

# Using the KODAK EKTACOLOR Processing Cartridge 111 with Digital Minilabs using Processes CP-48S and CP-49E

**NOTE:** If you are located in Europe, use publication CIS-229E.



KODAK EKTACOLOR Processing Cartridge 111 and KODAK Rinse Tablets are designed for use with all models of FUJI FRONTIER Digital Minilabs and models of NORITSU Digital Minilabs using Process Cycles CP-48S and C-49E. The EKTACOLOR Processing Cartridge 111 is a drop-in cartridge for paper processing chemicals.

The cartridge and tablets are part of Kodak's systems approach that enables users of other manufacturers' minilabs to provide customers with photographs printed on KODAK Paper and processed in KODAK Chemicals. When used with KODAK EKTACOLOR ROYAL or EDGE GENERATIONS Papers, the processing cartridge will produce prints with rich, bright colors and excellent shadow detail.

The KODAK EKTACOLOR Processing Cartridge 111 is compatible with both FUJI and NORITSU Minilab Systems using Process CP-48S and CP-49E. There are different time and temperature recommendations for these process cycles. See Figures 1, 2, and 3 for details.

## OBTAINING CHEMICALS

These products are offered worldwide. Each cartridge processes 111 square metres of KODAK EKTACOLOR ROYAL or EDGE GENERATIONS Papers when the processor is operated at recommended replenishment rates. They are available from your usual supplier of KODAK Products. Catalog numbers are as follows:

**KODAK EKTACOLOR Processing Cartridge 111**  
CAT No. 838 7375, US/Canada/Latin America/European Regions



## KODAK Rinse Tablets

CAT No. 191 3110, US/Canada/Latin America Regions  
CAT No. 119 9033, European Region

## CONVERTING TO THE KODAK EKTACOLOR PROCESSING CARTRIDGE 111

To convert to the KODAK EKTACOLOR Processing Cartridge 111, simply load the cartridge, and let it mix as usual on top of existing solutions. Use KODAK Rinse Tablets in the same way as FUJI FSC100 Super Conditioner Tablets. If you are converting from a FUJI CP-48S, CP-48HV, or CP-49E Processing Cartridge that processes 111 square meters of paper, then no processor adjustments are required to use the EKTACOLOR Processing Cartridge 111. Use the same replenishment and other software settings as for your previous chemical cartridge. **However, if you are converting from a FUJI CP-48LR, or CP-49ELR Processing Cartridge, you will need to adjust the replenishment rates listed for the Developer Replenisher and Bleach-Fix Replenisher to the rates listed in Figures 1, 2, and 3 that follow.**

At the time of the conversion from other chemicals to the KODAK EKTACOLOR Processing Cartridge 111, you may encounter process control biases using KODAK Control Strips and the aims described on page 7. For example, the LD may be low by as much as -0.10. This bias is explained by slight differences in the formulations of the previous product and the EKTACOLOR Processing Cartridge 111.

As the KODAK Chemicals and Paper season into the processor, the low plots will recover closer to the aim values. The printer will calibrate to follow the process shift, and there will be no significant impact on the picture quality. Depending on the rate of chemical use, it may take a few weeks for the full impact of the shift.

For smaller models of FUJI and NORITSU Digital Minilabs, such as the FRONTIER 330 or the NORITSU 3501/3502F, it will take approximately 6 cartridges to fully season the tank solutions with KODAK Chemicals and Paper. For models with larger tank sizes, such as FRONTIER 390 Digital Minilab, it may take up to 30 cartridges to fully season the larger tanks.

When your processor needs a new cartridge, simply mount the EKTACOLOR Processing Cartridge 111 on the machine, and let it mix as usual. Use KODAK Rinse Tablets in the same way as FUJI FSC100 Super Conditioner Tablets.

Figure 1

### FUJI FRONTIER 330,350,355, 370, 395, and 390 CP-48S

Process Cycle with KODAK EKTACOLOR Processing Cartridge 111

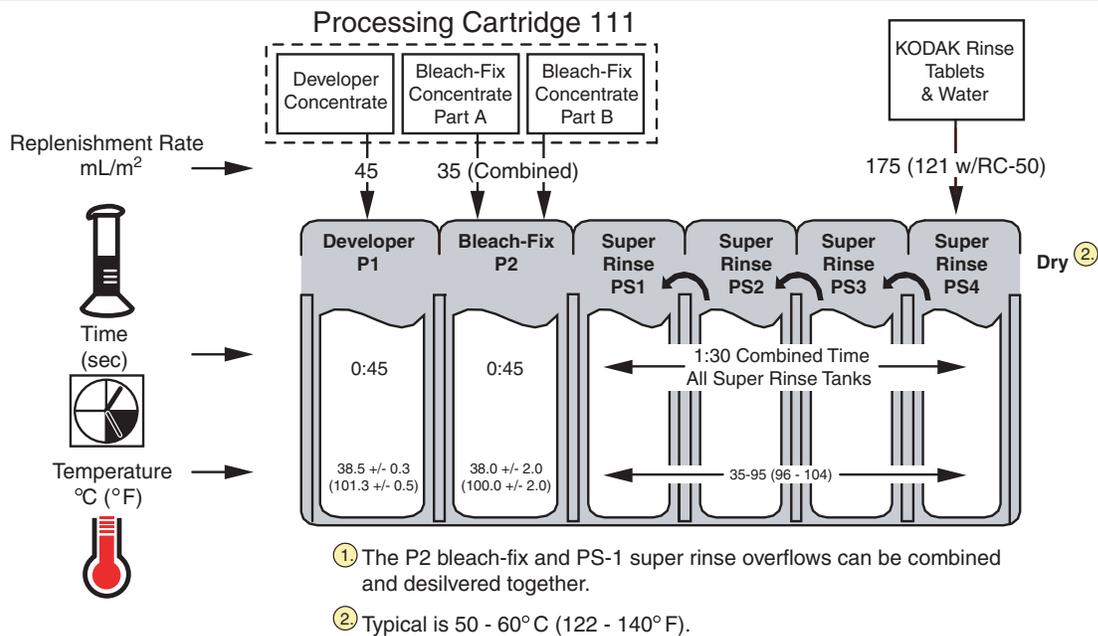
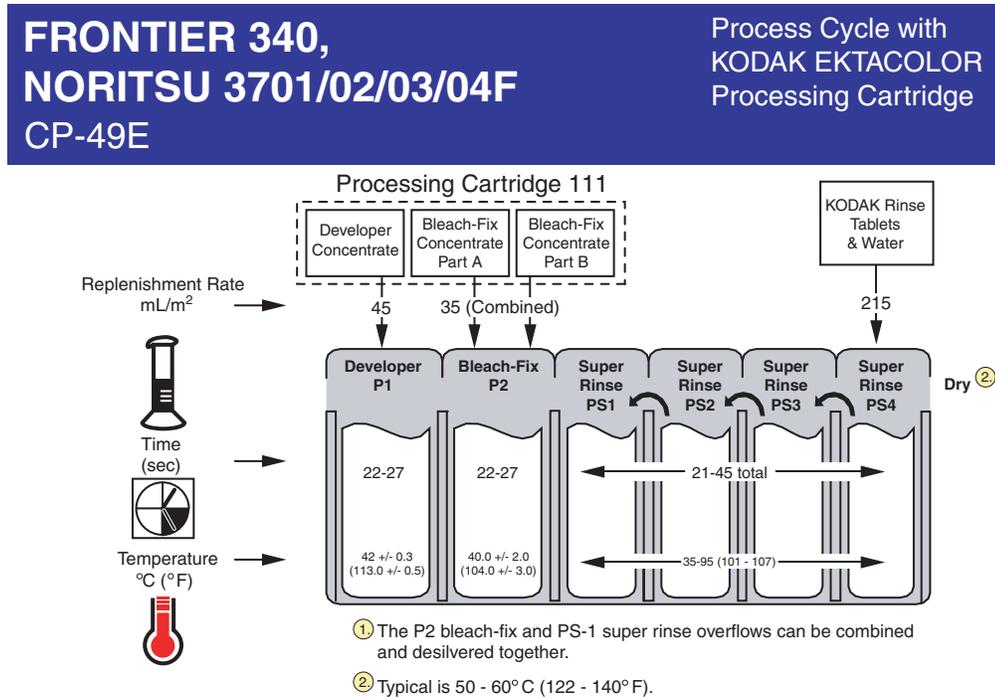
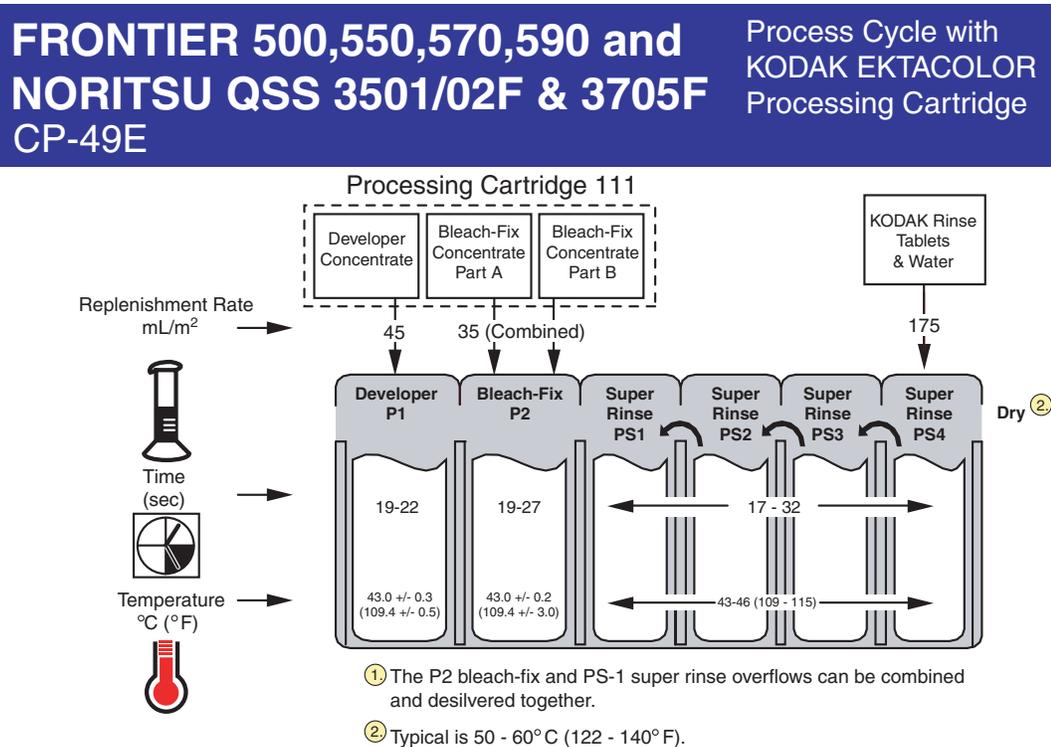


Figure 2



Follow the manufacturer's recommendation for the time in a specific model of Digital Minilab.

Figure 3



Follow the manufacturer's recommendation for the time in a specific model of Digital Minilab.

## Preparing Fresh Working Tank Solutions

To prepare fresh tank solutions for your FUJI FRONTIER or NORITSU Digital Minilab processors, you can use KODAK EKTACOLOR PC 111 Tank Developer, CAT No. 812 2335, to make 4.2 litres; and KODAK EKTACOLOR PC 111 Tank Bleach-Fix, CAT No. 830 7332, to make 4.2 litres. Use the instructions in the following tables to mix fresh tank solutions.

Note: Because the FUJI FRONTIER Model 390 has large tanks, an alternate method of mixing Developer and Bleach-Fix tank solutions is contained in Appendix A in the back of this publication

**Table 1a Preparing Fresh Developer Tank Solution with KODAK EKTACOLOR PC 111 Tank Developer, CAT No. 812 2335**

Minilab Model	Tank Volume (Litres)	Add water to Sub Tank	Add P1A (and water) to Sub Tank	Add P1B (and water) to Sub Tank	Add water (For FUJI FRONTIER, add water to P1 line on gauge)
	1.0	850 mL	69.5 mL P1A	62.5 mL P1B	Makes 1 litre
FUJI 330	9.4 litres	3 litres	653 mL (2 bottles + 70 mL) P1A + 1 litre water	588 mL (2 bottles + 63mL) P1B + 1 litre water	Approximately 3.2 litres water
FUJI 340	7.1	4 litres	494 mL (1 bottle + 202 mL) P1A No water	444 mL (1 bottle + 182 ml) P1B No water	Approximately 2.2 litres water
FUJI 350 or 355	12.7	4 litres	3 bottles P1A + 2 litres water	3 bottles P1B + 2 litres water	Approximately 3 litres water
FUJI 370 or 375	16.5	6 litres	4 bottles P1A + 2 litres water	4 bottles P1B + 2 litres water	Approximately 4.3 litres water
FUJI 390*	54.5	44 litres	13 bottles P1A only, No water	13 bottles P1B only, No water	Approximately 3.3 litres water
FUJI 550 or 570	11.0	5 litres	765 mL (2 bottles + 180 mL) P1A + 1 litre water	688 mL (2 bottles + 162 mL) P1B + 1 litre water	Approximately 2.5 litres water
NORITSU 3501/3502F	8.5	5 litres	2 bottles P1A No water	2 bottles P1B No water	No gauge, add 2.4 litres water
NORITSU 3701/02/03F	12.9	4 litres	3 bottles P1A + 2 litres water	3 bottles P1B + 2 litres water	No gauge, add approximately 3.2 litres water
NORITSU 3704F	14.9	6 litres	1036 mL (3 bottles + 160 mL) P1A + 2 litres water	930 mL (2 bottles + 140 mL) P1B + 2 litres water	No gauge, add approximately 3 litres water
NORITSU 3705F	14.0	6 litres	973 mL (3 bottles + 95 mL) P1A + 2 litres water	875 mL (3 bottles + 85 mL) P1B + 2 litres water	No gauge, add approximately 2.2 litres water

\*Due to the large tank capacity of the FRONTIER Minilab Model 390, we recommend you use KODAK EKTACOLOR PRIME SP Developer Replenisher LORR and KODAK EKTACOLOR RA Developer Starter to make fresh tank solution. See Appendix A.

**Table 1b Preparing Fresh Bleach-Fix Tank Solution with  
KODAK EKTACOLOR PC 111 Tank Bleach-Fix, CAT No.  
830 7332**

Minilab Model	Tank Volume (Litres)	Add water to Sub Tank	Add P2A and water to Sub Tank	Add P2B and water to Sub Tank	Add water (For Fuji Frontiers , add water to P2 line on gauge)
	1.0	350 mL	200 mL P2A	400 mL P2B	To Make 1 litre
FUJI 330	9.4 litres	3 litres	1.880 litres (2 bottles +200 mL) P2A	3.760 litres (2 bottles + 400 mL) P2B	Approximately 760 mL water
FUJI 340	7.3	2 litres	1.460 litres (1 bottle +620 mL) P2A	2.920 litres (1 bottle + 1240 mL) P2B	Approximately 920 mL water
FUJI 350 or 355	12.7	4 litres	3 bottles P2A	3 bottles P2B	Approximately 1.14 litres water
FUJI 370 or 375	16.5	5 litres	4 bottles P2A	4 bottles P2B	Approximately 1.4 litres water
FUJI 390*	53.5	19 litres	13 bottles P2A	13 bottles P2B4	Approximately 1.75 litres water
FUJI 550 or 570	11.0	3 litres	2.200 litres (2 bottles +520 mL) P2A	4.400 litres (2 bottles +1040 mL) P2A	Approximately 1.4 litres water
NORITSU 3501/3502F	8.2	2 litres	2 bottles P2A	2 bottles P2B	No gauge, add approximately 1.2 litres water
NORITSU 3701/02/03F	12.8	4 litres	3 bottles P2A	3 bottles P2B	No gauge, add approximately 1.25 litres water
NORITSU 3704F	15.6	5 litres	3.120 litres (3 bottles + 600 mL) P2A	6.240 litres (3 bottles + 1200 mL) P2B	No gauge, add approximately 1.2 litres water
NORITSU 3705F	14.6	4 litres	2.920 litres (3 bottles + 400 mL) P2A	5.840 litres (3 bottles + 800 mL) P2B	No gauge, add approximately 1.8 litres water

\* Due to the large tank capacity of the FRONTIER Minilab Model 390, we recommend you use KODAK EKTACOLOR PRIME SP Bleach-Fix Replenisher LORR and EKTACOLOR PRIME SP Bleach-Fix Starter to make fresh tank solution. See Appendix A.

### To Prepare a Fresh Super Rinse Tank Solution

You will need to prepare fresh super rinse tank solution when you drain the tanks for routine cleaning. To prepare fresh tanks, add one rinse tablet to each stabilizer tank, and fill the tank with water to the appropriate level.

## Disposing of Empty Cartridges

Your processor rinses the chemical solutions from the cartridge during the mixing cycle. The empty cartridge is not considered to be hazardous waste. Most regions have a local community-recycling program. Check with program authorities to determine if these bottles are eligible for local recycling. See KODAK Publication No. CIS-148, *Recycling KODAK Photochemical Containers*, for more information on preparing the empty bottles for recycling. CIS-148 and other publications on waste management are available from [www.kodak.com/go/KES](http://www.kodak.com/go/KES). If recycling is not an option, rinse the bottles as outlined in CIS-148, render the bottles unusable (if warranted), and then dispose with your normal solid waste.

## Filtration

Processing solutions may contain insoluble materials. If you don't filter out these materials, they may stick to the paper, tank walls, rollers, and lines, and can damage the paper. It is also important to replace solution filters periodically so that a blocked filter does not reduce the solution flow. Use the filters designed for the processor and recommended in the printer/processor manual.

## Drying

The drying temperature may need to be adjusted depending on the atmospheric conditions in the minilab. You can save energy costs by avoiding overheating. Typically, temperatures in the range of 50 to 60 °C (122 to 140 °F) have been effective.

## Silver Recovery

Publications on silver management that include recommendations and descriptions of silver-recovery options are available in the Silver Management section of the Kodak Environmental Services Publication Center at [www.kodak.com/go/KES](http://www.kodak.com/go/KES).

## Draining and Mixing Fresh Replenishers

If you need to drain and mix fresh replenisher solutions, follow the manufacturer's recommendations for draining the replenisher tanks, or use this procedure:

1. Empty the remaining replenisher solutions by using the drain valves at the bottom of the machine
2. After draining is complete, close the drain valves.

### Note for FUJI FRONTIERS only:

**It is necessary to add water to the developer replenisher tank. Add this instruction to those above:**

- 2A. Pour 500 mL of water into the developer (the slot farthest to the left) in the cartridge-loading section.
3. Insert a full cartridge into the slot and make replenishers by following the standard procedure given for the processor model used.

**Example:** Loading dock of FUJI FRONTIER Processor



Pour 500 mL of water into this position when making replenisher after completely draining replenisher tanks.

**Note:** If you forget to add the water and receive an error message (E-2675) when you prepare fresh replenishers, you can add the water after the replenishers have been mixed. **The water addition is only necessary when the replenisher tank has been drained; it is not required for routine mixes with the cartridge.**

## USING KODAK CONTROL STRIPS / PROCESS RA-4 / EXTENDED LENGTH IN THE FUJI FRONTIER DIGITAL MINILAB

KODAK Control Strips, Process RA-4 / Extended Length, CAT No.130 4690, are designed for use in all Control Strip Holders for FUJI FRONTIER and NORITSU 3501F and 3701F Digital Minilabs. No shim is required when using these extended length strips. If you have installed a shim in your control strip magazine for using the standard length KODAK Control Strips, Process RA-4, please remove it before using the strips. Use these strips for the most accurate process monitoring when you process KODAK EKTACOLOR ROYAL and KODAK EKTACOLOR EDGE Papers.

For calculating the aims for your control strip code, read the Status A Red, Green, and Blue densities of the reference strip, and then apply the correction factors. For the HD-LD parameter, subtract the corrected LD from the corrected HD density readings. You will find three sets of correction factors on the reference envelope for you to use in calculating the aims. Make sure you select the correct PC 111 correction factors for the specific FUJI FRONTIER or NORITSU "F" Model Digital Minilabs you are using:

- For FRONTIER Models 330, 350, 355, 370, 375, and 390, using Process CP-48S, use the correction factors labeled:  
**EKTACOLOR PC11148S**
- For FRONTIER Model 340, and NORITSU models 3701/02/03/04F using Process CP-49E, use the correction factors labeled:  
**EKTACOLOR PC11149E**
- For the FRONTIER Models 550, 570, or NORITSU Model 3501/02F and 3705F, using Process CP-49E, use the correction factors labeled:  
**EKTACOLOR PC11149S**

## USING THE “VISUAL PROCESS CONTROL GUIDE” TO TROUBLESHOOT PROCESSES CP-48S and CP-49E

If your Process RA-4 control chart indicates an out-of-control position, you may use the “Visual Process Control Guide” to investigate potential causes and apply corrective action.

### First check for operational errors:

- Make sure the control-strip code matches the reference-strip code.
- Calibrate the densitometer.
- Recheck the control-strip aims and verify the correction factors.
- Make sure you have used the right set of correction factors for calculating your aims, for the process cycle or model of processor used, see page 7.
- Verify the problem by processing a second control strip.
- Determine if any recent processor maintenance could have caused a problem.
- Use an accurate thermometer to verify that the developer and other solution temperatures are correct.

### Match your plots to the “Visual Process Control Guide” to identify your problem:

- Match your control plots to the examples given on the “Visual Process Control Guide.” Compare only one plot parameter at a time (BP, HD-LD, LD, D-min). Note that the patterns of the red, green, and blue plot deviations can be an indicator of different problems.
- Write down the problems indicated by each parameter for the plots that are out of control. Consider that you may have more than one problem occurring at the same time.
- Consider each potential cause of the out-of-control condition, and verify the operational conditions of the processor.
- When you have determined the most likely cause(s) of the out-of-control condition, take corrective action to eliminate the symptom of the problem.

## Corrective Action and Prescriptions

- **The Yellow Patch** monitors the performance of the bleach-fix solution for **retained silver**. A bleach-fix solution that is underreplenished or diluted will not efficiently remove silver in the paper, leaving retained silver in higher density areas. The yellow patch is not plotted on a control chart; it is meant to be a visual reference only. Compare the yellow patch on a processed control strip with the yellow patch on the reference strip. If the processed control strip yellow patch appears brown or less saturated in color, or “muddy” compared to the reference, you may have retained silver. You can confirm retained silver by the following test:
  1. Take your processed control strip and process it again through your processor in order to re-bleach-fix the control strip.
  2. Compare the yellow on the re-processed control strip to the yellow patch on the reference strip. If re-bleach-fixing has improved the yellow patch on the re-processed strip, then you have confirmed a retained silver problem.

### Prescriptions:

- Replace bleach-fix tank with fresh bleach-fix tank solution.
- Also, recalibrate the replenishment pumps for the bleach (P2-RA) and fix (P2-RB) replenisher solutions.

- **The Black Patch** monitors the performance of the developer for activity and contamination. There is no upper control limit for Black Patch. If the Black Patch plots are low, then it could be an indication of low developer activity due to underreplenishment or severe oxidation. If the blue Black Patch is very low and separated from the red and green plots, it could be a sign of developer contamination. See prescriptions listed under the **LD** parameter.
- **The HD-LD (Contrast)** is usually a very steady plot parameter that is unresponsive to most process problems. However, it can help monitor developer activity problems due to **agitation or oxidation**. If developer tank solution is underagitated, the plots will be low. If developer tank solution is slightly oxidized, the plots will be high. If the developer becomes extremely oxidized, the plots will be low. If the solution is extremely out of control by more than 0.18 density units over or under aim, drain and replace the developer tank solution. If the plots are less than 0.18 density units over or under aim, a prescription can be risked.

**Prescriptions:**

- **Underagitation:** call service representative to fix agitation pump on processor.
- **Oxidation:** check for air bubbles in developer tank; call service technician if seen.

- **The LD (Speed)** monitors the developer activity. **Speed** is the primary indicator of developer time, temperature, and especially developer replenishment rate. For time that is too long, temperature too high, or overreplenishment, the LD plots will be high. For time too short, temperature too low, or underreplenishment, the LD plots will be low. Check the temperature of the developer, adjust as necessary to bring back into specification. If the plots are extremely out of control, by more than 0.18 density units over or under aim, drain and replace the developer. If the plots are less than 0.18 density units from aim, a prescription can be risked.

**Note:** If the red LD is very high and/or the green LD is very low and they are split from the blue LD, it may be caused by developer contaminated with bleach-fix. In this case, the developer must be drained and replaced with fresh developer tank solution. Make sure the tank is cleaned and thoroughly flushed with water to remove all contaminated developer from the tank and circulation system.

**Prescriptions:**

- For **high LD** plots:
- **Overreplenishment:** Remove a volume of developer solution equal to 10% of the total tank volume and replace with water. Repeat until it is in control.
- For **low LD** plots:
- **Underreplenishment:** Remove a volume of developer tank solution equal to one third of the tank volume and replace with fresh developer tank that is mixed according to the "Make 1 litre" component ratios in Table 1a.
- **D-min (Stain)** monitors the whiteness of the unexposed paper. An increase in the D-min plot can indicate oxidation or contamination problems in the developer, or a problem in the super rinse when the solution is dirty or has biological growth residue.

**Prescriptions:**

- For high **D-min** on paper caused by oxidized or contaminated developer, replace the developer tank solution with fresh developer tank solution mixed according to the component ratios in Table 1a.
- For a high **D-min** on the paper caused by dirty stabilizer or biological growth in the stabilizer tanks and racks, clean the stabilizer tanks and replace the solution with water and KODAK Rinse Tablets.



## APPENDIX A:

### Alternative Method for Mixing Working Tanks Using KODAK EKTACOLOR PRIME LORR Chemicals

An alternative method for preparing fresh developer and bleach-fix working tank solutions for your FUJI FRONTIER or NORITSU Digital Minilab models "F" is to use KODAK EKTACOLOR PRIME LORR Chemicals. This alternative method is especially an advantage for mixing working tanks on the Fuji Frontier model 390, which has very large volume working tanks. You will need these chemicals:

1. EKTACOLOR PRIME SP Developer Replenisher LORR, CAT No. 864 4809
2. EKTACOLOR RA Developer Starter, CAT No. 102 6681
3. EKTACOLOR PRIME SP Bleach-Fix Replenisher LORR, CAT No. 127 3812
4. EKTACOLOR PRIME SP Bleach-Fix Starter, CAT No. 834 1133

Follow the mixing instructions in the appropriate tables below.

**Table 2a Preparing Fresh Developer Tank Solution with KODAK EKTACOLOR PRIME SP Developer Replenisher LORR**

Minilab Model	Tank Volume (Litres)	Water (Litres)	EKTACOLOR PRIME SP Developer Replenisher LORR Concentrate (mL)	EKTACOLOR RA Developer Starter (mL)
To make	1 litre	890 mL	65 mL	45 mL
FUJI 330	9.4	8.35	610	420
FUJI 340	7.1	6.32	460	320
FUJI 350 or 355	12.7	11.1	810	560
FUJI 370 or 375	16.5	14.7	1070	740
<b>FUJI 390</b>	<b>54.5</b>	<b>48.5</b>	<b>3540</b>	<b>2450</b>
FUJI 550 or 570	11.0	9.79	715	495
NORITSU 3501/3502F	8.5	7.56	553	383
NORITSU 3701/02/03F	12.9	11.48	839	580
NORITSU 3704F	14.9	13.261	969	670
NORITSU 3705F	14.0	12.46	910	630

To the specified volume of water, add the PRIME SP Developer Replenisher LORR concentrate directly from the bottle, then EKTACOLOR RA Developer Starter. If necessary, add a small amount of extra water to finish filling the tank. Allow the recirculation pumps to mix the solution when the processor is turned on.

**Table 2b Preparing Fresh Bleach-Fix Tank Solution with KODAK EKTACOLOR PRIME SP Bleach-Fix Replenisher LORR and EKTACOLOR SP Bleach-Fix Starter**

Minilab Model	Tank Volume (Litres)	Water (Litres)	EKTACOLOR PRIME SP Bleach-Fix Replenisher LORR Concentrate (Litres)	EKTACOLOR PRIME SP Bleach-Fix Starter (mL)
	1 litre	475 mL	475 mL	50 mL
FUJI 330	9.4	4.5	4.5	475
FUJI 340	7.3	3.47	3.47	365
FUJI 350 or 355	12.7	5.94	5.94	625
FUJI 370 or 375	16.5	7.84	7.84	825
<b>FUJI 390</b>	<b>53.5</b>	<b>25.4</b>	<b>25.4</b>	<b>2670</b>
NORITSU 550 or 570	11.0	5.23	5.23	550
NORITSU 3501/3502F	8.2	3.9	3.9	410
NORITSU 3701/02/03F	12.8	6.08	6.08	640
NORITSU 3704F	15.6	7.40	7.40	780
NORITSU 3705F	14.6	6.95	6.95	730

To the specified volume of water, add the PRIME SP Bleach-Fix Replenisher LORR and PRIME SP Bleach-Fix Starter concentrates directly from the bottles. Allow the recirculation pumps to mix the solution when the processor is turned on. If necessary, add a small amount of water to finish filling the tank.

**Note:** The contents of this publication are subject to change. To be sure you have the most up-to-date publication, check [www.kodak.com/go/photochemicals](http://www.kodak.com/go/photochemicals); select Technical Resources tab to find a link to *Current Information Summaries*.

Consumer Digital Group

**EASTMAN KODAK COMPANY • ROCHESTER, NY 14650**

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