



White Ink Dripping from Printhead Nozzles

When the ink system vacuum can no longer hold up the ink, it will drip.

For Océ Arizona 350 GT/XT printers with the White Ink Option, white ink dripping from the printhead nozzles can be an issue. Ink dripping is more likely to occur with white than with any other colors. This is due to the denser pigments used in the white ink solution, which results in an increased mass. Furthermore white ink dripping is more likely to happen during printhead maintenance due to the ink system vacuum being lowered below the threshold point during purging. This is done to prevent contaminants from being pulled into the nozzle channels and thus clogging the printhead. Therefore, any problems with the ink vacuum system (no matter how small) are more visible during printhead maintenance.

Troubleshooting Ideas:

Incorrect Ink System Vacuum Setting or Ink Vacuum System Bleed valve not correctly adjusted.

Bleed rates are important for the system to maintain ink vacuum level when changing between the purge state and the vacuum state. Verify the rate by using the "Ink Vacuum System Calibration" procedure found in the TSM. This procedure shows how to adjust the ink system vacuum level and the bleed valve (air restrictor on the vacuum pump and 3-way valve) rates.

Vacuum Leaks

Leaks in the ink vacuum system can cause ink to drip from the printheads.

A leak in the vacuum line between the printhead and the individual purge valves will result in localized ink dripping. Although it is localized, white ink is affected more due to its weight and is more likely to drip. If the leak is closer to the purge valve, other color channels will be affected and begin to drip.

Leaks in the ink vacuum line between the purge valve and the purge accumulator will affect all the printheads. Due to white ink being denser, white ink will be affected first and you will notice white ink dripping.

To determine if there is a vacuum leak in the ink vacuum system check the following:

- A) For a leak in the vacuum line between the printhead and the individual purge valves;
 - 1) Close all purge valves
 - 2) Attach the Service Vacuum Gauge at the input of the vacuum manifold in the carriage
 - 3) After ~10 minutes, while observing the vacuum gauge, open each purge valve one at a time. If a drop in vacuum greater than 0.5"/H₂O is observed then most likely there is leak between the printhead and the purge valve.

B) For leaks in the ink vacuum line between the manual purge valve and the purge accumulator;

- 1) Enter SDS
- 2) Close all manual purge valves
- 3) Disconnect the purge pump connector (J324) from the System Control PBA
- 4) Go to SDS 05-9-02 "Purge Pressure Sensor". Click on Start, record the value then click on Stop.
- 5) Run SDS Test 05-4-05 "Purge Valve Output". Click on Start (this opens the electronic purge valve). Wait 5 minutes then click on Stop.
- 6) Go to SDS 05-9-02 "Purge Pressure Sensor". Click on Start, record the value then click on Stop.
- 7) If the value recorded in Step 6 is lower than the recorded value in Step 4 by more than 30 inH₂O, most likely there is a leak between the manual purge valve and the purge accumulator. Use the information in Steps 1-4 below to help locate and repair the leak.
- 8) Reconnect the purge pump (J324) to the System Control PBA.
- 9) Open all manual purge valves.
- 10) Exit SDS.

Air in the Ink System (Leak in the Ink System)

Air in the ink system can cause pressure fluctuations, which can lead to over filling of the ink reservoir. When air enters the ink system it collects in the ink filter and compresses (pressurized) during ink fill operations (ink pump is On). When the reservoir reports full, the ink pump turns off and the compressed air will uncompress pushing more ink into the reservoir, which causes the reservoir to over fill. The excess ink is then pushed up the vacuum line at the top of the reservoir (see "ink in the air system " below) and then accumulates at the 0.2um filter.

Air can enter the ink system in the following ways:

- 1) Faulty purge, bleed and 3-way valves (manual and electrical)
- 2) Damaged vacuum tubing (if tubing kinks small pinhole can form)
- 3) Loose connections on luer barbs and twist fittings (the consequent leak may not be enough to cause ink to drip but it is enough to allow air to enter the ink system).
 - a) When the barb is used with the double walled tubing (the type of softer tubing used in the IGUS ribbon tubing or the down tube from the reservoir to printhead on the 350 GT/XT printers) the tube should not twist on the barb. If the tube twists freely on the barb, this is a sign that the tubing is failing at this location (ink has softened the outer wall of the tubing).
 - b) When the barb is used with the single-walled tubing (a stiffer tubing, which is the type used between the manual purge valves and the ink reservoirs), the tube will twist on the barb. This type of tubing twists easier as it is stiffer and does not conform around the barb as well, but if it is too loose air can leak into the vacuum system.
- 4) Damaged luer fitting (ink may not leak enough to cause a drip but it still may allow air to enter the ink system).

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- a) The male portion of the twist lock has only two tabs that act as its threads and over-tightening can easily bend these tabs. Bent tabs prevent adequate seal of the connection allowing air to enter the system.
 - b) If the luer barbs are not perfectly round or if they have small nicks or scratches, air can enter into the system. This is more of a problem with barbs on the single walled tubing, as the tubing does not fit as well around the bard.
- 5) Air in an ink bag.
 - 6) When removing an ink bag, a small amount of air can enter the ink system as the ink coupler closes. Make sure the ink coupler (3010109812) is the newer (blue) version shown below as it traps the air more effectively. This new coupler was included in the Mandatory White Ink Recirculation Valve Upgrade Kit (See Modification Bulletin 21C).



Previous Gray Coupler



New Blue Coupler

- 7) Faulty seal in ink components (ink pump, white recirculation valve)
- 8) Replacing an ink filter (bleed the new filter to reduce the amount of residual air).

Ink in the Ink Vacuum System

Air in the ink system can cause pressure fluctuations, which can lead to over-filling of an ink reservoir. Ink can also enter into the ink vacuum system from over-filling of an ink reservoir. When an ink reservoir over-fills, ink is pushed up into the vacuum line at the top of the reservoir. The 0.2um filter then stops the ink. When the 0.2um filter is wet, its fibers expand, effectively making the filter act as a plug. The result is that the ink is blocked from filling the entire ink vacuum system with ink, and it also prevents the ink vacuum from draining the reservoir. Without vacuum in the reservoir there is nothing holding up the ink, and the entire contents of the ink reservoir will drain out of the printheads.

Replacing the 0.2um filter is not enough. The ink must be removed from the tubing between the reservoir and the 0.2um filter. A small amount of ink in this tube will restrict flow, potentially lowering the vacuum applied to the reservoir. This small amount of ink left in the tube will slowly migrate into to newly replaced 0.2um filter. This can either cause the filter to become fully blocked again or partially block the filter, which will restrict flow potentially lowering the vacuum applied to the reservoir.

Important: Follow the procedures in the TSM (Installation / Shipping and De-Installation Preparation / Draining the 3XX/5XX Ink System) to remove as much ink as possible before the printer is returned to service. Cold ink is thicker and therefore more difficult to purge from the tubing, so ensure that ink temperature is greater than 45° (or 113°F) before you drain the ink and replace the tubing. Verify that there is no fluid (ink or flush) in the tubing between the 0.2micron filter and the ink reservoir. If fluid is present, allow enough time for it to drain before reconnecting. Run SDS test 5-4-05 Purge Pump Output for 15 minutes to dry the tube. This will force air through the line and empty all ink from the reservoir and printhead. Make sure the maintenance drawer is open or ink will drain onto it.