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**Océ**  
JetStream 1000

A new level in digital  
color inkjet printing



**Service Booklet, Release 0.5**

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We continually revise and update our documentation to meet changing requirements. To help us to do this better, please let us have any suggestions for improvements to this document and any other feedback and comments you may have.  
Thank you for your cooperation.

Best regards

**Alexander Weber**

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# 1 Mechanical Data

## 1.1 Dimensions

### 1.1.1 Dimensions of the shipping crates

Unit	W (mm/in)	D (mm/in)	H (mm/in)	Weight (kg/lb)
Unwinder	1790	1480	1890	1816
Inkjet Unit	2840	2280	2550	5980
Rewinder	1790	1480	1900	1725
GS Control Box (Input side)	1880	1200	2540	785
GS Control Box (Output side)	1880	1200	2540	681
Ink Supply Unit	1490	930	1320	355
Still Picture Unit	1780	1000	2390	675
Chiller Unit	980	870	1330	197
Starter Kit	1240	1230	1330	301
Steps 1	2280	1230	1490	741
Steps 2	2270	1180	1310	166
Miscellaneous	1760	1160	1390	349

### 1.1.2 Dimensions unpacked and ready for installation

<b>Unit</b>	<b>W (mm/in)</b>	<b>D (mm/in)</b>	<b>H (mm/in)</b>	<b>Weight (kg/lb)</b>
Unwinder	1250	1945	1520	1650
Step Unit	825	1159	305	105
Print Tower	1700	2595	2200	5200
Step Unit	843	1159	305	160
Rewinder	1250	1495	1520	1650
GS Control Box	800	800	2200	500
GS Control Box	800	800	2200	440
Chiller	510	550	1012	100
Ink supply unit	1200	648	1080	268

### 1.1.3 Service Areas

<b>Dimension</b>	<b>500<sup>1) 2)</sup></b>	<b>1000<sup>1) 2)</sup></b>
Length	10000	10000
Width	6000	6000
Height	3000	3000

1) Approximately values

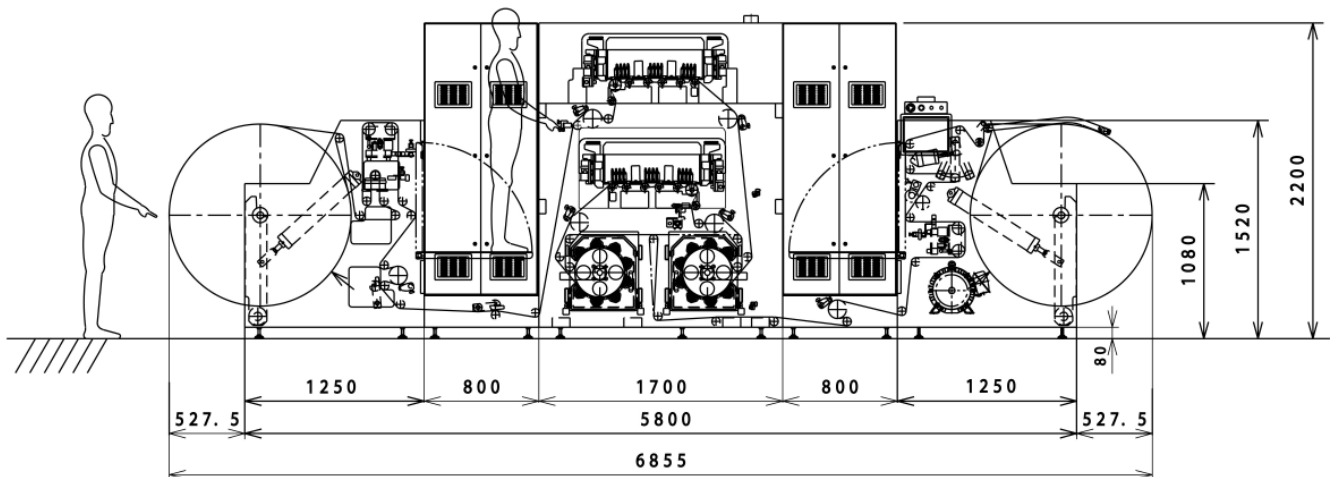
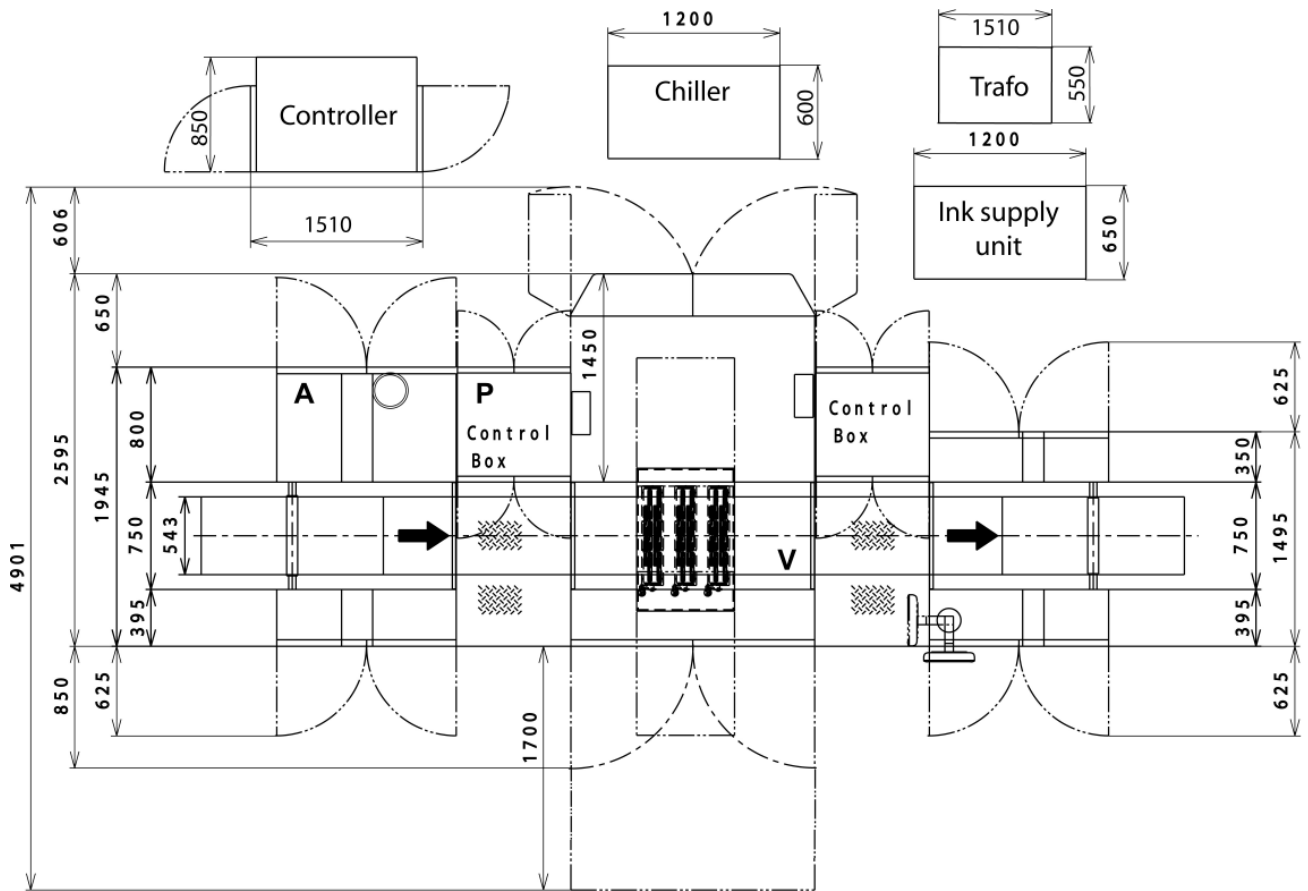
2) Without pre and post processing units

## 1.1.4 Dimensions of units including pre and post processing



### 1.1.5 Dimensions of JetStream 500/1000

Dimensions are in mm.



**P** = Power connection point

**V** = Vent points

**A** = Air connection point

## 1.2 Floor Loading

Overall loading of the floor occupied by the device shall not exceed **?** N/m<sup>2</sup>

## 1.3 Weight per Levelling Pad

Loading of a floor tile (500x500 mm or 600x600mm) of a false floor shall not exceed 7500N. The print engine is standing on levelling pads distributing the weight of the engine. The loading of the levelling pads is estimated as follows.

Levelling pad	Loading (lb)	Loading (kg)
Unwinder with Paper	1124	510
Print Tower	1581	717
Rewinder with Paper	1248	566

## 2 Environmental conditions

### 2.1 Operating Environment

The following table details the permissible environmental conditions:

Parameter	Unit	maximum conditions	recommended conditions
ambient temperature	°C	16 - 29	18 - 24
relative humidity (non condensing)	%	30 - 80	30 - 80

### 2.2 Noise Emissions

In the standard roll-to-roll configuration, the print system shall not generate a noise level in excess of 75 db(A) when measured at a distance of 1 meter. The measurement shall be performed according to standard ISO 7779.

### 2.3 Climate Control

We recommend air conditioning to maintain a 3K2 (general office) environment according to standard EN 60721-3-3.

The room environment needs to be able to remove 80% of the machine heat output, coupled with air conditioning to cope with the remaining 20%. The air conditioner shall be capable of bringing in 20% fresh air.

### 2.4 Venting

- Diameter of exhaust connection is 100mm.
- Exhaust to outside, all venting shall be rated for 180 °C minimum.
- First 10 meters of ducting, no fan is required, each additional 10 meter length will require a fan rated for the temperatures and 460 CFM (13 m<sup>3</sup>/min) (1 CFM = 1 ft<sup>3</sup>/min).
- Additional 10 meter duct length will require additional fans of same CFM
- All ducts must be isolated to protect against burn.

#### **Notice:**

The installation or operation of one or more printing machines may demand to observe obligations to obtain a permit according to the local emissions control or local building law. If such permission is required depends particularly on what kind of constructional or technical environment the printing machines shall operate and shall therefore be verified locally by the operator in collaboration with the competent authorities.

### 3 Electrical requirements

#### 3.1 Power Supply Cable

All connections to the Océ JetStream printing system are direct connect (hard wired). The customer is responsible for supplying power to the JetStream, to the transformer and then from the transformer to the JetStream EMC/Power Control panel. Accessible Primary disconnects are recommended but all installations should conform to local electrical codes.

#### 3.2 Supply Voltages and Frequencies

The JetStream print system has been designed for three-phase electrical power supply with 230/400 V (Europe), 208V/480V (US), 200V (Japan) voltage.

Voltage	Frequency	Region
230/400 ± 10 %	50 Hz ± 1 Hz	Europe
208 V ± 10 %	60 Hz ± 1 Hz	USA
200 V ± 10 %	50 Hz ± 1 Hz	Japan
200 V ± 10 %	60 Hz ± 1 Hz	
220 V ± 10 %	50 Hz ± 1 Hz	
220 V ± 10 %	60 Hz ± 1 Hz	
220/380 V ± 10 %	50 Hz ± 1 Hz	Far East South America
240/415 V +6/-10 %	50 Hz ± 1 Hz	
220 ± 10 %	60 Hz ± 1 Hz	

The distortion factor of the power supply voltage shall not exceed 5%.

A complete dropdown (100%) of the supply voltage shall not persist for more than 10 ms.

### 3.3 JetStream 500/1000 Europe (400 V / 50Hz)

#### Connecting power:

Separate power supplies for Controller and Printer are needed.

#### Controller:

Input: 400V, 3 Phases, N, SE

Circuit breaker: 16A

Cable: 5x 2,5mm<sup>2</sup>

#### Printer:

Printer is connected via Transformer.

Input Transformer: 400V, 3 Phases, SE

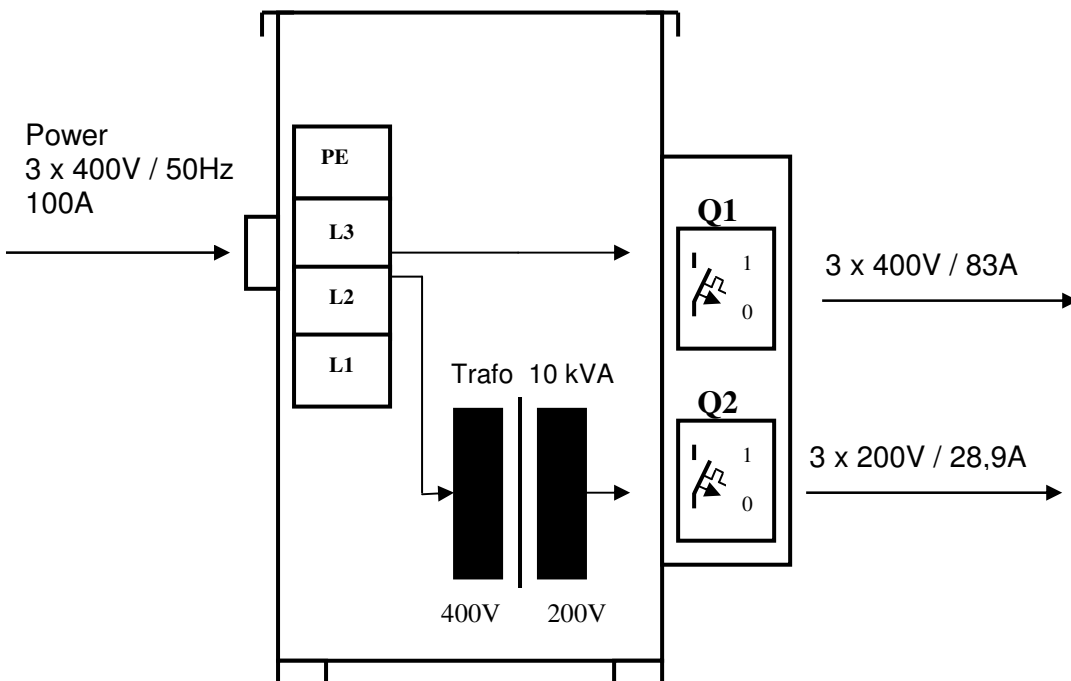
Circuit breaker: 100A

Cable: 4x 35mm<sup>2</sup>

Q1 to Printer (400V): Cable 4x 35mm<sup>2</sup>, max. Length 30m

Q2 to Printer (200V): Cable 4x 4mm<sup>2</sup>

#### Transformer: V29842-B45-V4



#### Average power idle mode:

#### Average power during printing:

#### Heat dissipation (BTU/hour):

Room: 184.079 BTU/h

Exhaust: 131.036 BTU/h

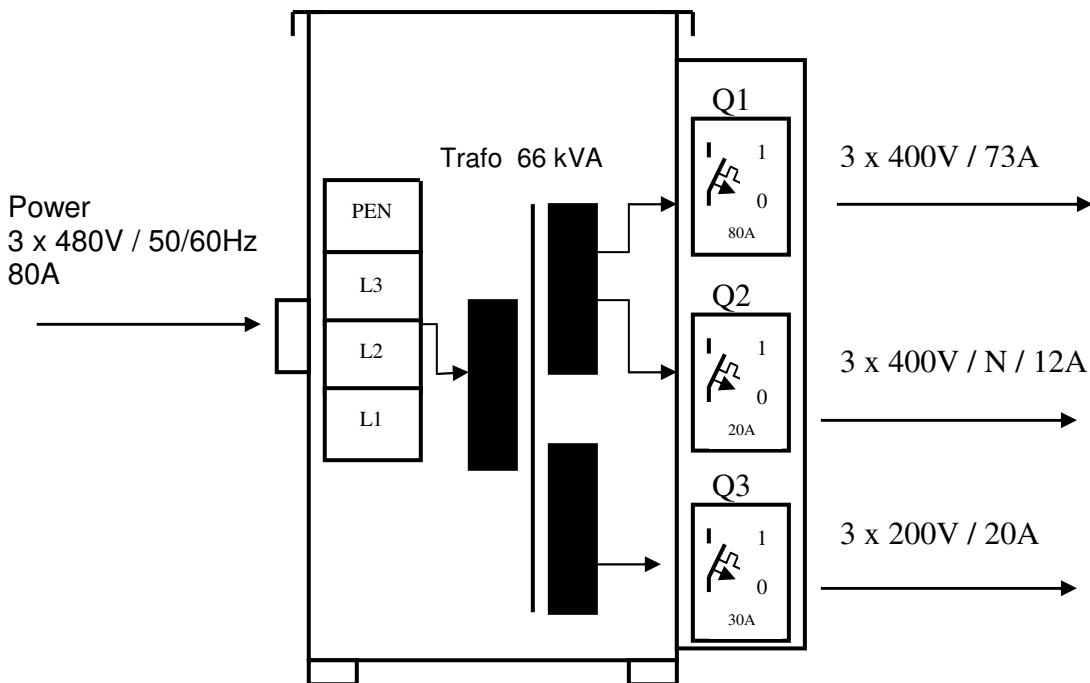
### 3.4 JetStream 500/1000 USA (480 V / 60Hz)

#### Connecting power:

Printer and Controller are connected via Transformer.

Input Transformer: 480V, 3 Phases, SE  
Circuit breaker: 80A  
Cable: 4 x AWG 2 (35mm<sup>2</sup>)  
Q1 to Printer (400V): Cable 4 x AWG 4 (25mm<sup>2</sup>), max. Length 30m  
Q2 to Controller (400V): Cable 5 x AWG 14 (2,5mm<sup>2</sup>), 3 Phases, **N**, SE  
Q3 to Printer (200V): Cable 4 x AWG 10 (6mm<sup>2</sup>), also possible is AWG 8 (10mm<sup>2</sup>)

#### Transformer: V29842-B45-V5



**Average power idle mode:**

**Average power during printing:**

**Heat dissipation (BTU/hour):**

Room: 184.079 BTU/h

Exhaust: 131.036 BTU/h

## 4 Air supply JetStream 500/1000

Dedicated air supply for constant supply of 0,7 MPa and 148 L/min. air flow.

Recommended compressor with a capacity of 3.7 kW and 430 L/min.

## 5 Remote Connection

An ADSL connection is required for remote service purposes. The minimum configuration is:

- DSL 6000 Connection: 6016 kbit/s Downstream / 576 kbit/s Upstream

The recommended configuration is:

- DSL16000 = 16000kbit/s Downstream / 1024 kbit/s Upstream

provided by the customer. The provider package must contain the physical connection, the Splitter and the DSL modem as well as the connection data, preferably with flat rate. Océ will provide the DSL-Router / VPN-Gateway (Océ/Elink 458)

LAN-Modem/Switch	V29842-B17-V3	2100037819
ELINK458OCE/OCE ROUTER	V29842-B17-V4	2100037948

## 6 Industrial Sink

The customer is responsible for providing an industrial sink to be used for Operator and FE cleaning functions. Cold and hot water has to be available.

## 7 Performance Data

### 7.1 Definitions

**Form:**

Defined as one piece of paper between two consecutive perforations or (if no perforations are used) between two form marks. A form does not define a specific number of Images or a specific geometrical size. A form can be printed on only one side or on both sides and each side can be printed with 1 or more Images.

**Image:**

An Image is one printed area on the paper. It can be printed in black-and-white or in colour. The term Image should always be accompanied by a designation of its format (e.g. "A4" or "Letter").

**Plane:**

After colour separation a full colour Image is split up in colour planes. The planes have the same dimensions as the Image, but only one colour.

**Click:**

Whenever 12 inches length of paper have been printed (regardless of the print width or the size of the images printed on it) the Click counter advances by one per print tower.



## 7.2 JetStream 500

Parameter		Unit	JetStream 500
Process Speed		m/min	75
maximum throughput 2 x DIN A4 portrait (two up) simplex		Images/min	505
maximum throughput 2 x Letter portrait (two up) simplex		Images/min	537
Dot raster		dpi	600
Droplet sizes (75 m/min)		pl	7, 8, 9, 10, 11, 12
Droplet size modulation		# sizes	2 <sup>1)</sup> or 4 <sup>2)</sup>
Paper width standard		mm	521
		inch	20.5
Image width standard		mm	516
		inch	20.3
Paper weights	normal	g/m <sup>2</sup>	64 -157
Printing past perforation			Yes
Paper drying			IR heated drums
Controller			SRA-MP
Average Print Volume per month	A4 Images		5 - 12
	12 inch Clicks		2.5 – 6

### Notes:

- 1) can be printed at rated speed
- 2) subject to successful completion of Océ test procedures, may require reduction of printer speed or compromise output quality

### 7.3 JetStream 1000

Parameter		Unit	JetStream 1000
Process Speed		m/min	75
maximum throughput 2 x DIN A4 portrait (two up) simplex		Images/min	1010
maximum throughput 2 x Letter portrait (two up) simplex		Images/min	1074
Dot raster		dpi	600 x 600
Droplet sizes (75 m/min)		pl	7, 8, 9, 10, 11, 12
Droplet size modulation		# sizes	2 <sup>1)</sup> or 4 <sup>2)</sup>
Paper width standard		mm	521
		inch	20.5
Image width standard		mm	516
		inch	20.3
Paper weights	normal	g/m <sup>2</sup>	64 -157
Printing past perforation			Yes
Paper drying			IR heated drums
Controller			SRA-MP
Average Print Volume per month	A4 Images		10 – 24
	12 inch Clicks		5 – 12

**Notes:**

- 1) can be printed at rated speed
- 2) subject to successful completion of Océ test procedures, may require reduction of printer speed or compromise output quality

## 7.4 Utilization

### 7.4.1 Average Utilization

Figure	Unit	JetStream 500	JetStream 1000
Paper movement	ft / month		
Paper movement	clicks / month		
Power-on time	hrs / day		
Power-on time	hrs / year		
Print-time	hrs/day		
Print time	hrs/year		

### 7.4.2 Rated Maximum Utilization

Figure	Unit	JetStream 500	JetStream 1000
Paper movement	ft / month		
Paper movement	clicks / month		
Power-on time	hrs / day		
Power-on time	hrs / year		
Print-time	hrs/day		
Print time	hrs/year		

## 7.5 Coverage

Below table shows the maximum ink coverage per page at different droplet sizes and speeds. Please note that the figures show the maximum coverage per print head module.

	<b>50 mpm</b>	<b>75 mpm</b>
<b>7pl</b>	100%	86%
<b>8pl</b>	100%	75%
<b>9pl</b>	100%	67%
<b>10pl</b>	90%	60%
<b>11pl</b>	82%	55%
<b>12pl</b>	75%	50%

## **8 Options**

### ***8.1 Core shafts sizes***

The unwinder and rewinder supports the same core sizes.

- 70 mm
- 3 inch
- 5 inch
- 6 inch

### ***8.2 Pre – and post processing units***

## 9 Conditions for an acceptance test

- Before the acceptance test proceeds the defined maintenance tasks are to be performed by Océ service.  
The system must be available for Océ to perform the tasks.
- The duration of the test should be 8 hours without interruption.
- One to four customer applications are to be printed.  
The applications must be handed over to Océ in advance for testing (if possible for the staging phase).
- Max. of two different paper types are to be printed. The paper types must be handed over to Océ in advance for testing.
- The operating is performed by an Océ service technician.
- The test is performed like a normal production. E.g. no special stress tests or interruptions.
- A technical availability of 90% must be reached.

## **10 Operating Training**

### ***10.1 Course Name***

Tbd.

### ***10.2 Requirements***

## **11 Service Training**

Tbd.

## **12 Maintenance**

### ***12.1 Operating maintenance***

Tbd.

### ***12.2 Service maintenance***

Tbd.



## **13 Expendables**

The expendables

Tbd.

# 14 Suggested JetStream Module Failure Criteria

## 14.1 Definitions

**Inkjet Head** Each inkjet head is used for printing one colour onto the full paper width. An inkjet head contains 10 inkjet modules.

**Inkjet Module** Each inkjet module prints with 600 dpi resolution across the paper direction. Two of these modules print approximately 1/5 of the print width. Each of these 2 modules print alternating lines in the direction of paper motion.

**Jet** An individual orifice in the inkjet module of which there are 600 per inch.

## 14.2 Background

The JetStream engine consists of 1 or 2 inkjet towers depending on print width and duplicity. The common field replaceable unit determining print quality with respect to missing, misdirected, or streaming jets is the inkjet module. There are a total of 40 of these modules in each tower, 10 per colour. Imaging in the JetStream occurs as the paper passes under the inkjet heads and the individual jets in each module are energized to release droplets of ink.

Imaging resolution is determined by several factors. Resolution orthogonal to the paper motion is intrinsically determined by the number of orifices per inch in the inkjet module itself. Resolution parallel to paper direct is somewhat more complex as it is determined by several factors. First is the firing frequency the physical number of inkjet modules. These coupled with the paper speed as it passes under the inkjet head determine the resolution in the paper motion direction according to the following equation:

$$\text{DPI} = \text{Number of alternating inkjet modules} * \text{Firing frequency (Hz)} / \text{paper speed (inches / sec)}$$

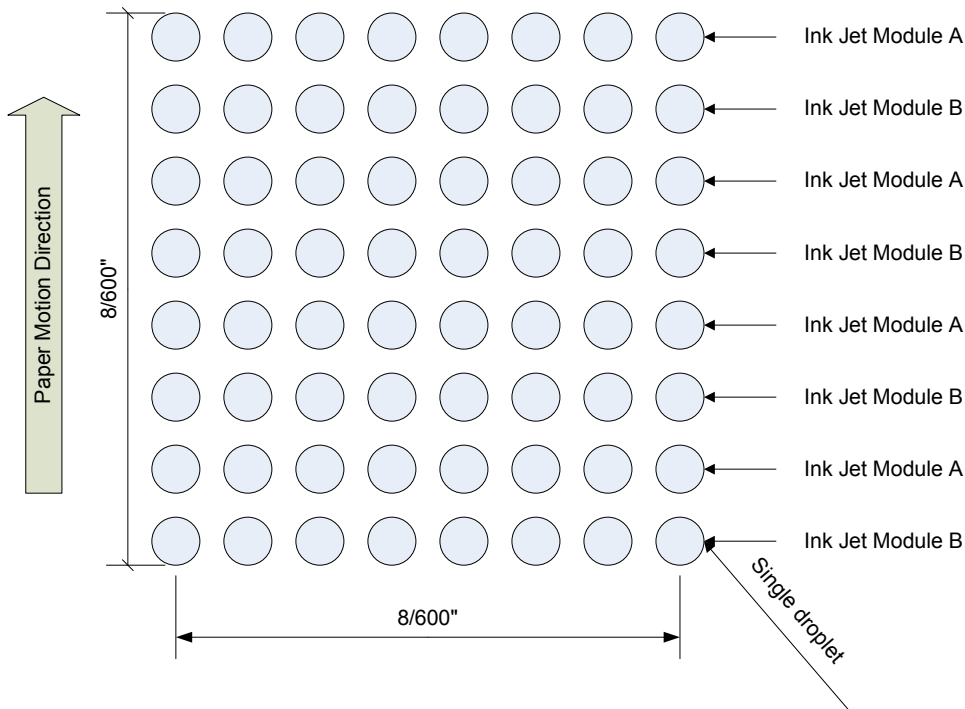
Or in the case of JS1100/2200

$$\text{DPI} = 2 * 30,000 \text{ (Hz)} / 100 \text{ (in/sec)} = 600 \text{ dpi}$$

It is critical to understand how an image is created in the JetStream in order to reasonably understand an inkjet module malfunction and its expected effect on image quality. Each inkjet orifice as determined by resolution is only utilized for every other dot in one 1/600 of an inch line, for an individual colour as the image is printed (see diagram below). Based on this understanding, a single missing or misdirected jet would have only a minor impact on print quality.

### 14.3 Single colour plane image microscopic view of 1/75 inch

## Single Color Plane



### 14.4 Failed Inkjet Module determination

An inkjet head will be determined to be defective and in need of replacement if one of the following conditions is met.

- 1) 3 adjacent jets are continuously misdirected or missing permanently. Misdirected is defined as a whole ink drop that is displaced from its proper centerline by more than 1/300 of an inch. Permanently is determined by a malfunction that is not remediated by 5 purge cycles or other service actions.
- 2) More than 5 % of the jets within a head module are continuously misdirected or missing permanently. Misdirected is defined as a whole ink drop that is displaced from its proper centerline by more than 1/300 of an inch. Permanently is determined by a malfunction that is not remediated by several purge cycles or other service actions.
- 3) A single jet, that is streaming continuously and is not remediated by 5 purge cycles or other service actions performed.

## 15 Paper

### 15.1 Paper Types

#### 15.1.1 Commodity Papers

Commodity Papers or standard papers are produced for conventional offset or digital printing. They do not necessarily have inkjet properties.

They are ideal for black-and-white printing, but printing with CustomTone or full-colour printing is also possible. The print quality is limited to lower requirements.

#### 15.1.2 Treated Papers

Treated Papers have inkjet properties. The costs of acquisition are about 1,1 to 1,5 times higher compared to Commodity Papers.

They provide an excellent print quality cost-performance ratio and are ideal when using variable colour images.

Furthermore they provide better properties regarding water resistance, wet cockling, curl and ink adhesion.

#### 15.1.3 Coated Papers

Coated Papers allow very high print quality to be achieved. The costs of acquisitions are about 2 to 2.5 times higher compared to Commodity Papers.

#### 15.1.4 Special Papers

Special Papers are made in general for special products, e.g. light-weight newsprint paper, high-volume book print paper as well as glossy coated photo paper.

They might have no inkjet properties, but might also be of treated or coated quality.

#### 15.1.5 Paper for adjustments

Paper for alignment and print quality adjustments can be ordered in Poing.

**Paper:** Mitsubishi DL9084 520mm (20.5 inch)

70mm core: V29898-B835-V4      2100042939

3" core:      V29898-B835-V5

6" core:      V29898-B835-V6

### 15.2 Paper Specification

The detailed paper requirements are specified in the paper specification for the JetStream.

- Order No. English: A29249-X6-X-1-7659
- Order No. German: A29249-X6-X-1-59

## 16 User documentation

In the order number, “Version” stands for the relevant version of the document, and “Language” for the language code required for the order.

A29246-X32-X-Version-Language

User documentation is available in following languages:

Language	Order number
German	
Italian	
Slovakian	
Spanish	
English US	