

Troubleshooting Jet Drop-Out

ColorSpan Legacy Solvent and UV-Cure Printers



Document Scope

This document describes jet drop-out that occurs during active printing and methods for isolating the cause of the drop-out.

Overview

There are three general causes of jet drop-out. They are:

- Electrical: the jets do not receive the impulse to fire
- Starvation: the jets do not receive enough physical ink from the supply
- Vacuum: an upset to the vacuum system disrupts jetting

The remainder of this document describes each general cause and presents strategies for troubleshooting and resolving the issue.

Electrical

Headboard Connections

Each printhead connects to the headboard with its own flex cable. If this cable is loose or not fully seated, some or all jets will not receive the electrical impulse to fire. Reseat connections on the affected printheads and test.

Inconsistent Voltage

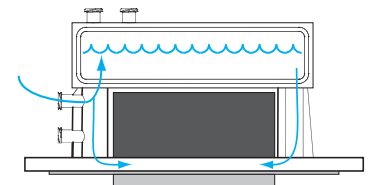
A failure of any one of the numerous components on the head board will adversely affect performance in some way. When only some printheads appear affected by jet drop-out, test the headboard by swapping the flex cable connections between two adjacent printheads. (One of the printheads must be working normally). If the drop-out problem moves to the previously unaffected printhead, the headboard may be suspected.

Track Power Cable to Headboard

If all printheads simultaneously drop all jets, but the printer appears to continue to operate normally, the power cable that runs through the track to the headboard may have an intermittent wiring break. The flexing of the cable opens the break and the printheads no longer have power. This symptom is less common but easily identified because all printheads suffer simultaneous, complete jet loss.

Starvation

Ink fills the printheads from the front and rear ends toward the middle of the printheads. If inadequate ink is being supplied to the printheads, the prime bar pattern will show that a large section of jets, most likely in the middle, will be missing from the affected heads because there is insufficient ink in the reservoir to provide ink toward the middle.



Thermistor Problem

A fault in the thermistors used to detect low ink the printheads could cause the ink pumps to fail to run, resulting in starvation. Monitor the ink pump for the affected color and determine if it ever runs during printing. Thermistor replacement is low-cost and straightforward in procedure, so it is an easy item to test and rule out.

Physical Blockage within the Printhead

The printheads have internal filtering screens to prevent large debris particles from entering jetting area. If significant foreign particles have somehow entered the printhead, the filtering screens could become blocked and prevent ink from flowing. Generally there is no way to remove contaminants from the printhead interior, so the affected printhead(s) must be replaced to determine if this issue is the cause of the drop out.

Vacuum

Vacuum is used to suspend the small quantity of ink within the printhead on-head reservoir. (See Tech Note 2749, *Vacuum/Pressure System Guide for Operators*, for additional information on the vacuum system.) Both too much vacuum and too little vacuum can lead to jet dropout.

Diagnosing a Vacuum Issue

While the printer is printing and jet drop-out is observed, pause the printer and send the carriage to the capping station (solvent printers) or parking station (UV printers). Remove the station tray and observe the orifice plates on the printheads. If ink is pooling on the surface of the orifice plates, then there may not be sufficient vacuum (ink is seeping out through the jets and accumulating). If the orifice plate appears dry, then there may be too much vacuum (ink is not flowing from the reservoir to the jets).

Isolating a Vacuum Issue

Vacuum-related issues will typically affect either an entire color channel (four printheads) or all colors (16 printheads). If all heads/colors appear affected, focus your troubleshooting on system components from the vacuum/pressure assembly up to the valve/manifold block at the carriage-end of the track. If one color (or more, but not all four) are affected, begin from the valve/manifold block and proceed to the affected printheads. Note, however, that the entire system should be checked before ruling out vacuum as a possible cause.

Insufficient Vacuum

Insufficient vacuum is usually caused by a leak, but verify that the vacuum regulator is set correctly and the control panel display shows the correct vacuum level for the printer type in question (3.25 for solvent, 5.00 for UV). Inspect each fittings on the printheads and valves/manifold as well as all tubes and ink pump connections. Make certain that the fittings and connections are “snug” and the integrity has not been compromised - cracked, deformed, cross-threaded, etc.

If after confirming that all of the fittings are not compromised and are all snugly affixed, then remove the Null Port filter as well as the Vacuum filter outside of the Vacuum/Pressure Assembly. Send the carriage to the Capping Station/Parking Station and use the surfaces of the Orifice Plates as your guide, rather than the displayed vacuum value on the LCD. Adjust the vacuum level downward (counter-clockwise on the Regulator) until ink begins to pool on the orifice plates. After reaching this point, adjust the vacuum regulator clockwise .25 to .30 inches. You will see that the pooling effect will no longer be present. Test the printer and confirm that the dropout is no longer present.

Too Much Vacuum

Too much vacuum generally can be caused only by improper setting of the regulator, or by a malfunctioning vacuum pump or malfunctioning regulator. Adjust the regulator downward (turning counter-clockwise) and observe the orifice plates as described in the preceding paragraph. If the final setting of the regulator displays an unexpected value on the control panel, or if the desired effect cannot be achieved regardless of regulator adjustment, there may be a fault within the vacuum/pressure assembly.

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