at stand-by modus. Check water refreshment at development. Check drain hose fitting for leakage.
10. Dev. in replenishment tank Is fully black.	10.1 Dev. is heavily oxidated .	Dispose Dev. Clean the tank on a regular basis. Place a cover on the surface.
	Dev. = Developer Fix. = Fixer	Anti-Ox. = Anti Oxidation

Solving problems in the imagesetter

Problem	Cause	Cure
1. Film transport problems. (Film fails to transport out of the loading cassette, or through the imagesetter, bridge or processor)	1.1 The actual film width does not correspond with the film width input on the imagesetter user interface.	Check if the film width on the label corresponds with the actual width of the film in the cassette.
	1.2 The roll of film and / or feed cassette have been loaded incorrectly.	Unload the loading cassette and make sure the film advances smoothly when pulled upon.
	1.3 The film packaging may obstruct smooth film transport.	Ensure all packaging components are removed from the film loading cassette and the imagesetter film transport path.
	1.4 Stiff film flanges may bend inwards, creating friction and disrupting the film transport.	Remove the film flange or secure it with adhesive tape. Do not place a new or used roll on a flat surface, to avoid that it rests only on the film flanges.
	1.5 Hard film flanges can get sepparated from the carton core (after a long period in the loading cassette, after repeated loading/unloading): this can result in film unwinding.	Never tilt a large format film roll on one side (use a film roll holder when handling large format film rolls): due to the heavy weight the hard film flanges may loosen its grip on the carton core.
	1.6 Accumulation of dirt, dyes or other substances on the surface of the transport rollers, drum or other transport surfaces of the imagesetter.	Clean with warm water or an appropriate cleaning agent. Consider replacing the rollers if found to be excessively worn or contaminated.
	1.7 Transport roller tension incorrect.	Ensure that the correct film thickness is used. Ensure the film guides are in the correct position and that regular maintenance checks are carried out. Do a nib-roll calibration test (verifies the pressure between a roller pair) if problems persist.
	1.8 High level of memory curl. All film brands supplied on roll show some memory curl. This depends on age of film, storage conditions, etc. Memory curl increases with warm storage conditions.	Test the memory curl by cutting off a piece of film and laying it down on a flat surface: measure the amount of lifting of the film edges. Try a fresh badge of film to see if this resolves the problem.

	1.9 Relative Humidity (RH) exceeding the operating range of the imagesetter may cause problems with curl or static electricity.	Check the film shelf life conditions: T < 20°C (68°F) and RH < 60%. Use air conditioning to provide desired humidity and temperature. Equipment must be properly grounded.
	1.10 Processor is in bad condition. Incoming roll pair is sticky due to oxidated Dev. substance.	Check and clean roll pairs and crossovers. Avoid spilling Dev. on incoming roll pair. Act carefully when placing the Dev. rack back into the tank after cleaning or when removing a jammed piece of film.
	1.11 The film is not being detected by the imagesetter detection cells.	Verify if the correct type and/or minimal width of film is being used for this type of imagesetter. Check the error number/description on the imagesetter display to determine which of the detection cells is involved.
	1.12 Exposed films are not transported properly into the reception cassette.	Verify if the reception cassette is in the correct position and not containing any film or other possible obstructions.
	Dev.: Developer	T: Temperature RH: Relative Humidity

Solving Film registration problems

Problem	Cause	Cure
1. Film registration of the colour separations Remark: always expose all color separations at the same time.	1.1 General: registration problems caused by the imaging method (capstan versus drum imaging). 1.2 Inadequate or uneven vacuum applied in the imagesetter. 1.3 The colour separation films (registration marks) do not fit with eachother (film size changes).	It's common knowledge that drum imagesetters perform much better in respect to registration accuracy compared to capstan technology. Verify if the vacuum pump is working adequately and if there are no obvious leaks. Check the following: - Was each film sheet processed under exactly the same conditions (T, RH, drying)? - Allow each film to adapt to the environmental conditions of the room before exposure and after processing. This may take up to 20 minutes! Ensure that the environmental conditions are the same in all working areas being used. - Was any of the films left on a hot light box, dryer section, or other hot surface? - Check the drying conditions in the film processor. If the airflow in the dryer section is obstructed, the uneven drying may cause registration problems. Remark: over-drying often results in over-sized film. - Rewash (and dry) the 4 separations again under the same conditions.
		T: Temperature RH: Relative Humidity

In depth study: Controlling Film Size and Registration

There are 4 factors which may cause size changes in photographic films:
- Relative Humidity
- Temperature
- Processing
- Ageing

Relative humidity will affect both the gelatin containing layers and the support material, usually PET (polyethylene terephthalate). Loss of moisture causes contraction of both these materials, however they do so to different degrees and dynamics. Size changes are generally referred to using the humidity coefficient, which is defined as the percentage change in length per percent change in relative humidity. For PET the figure is around 0.0008% change in length/ % change in RH. For a sheet having a length of 500mm, this is equivalent to a 4micron change in length for each percentage point change in relative humidity. The contribution of the gelatin containing layers may be equal to or slightly more than the support, depending on the film type. Assuming about the same, we are now looking at a total of 8 microns change in length over a 500mm long sheet for every percentage change in relative humidity. If conditions in the work place are controlled to plus or minus 5% in terms of relative humidity, we are looking at a potential change of 40microns, possibly 80microns, if the conditions are oscillating between the control limits.

Some thought also needs to be given to the dynamics of moisture uptake and release. Water vapour will exchange relatively rapidly with the gelatin-containing layers over a time scale of minutes to hours. On the other hand the base material will take hours and even days to fully equilibrate with new conditions. For most practical purposes in terms of film registration, it is the rapidly responding gelatin layers that are of most significance.

Most films are manufactured and packed at around 40 to 50% relative humidity, and ideally working conditions prior to exposure, during exposure and post-processing should be close to 50%. But perhaps even more important is that there are not abrupt changes during the workflow or between separations. If one separation has to be done at a different time, try to match the conditions under which the other separations were produced as closely as possible.

Temperature may also cause size changes in the film. These changes are rapid and fully reversible provided extreme high temperatures are avoided. The thermal coefficient is around 0.001% per degree Fahrenheit (0.0018% per degree Celsius). For our example of a 500mm long sheet this is a size change of 5 microns per degree (F) change in temperature. The same comments made above for relative humidity apply. The customer should avoid abrupt changes in temperature and following processing adequate time should be allowed for all the separations to cool down before attempting registration. Probably, registration problems due to temperature changes are less frequent than relative humidity.

Processing can have a significant effect on the size of the film and this is almost entirely due to changes in the coated layers. One of the main reasons for any change is the difference in response to relative humidity between the raw and processed film. There is usually a relative humidity value at which there is zero processing dimensional change for both raw stock and processed film – however this may not correspond to the working condition. Thus there will usually be a finite dimensional change associated with processing. This can be minimised and should be the same for all separations if all films are processed equivalently and dried at an appropriate temperature. The latter can be found by trial and error, but the general maxim is that over drying leads to oversize and under drying to undersize. So, if you are having problems, try adjusting the dryer temperature.

Ageing effect is fairly negligible when processed and stored under the correct conditions.

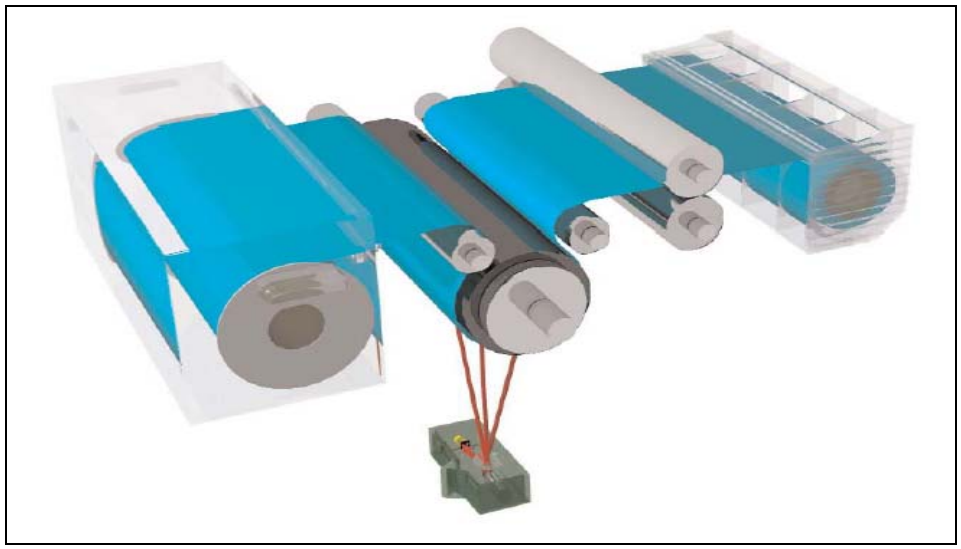
Finally, a summary of most of the above, plus some practical points.

Film Base	Know the limits of polyester film. All polyester films have humidity coefficient of 0.0008 %/% RH
Environment Control	Humidity and temperature control are a must! Always expose all separations at the same time.
Precondition Film	Condition and expose film at the same humidity and temperature to be used for registration. Sheets should be conditioned separately and both sides exposed to moving air, if possible. Allow time for all sheets to be registered to equilibrate for at least 15 minutes, preferably longer following processing.
Drying Conditions and Size Change	Process Dimensional Change (PDC). Determine dryer temperature for Zero PDC. Evaluation method: zero point processing (curve) Dimensional differences between before and after processing, measured on film conditioned at 35°C (95°C), 45°C (113°F) and 55°C (131°F)
	Under dry is under size. Over dry is over size.
Equilibration	Equilibrate film to new conditions before registering.
Time to Equilibrate	Humidity: emulsion equilibrates rapidly. Temperature: emulsion equilibrates rapidly. Humidity: PET base takes 1 hour per mil thickness. Temperature: PET base equilibrates rapidly.
Film Storage	Store film flat. Do not roll film.
Reversible Changes	Size changes due to changes in relative humidity and temperature are considered reversible, except above 60°C (140°F) (leads to permanent change).
Four Causes of Size Change	(1) Relative humidity: in the range of 15 to 60% the changes are reversible. 4 mill.: Hum. Coëf.= 0.017mm/m /% RH unprocessed and 0.16 processed. 7 mill.: Hum. Coëf.= 0.012mm/m /% RH unprocessed and 0.11 processed. A change of 1% in RH will cause a difference of 17/12 microns over 1 meter (2) Temperature: in a range up to 60°C (140°F) the changes are reversible Thermal coefficient = 0.018mm/m / °C or 0.0018% per °C or 0.001% per °F A change of 1°C will cause a difference of 18 microns over 1 meter. (3) Processing/drying: ideal drying temperature lays between 40° and 50°C (104 and 122°F). (4) Ageing: > 3 years fairly negligible when processed/dryed at 50°C and stored at 50-60% RH. Storing at a low RH <25% can lead to a shrinkage of 100µ/m after 100 days.
Emulsion Gel Layers	Exert compressive forces on the base with absorption and desorption of moisture.
Polyester Base	Expands and contracts with absorption and desorption of moisture.
X + Y Axialism Dimensions	Changes in dimension should be within 10% of each other in X-Y dimensions.
Post Process Equilibration	1/4 hour is adequate if film was preconditioned to same environment before exposing and processing.

Controlling Film Size and Registration: laser imagesetter technology

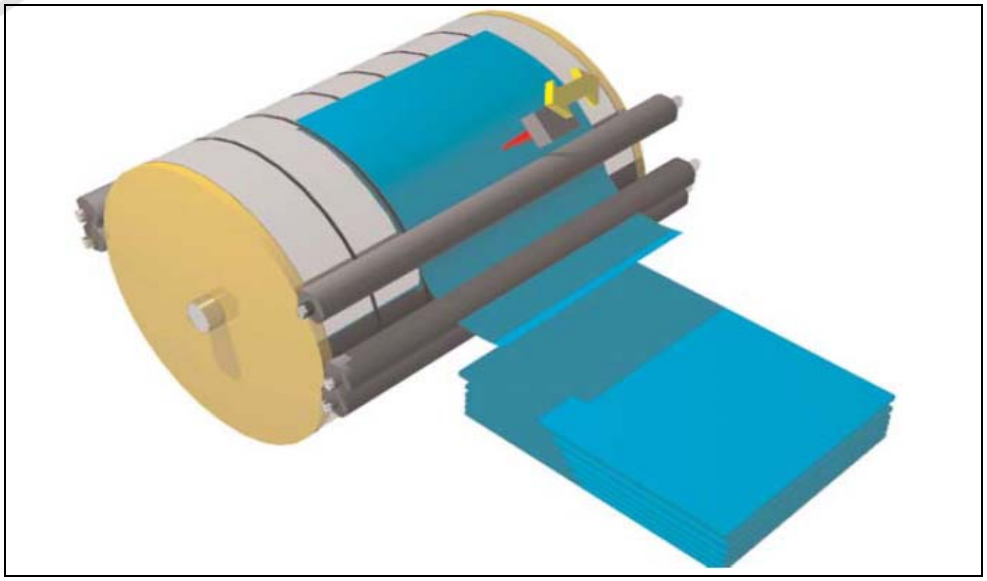
Capstan:

Named after capstans, or rollers, that feed the media through the device. Media is transported lengthwise by rollers as the laserbeam projects across the width of the media. With this construction possible vibration effects can occur. The laserbeam does not move, but is projected across the scan line.
Used in areas where high volume output is priority.
Accuracy and registration: medium quality (< = 50 micron)



External drum:

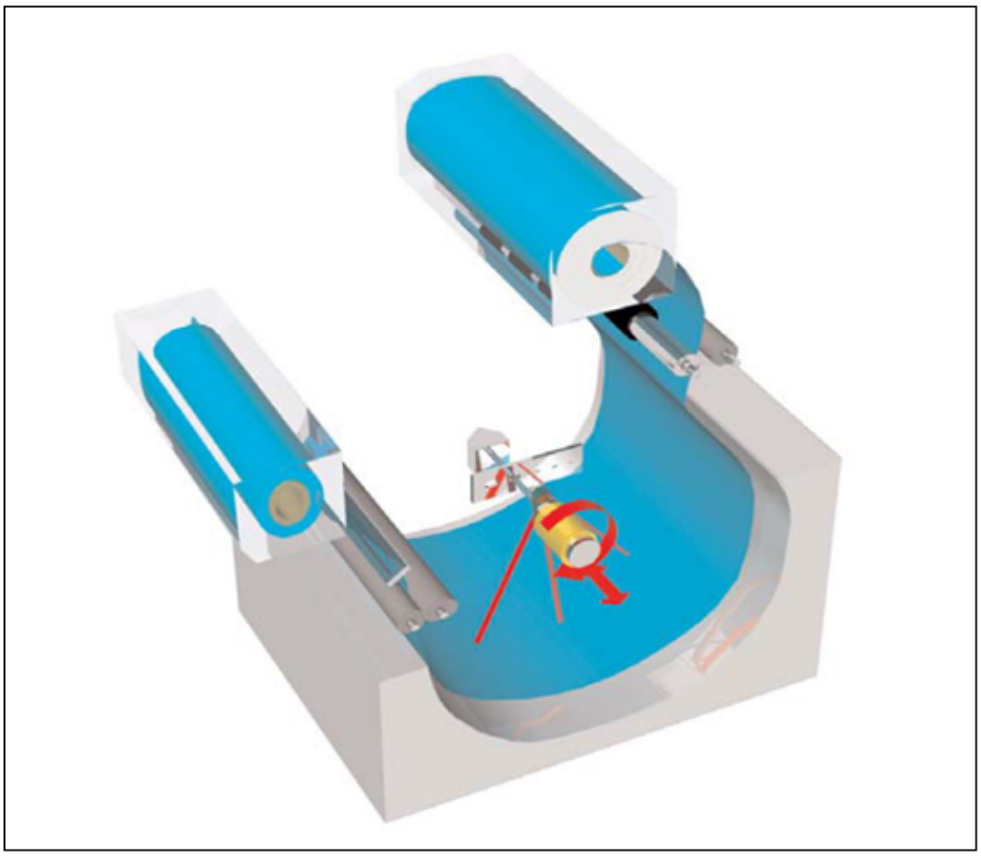
The media is held by a vacume on the outside of the drum and an imaging head is positioned on the outside of then drum, very close to the media. The imaging head moves parallel to the central axis of the drum while the drum rotates.
External drum imagesetters usually take sheet fed media, especially large format imagesetters.
Accuracy and registration: high quality (< = 25 micron)



Internal drum:

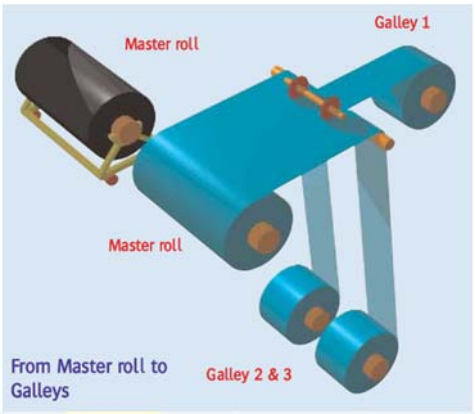
Media is positioned on the outside of the drum. An imaging head is positioned in the center of the drum containing mirrors or prisms to project the beam onto the film.
The drum does not rotate. The optics spin as the head travels along the drum to image the entire sheet.

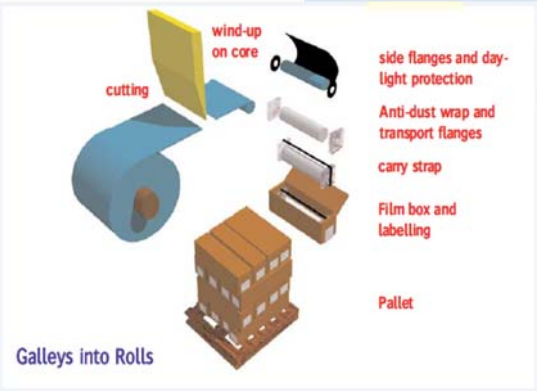
Accuracy and registration: high quality (< = 25 micron)

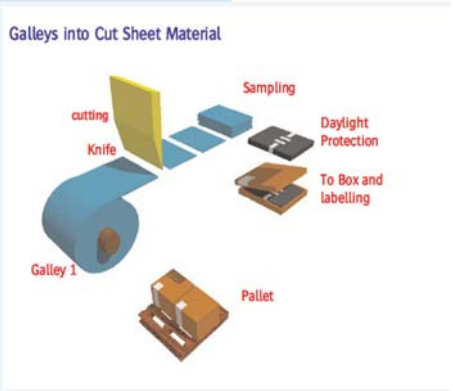


Finishing & packaging: the process

Once the master rolls are coated with photographic emulsion they are stored under controlled conditions to allow the effects of ageing to take place. Each master roll is accompanied by a coating inspection report which is used to plan the further finishing of the master rolls into so called galleys, an intermediate finishing step, and the final packaged products. The final product can be eather cut sheets (Contact film or Camera film) or rolls (Daylight loading Recording film).







In the next two sections we will concentrate on the daylight loading packaging and give some important guide lines on how to handle the loading of Recording film into a supply cassette of an imagesetter.

Daylight loading packaging: features & strengths

'Agfa Graphics Recording film daylight loading packaging is the best in the market.'

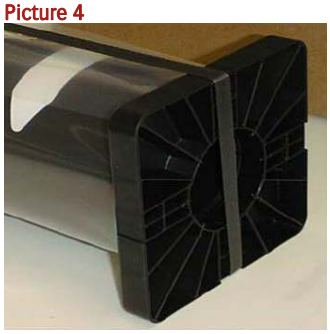
The daylight loading packaging of Recording film is extremely important. The Recording film emulsion is extremely light sensitive and must be perfectly sealed from any surrounding light untill it's safely loaded into the supply cassette of the imagesetter. Also, any sort of dirt or dust particles has to be avoided. A **stiff flange** (picture 1) or a **hard flange** (picture 2) is used to seal both ends of the film roll to the **film leader** (picture 5). This allows the film roll to be loaded into the imagesetter **supply cassette** (picture 12) under daylight conditions (see next section: 'Handling: preparing Recording film for usage').

The hard flange is a rigid construction that allows larger size rolls (> 66cm) to be directly placed on a flat surface. For film rolls with stiff flanges we advise using the **large size holder** (picture 6) to avoid bending of the flanges due to the weight of the roll (this may cause film transport issues).

An **anti dust wrapper** (picture 3) is used to protect the daylight packaging against dust coming from the **cardboard box** (picture 7) and the surrounding envirronment. This could cause unwanted 'pinholes' (tiny holes in the imaged areas, visible as 'stars' when putting the film on a light table) after exposing and developing the film.

The film leader is wrapped several times around the film roll for easy loading into the cassette and assuring a perfectly light tight sealing in combination with every flange specification. This construction is also damp resistant and the sealing to the flange can be broken without creating any dust or debry.

Transport of film may cause damage to the carton box or even to the roll of film. A roll of film that falls from hight of 0.5 m may already have a problem due to a crushed core, just by the weight of the roll. For that reason we applied **Transport flanges** (picture 4) which are strapped onto the roll. This provides a good level of protection in order to avoid complaints about crushed cores.

Picture 1  Stiff flange	Picture 2  Hard flange	Picture 3  Anti dust plastic wrap
Picture 4  Strapper and transport flange	Picture 5  Film leader	Picture 6  Large size holder

Handling: preparing Recording film for usage (Avantra setter)

Opening the carton box:

Picture 7

Picture 8

Open the upper lid (picture 7).
Take the rol out of the box by means of the plastic strap (picture 8) and put it onto the large size holder (picture 9).

Removing the packaging:

Picture 9

Picture 10

Remove the strap and the transport flanges (picture 9).
Remove the plastic anti dust wrapper (picture 10).

Loading into the supply cassette:

Picture 11

Picture 12

Mount the endcaps of the supply cassette onto the roll core (picture 11).
Place the roll with mounted endcaps in the supply cassette (picture 12).

Picture 13

Picture 14

Remove the tape that secures the filmleader (picture 13).
Pull the leader approximately 15 cm over the edge of the cassette and close it (picture 14).

Picture 15

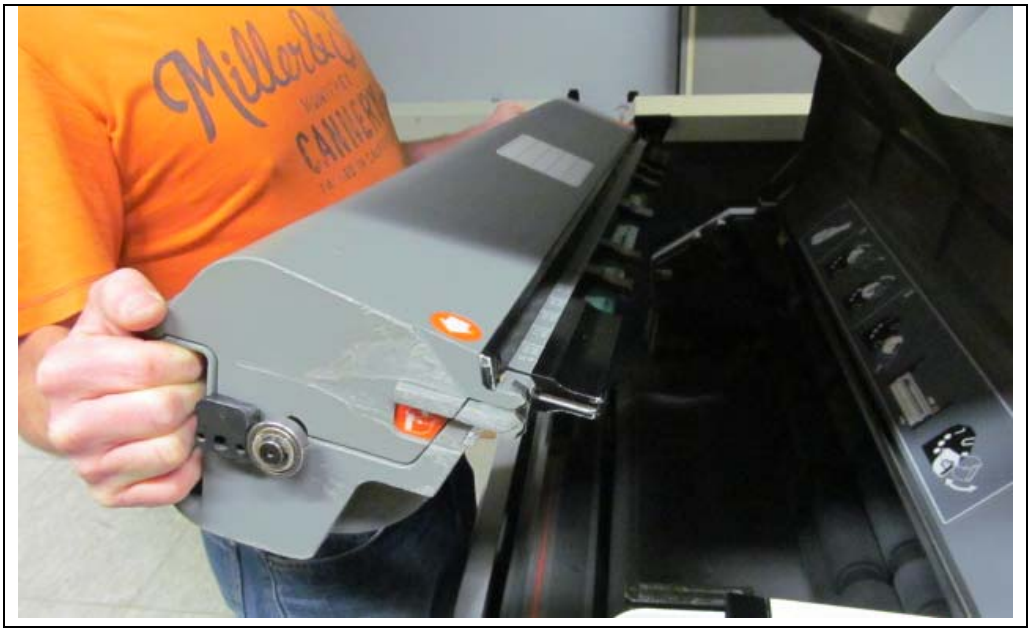
Picture 16

Pull the leader gently forward for about 120 cm (picture 15) until the film appears.

Picture 17

Picture 18

Sepparate the leader from the film (picture 16 and 17). Rewind manually and position the film into the loading position: in line with the front side of the cassette (picture 18).



The cassette is ready to be put into the imagesetter (picture 19).

Storage conditions:
Film should preferably be stored in a cool and dry place with a stable temperature between -20°C (-4°F) and +20°C (68°F) and a relative humidity between 30 and 60%.

Shelf life:
30 months (under the above conditions).

Transport conditions:
Temperature preferably above -20°C (-4°F) and below 30°C (86°F).
Temperature is allowed to rise between 30°C and 48°C (118°F) for a maximum period of 10 months.
Temperature is allowed to rise between 48°C and 60°C (140°F) for a maximum of 3 terms of 12 hours.

Film label

Artikel No:

Unique combination of five letters and/or numbers defining:

- Film type
- Width and length
- Specification of core / flange and EI / EO (see explanation spec. overview)

Batch No:

Unique combination of eight numbers defining:

- Emulsion type and number
- Coating month and alley number

Cutting No:

Combination of letters and numbers defining:

- Galley number
- Finishing installation number
- Film box serial number

Important remark in case of complaints:

Always communicate the 3 numbers explained above. This will allow a swift and easy investigation by HQ and thus resulting in a faster sollution for the customer.

Film packaging specifications: overview and explanation

AGFA	FUJI	KODAK	HUAGUANG
Film - Recorder Specification			
610 CD	EO W3	SP 390	6172BD
600 CD	Ei W3	SP 390 R	6072BD
610 CDH	SN L1	SP 989	6172CD
600 CDH	N L1	SP 989 R	6072CD
610 BD	NO5 L2	SP 829	6151BD
600 BD	Ni5 L2	SP 829 R	6051BD
600 D	NiM	SP 867	6051FD
610 B	NO5		
600 B	Ni5	SP 820	
600 A	Ni3	SP 889	
600 D			
610 D		SP 869	
Darkroom Specification for Camera and Textiles -			
610 C	EO DS	SP 385 / 902*	SP-214
600 C	Ei DS	SP 351	SP-217
Specification			
610 C	EO DS	SP 385	SP-214
600 C	Ei DS	SP 351	SP-217

Agfa Packaging Specs Explanation

Always 3 figures .....followed by a character combination (min 1 max 3)

First figure for material type
- 6xx for film
- 9xx for paper

Second & third figure for winding
- x00 Emulsion IN side
- X10 Emulsion OUT side

First character for core diameter
- A 28.6 mm inner core diameter
- B 50.8 mm inner core diameter
- C 72.0 mm inner core diameter
- D Daylight loading

Second & (occasional) third character
- xD Daylight loading with Universal flange
- xDH Daylight loading Hard flange

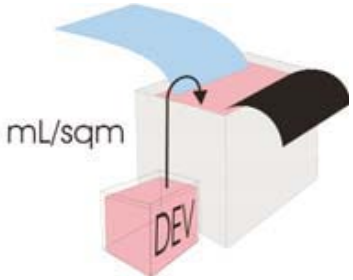
Alliance Recording Films: chemistry set-up on Screen Katana on-line processor

1. Good reasons for developer replenishment

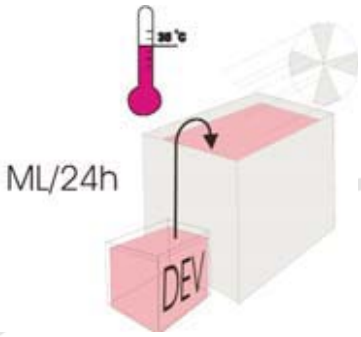
To guarantee consistent film quality it is necessary to keep the developer in good shape by replenishing it. This will assure high density on the Alliance and Digidot recording films, even in critical image elements such as the smaller dots, leading to optimum image reproduction on plate.

2. What triggers developer replenishment?

During film development the developing agent is consumed, turning the exposed silverhalides into metallic black silver. It is also refered to as exhaustion. This chemical reaction equally increases the acidity of the developer (decreasing the pH value). In practice this will result in a **decreased density** on film simply because there is less developing agent available and due to the lower pH, making the developer less active. To compensate for both effects the developer requires systematic replenishment. For **every square meter of exposed film that passes through the processor,** the replenishment pumps will add a predetermined amount of replenisher chemistry. This type of replenishment is called **exhaustion replenishment**.



On top of the above effect the developer will also continuously react with oxygen in the air. Even when no film is being developed and the processor is idle, the developer will still continue to react (oxidation) with the air on the surface. Because of this ongoing reaction of the developer with oxygen in the air, the alkalinity is decreasing. This will result (in case of strong oxidation) in **dot growth** and **decreased density** on film. When the developer is adequately replenished, it will be able to compensate for the oxidation. The working latitude of the developer will assure consistent results and job repeatability and avoid effects such as uneven development. The anti-oxidation replenishment will happen **every hour** in the working time and after each down time. In the down time the 'non working' hours are counted by the processor and the according amount replenisher will be pumped **when the processor is started** again. This type of replenishment is called **anti-ox replenishment**.



3. Recommended settings:

Agfa developers		ACD/G101c/ G101p	
Recommended processing time		**30 sec.**	.
Processing latitude		20 - 40 sec.	
Processing temperature		35°C or 95°F (recommended)	
Developer replenishment			
1 / Exhaustion replenishment:		ml/m2	cc/sqin
	Pos Work 15% exp.	100	0,06
	50% exp.	200	0,12
	Neg Work 85% exp.	350	0,23
2 / Anti-Ox replenishment:		1500 ml/24h = 0,264 US_gallons/24h	

A general Rule of Thumb:

The total volume of developer replenishment consumed in one week (exhaustion and anti-ox replenishment), should at least equal the volume of one developer tank in the processor. This depends on the quantity of film being used and the replenishment settings. If this volume is not reached, at least one of the replenishment settings has to be increased. This is needed in order to achieve a sufficiently stable chemical environment.

4. How to set the developer replenishment:

On the operation panel: press button DEV , the display shows the setting for manual replenishment.

Press the ml/m key , the amount of film replenishment appears in the display, set the amount replenishment to 200 with the ↑↓ , then push the entry key to save the data.

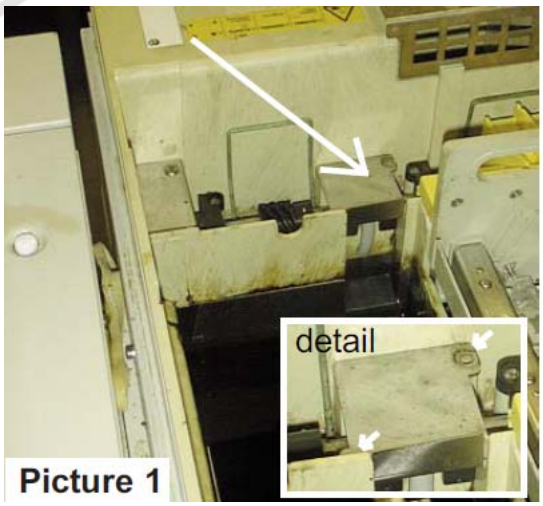
5. How to set the developer replenishment for oxidation and down time:

On the operation panel: press button DEV , the display shows the setting for manual replenishment.

Press the ml/h key , the amount of oxidation replenishment appears in the display, set the amount replenishment to 200 with the ↑↓ , then push the entry key to save the data. This will set the oxidation replenishment to 1500ml per 24 hours.

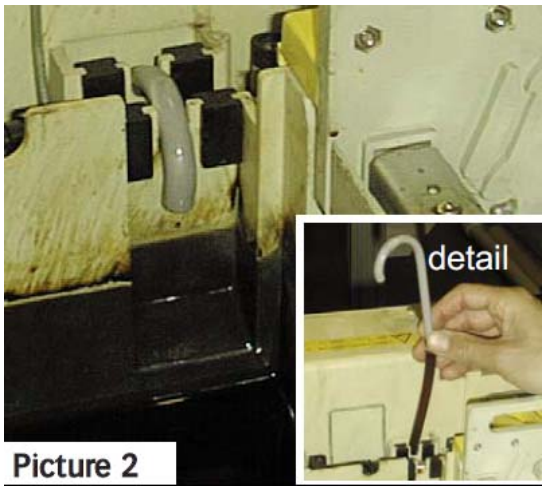
6. <u>Important:</u> check the replenishment pumps

To check the pumps it is necessary to verify the capacity of the pump and check if what you enter in the display is really pumped by the pumps.



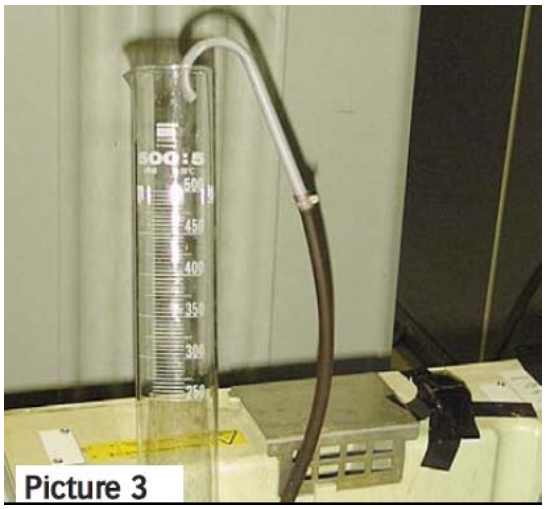
How to proceed:

1. Open the processor lid and remove the cross-over (dev. to fix.) and the developer rack.
2. Unscrew the stainless steel plate (2 bolts) that covers the replenishment pipe (see picture 1).



Picture 2

3. Take out the plastic pipe from this fitting and lift it up. (see picture 2)


Picture 3

4. Hook the replenishment pipe in a 500 ml measuring glass to enable accurate readings (see picture 3). Make sure the replenishment tank is at least half full. If not it might be impossible to pump up the required quantity.

5. Use a small metal object to secure the "open lid contact", so the processor is running normal. Run a piece of film through the processer (> 1 m^2) by activating the imagesetter film forward feed. This will activate the pump and fill the measuring glass.

Example: Katana 5055 with 24 inch (55,9 cm) film width

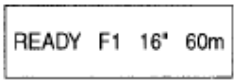
Execute and process 2 forward feed commands (see description next page). This will approximately result in 1,60 m^2 processed film (measure the film and calculate the surface for more accuracy). Read the pumped volume in the measuring glass (e.g. = 160 ml). This is the **effective amount of developer replenishment** (160 ml /1,60 m^2). Convert this to ml/m^2 (= 100 ml/m^2).

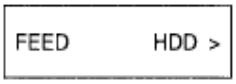
If the pumped volume is lower than the desired amount of developer replenishment (e.g. see table, p. 24: pos. work 50% exp = 200 ml/m^2), the technician will have to modify the internal pump setting or modify the amount on the processor display to compensate for the error (the 200 ml/m^2 setting gave only 100 ml/m^2, meaning the setting on the processor display has to be increased by 100%, thus 400 ml/m^2).

7. How to execute the forward feed/cut command:

A. Executing the forward feed command

Start on the operation panel: home position



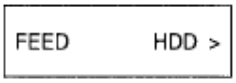
1. Press (MENU) button to entry the feed menu
2. Enter the feed icon on the display 

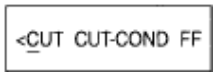
3. Navigate through the menu by pressing 5 times (▶) to FF menu
4. Enter the FF icon on the display 

5. Enter the Forward feeding command = execute 

Remark: FF length is normally set standard to 500mm, if not raise the amount with (▶) button.
Repeating the procedure will give a total feed of 120mm which is a good basis for checking the existing replenishment rate.
After executing the second forward feed the menu will ask you to cut the film.

B. Executing the cut command

1. Press the enter button after "PLEASE CUT FILM" message appears
2. Enter the feed icon on the display 

3. Navigate through the menu by pressing 3 times (▶) to CUT menu
4. Enter the CUT menu 

5. Enter the CUT command= execute 

to cut / discharge the media