

# Bulk Ink Maintenance and Handling

## Valve Installation

The valve should be inserted into the clip on the print cartridge until a clicking sound is heard or the operator feels the valve snap into place as illustrated in Figure 1.

Note: It is best to place the print cartridge in the printer and locate the ink reservoir in the appropriate tray before connecting the valve.



Figure: 1 Valve Installation

## System Connection

The valve and clip are symmetrical so there is no special orientation. Depending on the printer, it may be necessary to route the tube to keep it out of the way of the print mechanism. If this is the case, wait until all of the tubes are in place and the print cartridge is ready to be placed into the printer before the tape is removed from the print cartridge. The tape will prevent the print cartridge from being damaged and it will also help to keep ink from leaking out of the print cartridge. If there is no need to route the tubes, remove the tape from the print cartridge and place it in the printer as quickly as possible. Put the reservoirs in their proper place on the machine. It is important to keep the reservoirs in their proper place because the ink system will function best if the reservoirs are 4 inches below the head of the print cartridge.

Note: it is important to take the tape off of the cartridge before it is placed in its holder. The cartridge will not make the proper electrical connection and the nozzles will not fire if the tape is still in tact.

## Handling

Once the connection is made between the print cartridge and the ink reservoir, it cannot be taken apart without damaging the system. It is best if the system is left in the machine, but sometimes this is not possible. When handling the system, it is important to keep the print cartridge as close to the ink reservoir as possible without letting it go below the ink reservoir.

The orientation of the print cartridge and ink reservoir is important because:

- If the print cartridge is held more than 10 inches above the ink reservoir, air will be drawn into the print cartridge. Air inside of the print cartridge not only causes print defects, but it can also cause the print cartridge to stop printing before all of the ink has been used.
- If the print cartridge goes below the ink reservoir, ink will seep from the print cartridge, potentially damaging the system.

## Handling Cautions

The ink reservoir and print cartridge should always be held when handling the system. The system should never be held or carried around such that the print cartridge or ink reservoir is dangling by the tubing. These actions could cause loss of ink containment.

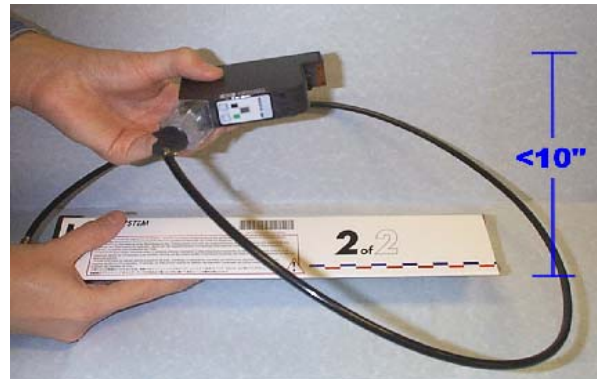


Figure: 2 Handling Orientation

## Storage

Short-term storage is defined as less than 2 days or less than 1 day in a hot and dry environment. Long-term storage is defined as more than 2 days or more than 1 day in a hot and dry environment.

### Short-term Storage

If the printing system has a capping station:

- Leave the print cartridge in the printer and the ink reservoir in their place 4 inches below the print cartridge

If the printing system does not have a capping station:

- Leave the print cartridge in the machine for a short period of time
- The next time that the printer is used, the print cartridge will have to be cleaned as instructed (please see Print Cartridge Care section of document)

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## Long-term Storage

If the printing system has a capping station:

- Leave the system in the printer.

If the printing system does not have a capping station, the ink system should be removed from the printer but:

- The system must be stored carefully. The print cartridge must be stored above the ink reservoir in order to maintain the proper internal system pressure. The best way to keep the pressure regulated is to rubber band the system together with the print cartridge resting on top of the ink reservoir as shown in Figure 3. The print cartridge is resting on the flat surface of the ink reservoir.
- Keep the print cartridge in an area that is relatively free of dust and paper particles and is not too dry.
- Place the print cartridge in a Tupperware container with a damp sponge or towel to maintain humidity and prevent the print cartridge from drying out.
- When the print cartridge are ready to be used again the print cartridge will need to be cleaned as instructed .

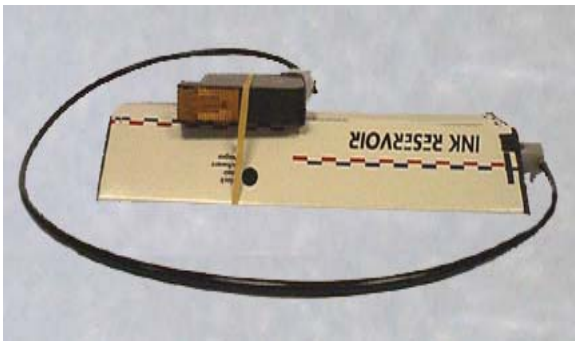


Figure: 3 Storage of a Connected System

## Disposal

When the ink system has reached the end of its life, it must be disposed of as a system because of the permanent print cartridge to ink reservoir connection. The system may be disposed of in normal garbage. What little ink is stranded in the system may leak out when it is placed in the garbage so it may be best to place the systems in plastic bags prior to disposal. An ink mess can be avoided by kinking the tubing between the reservoir and the cartridge before it is placed in the trash. The tube can be kinked by bending the tubing and tying it in a knot. If there should be an ink spill, soap and water should clean up any problem areas. Lava soap also works well to get the ink off of hands.

## Print Cartridge Care

### Inserting and Removing the Print Cartridge

The printing system should stay in the printer at all times except when the operator is

- Replacing it.
- Cleaning it.
- Storing it.

When the print cartridge is removed from the carriage, it is important to hold the print cartridge by the black side covers of the cartridge. Do not pull the print cartridge out of its place by the tubing or the clip.

The ink system should never be:

- Squeezed.
- Shaken.
- Dropped.
- Hit against the palm of one's hand or any other hard surface (e.g. a table).

Squeezing the ink system will cause ink to drool out of the print cartridge. The print cartridge should never be shaken or dropped. Shaking the print cartridge does not "mix" up the ink. It actually hurts the print quality because it allows little bubbles to form near the ink firing chambers. These bubbles prevent the nozzles from firing causing white streaks in print and images.

### Wiping

One of the most critical paths to good print output is the maintenance of the print cartridge. During printing, ink can build up on the print cartridge causing black spray in the text. Paper fibers and dust can also build up on the print cartridge degrading the print quality. Proper print cartridge maintenance will allow the ink cartridge system to produce good print quality the whole life of the system. A cotton TexWipe<sup>®</sup> and de-ionized water is one of the best ways to wipe ink and other build-up off of the print cartridge. A TexWipe<sup>®</sup> is a 100% cotton, high-density cloth with no chemical additives. Something comparable is adequate to wipe the nozzles. A good choice of wipe would have the following qualities:

- Soft.
- Fiberless.
- No chemical additives.
- Moist with de-ionized Water.

A cloth should NOT be:

- Abrasive.
- Dry.

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- Made of small fibers that can be left behind on the cartridge's nozzle plate.

Never use the following to wipe the print cartridge:

- Industrial paper towels. These cloths usually contain a high recycle content and are abrasive.
- Toilet paper. These cloths are usually not fiberless.
- Sponge. Particles from the sponge can be left behind on the nozzle plate.

The cloth must be soft so that it does not scratch the pen. It should be fiberless because small fibers from the cloth can be left behind and block the nozzles of the cartridge. The cloth must also be moist with liquid or it will scratch the print cartridge. Scratches on the print cartridge prevent the ink from coming out of the nozzle straight. If the ink does not come out of the nozzles straight, it will not land on the paper in the proper place causing fuzzy text and graphics. De-ionized water is better than tap water because tap water contains an unmonitored amount of minerals. During wiping the water cleans out the nozzles and the firing chambers. A small amount of water mixes with the ink in the chambers. Over time, the minerals in tap water can leave behind deposits in the chambers that block it completely. A blocked chamber will show up as a white streak in text or graphics.

The direction and force of the wipe is also important to note. During wiping, harmful particles on the top of the print cartridge can be wiped into the nozzles if not careful. It is important to wipe in the direction of the nozzles as shown in Figure 4. The print cartridge should be pointing down while it is being wiped. This position will prevent the nozzles from pulling little bubbles into the firing chambers. A large pressure is not necessary to clean the particles off of the print cartridge. A large pressure can actually cause particles to scratch the print cartridge. Scratches can cause the nozzles to fire in improper directions adversely affecting print quality. It is very important to always be gentle when cleaning the print cartridge.

It is also important to keep the electrical interconnects of the print cartridge clean. The interconnect pads can be cleaned with:

- Moist cotton TexWipe®.
- Moist Q-Tip.

The interconnects should NOT be cleaned with:

- Pencil eraser (A common misconception is that the interconnects can be cleaned with the eraser of a pencil. The eraser actually damages the

interconnect and will decrease the life of the cartridge.)

It is important to make sure that this section of the cartridge is dry before it is re-inserted into the printer to eliminate the chance of an electrical short.

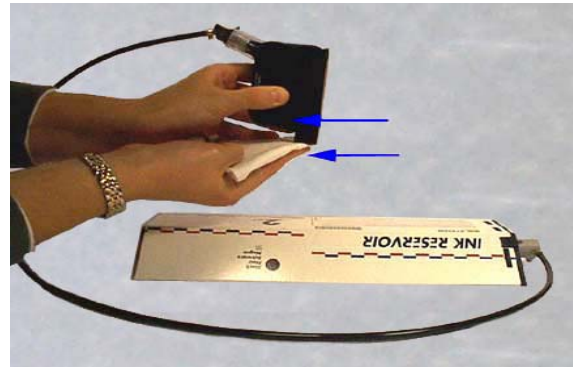


Figure: 4 Direction of Wiping

## Purging the Nozzles

If the print cartridge sits inactive for a period of time, ink may dry in the nozzles. Dried ink clogging a nozzle is called an ink plug. As a result of the ink plug, white streaks will be visible in the printed text or graphic. Printing alone may not remove ink plugs from the nozzles. To obtain better print quality, purge the ink plug. This is accomplished by wiping the nozzle plate until ink is drawn out and absorbed into the cloth. Then print a few lines of text or graphics at high resolution.

## Procedure

This purging operation as well as wiping the print cartridge with a wet cloth should be done after every extended period of down time in order to prevent unacceptable levels of print quality.

- Wipe the print cartridge with a moist cloth (see wiping procedure).

Print a few lines of text in a higher resolution (for example 600x600 dpi). The higher resolutions (for example 600 dpi) exercise more nozzles and push more ink out.