



Toray Waterless CTP Plate  
**Instruction Manual**

Thermal Negative working type  
**TAC RG5/RL7**





# Introduction

Thank you for your purchasing Toray's waterless plate. This document is the instruction manual describing the knowledge and cautions necessary for using Toray's waterless plate safely. Before using Toray's waterless plate, please read this manual and understand the cautions thoroughly.

As to the MSDS of the treating solutions to be used together with the plate, it should be obtained from the dealer and read prior to use.

## **Cautions in Using This Document**

- 1.No part of this manual can be reproduced in any form without permission.
- 2.The contents of this manual are subject to change without notice when this product is improved.
- 3.If there are any unknown points, errors, or omissions in this manual, please let us know.

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# 1

## **Basic point of Toray Waterless CTP Plates**

# Toray Waterless CTP Plate (Thermal Negative working type)

## The feature of Toray Waterless CTP Plate



The non-imaged area consists of ink repellent silicone rubber layer. This silicone acts as a dampening solution of the conventional planograph. The plate is a thermal type which reacts to the near-infrared ray, and the exposed part will be the imaged area (negative working type).

## About Toray Waterless Plate

### Structure of the plate

Structural Drawing  
(TAC-RG5)

The structure of RG5 is basically the same as the analog waterless plate.

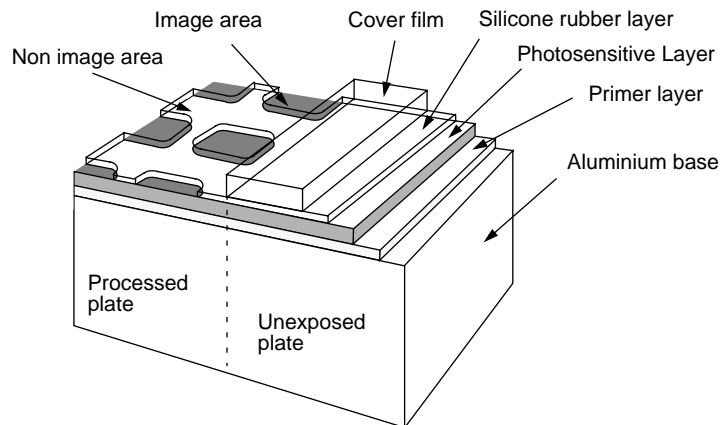


Fig.1 Structure of "Toray Waterless CTP Plate"

### Function of each layer (unprocessed plate)

- Transparent cover film
- Silicone rubber layer  
(ink repellent: Non-image area)
- Photosensitive Layer  
(ink receptive: Image area)
- Primer Layer

Protects the Silicone rubber from scratches and dust during transportation.

Forms the non-image area utilizing the feature of mutual repulsion between silicone and ink (oil). This layer acts as the dampening solution of the conventional planograph.

The photosensitive layer in exposed areas forms the image areas for its ink receptivity.

Allows dot readability by blocking off the grain of the aluminum base.

### Principle of image constitution

Photo thermal exfoliation

The photosensitive layer of the exposed area reacts to the near-infrared ray, and the adhesion between the silicone layer and the photosensitive layer is weakened by the action of pre-treatment solution. The adhesion is originally strong at the unexposed area and does not react to the pre-treatment solution. This makes a difference between the adhesion at the exposed area and unexposed area.

The silicone layer of the exposed area will be rubbed away mechanically and the surface of the photosensitive layer (ink accepting part) appears when the developing brush scrubs the plate.

## Background of the improvements of Toray Waterless CTP Plates

### Overview of the improvements of Toray Waterless CTP Plates.

Table1: Background of the improvements

Type	Improvements on the performance of plates
JG5	The first plate introduced to the market
CG5	Improvement of scratch resistance Improvement of measurement ability of the printing plate
UG5	Wider development latitude
RG5	Improvement of scratch resistance and durability Dot readability

### Improvements from the CG, UG Plates

#### Plate Structure

RG5 has a primer layer which blocks off the grain of the aluminum base. The structure of the plate is aluminum base / primer layer / photosensitive layer / silicone layer / cover film, which is the same as the analog waterless plates.

#### [Feature 1]

The grain of the aluminum base is blocked off

It used to be difficult to read the exact dot area on the CG/UG plate due to the flat grain of the aluminum base. As for the RG5 plates, the dot area is readable because of the primer layer blocking off the flat grain, and it became easier to carry out an evaluation on the processed plate.



***The dye density in the image area of RG5 fluctuates owing to the piece dyeing.***

To measure the dot area exactly, please use the CCD type dot reader such as cc Dot.

#### [Feature 2]

Improvement of scratch resistance and durability

The scratch resistance and durability is improved by adding a primer layer between the base and the photosensitive layer.

## How to handle unprocessed plates

### The difference between analog waterless plates



The plate is a type of photosensitive material like the analog waterless plates. The sensitive wavelength band of the CTP plate is around the infrared ray whereas the analog plate is ultraviolet ray. The plate can be handled under normal light because the amount of infrared ray involved in the fluorescent light is very small.

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### How to handle unprocessed plates

#### Opening the case and taking out the plate

The plate might be scratched if you open the case by cutting the carton case strongly with a retractable knife. Be careful when you take the plate out of the case for you might scratch the other plates and ruin the cover film.

#### Storage of the unprocessed plate

Store in a cool, dark plate just like the waterless analog plates.

#### How to handle the cover film

The cover film is used to protect the surface of the plate. The plate may be exposed either with or without the cover film, but it will be more energy efficient when the cover film is removed before exposure. The cover film must be removed before development.

#### Safety light of the unprocessed plate

The plate will not react to visible light or ultraviolet ray, but it will react if it is exposed to near-infrared ray for a long period of time. Please keep the plate away from the window or a fluorescent light without infrared shielding and do not leave the plates under those conditions for a long time. There is no problem in leaving the plates under normal room light (fluorescent light) for a few hours.



***The plate surface may take on a red or brown tinge and silicone peeling on the non-imaged area may occur during the development if the plate is left under the infrared ray for a long time.***

#### The Handling the Unprocessed Plate

Touching the surface of the plate without cover film before development will not affect the developing performance.



***The dots may not be reproduced if something like grease adheres to the plate surface.***



## How to handle RL plates (plates without cover film)



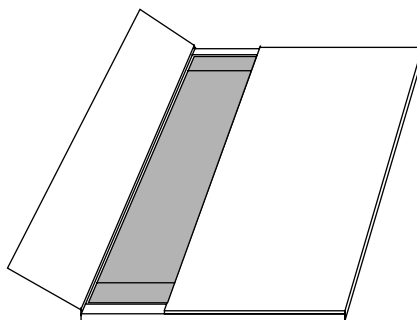
The surface of RL7 plate is not protected by cover film. To avoid damaging the plate surface, follow the instructions shown below to take out the plates from the cardboard case.

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### How to take out the plates

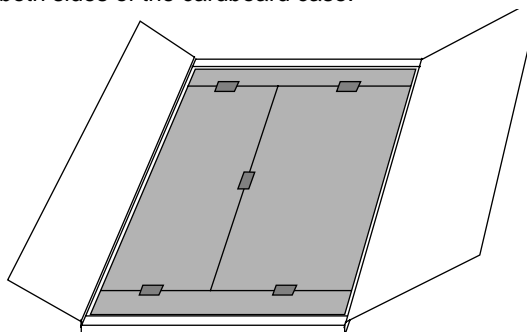
#### Opening the case and taking out the plate

- 1 Open the cardboard case.

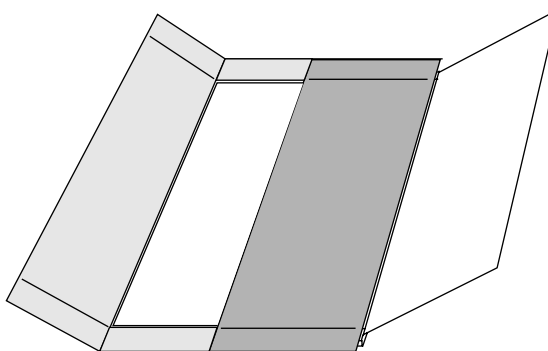


*The plate surface may be damaged if you cut the cardboard case too deep to open it.*

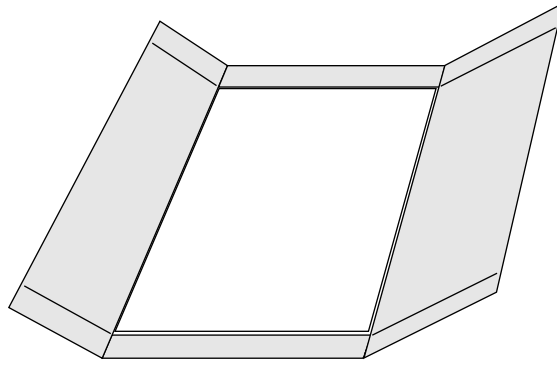
- 2 Open both sides of the cardboard case.



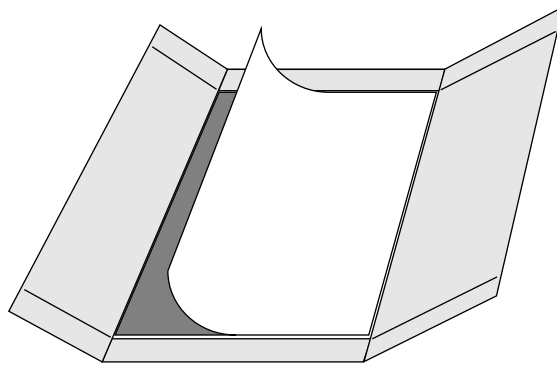
- 3 Open the aluminum coated package.



- 4 Open the aluminum coated package as shown below.

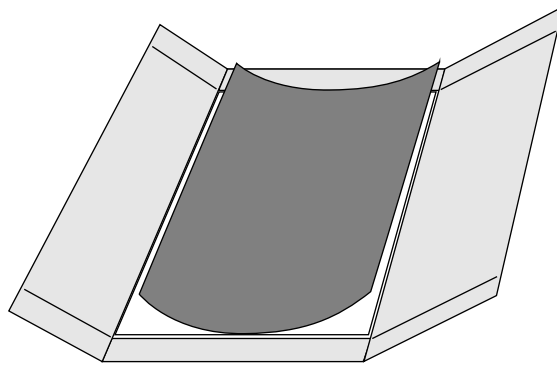


- 5 Remove interleaf paper.



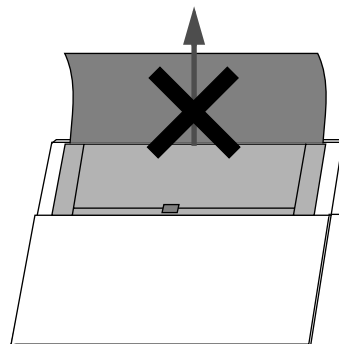
*Please treat the interleaf paper gently since the silicone layer will be damaged if it is scratched hard by the interleaf paper.*

- 6 Taking out raw plate.



## Cautions

The plate surface will surely be damaged when it is pulled out of the cardboard case by the following way. Please make sure to keep the instructions above.



## Exposure



Absorption maximum wavelength of the photosensitive layer is at the near-infrared ray, and every type of thermal plate setter loading a laser whose oscillation wavelength is 830nm can expose the plate. The plate is a negative working type, so the exposed part will make the imaged area. Please make sure that the setting of the plate setter is correct.

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### About the Exposing Process

#### Plate setter aptitude

Special adjustments or modification may be needed according to the model of the plate setter. Please refer to the plate setter manufacturer or contact us before using Toray Waterless CTP Plate.

#### Preparation and adjustment of the output device

The manufacturer of the plate setter will mainly do the following operation to accommodate the setter to Waterless CTP Plate.

Sensor Adjustment

Adjust the sensor of each part to output without any trouble.

Focus Adjustment

Record several points of focus adjusting internal patterns, which is supplied with the plate setter, varying fitfully towards both plus and minus directions from the basic point to adjust the focus.

The optimum focus point will be decided according to the reproduction of each points above.

Output Adjustment

Record several points varying fitfully towards both plus and minus directions from the basic output point, and decide the optimum output condition according to the reproduction of each points above.

#### Exposure

How to handle the cover film

Exposure is possible either with or without cover film, but there is some energy-loss when the exposure is done with cover film.



***The plate without cover film is not certificated by some of the plate setter manufacturer. Please refer to the manufacturer.***

The exposing performance of plates

The exposed area will turn duskish and would be easier to see when the output of the plate setter is higher.



***The exposed area will turn from black to white and white to red when the light exposure is stronger. The output energy is basically set to the whitening point.***

Leaving the exposed plate undeveloped

It may be left undeveloped for at least a few days, depending on the conditions of exposure and development.

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## Calibration

### Correction value

#### Setting for reproduction on plate

The dot gain when printing waterless plate is different from those of conventional printing for about 3%-5% in the middle part, so the calibration curve should be adjusted as follows according to the requested quality.

#### Approximate to the analog waterless printing (positive plate)

Typical reproduction of waterless printing with massive colors can be obtained. The calibration curve must be set to make the middle tone dot on the plate 3% smaller to gain this reproduction.

#### Approximate to the conventional offset printing (positive plate)

Printing will be slightly lightened when color matching is based on the middle tone. This will reduce the turbidity of color and improve smoothness. The calibration curve must be set to be linear on plate to achieve this reproduction.

### Dot measurement

#### CCD type

Please use this type of dot reader to measure the exact dimension of the dots. If you are using ccDot (ver2.19v) for measurement, the light reading filter should be green (Read setting for Magenta) to raise the read precision of the shadow dots. The read filter will remain red (Cyan) when it is AUTO.

#### Densitometer type

On "Spectro Eye" (by Gretag Machbeth), default n value of for "PS plate reading" mode is 1.15.

This value can be also used for CTP Waterless plate, resulted in nearly same as the case of ccDot4.

## Development

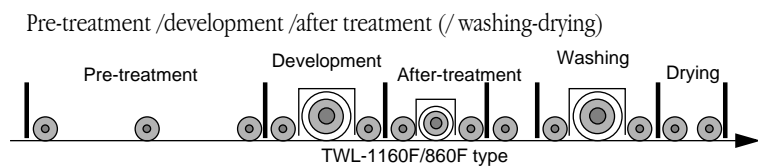


The photosensitive layer of the unexposed part of conventional CTP plate is liquated by developing solution (alkaline solution) and forms the non-imaged area. As for the waterless CTP plates, the silicone layer of the exposed area is scraped off by the developing brush, and forms the image area.

### About the developing process

#### Developing process

Processor



#### Function of each unit

**Pre-treatment**  
(Pre-treatment solution)

The pre-treatment solution weakens the bond between the silicone layer and the photosensitive layer of the exposed area to help brushing off the silicone at the developing unit.

**Development**  
(tap water)

Automatically brushes off the silicone of the exposed area with the oscillating and rotating developing brush and water.

**After-treatment**  
(After-treatment solution)

Tap water act as a lubricant to prevent brush scratch and also prevents the brush being clogged by the scraped silicone.

Completely removes the fringe of the exposed area and adjusts the figure of the dots by brushing the plate surface with a counter-rotating brush and after-treatment solution. Also dyes the surface of the photosensitive layer to improve the ability to examine the developed plate.

**Washing(on selected type)**  
(Tap Water)

This unit is set after the after-treatment unit to wash the surface of the plate with tap water to improve the developing performance, maintain the stability of the plate and enable the plate to be automatically stocked.

#### Standard Condition of Development

The Standard Condition of Development is as follows which has already been installed to the processor according to the condition of each machine.

Table2: The Standard Condition of Development

Processor	Standard Condition	
	TWL-1160/860F,K	TWL-650F,V
<b>Solution</b>	Pre-treatment solution type : NP-1	
<b>Temp.</b>	35 C (can be adjusted between 35-40C, if necessary)	
<b>Speed</b>	90cm/min. (can be adjusted between 80-100cm, if necessary)	45cm/min. (can be adjusted between 40-50cm, if necessary)

## Developing performance of the plate

### Developing performance of the plate

[The developing performance of the exposed plate]  
 =[Laser intensity of the plate setter]  
 x [developing performance of the processor]

[Laser intensity of the plate setter]

Laser intensity

The burden imposed on the processor will be lightened when the laser intensity is higher, which will allow the developing latitude to be wider. The stability of development will be improved by setting the laser intensity higher.

[The developing performance of the processor]

Brush pressure of each brush

The brush pressure of each brush will decrease due to fatigue of the brush as it is used. A regular readjustment of the brush pressure is required.

Temperature and the soaking time of the pre-treatment solution

The developing ability will be improved when the temperature of the pre-treatment solution is higher. When the transportation speed is low, the plate will be soaked in the pre-treatment solution and scrubbed by the developing brush for a long time which will improve the developing ability.

Density of the pre-treatment solution component contributing to development (Amine)

This active component in the pre-treatment solution is effective to the developing performance of CTP plates and the developing performance is higher when it's density is high. The ratio of Amine will decrease over time, which reduces the developing performance.



***The lower limit of Amine is about 5% though it is up to the laser intensity of the plate setter. If the laser intensity is higher than the average level, there will be less effect to the developing performance even if Amine ratio is under 5%.***

### The upper and lower limit of development

Envisioned troubles

Poor reproduction of highlight dots and banding problems may occur when the developing speed is fast, and silicone peeling may be seen when the developing speed is slow.

Point to notice when developing

The silicone of the unexposed area will peel off when the plate is developed twice. Please make sure that there is no cover film left on the plate before development.

## Processed plate



The silicone rubber layer that makes the non-imaged area will not be sensitized under normal circumstances due to its stability to light. Therefore, gumming is not required. The plate structure is a deep-etch plate with a dented imaged area, compared to the conventional plate which has relief structure.

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### About the printing plate

#### Characteristic

Dot readability	Dyeing on image area would vary in density due to its developing system. Please use the CCD type dot reader such as ccDot to measure the dots accurately.
Ink receptivity of the imaged area	The imaged area will gradually lose ink receptivity beginning in the highlight dot when it is left unprinted for a few days after development. Please wash the plate surface with plate cleaner PC-1 (PC-E), hand development solution HP-7N or a normal washing oil to recover ink receptivity.
Ink repellency of the non-imaged area	The ink repellency of the non-imaged area of the plate before/after printing will not change over time.
Durability	The durability of the plate is around 100,000 copies under normal conditions, but the durability may fall under the following conditions. <ol style="list-style-type: none"><li>Dusty Paper, Paper with high ratio of powder</li><li>Too much ink piling on blanket (non-image area)</li><li>The pressure between plate cylinder and blanket cylinder is too high, or there is a difference in the speed between the plate cylinder and blanket cylinder</li><li>Hard particles on the form roller or the blanket cylinder</li><li>Dust under the under-packing</li></ol>
Used Plates for stock	When the plate is to be stocked after printing, the ink on the plate surface must be removed and paper should be put between the plates. It would be easier to remove the ink from the plate if you print on waste paper without taking off the form roller before the plate is removed from the press.
Washing the plate surface	Normal washing oil could be used to remove the ink from the plate surface, but a dedicated plate cleaner (PC-1, PC-E) should be used together with cotton pad or soft knit cloth to avoid the plate from being dried. The form roller could be released to the plate surface when the printing ends, which will enable the ink removal done together with the roller washing.

# 2

## **CTP plate developing performance management**

## Developing performance managements

### Factors affecting the developing performance



The developing performance of the plate is determined by the laser output and the developing condition of the processor. The means to control the developing condition of the processor will mainly be described in this chapter.

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### The day-to-day control of the developing performance

#### How to check?

The reproduction of the highlight dots will be most affected by the developing performance. The horizontal and vertical lines of 1 pixel are more sensitive than the reproduction of 1% dots, so these lines are recommended to be included in the test image to check the developing performance.



## Maintenance of the processor

### Daily management

Daily check	Check that there is no leak on the floor, no abnormal noise and that the rate of shower flow is adequate.
Cleaning	Adhesion of silicone residue is apt to be seen on the developing brush cover and the rollers of the developing unit. Wash these parts at least once a week with water.
Filter replacement (developing unit/ after-treatment unit)	The silicone residue brushed off at the developing/after-treatment unit accumulates in the filter of each unit. Therefore, the filter of the developing unit must be replaced once per 1000-2000 plates, and the filter of the after treatment unit must be replaced once per 2000-3000 plates. The rate of shower flow will be insufficient when the filter is not replaced with the above frequency, which will cause poor development.
Bearing Greasing	The developing/after-treatment unit has a rotating/ oscillating brush, which needs to be greased to avoid wear of the bearing. The frequency of greasing depends on the condition of usage, but it must be at least once in three months, preferably once a month.
Replenishment of solution	Replenish the solution of each unit when the solution level of the level gauge is below the lower limit.
Developing brush	Check the brush pressure of the developing brush at least once a year, because the developing performance will gradually reduce due to wear of the brush as it is used.  The brush must be replaced either every 2 years or 20,000 plates to avoid poor development.
The supplying level of developing water	The developing water will be supplied automatically as the plate is developed, but the over flow drain is apt to be blocked by silicone when the supplying valve is not opened or the amount of water supplied is not enough. Please check the supplying level occasionally.

## Pre-treatment solution management

### Daily management

#### Replenishment of pre-treatment solution

Replenish the pre-treatment solution in order to compensate for the loss due to normal use.

#### When the monthly usage is less than 500 plates

The ratio of amine, the component contributing to development, in the fresh pre-treatment solution is about 10%. When the usage is less than 500 plates per month, the loss of amine could not be recovered by the replenishment of pre-treatment solution. The ratio of amine will fall from 10% to 5-6%, which is the lower limit, within 3-6 months and affect the developing performance. Therefore, you need to drain and pour new pre-treatment solution.

#### When the monthly usage is more than 1000 plates

When the monthly usage is over 1000 plates and the pre-treatment solution decreases quickly, the density of amine will increase as the solution is replenished and there will be no major change in the density of amine.

#### Replacement of Pre-treatment solution

It is recommended to replace all the pre-treatment solution to fresh solution annually in order to maintain the stability of the developing performance.

### Checking the amine volume

#### Lower limit

Amine comprised in the pre-treatment solution decreases due to development and being left warm. If this component becomes less than a specific amount it will cause poor development.

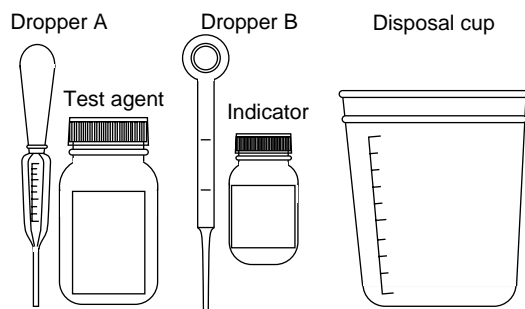
## How to check the amine concentration

The following is the simple method to check whether the amine concentration is above the lower limit. A monthly check is recommended.

### Procedure

#### Preparation

- 1 Make sure that the following equipments are ready.

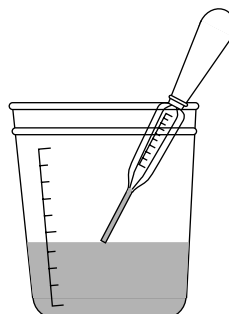


- 2 Obtain sample of pre-treatment solution from the pre-treatment unit of the processor using the disposal cup.

*Wear an eye shield when you open the top cover of the processor.  
Only a small amount of the sample is needed.*

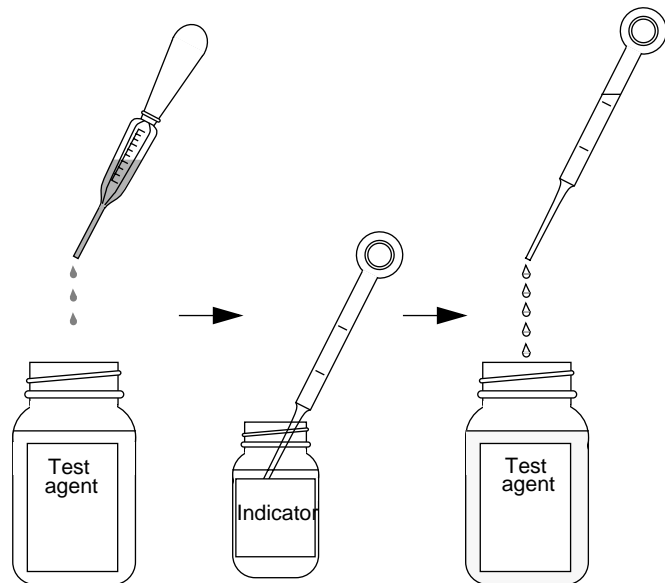
#### Measurement

- 3 Soak up the pre-treatment solution sample using the dropper A.



- 4 Open the lid of the test agent bottle and put 3 drops of pre-treatment solution from dropper A into the test agent

*The test agent will turn pale yellow when the pre-treatment solution is deteriorated*



5 Open the lid of the indicator bottle and soak up the indicator using dropper B. Put 5 drops of indicator from the dropper B into the bottle of the test agent.

6 Shut the lid of the test agent and stir.

7 The test agent will turn magenta (bright purplish red color) if the concentration of amine is above lower limit.

*There is no problem in the developing performance using this pre-treatment solution.*

8 Add 1 liter of AD-1 to the pre-treatment solution if the test agent does not turn magenta.

*Do not add AD-1 if the pre-treatment solution was poured into the processor over a year ago, for the pre-treatment solution will deteriorate earlier than usual. In such case, the pre-treatment solution should be completely exchanged.*

# 3

## **Toray Waterless CTP Plate Trouble Shooting Guide**

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## Poor reproduction of dots

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### Main Factors

#### The conditions of Processor

- a) Decrease of the ratio of Amine in the pre-treatment solution due to the long term operation of the processor.
- b) Old (Inferior) development brush

#### The conditions of Plate setter

- a) Fluctuation of the laser output conditions, like Focus, Laser intensity.

**Problem** Partial poor reproduction of dots

**Case** Partial developing / Uneven developing like the line shape in the direction of the right angle to the moving of plate.

**Cause** Decrease of the ratio of Amine in the pre-treatment solution. Lower ratio of Amine decreases the developing ability of the processor.

**Solution** Raise the temperature of the pre-treatment solution

Raise the temperature of the pre-treatment solution for 2-3 C from the current temperature. If silicone peeling occurs by this action, raise the developing speed.

**Solution** Add "AD-1" to increase the ratio of Amine, or Add the new pretreatment solution, or Renew the pre-treatment solution.

Check the ratio of Amine with the inspection liquid. If the ratio is lower than the limit, please take the above action.

**Cause** Poor developing performance of the processor.

Poor development is mainly caused by the old (inferior) development brush.

**Solution** Lower the developing speed [as an emergency measure]

Lower the developing speed but be careful not to cause silicone peeling. If the dot Reproduction is still not good enough under the condition of 80cm/min, try the following action.

**Solution** Raise the brush pressure

Checked the rubbed width of the development brush, if the brush pressure is found to be lower than the optimal condition, it is needed to be increased. The brush is needed to be changed if it is older than the guaranteed age.



*There is almost no problem by guiding the customers to control the ratio of Amine in the pre-treatment solution.*

**Problem** Uneven color of the processed plate by the banding problem of the plate setter.

**Case**

**Cause** Fluctuation of the platesetter output conditions

**Solution** Adjust the laser intensity of the platesetter

The laser intensity of the plate setter may be too low. Please contact the manufacturer and raise the laser intensity to broaden the developing latitude.

**Solution** Adjust the focus of the platesetter

The plate setter focus may not be set properly for some reasons. Please call the manufacturer for the adjustment.

**Solution** Increase the developing ability of the processor

There is a tendency that the poor development makes "banding" line clearer. Please refer to the above " Problem 1".



*a) Even though the uneven color of the plate due to the poor development might cause the problem of the printing quality, there is almost no problem found in Japan.*

*b) Other cases of the uneven color of the plate have no influence on the printing quality.*

**Problem** Defocusing

**Case**

**Cause** Hard particle on the cylinder or the back of the plate

If there is a space between the cylinder and the back of the plate when fitting the plate on the cylinder, the focus of that part will be changed which will cause blur.

**Solution** Remove the particle from the cylinder of the platesetter

If it is seen on the same plate continuously, check if there is a hard particle on the cylinder and remove it.

**Solution** Adjust the focus of the platesetter

Even a small particle may cause blur when it is out of focus. Call the plate setter manufacturer for maintenance.

**Solution** Increase the developing ability of the processor

Please refer to the above " Problem 1"



*In only case that the poor development of the processor is found, Toray takes an action to solve the problem for the customers.*

# Silicone peeling on the non-imaged areas



## Main Factors

The conditions of Plate.

- a) Long time exposure under the near- infrared ray. In spite of no problem in case of the normal exposure under the room light, it would be possible that the silicone layer peels in case of the long time( more than half a day) exposure under the room light before the development and/or the exposure under the direct sun light.
- b) Pre-treatment solution left on the plate for a long time.

The conditions of Processor.

- a) Over development due to the higher temperature of the pre-treatment solution and/or the lower speed of the development, ..... so on.

**Problem** Silicone peeling on the non-image area

**Case** The silicone peeling is found in wide area

**Cause** Over development in the processor

**Solution** Raise the development speed

Dot loss may occur for the insufficiency of brush pressure when the development speed is over \*120cm/min(TWL-KII,F ). Please try the following solutions if silicone peeling occurs as the speed of \*120cm/min.  
(\* 60cm/min:TWL-650V,F \*80cm/min:Konings)

**Solution** Lower the temperature of the pre-treatment solution

At first, please confirm that the actual temperature is same as the set up one. If OK, please lower the temperature of the pre-treatment solution around 2-3 C from the current temperature. If dot loss occurs by this action, lower the developing speed to the extent that silicone peeling does not occur.



*Even if the customers set up the temperature as 35 C, it would be possible that the temperature automatically increase due to the long time operation of the processor under the relatively higher room temperature. This is the reason why the customers in Japan is recommended to check the actual temperature of the pre-treatment solution constantly.*

**Cause** Long time exposure under the non-safe light

**Solution** Identify where the plate is being exposed, and shield the near-infrared ray of that place.



*There should be no problem under the normal room light even though the long time exposure. But, it is possible that the direct sun light could cause the problem even though short time exposure like 1 hour .*

**Cause** Process the plate more than twice

**Solution** Only one time process should be applied on the plate

There are some cases which the silicone does not peel even after more than twice process, actually. This depends on the conditions of the development, the aging conditions of the plate after its production.... so on, but one time process must be recommendable to avoid the risk.

**Case** The silicone peeling is found in the range of the fixed width.

**Cause** Slip of the transportation roller in the pre-treatment portion would make the dwelling time too long.

**Solution** After visual checking of transportation, adjust the nip pressure.



*The flesh plate just after the production can be used without the peeling problem as much as the optimal conditions of development (35C 80-100cm/min) can be kept.*

*The plate is getting stronger against the peeling according as time pass after the production. There is no problem found in Japan.*

**Problem** Silicone peeling on the non image area

**Case** The bluish spots are found and the silicone peels on those spots

**Cause** Pre-treatment solution is left on the plate surface.

**Solution** Eliminate the possibility of the adhesion of pre-treatment solution.

Please check if there are some places around the processor, which may allow the adhesion of the pre-treatment solution.



*There were a few cases that, when the customers put the interleaf paper into the plates, the solution adhered on the paper made the part of the plate turn blue.*

**Case** The silicone peeling is found by the side of the solid area.

**Cause** Slip of the transportation roller because of the over pressure.

**Solution** Adjust the pressure of the rollers to the proper condition.

In case the ability of the roller to cut the solution is decreased after the change of roller pressure, the roller is needed to be renewed.

**Cause** Tips of the fibers of the development brush can not work well because of the accumulation of the silicone waste in the brush.

**Solution** Cleaning or change of the development brush.



*This problem was found in some cases in Japan when the circulation of the developing water was often stopped.*

## Poor dyeing density on image area

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### Main Factors

#### The conditions of plate setter

- a) Higher laser power makes the dyeing density higher, normally. But, there would be some risks that the certain range of the combination of the laser power and development condition causes the scratches on the image area.

#### The conditions of processor

- a) Ability of the pre-treatment solution to develop the plate Higher ability makes the dyeing density higher, but possibly make the scratches on image areas.
- b) Density of after-treatment solution This is getting higher during the long time operation of the processor. After-treatment solution which has higher density makes the dyeing density higher, but this solution may melt the surface of the image area and it can be easily damaged by the water-washing brush.

**Problem** Scratches on image area caused by the brushes of the processor

**Case** Scratches by the brushes are remarkable on the wide solid and shadow areas.

**Cause** After dyeing on the after-treatment portion, the surface of the image areas is shaved by the water-washing brush.

**Solution** Decrease the pressure of the water-washing brush.

In this case, no scratch is found between the after-treatment portion and the water-washing portion. Please refer to " Instruction Manual" of the processor.

**Solution** Adjust the laser intensity of the plate setter.

Please try the various intensity to find the best condition to eliminate the scratch.

**Solution** In case that the quantity of the after-treatment solution is lost too much, Add water to the solution to decrease the its density, or renew it.

**J** *Scratches by the brushes on the wide solid / shadow area do not have an effect on the ink acceptance.*

*Dot-readability on the plate may not be changed because the small reading device does not take such a scratch in many cases. Due to the above reasons, there have not been many complaints from the customers in Japan.*

**Problem** Dyeing density on image area is too low

**Case** Dyeing density is very low just after the processor is started.

**Cause** Temperature of the after-treatment solution (= room temperature ) is too low.

**Solution** Raise its temperature.

Because there is no heater at the after-treatment portion of the processor, please Raise the temperature by letting the pump move solely.



*In cold places in winter, there were some experiences that the heater in the fish bowl for the tropical fish could be used effectively.*

**Case** Dyeing density is gradually decreased during the process.

**Cause** Density of the after-treatment solution is decreased by the increased water which comes from the developing portion due to the poor ability of the roller at end of development portion to cut the water.

This cause is found mainly in the customers who are not replenishing the after treatment portion with the solution frequently, compared with the replenishment of the pre-treatment portion.

**Solution** Checked the situation of roller to cut the water, adjust the nip pressure.



*Guide the customers to renew the rollers because they become thin during the long operation.*

**Cause** Lower ability to develop the plate due to the decrease of the ratio of Amine in the pre-treatment solution.

**Solution** Add "AD-1" to increase the ratio of Amine, or Add the new pre-treatment solution, or Renew the pre-treatment solution.

Checked the ratio of Amine with the inspection liquid. If the ration is lower than the limit, please take the above action.

## Scratch on non image area



### Main Factors

Scratch caused during the shipping and handing process

- a) Plate surface is damaged by the edge of the other plates.
- b) In case that the particle is stuck on the plate surface, it makes damage during the storage period if the plate is piled with other plates.

Scratch caused by Hickey Picker

- a) Hickey picker whose point is made of silicone rubber for waterless plate should be used.
- b) If the particle, like the waste of ink, is stuck on the point of hickey picker, it is possible that the plate surface is damaged.

Scratch caused by the particle stuck on the blanket.

- a) Firstly, small spot like pin-hole is found. This gradually become bigger and looks like "Crawl of Earthworm".

Scratch caused by the particle suck on the formroller of the press

- a) Particle, like the burr of aluminum or the hardened waste of ink, make the scratch on the plate in the direction of the process.
- b) There scratch are found here and there at first, and they will become one line. ( Two line can be found in case that the form roller is fluctuating in the direction of the plate width.)

**Problem** Scratch by the handling of the plate

**Case** Fine scratch like the curved line is found on the printed material

**Cause** Rubbed with the interleaf paper when plate is taken out from the carton

**Solution** Take plates from the carton with the recommendable methods

One of the recommendable methods is to open the carton like "double(hinged) door", and take the plate one by one. ( Planning to indicate the recommendable methods on the carton.)



*Because of no commercial sales of the coverfilm-less plate, there is not major problem in Japan.*

**Cause** Damaged during the shipment and storage period.

**Solution** Keep the interleaf paper between the plate.



*Guide the new customers to handle the plates carefully.*

**Cause** Damaged when the plate surface is wiped.

**Solution** Wiping cloth should be kept carefully not to make the particle stick on the cloth.

**Case** Scratch like straight line is found on the printed material just after the start of printing.

**Cause** Damaged by the Auto-Loader of plate on the press

**Solution** Identify which part of the auto-loader the scratch is made by, and protect the plate surface against that part.

Please consult with the press manufacturer regarding how to find the part making scratch and how to protect.

**J** *Asked the press manufacturer to take care of this matter, there is no major issue about the scratch caused by the press.*

**Cause** Damaged by the "Safety Bar" between the plate cylinder and the blanket cylinder.

**Solution** Identify which part of the safety bar the scratch is made by, and protect the plate surface against that part.

**J** *Hardened waste of ink on the safety bar is the main cause of the scratch. The part which has ink waster is cleaned or covered with the protection tape.*

**Cause** Damaged by the particle stuck on the point of Hickey Picker.

**Solution** Change the point of Hickey Picker to the new one made of silicone rubber.

**J** *Toray is supplying the point made of silicone rubber to the customers according to their specifications.*

**Problem** Scratch like straight line is found according as the printing is going.

**Cause** Attacked by the particle stuck on the form roller, the silicone layer of the plate is broken.

**Solution** Remove the particle after finding its position, or renew the form roller  
Particle stuck on the hickey pick-up roller is the main cause of this scratch.

**J** *Guide the customers to check the particle by making the nip pressure of the roller zero momentarily, and clean the roller constantly.*

**Case** Scratch like small spot is found on the printed material at first, and its size is going bigger during the printing.

**Cause** Attacked by the particle stuck on the blanket, the damage of plate surface become bigger by the moving of the particle.

**Solution** Find the position of the particle, and terminate the cause of the particle.

**J** *Particle on the blanket is mainly the small waste of aluminum which falls down from the plate lock up device. Guide the customers to clean the plate lock up device.*

**Problem** Scratch caused by the developing brush of the processor.

**Case** Fine and short scratch is found suddenly on the non image area.

**Cause** Damaged by the particle, like the burr of aluminum, stuck on the tip of the fiber of the development brush.

**Solution** Aging of the brush will be done, if needed.

This scratch is found on just a few plates only, and no problem after that.

**Case** Scratch is started to be found in the almost same position of the printed material, just after the development brush is changed, or a few days later.

**Cause**

Burr of the tip of the single fiber which the new development brush may have.

**Solution**

Aging of the brush

If not improved even after the aging, the brush should be used by making it turn reversely, or renewed.



*In case of the export of the processor, the aging of the brush is done and no scratch on the printed material is confirmed before its shipment to the foreign countries.*

**Cause**

Longer fiber than the standard length is still remained after the cutting of brush fibers.

**Solution**

Remove the longer fiber.

Please check the part of the brush which is located in the position related to the scratch on the plate or paper in order to find out the longer fiber.



*There were some cases that the longer fiber damaged the plate before. No problem is found now due to the inspection of the processor before the shipment.*