

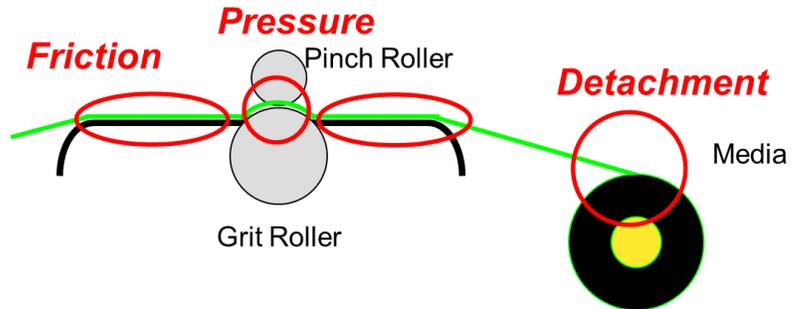
## Static Suppression on Roland Printers

This document is designed to provide an overview of how static affects print quality on Roland™ wide format printers. It will cover a detailed illustration of how static distorts print quality, how to identify and correct static inducing print environments and who to refer to for static reduction equipment. Unfortunately there is no end all solution to static; however we aim to lower the occurrences with education and proactive precautions for the most susceptible environments.

### What is Static?

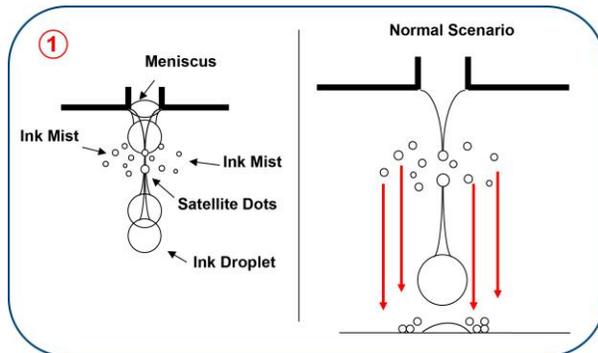
#### How Static Build Up Occurs on Printers

1. **Friction**  
Build up caused by the media traveling across the platen.
2. **Pressure**  
Build up where the media moves between the pinch and grit rollers.
3. **Detachment**  
Build up as the media is unwound off the roll.



### What Does Static do to a Printer?

#### How Static Affects Print Quality

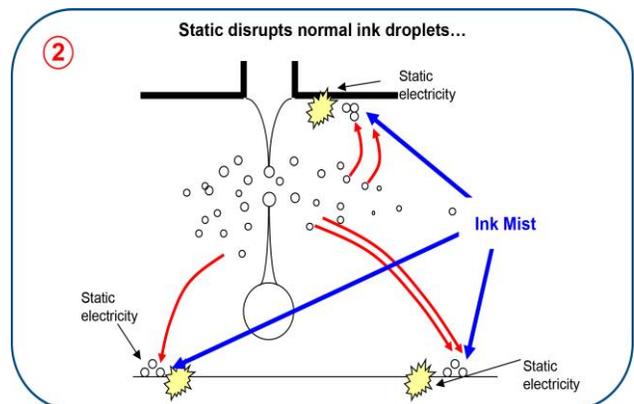


#### 1. What is ink mist?

Ink mist is a standard occurrence with inkjet printing. They are small satellite drops that form during the printing process. Under a normal print scenario, the ink mist falls directly down around the actual ink drop causing no noticeable defects to print quality.

#### 2. What does static do to ink mist?

When static electricity is introduced, it attracts the smaller ink mist satellite drops causing it to deviate from the normal fall pattern. It can stick to the print head eventually clogging nozzles and causing drop out. It can also scatter when it is attracted to locations of static on the media, away from the actual ink drop causing a blurring to the print.

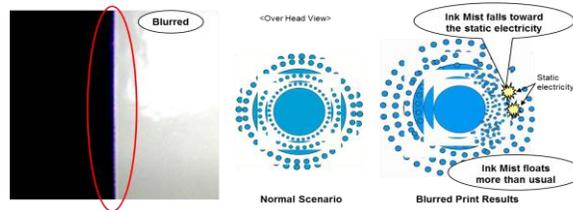


## What do Print Defects Due to Static Look Like?

### Symptoms of Print Defects Due to Static

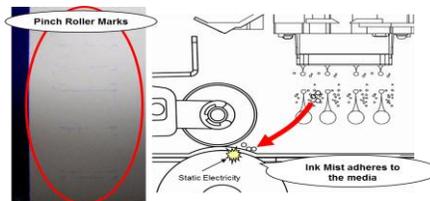
#### Blurred Printing

As mentioned in number 2 of the above section. Ink mist will float off path and land where it is attracted by a static charge. Edges will appear out of focus and soft.



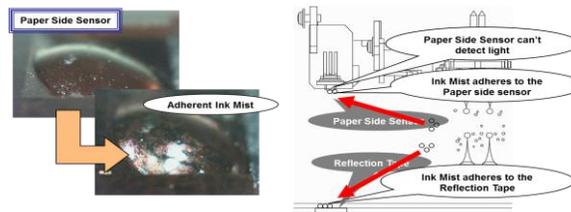
#### Pinch Roller Marks

Ink mist attracted to static charge can drift over and land on the pinch roller leaving marks on the media as it passes through.



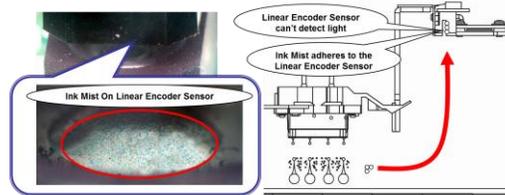
#### Side Sensor Damage

Ink mist adheres to the paper side sensor or to the reflection tape disabling the paper side sensors ability to detect light causing improper media edge detection.



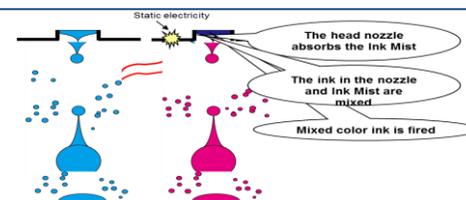
#### Linear Encoder Damage

Ink Mist adheres to the liner encoder sensor restricting the sensors ability to detect light.



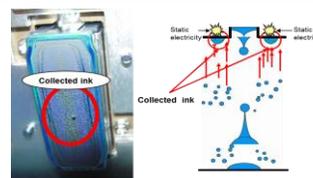
#### Cross Contamination of Printheads

Static causes the ink mist to float across and the next head absorbs the mist, mixes it with native color resulting in a mixed ink firing.



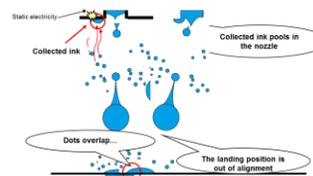
#### Printheads Composure Disrupted

Ink will fire and the mist will attract back up to static charge on the printhead. Collected ink will dry and cause printhead damage.



#### Irregular printing

Collected ink mist will pool in the nozzle and randomly drop in unselected patters causing dot overlap due to misaligned dots.



## What Causes Static?

### Three Controllable Causes of Static Build-Up

There are three main causes for static build up. Environmental issues, mechanical factors and media type all play into potential static build up. It is important to control these three factors as best as possible to help ensure static suppression.

1. **Environmental**  
Low humidity creates electrostatic generation at a hardware level.
2. **Mechanical**  
A machine that is not well grounded will not allow for static to be discharged.
3. **Media**  
Printing on a media that is prone to static build-up, either on the backer or the surface will cause a static charge.  
i.e.: 3M IJ-180C, Oracal 3651, Roland ESM-GVB

## What Can Help Prevent Static?

### 1. Create an Optimal Print Environment

Use at an ambient temperature of 20 to 32°C (68 to 90°F).

If the machine is used at an ambient temperature lower than 20°C (68°F), then depending on the type or width of the media, wrinkling or temperature-caused unevenness may occur. To obtain stable printing results, the machine should be used at an ambient temperature of 20 to 32°C (68 to 90°F).

#### Keep at a Constant Temperature and Relative Humidity

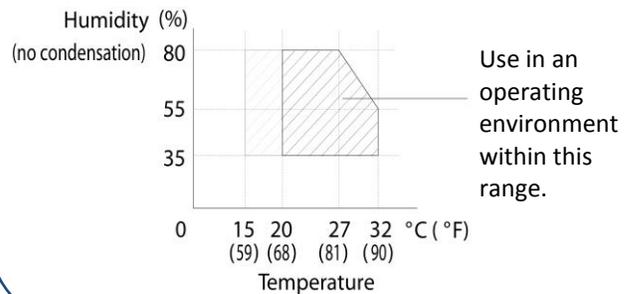
Even when the machine is not in use, keep it at a temperature of 5 to 40°C (41 to 104°F) and a relative humidity of 20 to 80% (with no condensation). Temperatures that are too high may degrade the ink and cause malfunction. Temperatures that are too low may cause the ink to freeze and damage the heads.

### 2. Properly Ground the Printer

### 3. Use Media that is Not Prone to Static

#### Optimal Operating Environment

- 25° C (77° F)
- 50% Humidity
- No Condensation



#### 4. Use Static Suppression Hardware

There are a number of static suppression companies in the market today. Two recommended companies for static suppression hardware are **Takk Industries** - [www.takk.com/](http://www.takk.com/) and **Meech** - [www.meech.com/en/products](http://www.meech.com/en/products)

There are several different ways to suppress static. Static bars, cords and brushes are some that have good results. Pictured below are some different possible configurations.



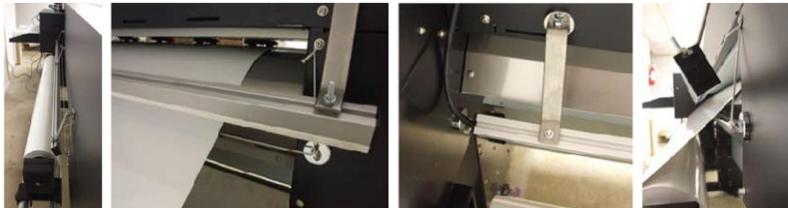
##### Static Cord

Reduces static build up on back of media or media liner caused by detachment from the roll and friction from moving across the media feed path.



##### Static Cord and Bar Combination

The cord reduces static build up on back of media release liner caused by detachment from the roll and friction from moving across the media feed path. The bar reduces static on the media surface caused by detachment.



##### Static Brush Attached to Printhead Assembly

The brush reduces static build up on the printhead assembly and prevents static travel to and from the pinch rollers, linear encoder and side sensor.

