LOVESHAW
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Technical Bulletin

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TO: Loveshaw Regional Sales Managers
Loveshaw Distributors
Customer / Technical Service

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TOPIC: Thermal Jet Pen cartridge maintenance and shutdown requirements

The following pen cartridge requirements are necessary to help maintain print quality.

PRODUCTS AFFECTED: HRP head ½" and HRP Head 1"

Porous inks:

- **Daily Maintenance:** Prior to shift startup, the cartridge orifice array should be cleaned of any debris or ink build up. See maintenance procedure on sheet 2.
- **Shutdowns of one day or more:** For extended shutdowns, follow the daily maintenance procedure, remove the pen cartridge from the print head and store in a cartridge boot cap (MJHRP-019).
- **Bulk ink systems:** A properly maintained bulk pen cartridge can maintain acceptable print quality for up to two 350ml ink cartridges. However, there are several factors that can affect print quality:
    a) The amount of time it takes to consume 700ml of ink: The longer it takes to consume 700ml of ink the more difficult it is to maintain acceptable print quality. Bulk ink is designed for high throughput applications and is not suitable as a means of reducing ink cost in low throughput applications. If ink cost is an issue then consider printing in draft mode. Draft mode produces a lighter mark but the resulting ink cost is comparable to using a bulk ink system.
    b) Daily maintenance: If daily maintenance isn't performed then print quality will degrade before 700ml of ink has been consumed.
    c) Capped during shutdowns: If the cartridge is not properly capped during down times then print quality will degrade over time.
    d) Environmental conditions: Hot and/or dry environments are the most challenging to maintain print quality. This is due to low humidity pulling the solvent out of the ink leading to a hard plug in the nozzle. No amount of purging or wiping can recover a hard plug. To combat this scenario the pen cartridge must be capped during down times.
    e) Air currents around the print head: Air flowing across the front of the print head can contribute to ink drying in the nozzles.

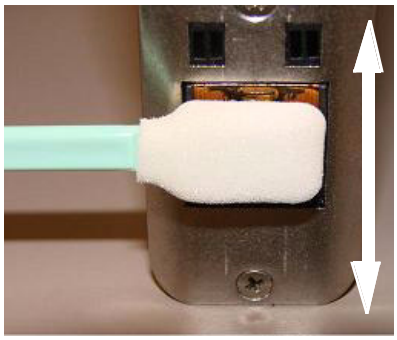
Non-Porous inks:

- **Daily Maintenance:** Prior to shift startup, the cartridge orifice array should be cleaned of any debris or ink build up. See cleaning procedure below.
- **Shutdowns of one hour or more:** For short term or extended shutdowns, follow the daily maintenance procedure, remove the pen cartridge from the print head and store in a cartridge boot cap (MJHRP-019).
- **Leading edge print quality:** Poor print quality on the leading edge of print can be a result of the fast drying qualities of non-porous ink. This is caused by the shortened decap time associated with non-porous ink. To resolve this issue two or more sacrificial bars (lower case L's) should be placed at the leading edge of the print message. This will prime the print cartridge so the necessary message content has acceptable print quality.

Daily maintenance procedure:

- Requirements:
  - Deionized or distilled water (DO NOT USE TAP WATER) for porous ink only.
  - Sponge swabs
- Procedure:
  - For **POROUS INK ONLY**, lightly dampen sponge swab with deionized water.
  - For **NON-POROUS INK ONLY**, hold sponge swab against orifice array of cartridge. Press and hold the purge button on the rear of the print head for at least ten seconds. This will fire all the channels of the ink cartridge and dampen the swab with ink. The ink will act as its own solvent for cleaning.
  - Rub up and down across the orifice face with light force several times with one side of the sponge swab.
  - Turn the swab over and make the final light rub stroke top to bottom.
  - Immediately press and hold the PURGE button on the rear of the print head for 5-10 seconds to reprime the orifices. Because ink will eject during the channel purging, a piece of paper, cloth, or comparable material can be held in front of the orifice array.
  - If print quality becomes unsatisfactory during any shift repeat this procedure.

Before cleaning



Wipe pen cartridge face up and down several times. Immediately press and hold the purge button for 5-10 seconds.

After cleaning

Some causes of poor print quality are:

- Print head is mounted too far away from product being printed: Adjust print had location.
- Carton rubbing across the front of the print head: This can cause damage to the pen cartridge and contribute to debris build up on the pen cartridge.
- Pen cartridge face is dirty: Clean pen cartridge and follow routine maintenance schedule.
- Pen cartridge has physical damage: Replace pen cartridge.
- Pen cartridge not properly seated in the print head: Remove pen cartridge, clean pads of pen cartridge and pogo pins in print head, re-insert cartridge.
- Debris on the pen cartridge pads or the print head pogo pins: Remove pen cartridge, clean pads of pen cartridge and pogo pins in print head with a clean dry cloth, re-insert cartridge.
- Inadequate cartridge maintenance: When a cartridge isn't properly cleaned or capped during down times the solvent in the nozzles evaporates and can create a hard plug. Once a hard plug has formed it is impossible to clear.
- Environmental conditions: Hot and/or dry environments are the most challenging to maintain print quality. This is due to low humidity pulling the solvent out of the ink leading to a hard plug in the nozzle. No amount of purging or wiping can recover this condition. To combat this scenario the pen cartridge must be cleaned regularly and capped during down times.
- Air currents around the print head: Air flowing across the front of the print head can contribute to solvent being pulled out of the ink. When this happens a hard plug can form in the nozzle and no amount of purging or wiping can recover it. If possible relocate the print head or provide wind barriers.