

AUTO X-RAY *CHEMICAL SYSTEM*

AUTOMATIC X-RAY is an all liquid chemistry in concentrated form for the processing of medical X-ray films in automatic roller transport processors.

AUTOMATIC X-RAY Developer & Replenisher is used to prepare either a Developer working tank solution in conjunction with a Starter(sold separately), or a replenisher solution to maintain the activity of the tank solution as films are being processed through the machine.

X-Ray Fixer & Replenisher is the companion product of AUTOMATIC X-RAY Developer. No starter addition is necessary. Once diluted, the X-ray fixer can be used as a machine tank solution or as a replenisher.

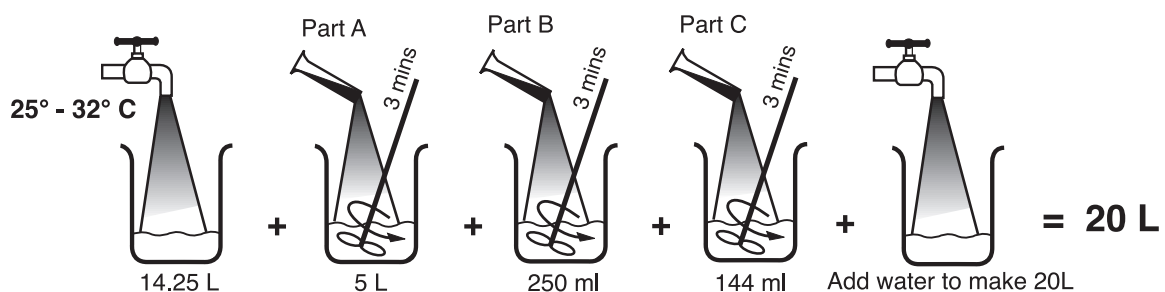


Product Description

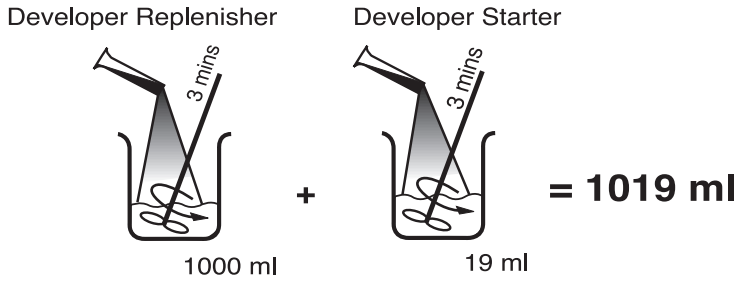
Catalog No.	Product	To make / (Pack Size)
873630	AUTOMATIC X-RAY Developer Starter	(6 x 1 L Conc.)
873498	AUTOMATIC X-RAY Developer Replenisher	2 x 20 L
873505	AUTOMATIC X-RAY Fixer Replenisher	2 x 20 L

Mixing Instructions

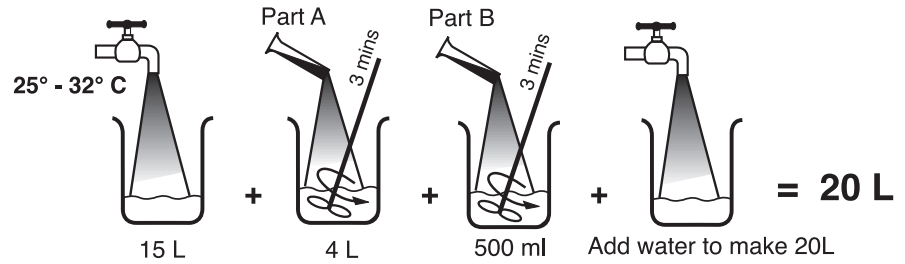
To Prepare Automatic X-Ray Developer Replenisher



To Prepare Tank Solution Of Automatic X-Ray Developer



To Prepare Automatic X-Ray Fixer Tank/Replenisher Solution



Process Parameters

Bath	Temperature	Repl.Rate * (ml/m ²)
Automatic X-Ray Developer	30 °C ~ 35 °C	400
X-Ray Fixer	20 °C ~ 30 °C	600

* N.B. : These rates may vary depending upon : -

1. The amount of films processed daily.
2. The particular developer temperature chosen.
3. The size of the films being used.

Example :

Quantity of films per day (35cm x 43cm)	Developer	Fixer
0 ~ 25	75 ml/film	112 ml/film
25 ~ 100	70 ml/film	105 ml/film
100 ~ 150	60 ml/film	90 ml/film

REPLENISHMENT OF SOLUTION

During the reactions mentioned above, solutions lose their strength, chemical changes and also due to carry-over from previous solution. In order to maintain the activity of each bath so that process activity does not change, it is necessary to replenish each solution.

Chemical Specification - pH & Specific Gravity (S.G.)

Product	Fresh Tank Solution		Fresh Replenisher	
	pH (25°C)	S.G.(20°C)	pH (25°C)	S.G.(20°C)
Automatic X-Ray Developer	10.30 ± 0.05	1.078 ± 0.003	10.80 ± 0.05	1.078 ± 0.003
X-Ray Fixer	4.5 ± 0.05	1.097 ± 0.010	4.5 ± 0.05	1.097 ± 0.010

Trouble Shooting Guide

PROBLEM	POSSIBLE CAUSE	ACTION TO BE TAKEN
1. Light Image	A. Developer temperature too low	Check the temperature with a thermometer and adjust setting.
	B. Under-replenishment of developer	Check replenishment pumps & settings and adjust accordingly.
	C. Exhausted developer	Make new fresh solution.
	D. Developer contaminated by fixer*	Check mixing procedures - If needed make new fresh solution.
	E. Overdiluted developer	Check mixing procedures - If needed make new fresh solution.
	F. Mixing error	Check mixing procedures - If needed make new fresh solution.
	G. Weak or insufficient exposure	Check equipment used for exposure.
	H. Processing time too short	Check speed of processor and adjust it if required.
	I. Too much starter	Check mixing procedures - make new solution.
2. Light Image (sudden effect)	Fixer contamination* of developer	Check mixing procedures - make new developer solution.
3. Image too dense	A. Developer temperature too high	Check the temperature with a thermometer and adjust setting.
	B. Over-replenishment of developer	Check replenishment rates, pumps & settings and adjust accordingly.
	C. Processing time too long	Check speed of processor and adjust accordingly.
	D. Over-exposed film	Check equipment used for exposure.
	E. Insufficient amount of starter	Check mixing procedures - make new fresh solution.
4. Fogged film	A. Unsuitable darkroom light	Follow film manufacturer's recommendations.
	B. Light leak into darkroom	Safety light must be at a distance of 1.2m minimum. Check if light bulb is of the correct type. Examine darkroom for light leaks
5. Mottles	Developer rollers are excessively worn or damaged	Change rollers if thorough cleaning proves to be insufficient.
6. Film does not dry	A. Drying temperature too low	Check temperature and raise if necessary.
	B. Wash-water flow too low	Check flow rate & temperature and adjust to standard.
	C. Ineffective fixer	Check replenishment rate and adjust accordingly.
	D. Relative humidity too high	Dry the air in working area.
7. White spots on light areas of film	A. Fixer temperature too low	Check with reliable thermometer and adjust accordingly.
	B. Under-replenished fixer	Check rate of replenishment and adjust as necessary.
	C. Mixing error for fixer	Check mixing procedure and mixing tank calibration.
	D. Insufficient wash	Check wash flow rate and increase as required.
8. Small particles on film	Dirt in solution	Check solution circulation, filter and pump.
9. White transparent spots on film	A. Spilling or splashing of fixer before processing	Handle films with care and clean hands.
	B. Soiled screen	Clean screen.
	C. Particles of emulsion lifting from film	Clean rollers. Check that fixer replenishment rate is sufficient.**
	D. Air bubbles between roller and film in developer	Check solution circulation, pump and filter.

10. White or dark half-moon shaped marks on film	Film has been folded or bent before processing	Handle film with care, do not bend.
11. Parallel black & transparent stripes	Uneven pressure from distorted rollers in the developer section of the processor.	Clean machine thoroughly-have machine manufacturer check rollers.
12. Dark black marks	A. Electronic discharge B. Pressure applied during handling	Check relative humidity. Handle films smoothly and with care.
13. Dark or light spots on film (comet shaped)	Splashing of chemicals (fixer or detergents) before processing	Clean up working & loading areas.
14. Soiled film after drying	Drying temperature too high	Check temperature and adjust it to recommended value.
15. White layer on film	A. Wash flow-rate too low B. Solid/exhausted fixer bath	Check flow-rate and temperature of wash-water-adjust if needed. Check mixing procedure-Prepare new fix solution. Check fix replenishment rate.
16. Yellow stain on film after storage	Insufficient fixation	Ensure fixer** replenishment rate is correct.
17. Scratches on film	A. Along the entire length of film B. Along the direction of feed of film into processor (often with round areas of higher density)	Guide rails scratching film. Process another film with its long axis at right angles to the direction in which the previous film was processed. This will show whether the scratches occur before loading into processor or during processing. Excessive pressure applied to film by fingers when inserted into feed slot of processor.

* When filling a processor with developer and fixer solution always mix and install fixer before developer to avoid fixer splashing into installed developer. Always rinse developer tank and rollers thoroughly with water after installing fixer before installing developer. Use separate mixing tanks.

** the conditions of a fixer can be judged by its silver content. Normally the silver concentration should not exceed 4g/l. If it is too high this indicates too low a rate of replenishment. Silver concentration can be measured by silver test strips available from various laboratory chemical suppliers from Merck.

Handling Process Solutions

All photographic processing solution can cause harmful effects when brought into contact with human tissue to a greater or lesser extent depending on the nature of the solution and its concentration. All users of such solutions should exercise the greatest care to avoid chemicals contacting the skin, eyes or other parts of the body. Always wear solution resistant gloves and effective eye protection.

In case of accidental contact with processing solutions wash the affected part with plenty of clean cold running water. Wash with an acidic soap and rinse thoroughly with water. Consult a medical doctor if necessary. Some photographic solutions produce irritating vapours, therefore through ventilation is essential. Do not inhale air above processing solutions.

Always read the hazard information on the packs of solution concentrate before attempting to handle the solutions.

FUJI HUNT



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