

For customer

**HITACHI**  
Inspire the Next



**INK JET PRINTER FOR INDUSTRIAL MARKING**

# HITACHI Printer

## Handling Guidance and Precautions for Ink



- ◆ Please read SDS(Safety Data Sheet) of purchased ink and makeup.
- ◆ Before using IJ printer, please read following precautions for stable operation.
- ◆ Please refer "Basic Operation Manual", "Instruction Manual" and "Technical Manual" also.

|  |   |
|--|---|
|  <b>WARNING</b> | WARNING is used to indicate the presence of a hazard which may cause severe personal injury or death if the warning against performing an incorrect handling procedure is ignored.    |
|  <b>CAUTION</b> | CAUTION is used to indicate the presence of a hazard which may cause personal injury or property damage if the warning against performing an incorrect handling procedure is ignored. |

Version; W5.03

## Basic Precautions

[ i ]

### Precautions of Storage

- (1) Please read SDS(Safety Data Sheet) of purchased ink and makeup.
- (2) Store inks and makeups in the cold dark place (0 to 20°C ).(Please store them in the same way regardless before and after opening cartridge/bottle.)
- (3) There is an opening deadline for inks and makeups. Please fill them into the IJ printer before the "Expiration date" described on the cartridge/bottle. ("Expiration date" means "Opening deadline".)
- (4) Once the cartridge/bottle is opened, even if it is stored in a cold dark place, the ink begins to deteriorate in the same manner as the ink in the printer. If "Ink Replacement Cycle" base on guideline have passed, dispose the ink.

[Note] Regarding to (3) and (4), please see detail on following "[v] Guideline for the "Ink Replacement Cycle" and applicable makeup" .



#### WARNING

Do not drain the ink or makeup waste solution into public sewer systems or elsewhere. Waste disposal must comply with all appropriate regulations. Have the used wiping papers and the empty container disposed by an industrial waste processor. Consult the appropriate regulatory agency for further information.

[ ii ]

### Consideration of "Air purge" Install

Depend on usage environment, air purge is necessary. Below is the conditions under which air purge is required.(\*1).

- (1) When the printer is used in a high-humidity environment, such as a beverage can or beer can line (Perform air purge when using it in the 85 % RH or higher humidity environment.)
- (2) When a water drainage blow sequence is performed before printing.
- (3) When you use the printer in an environment with a lot of paper powder or dust.
- (4) When the end of the print head becomes dirty because the distance between the print head and the target is too close and ink splashing occurs.
- (5) When you use the ink for which the need for air purge is described in the handling guidance of each ink.

[Note] Depending on the ink, "Air purge" is required regardless of the usage environment.  
On the contrary, there is case installing is not available. Please see "Precautions for each ink".

(\*1) UX2/UX/RX2 : [Technical Manual] 3.1 Print head air purge

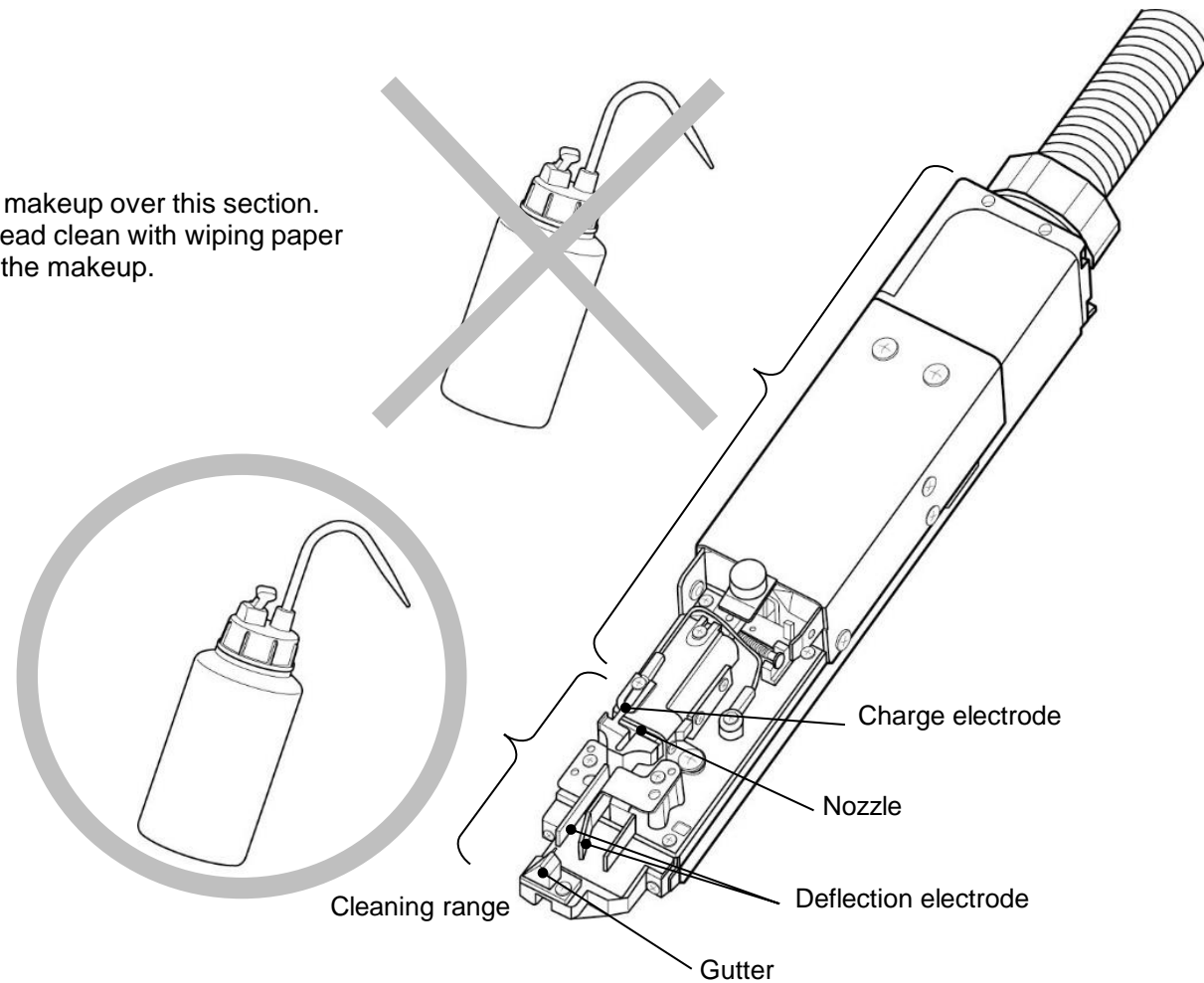
[ iii ]

## Print Head Cleaning

Take the following precautions when cleaning ink from around the nozzle.

- (1) Face the end of the print head downward and pour makeup onto the dirty part and clean while catching the makeup in a beaker.

Do not pour the makeup over this section.  
Wipe the print head clean with wiping paper dampened with the makeup.



\*This figure is an image of UX2 series. There are some difference between UX2 and UX/RX2, but basic structure is same.

- (2) After cleaning, thoroughly wipe the print head with wiping paper and allow it to dry.
  - Thoroughly dry the nozzle orifice, charge electrode, deflection electrode, and mounting base and fringe of the gutter. Make sure that the parts are sufficiently dry before starting the next operation. If operated while wet, the printer will not start normally.
  - While the print head is wet, do not orient its end upward.
- (3) Do not immerse the print head in the makeup.
- (4) When printing is frequently performed or the distance between the print material and the print head is short, ink splashes may stain the end of the print head and the print head cover. If this condition is left unresolved, the staining will be worse, resulting in a print error or emergency stop. If a print error or emergency stop frequently occurs due to staining caused by ink splashes, stop the operation in progress and clean the end of the print head (around the nozzle, charge electrode, deflection electrode, mounting base and gutter) and the print head cover. Perform this operation in addition to the cleaning at the end of each day's work.

Air purging of the print head is effective against staining due to ink splashing. See the "Print head air purge(\*1)".

(\*1) UX2/UX/RX2 : [Technical Manual] 3.1 Print head air purge

[ iv ]

## Gutter Cleaning

This unit collects ink from the gutter. At the same time, it sucks in atmospheric gas, dust, and other matter from the air. If these substances are mixed with the ink in the gutter, undissolved components in the ink or makeup may stick to the gutter. If the unit runs for a long time without the gutter being cleaned, these components will gradually accumulate in the gutter. This, together with the ink coming into contact with it, may cause an error stemming from a dirty head.

If this fault occurs, perform the following actions (1) and (2):

- (1) Clean the gutter and its perimeters with makeup periodically.
- (2) See the procedures described in the Technical Manual "Cleaning the Gutter(\*1)" to clean the gutter and the ink recovery route.

If the above actions (1) and (2) do not solve the issue, contact your nearest distributor.

(\*1) UX2 : [Technical manual] 5.6 Cleaning Gutter

UX/RX2: [Technical manual] 6.6 Cleaning the Gutter

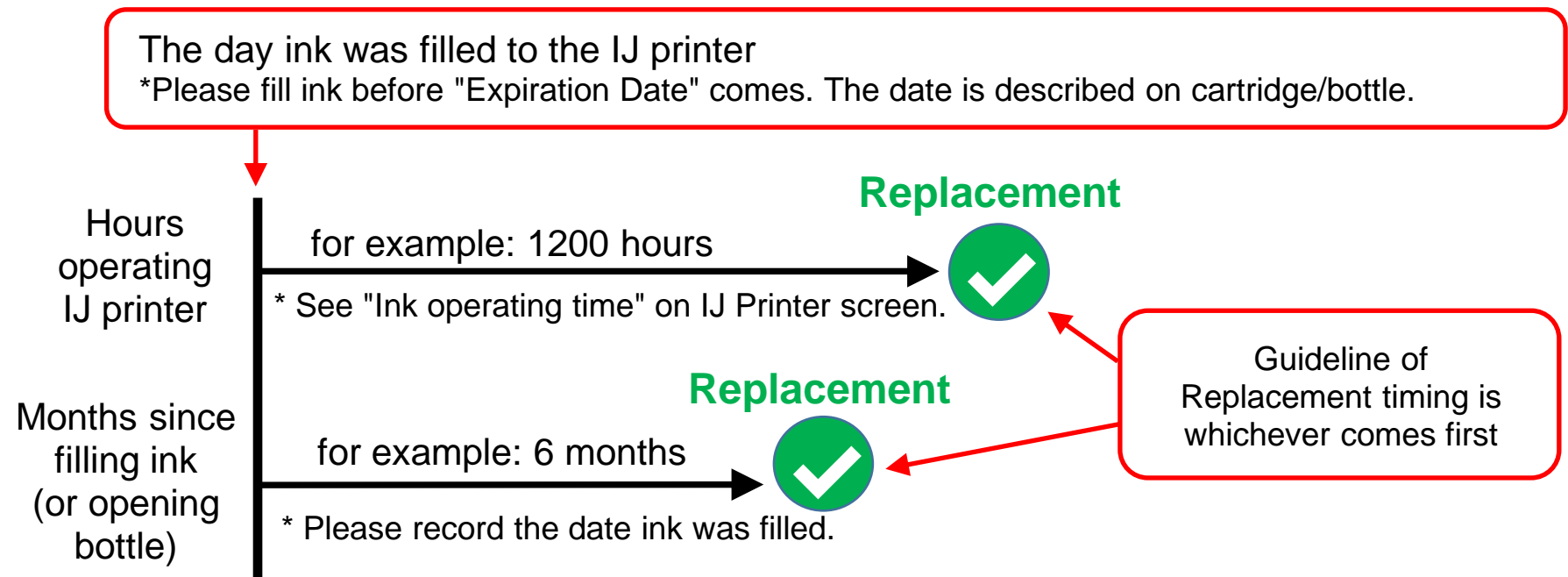
**[ v ] Guideline for the "Ink Replacement Cycle"**

While the IJ printer ink circulates for operations, it reacts with atmospheric air elements and deteriorates with time. Therefore, it needs periodic replacement. Each ink has several guideline for the ink replacement cycle. Also, since the proper replacement intervals vary with the printer operating environmental conditions (temperature, humidity, dust, etc.). Please determine the best replacement cycle in accordance with the obtained printing results, and replace all ink in the printer with new ink.

[Note] The makeup must be filled to the printer within one year after opening the cartridge.  
 Note that basically the makeup filled to the printer needs no replacement.

(\*1) UX2 : [Technical Manual] 5.3 Replacing the ink  
 UX/RX2: [Technical Manual] 6.3 Replacing the ink

**[Guideline for ink replacement timing]**



**[Remark] "Hours operating on IJ printer" and "Months since filling ink" are depend on Ink model. Please refer to the attached document for each ink.**

**[ vi ] Stoppable Period and Long-term Shutdown**

If the IJ printer is not operated on regular basis, ink may stick in circulation system. If it sticks, error such as ink not ejecting and ink can not be recovered are occur. To prevent these issues, refer to "IJ printer Stoppable period (\*1)", and operate IJ printer (eject ink from the nozzle) on a regular basis. The period that can be stopped depends on the storage temperature. Also, please note that the period may be shorter dramatically depending on the usage environment(\*2).

In case of long period shut down more than the term shown in "Stoppable period and Long-term shutdown", to operate "Long-term shutdown" is necessary. This long-term shutdown prevents sticking by draining the ink in the IJ printer and filling makeup (solvent) instead. Dedicated operation is required even when restarting. Please refer to the [Technical Manual (\* 3)] for details of the operation.

(\*1) Maximum period possible to be continuously shut down without operation. it is necessary to operate it at least once during this period.

(\*2) Please note that the ink may harden within a week if it is stored at 45 ° C or higher.

- (\*3) UX2 : [Technical manual] 6.16 Long-term shutdown
- UX/RX2 : [Technical manual] 6.16 Long-term shutdown
- UX(Twin nozzle) : [Technical manual] 6.15 Long-term shutdown
- UX-P : [Technical manual] 6.15 Long-term shutdown
- RX2 : [Technical manual] 6.14 Long-term shutdown

#NAME?

**⚠ CAUTION**

Since "Perform long-term shutdown storage work" requires special work, it is recommended to contact your local distributor and ask for the work.

**[Remark] "Days printer can be stopped" depend on Ink model. Please refer to the attached document for each ink.**

[ vii ]

## Required Operating Minimum Hours to Prevent Ink Viscosity Decrease

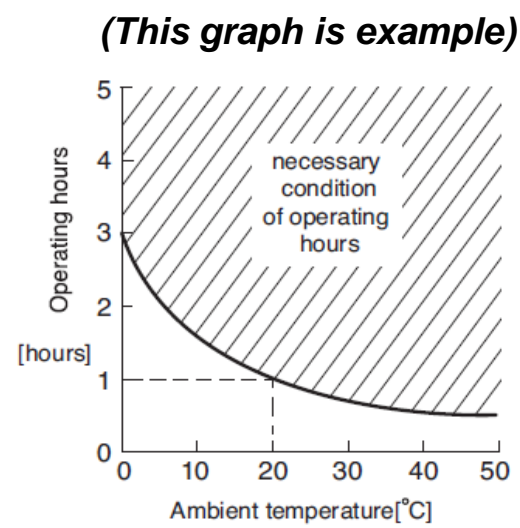
Following is precautions when repeating operation start and stop.

The IJ printer automatically cleans the circulation system with makeup (solvent) when stopped to prevent ink from sticking. At this time, the amount of solvent in the ink tank increases and the ink viscosity decreases. On the other hand, when the IJ printer is operated, the ink viscosity is automatically adjusted for stable operation. However, if the main tank is filled with a large amount of solvent by repeating "shutdown (automatic cleaning) in a short time", the ink viscosity may not be controlled normally. To prevent this, operate for a certain period of time (eject ink from nozzle) after starting operation. The required operating time depends on the ambient temperature and ink model.

[Note] For stable operation, limit the number of times "Shutdown" to be performed to two at a time.

### [ For example ]

The table on the right showing the minimum required operating time is an example. In this case, if IJ printer is running under 20 °C ambient temperature, the required operating minimum hours is around 1 hour, after starting operation.



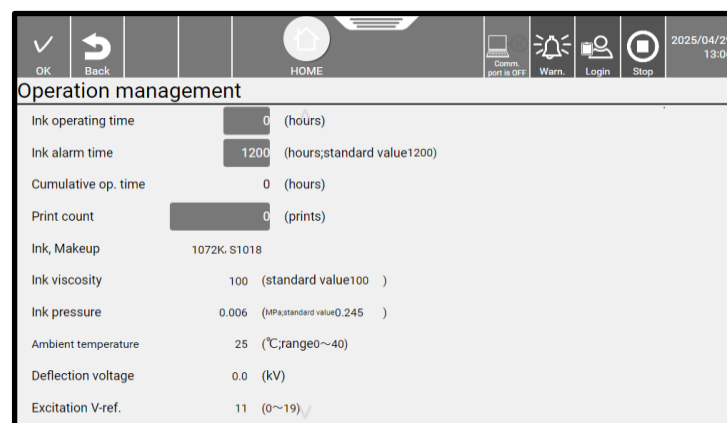
**[Remark] "Required operating minimum hours" depend on Ink model. Please refer to the attached document for each ink.**

## Supplementary Information

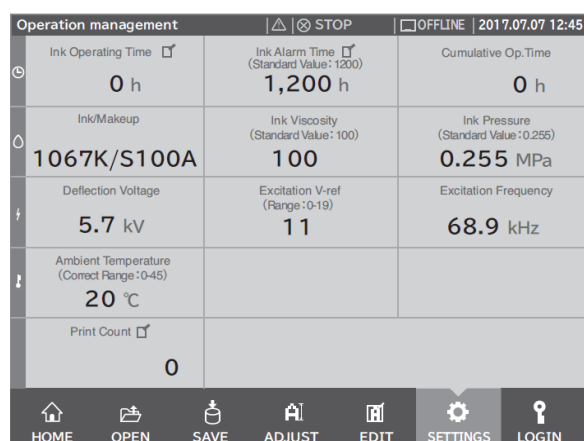
In case of using "Rotary encoder" in order to match production speed and printing speed, "Excitation frequency" information is necessary(\*1). This value depends on ink model, nozzle size and setting. Please see "Operating management" screen, and confirm the value of excitation frequency. In addition, applicable makeup and other information are shown also on the screen.

(\*1) UX2 [Technical Manual] 4.3.2 Speed Matching Function Using Rotary Encoder

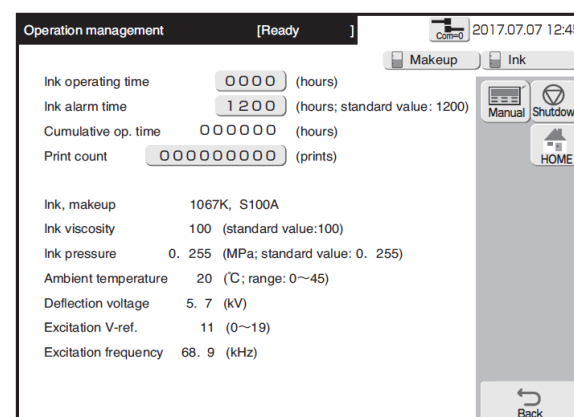
UX/RX2 [Technical Manual] 4.3.2-3 Method of calculating the conditions which allow product speed matching



UX2 style screen



UX/RX2 style screen



Classic style screen

### Precautions (Basic precautions)

Note

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## Attachment for "Basic Precautions"

Detailed values for the following notes described in the main document depend on ink. Please refer to the contents described in the table of this document and use IJ printer and ink. Applicable makeup for each ink is described also.

- [ v ] Guideline for the "Ink replacement cycle"
- [ vi ] Stoppable period and Long-term shutdown
- [ vii ] Required operating minimum hours to prevent ink viscosity decrease

※ Depending on the ink, there may be special precautions. In this case, please see "Precaution for each ink" also.

### Value of "Basic precautions [v], [vi] and [vii]" for each ink

#### 2410E

|                   |       |              |                   |
|-------------------|-------|--------------|-------------------|
| Applicable Makeup | S2410 | Base solvent | Ethanol & Acetone |
|-------------------|-------|--------------|-------------------|

#### [ v ] Guideline for the "Ink replacement cycle"

Guideline of replacement timing to new ink is the earlier of the following.

| Hours operating on IJ printer | Months since filling ink (or opening bottle) |
|-------------------------------|--|
| 300 - 600 hours               | 3 months                                     |

#### [ vi ] Stoppable period and Long-term shutdown

Guidelines for stoppable period (Days printer can be stopped)

| Storage temperature         | 0-35°C  | 35-40°C | 40-45°C |
|-----------------------------|---------|---------|---------|
| Days printer can be stopped | 21 days | 14 days | 7 days  |

#### [ vii ] Required operating minimum hours to prevent ink viscosity decrease

Please operate IJ printer for at least following hours per start-up of IJ printer.

|                           | For single nozzle | For Twin nozzle ((UX-D860J/W)) |
|---------------------------|-------------------|--------------------------------|
| Estimated operating hours |                   |                                |

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## Precautions for each ink

Following items are precautions for each ink. In order to prevent errors, please be sure to check following matters before installing. In addition, please see "Basic Precautions" also.

| Precaution Number | Precautions for ink <a href="#">2410E</a> |
|-------------------|---|
|-------------------|---|

|            |  |                          |
|------------|--|--------------------------|
| <b>A01</b> | <b>Installing air purge is required</b>  |                          |
| Detail     | It is required using air purge to the print head regardless of the humidity of the usage environment. If air purge was not installed, IJP may stop abnormally cause by charging error due to electrode dirt in the print head, ink sticking in the circulation system, and other. In addition, there is a case IJP need to be repaired. Be sure to install the air purge.                |                          |
| Remark     | Depend on the usage environment, even if air purge was installed, ink deposition is appears. Therefore, please open print head cover every 24 hours, and check if there is ink deposition around electrodes, then please clean them as necessary.<br><br>Reference: UX2 : [Basic Operation Manual] 3.3 Print head cleaning<br>: UX/RX2: [Basic Operation Manual] 2.3 Print head cleaning |                          |
| Manual     | UX2 : [Technical Manual]   | 3.1 Print head air purge |
|            | UX/RX2 : [Technical Manual]  | 3.1 Print head air purge |

|  |   |                          |
|--|---|--------------------------|
| <b>Confirmation of makeup dryness after print head cleaning &lt;for ethanol inks&gt;</b> |   |                          |
| Detail   | Makeup for this ink is difficult to dry. When print head was cleaned with makeup, please make sure that print head is dried enough, before operation. |                          |
| Manual   | UX2 : [Basic Operation Manual]  | 3.3 Print head cleaning. |
|  | UX/RX2 : [Basic Operation Manual]   | 2.3 Print head cleaning. |

| <b>E05</b> | <b>Regular replacement of ICU (for 2410E)</b>   |             |   |               |   |               |                                   |    |        |             |              |   |   |        |             |  |        |             |   |     |        |             |                        |   |        |             |  |  |
|------------|---|-------------|---|---------------|---|---------------|-----------------------------------|----|--------|-------------|--------------|---|---|--------|-------------|--|--------|-------------|---|-----|--------|-------------|------------------------|---|--------|-------------|--|--|
| Detail     | <p>For the purpose of operating Ink Jet Printer stable, please replace following parts under the situation (A) or (B), whichever comes first.</p> <p>(A) When cumulative operating hours reaches 10,000 hours.<br/>* Regardless ink types, ICU parts replacement is recommended when cumulative operating hours reaches 10,000 hours.</p> <p>(B) When cumulative usage term(the term ink touches ICU) reaches two and a half years.</p>   |             |   |               |   |               |                                   |    |        |             |              |   |   |        |             |  |        |             |   |     |        |             |                        |   |        |             |  |  |
|            | <table border="1" style="width: 100%; border-collapse: collapse; margin: 10px 0;"> <thead> <tr style="background-color: #f2f2f2;"> <th>Model</th> <th>Parts code</th> <th>DWG No.</th> <th>Parts name</th> <th>Quantity /IJP</th> <th>Approximate replacement intervals</th> </tr> </thead> <tbody> <tr> <td rowspan="3" style="text-align: center; vertical-align: middle;">UX</td> <td style="text-align: center;">451994</td> <td style="text-align: center;">1N4ZE2353-A</td> <td style="text-align: center;">ICU-UX PARTS</td> <td rowspan="3" style="text-align: center; vertical-align: middle;">1</td> <td rowspan="6" style="text-align: center; vertical-align: middle;">                     “Cumulative operating hours: 10,000 hours”.<br/><br/>                     Or<br/><br/>                     “Cumulative using terms: two and a half years”                 </td> </tr> <tr> <td style="text-align: center;">451633</td> <td style="text-align: center;">3N4ZJ6455-A</td> <td style="text-align: center;">PRE-FILTER ASSEMBLY(A)<br/>(*For makeup filter)</td> </tr> <tr> <td style="text-align: center;">451630</td> <td style="text-align: center;">3N4ZK0104-A</td> <td style="text-align: center;">ICU JOINT PARTS<br/>(*For Sensor Block CM Parts(452003))</td> </tr> <tr> <td rowspan="2" style="text-align: center; vertical-align: middle;">RX2</td> <td style="text-align: center;">451964</td> <td style="text-align: center;">1N4ZE0656-A</td> <td style="text-align: center;">ICU ASSEMBLY RX2 PARTS</td> <td rowspan="2" style="text-align: center; vertical-align: middle;">1</td> </tr> <tr> <td style="text-align: center;">451633</td> <td style="text-align: center;">3N4ZJ6455-A</td> <td style="text-align: center;">PRE FILTER ASSEMBLY(A)<br/>(*for makeup filter)</td> </tr> </tbody> </table> | Model       | Parts code  | DWG No.       | Parts name  | Quantity /IJP | Approximate replacement intervals | UX | 451994 | 1N4ZE2353-A | ICU-UX PARTS | 1 | “Cumulative operating hours: 10,000 hours”.<br><br>Or<br><br>“Cumulative using terms: two and a half years” | 451633 | 3N4ZJ6455-A | PRE-FILTER ASSEMBLY(A)<br>(*For makeup filter) | 451630 | 3N4ZK0104-A | ICU JOINT PARTS<br>(*For Sensor Block CM Parts(452003)) | RX2 | 451964 | 1N4ZE0656-A | ICU ASSEMBLY RX2 PARTS | 1 | 451633 | 3N4ZJ6455-A | PRE FILTER ASSEMBLY(A)<br>(*for makeup filter) |  |
| Model      | Parts code  | DWG No.     | Parts name  | Quantity /IJP | Approximate replacement intervals   |               |                                   |    |        |             |              |   |   |        |             |  |        |             |   |     |        |             |                        |   |        |             |  |  |
| UX         | 451994  | 1N4ZE2353-A | ICU-UX PARTS  | 1             | “Cumulative operating hours: 10,000 hours”.<br><br>Or<br><br>“Cumulative using terms: two and a half years” |               |                                   |    |        |             |              |   |   |        |             |  |        |             |   |     |        |             |                        |   |        |             |  |  |
|            | 451633  | 3N4ZJ6455-A | PRE-FILTER ASSEMBLY(A)<br>(*For makeup filter)          |               |   |               |                                   |    |        |             |              |   |   |        |             |  |        |             |   |     |        |             |                        |   |        |             |  |  |
|            | 451630  | 3N4ZK0104-A | ICU JOINT PARTS<br>(*For Sensor Block CM Parts(452003)) |               |   |               |                                   |    |        |             |              |   |   |        |             |  |        |             |   |     |        |             |                        |   |        |             |  |  |
| RX2        | 451964  | 1N4ZE0656-A | ICU ASSEMBLY RX2 PARTS                                  | 1             |   |               |                                   |    |        |             |              |   |   |        |             |  |        |             |   |     |        |             |                        |   |        |             |  |  |
|            | 451633  | 3N4ZJ6455-A | PRE FILTER ASSEMBLY(A)<br>(*for makeup filter)          |               |   |               |                                   |    |        |             |              |   |   |        |             |  |        |             |   |     |        |             |                        |   |        |             |  |  |



|            |   |  |
|------------|---|--|
| <b>Z01</b> | <b>Precaution for egg shell inks about compliance</b> |  |
|            | Detail  | <p>This ink is for printing to egg shell.</p> <ul style="list-style-type: none"><li>① The printed ink dots may fade and wash off in prolonged contact with water.</li><li>② Composition of "Egg shell ink" meets each regulation/law(*). It will not comply with the regulation/law, if other inks were mixed. Therefore, Do NOT install this egg shell ink to a printer which has been used for other ink models(except other egg shell inks).<br/>(*Please contact the service station for applicable regulations.</li><li>③ This ink is for only printing to "Egg shell". Do NOT use the purpose of direct food contact printing.</li></ul> |