

Wingman's Guide

Troubleshooting Top 10 Issues



Troubleshooting Top 10 Issue

The following are troubleshooting steps for the top 10 most common issues. These steps will help to provide a path to follow when these issues are encountered to bring about a faster resolution. Before proceeding with troubleshooting, **HP strongly recommends updating the printer's firmware to version 4.00.**

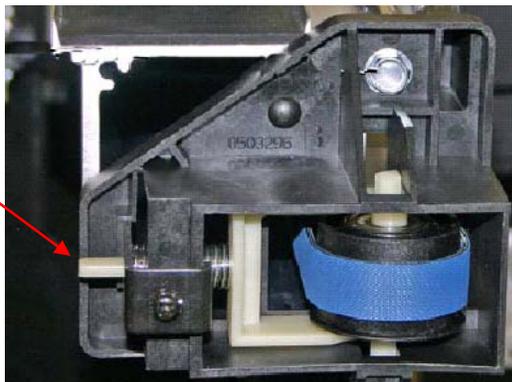
Carriage Motion Failure

Fixes	Probability
Carriage Drive Assembly	High
Dirty Encoder Strip	High
Carriage Drive Belt	Low
Idler Assembly	Low

The Carriage Motion Failure error message is most commonly related to the following components: Carriage Drive Assembly, Encoder Strip, Carriage Drive Belt, and Idler Assembly. The following steps detail how to troubleshoot to determine the source of failure:

1. Clean the encoder strip with a lint free cloth and isopropyl alcohol (70% IPA). Inspect the encoder strip after this by placing a white paper underneath and moving it along the full length of the encoder strip, checking for any dirty spots, missing tick marks or damage. If the carriage is normally always stopping in the same position it points more at the encoder strip as being the issue. Once the encoder strip has been cleaned and inspected, retest. If the error continues, proceed to the next step.
2. Run the Carriage Motion Troubleshooter found under Tools>User Diagnostics
3. During the position test of the Carriage Motion Troubleshooter, does the number displayed on the screen fail to change at any point when moving the carriage by hand along the full length of the rail? If yes, then ensure step 1 has been completed. If no, proceed to the next step.
4. During the slow speed test of the Carriage Motion Troubleshooter, does the carriage slow down, speed up or stop? If yes, proceed to step 6. If no, proceed to step 5.
5. During the fast speed test of the Carriage Motion Troubleshooter, does the carriage slow down, speed up or stop? If yes, proceed to step 6. If no, proceed to step 13.
6. Remove the service-side cover and inspect the idler assembly, when the carriage drive belt is properly tensioned, the white tab shown in the picture below will extend past the edge of the idler by a couple of millimeters. Re-tension the belt if needed and retest.

The end of the white tab should extend just to the very edge of the idler bracket.



7. Inspect the drive surface of the carriage drive belt for burnishing, replace or flip inside out if burnished.
8. Clean the encoder reader with isopropyl alcohol. Also, check for encoder reader alignment to ensure the encoder strip goes through the center of the encoder reader. If upon inspection of the encoder strip during step 1 you find scratches that run the full length of the encoder strip it is likely the encoder reader is not properly aligned. If an adjustment is required, please follow the steps detailed in the Carriage Assembly FRM Instructions for removal of the proper screws to allow for proper adjustment. Once the encoder reader has been cleaned and properly aligned, retest.
9. Remove the user side cover and inspect the carriage drive assembly. Check for proper tension of the timing belt, when properly tensioned there should be approximately 1/8 inch deflection. If there are any teeth missing on this belt or it does not provide correct tension, it will require replacement.
10. Inspect the carriage drive shaft and ensure both pulleys are not able to move up or down on the shaft. If there is any play in either of these pulleys, replace the carriage drive shaft.
11. Inspect the carriage drive motor and ensure the top of the pulley is flush with the shaft it sits on. If the shaft is sticking out above the top of this pulley, the carriage drive motor will require replacement.
12. Inspect the track assembly to ensure the cables and tubes are not too tight within the track and causing the track to not flex properly and thus fighting against carriage motion. Also ensure the track is not leaning forward or backwards and causing a drag in carriage motion.
13. Does the carriage motion failure occur while loading media? If yes, check to ensure cables on user side of carriage (ionizer and UV power cable) are not interfering with carriage motion. Inspect the drive surface of the carriage drive belt for burnishing, replace or flip for new drive surface. Zero and re-measure platen width. If no, proceed to the next step.
14. Does the carriage motion failure occur during printing? Test grounding paths for media edge guides and ionizers. Power off ionizer, if the error does not return, replace the ionizer or ensure it is properly grounded.

Failed to Fill Printheads with Ink

Fixes	Probability
Connector, loose	High
Ink Pump	High
Ink Box Empty	High
Pigtail	Low
Ink Filter	Low
Ink Tube	Low
Thermistors	Low
Headboard	Low

The Failed to Fill Printheads with Ink errors are most commonly related to the following issues/components: loose connectors, ink pump, empty ink boxes, pigtail assembly from ink box and ink filters. The following steps detail how to troubleshoot to determine the source of failure:

1. Is there ink in the ink box? If not, obtain a replacement and retest.
2. If there is ink in the box, can it flow through the pigtail tubing leading from the ink box?
 - Tip the ink box on its side to allow the pigtail tubing to fill with ink.

- Wearing gloves and with paper towels handy, be prepared to catch any ink that does flow. The ink will not gush, but there should be a steady flow out of the quick-connector.
 - Press in the tip of the quick-connector to allow the ink to start flowing out.
 - If ink does not flow out of the quick-connector, there may be a clog within the tubing or filter of the pigtail assembly
3. If ink flows from the box and pigtail, is the pump pumping ink?
 - Remove the lower user side enclosure to allow access to the internal OHS components.
 - Locate the ink pump in question, wear gloves and have paper towels available, disconnect the output tube from the check valve and catch any ink that spills.
 - Place the output tube in an appropriate receptacle to catch any ink during this test.
 - Go to Service Printer>Device Tests>Ink System Tests>Print Ink Pumps. Turn on the appropriate ink pump and observe for ink to be expelled from the output tube.
 - If ink does not flow from the ink pump, the pump may be clogged or defective.
 4. If ink flows from the ink pump, can it flow through the check valve?
 - Locate the check valve in question, wear gloves and have paper towels available, disconnect the check valve output from the tube that follows and catch any ink that spills.
 - Place the check valve output tube in an appropriate receptacle to catch any ink during this test.
 - Go to Service Printer>Device Tests>Ink System Tests>Prime Ink Pumps. Turn on the appropriate ink pump and observe for ink to be expelled from the check valve output tube.
 - If ink does not flow from the check valve output tube, ensure it is installed in the correct direction and if so replace with a new check valve.
 5. If ink flows from the check valve output, can it flow through the long ink tube?
 - Remove the carriage cover.
 - Disconnect the long ink tube where it exits the track, wear gloves and have paper towels available to catch any ink that spills.
 - Place the tube in an appropriate receptacle to catch any ink during this test.
 - Go to Service Printer>Device Tests>Ink System Tests>Prime Ink Pumps. Turn on the appropriate ink pump and observe for ink to be expelled from the long ink tube.
 - If ink does not flow from the long ink tube, the tube may be clogged or defective.
 6. If the mechanical aspects of ink fill do not appear to be an issue, then the issue may be related to thermistors readings of ink and air temperatures. Take the following steps to determine if there is any issue with thermistor readings:
 - For the channel showing a "Failed to Fill Printheads" error, proceed to empty the printhead of ink by going to Tool>Maintenance>Printhead Procedures>Empty Printheads (Fill with Air).
 - Once the printheads have been emptied of ink, allow 15 minutes to pass to allow the thermistor readings to change to room temperature.
 - Go to Tools>System Information and go to page # to show the thermistor readings.
 - The ink and air thermistor readings between ink and air for each thermistor triplet should be within # degrees of each other. The air reading will be the same between Black and Cyan, Magenta and Yellow, and Light Cyan and Light Magenta.
 - If the thermistor readings between ink and air are greater than # degrees, proceed to replace the thermistor triplet set.
 - If any thermistor reading is 2 or lower (indicating a short) or 225 (indicating an open circuit), proceed to replace the thermistor triplet set and inspect the headboard connector.

UV Lamp Current Not Detected

Fixes	Probability
UV Power Cable	High
Bulb	High
Lamp Housing	Low
Electronics	Low

The UV Lamp Current Not Detected error is most commonly related to the following issues/components: UV power cables, UV Bulbs (defective bulbs and poor connections), and Lamp Housings. The following steps detail how to troubleshoot to determine the source of failure:

1. Inspect both UV bulbs and spread connectors back carefully to ensure a proper connection within the lamp housing, retest.
2. Swap UV bulbs between left and right lamp housings. If the issue changes sides, replace defective UV bulb. If the issue does not switch sides, proceed to next step.
3. Swap UV power cables between left and right lamp housings. If the issue does not change sides, replace UV lamp housing. If the issue does change sides, proceed to the next step.
4. Swap UV power cables at lamp housings back to normal. The issue will move back to the original side now, we now need to determine if the UV power cable or UV power supply is the issue.
5. Swap UV power cables at the electronics assembly. If the issue changes sides again, it is related to the UV power supply. If the issue does not change sides again, it is related to the UV power cable.

UV Lamp(s) Not Lighting

Fixes	Probability
Bulb	High
UV Power Cable	High
Lamp Housing	Low
Electronics	Low

The UV Lamp Current Not Detected error is most commonly related to the following components: UV power cables, Bulbs (defective bulbs and poor connections), and Lamp Housings. The following steps detail how to troubleshoot to determine the source of failure:

1. Inspect both UV bulbs and spread connectors back carefully to ensure a proper connection within the lamp housing, retest.
2. Swap UV bulbs between left and right lamp housings. If the issue changes sides, replace defective UV bulb. If the issue does not switch sides, proceed to next step.
3. Swap UV power cables between left and right lamp housings. If the issue does not change sides, replace UV lamp housing. If the issue does change sides, proceed to the next step.
4. Swap UV power cables at lamp housings back to normal. The issue will move back to the original side now, we now need to determine if the UV power cable or UV power supply is the issue.

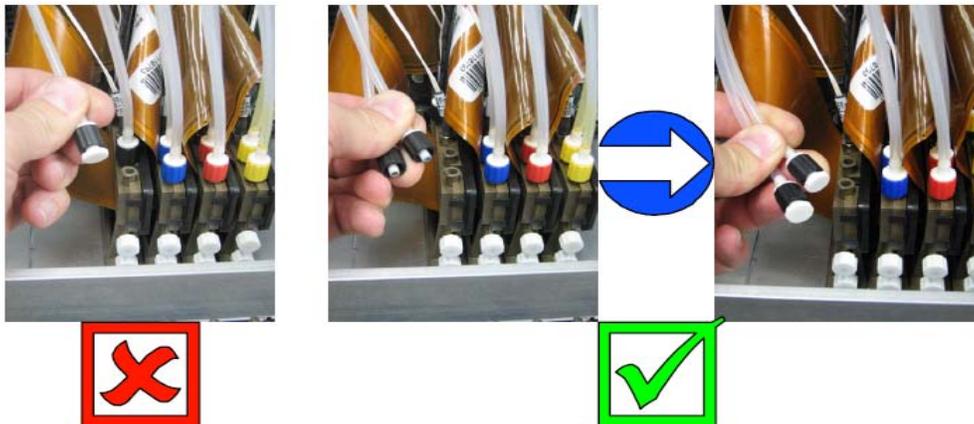
5. Swap UV power cables at the electronics assembly. If the issue changes sides again, it is related to the UV power supply. If the issue does not change sides again, it is related to the UV power cable.

Ink Delivery System Overfill

Fixes	Probability
Vacuum Leak	High
Thermistors	High
Head Flush Overfill	High
Loose Fitting	Low
Printhead, Reservoir Leak	Low

The IDS Overfill issue is a situation where ink will flow into the vacuum system and thus cause vacuum issues with either specific channels or complete vacuum loss to all channels, customers will report ink dripping from the printheads on one or more channels. The most common causes of IDS Overfill issues are vacuum leaks, thermistors, and overfills caused by technical error (ink pump power cables switched between 2 pumps and head flush overfills during printhead replacement). The following steps detail how to troubleshoot to determine the source of failure:

1. Assuming the customer has reported ink dripping from one or more colors, remove the carriage cover to begin determining how far back the ink has filled into the vacuum lines and where the overfill began.
2. Determine all vacuum related parts that have had ink enter them as these will need to be replaced.
3. Ensure all vacuum and ink tube fittings are tight on the affected channel and inspect the printhead reservoir for separation.
4. Has an ink pump just been replaced? If yes, make sure the ink pump power cable has not been switched with another color.
5. Has a printhead just been replaced? If both dual vacuum tubes are not removed from the printhead(s) during printhead replacement it is possible that when filling the printheads with head flush that head flush will enter into the dual vacuum tube still attached. This can be checked by removing the F-fitting at the manifold for the dual vacuum tubes with a cloth in hand to collect the head flush.

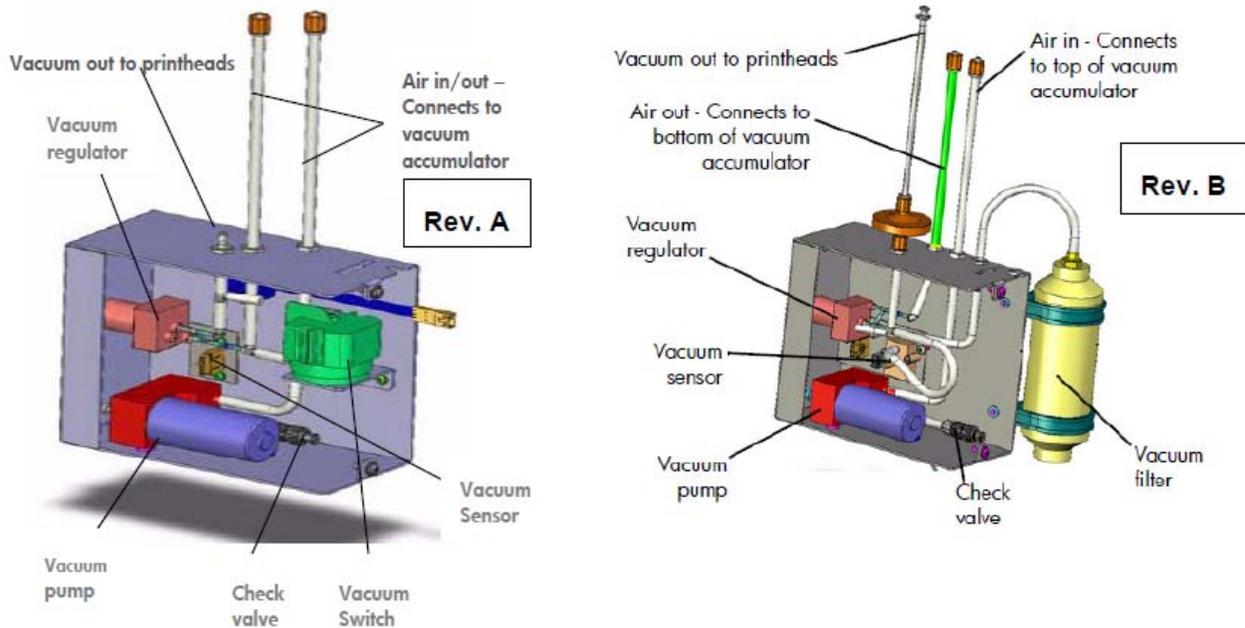


Vacuum Not Recovering

Fixes	Probability
Vacuum Restrictor	High
Vacuum Assembly	High
Long Vacuum Tube	Low
Vacuum Leak	Low

The Vacuum Not Recovering error is most commonly related to the following issues/components: Vacuum Restrictor, Vacuum Assembly, and Vacuum Leaks. The following steps detail how to troubleshoot to determine the source of failure:

1. Verify if the vacuum assembly is the newest build or not as this error is most commonly related to the older revision vacuum assembly (Rev. A) that did not include a filter to prevent dust particles from entering the vacuum assembly.



2. If the vacuum assembly is the Rev. A version, remove the vacuum restrictor (Located in tubing attached to the back of the vacuum regulator you will find a small brass fitting). Once removed, take compressed air and blow through the small orifice to remove any dust or debris that may be located within this part. Perform a purge cycle to retest and see if the issue is resolved, if not proceed to next step.
3. Tighten all vacuum fittings from the vacuum assembly all the way up to and throughout the carriage assembly. Perform a purge cycle to retest and see if the issue is resolved, if not proceed to the next step.
4. Since the vacuum not recovering error can also be caused by a vacuum leak which can cause the vacuum pump to refresh at a faster rate than normal or run continuously, perform the following steps to isolate the location of the leak:
 - Over the following steps it is important to listen for the vacuum pump.
 - Disconnect the long vacuum tube from the manifold and place your finger over the end to cap off. Allow the vacuum pump to refresh, if the vacuum pump no longer refreshes at a fast rate then the vacuum leak is located somewhere between the manifold and printheads (proceed to step 3). If the vacuum continues to refresh at a fast rate then the vacuum leak is located

somewhere between the end of the long vacuum tube and the vacuum assembly (proceed to step 5).

- Proceed to remove the F-tube connection (for the dual vacuum tubes) from the manifold for the black color channel and cap the opening for this valve on the manifold by placing your finger on it. If the vacuum pump refresh rate returns to normal, then the vacuum leak is somewhere from the dual vacuum tubes to the printheads. If the vacuum continues to refresh at a fast rate, perform this same step for all color channels as needed to determine which one is causing the vacuum leak. (Note: test one color channel at a time and reseal the F-tube connection to the manifold after testing). If the vacuum pump continues to refresh at a fast rate after testing all color channels in this way, the vacuum leak is coming from the manifold.
- If step 3 showed a particular color channel to be the cause of the vacuum leak, proceed to remove the dual vacuum tubes from the printhead(s) and cap off with your fingers or with the proper luer fitting cap. If the vacuum continues to refresh at a fast rate, then the vacuum leak is being caused by the dual vacuum tubes and special attention should be paid to the F-tube connection, repair or replace this dual vacuum tube assembly. If the vacuum pump refresh rate returns to normal, then the vacuum leak is somewhere on the printhead(s), check all fittings and inspect the printhead reservoir to verify if the side cover is separating from the reservoir body. Resolve reservoir separation or printhead vacuum leak issues by ordering the Reservoir Kit (CH104-67001).
- Disconnect the long vacuum tube from the vacuum assembly and place your thumb or proper luer fitting cap over the end to cap off. If the vacuum pump no longer refreshes at a fast rate, then the vacuum leak is somewhere along the long vacuum tube, replace or repair as needed. If the vacuum continues to refresh at a fast rate, then the vacuum leak is somewhere between the vacuum assembly and vacuum reservoir (proceed to step 6).
- Inspect all fittings/connections inside and outside the vacuum assembly. Repair or replace any fittings or tubing found to be causing the issue. If the vacuum leak has been isolated to the vacuum assembly and the leak cannot be located within it, replace the vacuum assembly.

Vacuum Related Numerical Errors 03800001 and 03800002

Fixes	Probability
Vacuum Assembly	High
Loose Printhead Fitting	High
Manifold Assembly	Low
Loose Vacuum Tube Fitting	Low

The numerical vacuum related errors 03800001 and 03800002 are most commonly related to the Vacuum Assembly and vacuum leaks. The following steps detail how to troubleshoot to determine the source of failure:

1. Disconnect the long vacuum tube from the vacuum assembly and place your finger over the end of the tube leading from the vacuum assembly. If the numerical error reappears after a reboot of the printer, then the issue is related to the vacuum assembly. If the numerical error does not reappear after a reboot, then the issue is somewhere between the long vacuum tube and printheads. Troubleshoot a possible vacuum leak by utilizing the steps detailed under the Vacuum Not Recovering section.
2. If the vacuum error has been isolated to the vacuum assembly, reseal the vacuum sensor connection within the vacuum assembly and check all vacuum tube connections within the vacuum assembly to resolve any leaks.
3. Turn the vacuum regulator counter-clockwise until the vacuum pump turns on and runs constant. Begin to turn the vacuum regulator clockwise until the vacuum pump no longer runs constant but

refreshes at a normal rate. Reboot the printer to ensure the numerical vacuum error no longer appears.

4. If the numerical vacuum error still appears, replace the vacuum assembly.

LCD Backlit with no Characters Displayed

Fixes	Probability
LCD Panel	High
Electronics	High
VGA Cable	Low

The LCD showing backlit but with no characters displayed is most commonly related to the LCD and the electronics assembly. The following steps detail how to narrow down what component may be causing the issue:

1. Power the printer off and wait until the printer has completely shut down. Press hard in the upper right hand corner of the LCD panel for 5-10 seconds. Position the carriage assembly in the middle of the rail and get in position with your ear next to the electronics assembly. Do you hear any beeps coming from the motherboard and the processor cooling fan turning on? Does the carriage assembly move back to the home position? If yes to either one, assume the components of the electronics assembly are acting normally.
2. Power the printer off and locate a spare computer monitor that can be utilized for testing. Attach the printer's VGA cable to the secondary monitor and the power cable to a wall outlet. Power the printer on, if the spare monitor displays the printer's interface then the issue is related to the LCD panel. If the spare monitor still does not display anything, proceed to step 3.
3. Power the printer off and swap the printers existing VGA cable with the VGA cable originally connected to the spare monitor and connect this to the printer's LCD panel. If the LCD panel displays the printer's interface then the issue is related to the VGA cable. If the LCD still fails to display anything, then the issue is related to the electronics assembly.

Note: LCD displays showing a white screen with no characters will almost always be related to the LCD panel.

Vertical Banding

Fixes	Probability
Trolley	High
Dirty Rail/Bearings	High
Carriage Drive Assembly	Low

Vertical Banding is anomaly in printed output that is most often caused by vibration that distorts the placement of ink drops on the media. These vibrations can be caused by any one or a combination of many things. The most common sources of vertical banding are the carriage and carriage drive systems. The following things should be checked for issues:

Carriage

- Was the printer powered off for an extended period of time? While the printer is powered on, the carriage will move periodically during idle times to prevent the weight of the carriage from creating flat spots on the trolley bearings/wheels. This can be prevented by allowing the printer to remain powered on at all times. If the trolley wheels have indeed developed a flat spot, this can be resolved by allowing the printer to run the carriage back and forth for a period of time to re-round the wheels. The Carriage Motion Troubleshooter found under User Diagnostics can be used for this purpose.
- Are the trolley bearings dirty, warped, cracked, or chipped? Thoroughly clean the trolley bearings until no residue remains. The rail where the trolley bearings glide should also be cleaned at the same time.
- Is the carriage making any noise when it moves? Attempt to determine the specific source of the noise, such as a loose fastener or some other unsecured component.
- Are the UV lamp housings making any notable noise when the carriage is moving? Ensure all supports and fasteners that secure these assemblies are in place and properly tightened.
- When the lamps are on and the carriage is not moving, can you feel any excess vibration coming from the UV lamp housings? Ensure the components within the UV lamp housing are secured and lamp fans are operating properly.
- Are the UV lamp shutters properly calibrated? Calibrate the shutters through the Service Calibration menu and ensure they are operating properly.

Rail

- Is there a build-up of dirt or other debris on the rail? Clean the rail thoroughly as well as the trolley bearings.
- Clean the encoder strip, both top and bottom surfaces. Use isopropyl alcohol (IPA) up to 70% concentration. Do not scrub the strip aggressively or the strip emulsion could be damaged, leading to other printer errors.
- The lower wheel-bearing surface of rail should be lightly lubricated by using only HP kit CH884A Oil Cloth Kit. **The other rail surfaces should not be lubricated in any way.**
- Is the aluminum rail body chipped or gouged in any location? Can this location be correlated to the appearance of the vertical banding in the output?
- Do the bands seem to line up with the pinch rollers? Clean or replace the rollers. Static electricity on the media can interact with the pinch rollers, creating vertical banding at those locations. Try several media types to determine if the issue is media-specific.
- Are all fasteners to all rail components properly tightened?
- Is the main blue carriage belt making any noise or moving inconsistently during printing? Ensure tension on the belt is correct.
- Fully inspect the carriage drive belt idler to verify there are no cracks around the primary attachment fastener to the rail.
- Ensure the carriage drive bracket is securely attached to the rail.
- Inspect the carriage drive motor pulley for any slippage on the motor shaft.
- Inspect the carriage drive shaft for any slippage by either pulley (geared and gritted) on the shaft.
- Listen carefully to the carriage drive motor for any abnormal noises during operation.
- Remove the stainless steel strips from the rail body and clean thoroughly. Inspect for any significant surface deviations such as scratches or gouges in the rail areas behind the strips.
- **CAUTION:** Removing and reinstalling the rail strips can be difficult. The strips are easily damaged, which will induce further problems if none were present before. Use discretion when deciding if the rail strips must be removed for inspection.

Platen

- Are all fasteners to all platen components properly tightened?
- Is one or more of the platen fans noisy or vibrating under the substrate?
- Is the media feed motor binding?
- Listen carefully to the media drive motor for any abnormal noises during operation.

Media Supply

- Inspect the media supply spool for any warping, slipping, or binding.
- Ensure rigid media is truly flat. Try a variety of media types to ensure the issue is not media specific.

General

- What surface is the printer installed on? The printer must be installed on a flat and stable floor that can safely support the weight of the printer, input and output tables, media, supplies, and operator.
- Is there anything causing excess noise on or around the machine, such as fans, other large equipment, etc?

Hardware component circumferences

The table below shows various moving components in the carriage drive system and their circumferences. If the interval of vertical banding is determined to be related to a mechanical component and the circumference approximately matches one listed here, it can be considered as a possible cause.

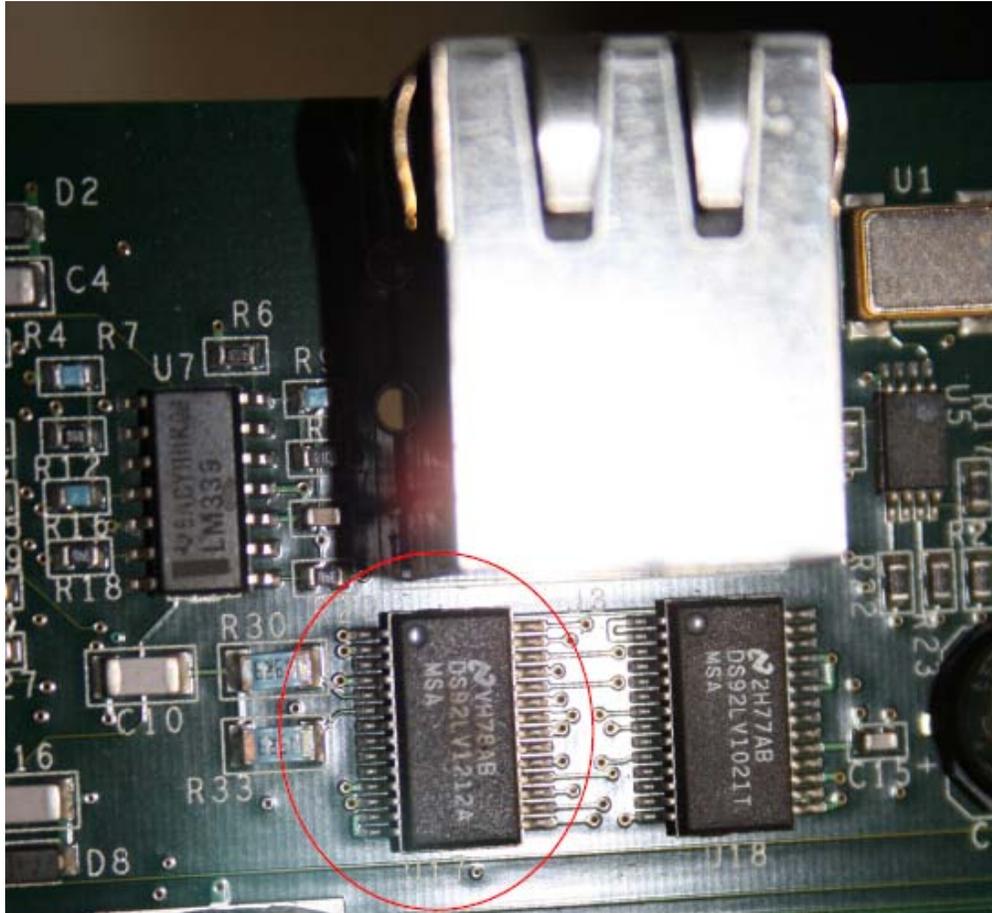
Drive Motor	1.67 inches (4.24 cm)
Drive Shaft Gear (Timing Belt)	5.58 inches (14.17 cm)
Drive Shaft Pulley (main drive belt)	2.81 inches (7.14 cm)
Idler Pulley	4.71 inches (11.96 cm)
Trolley Wheels	1.98 inches (5.03 cm)

Failed to Program Headboard

Fixes	Probability
Track Data Cable	High
Reseated cables at headboard and/or I/O	High
I/O Board	High
Headboard	Low
Track Power Cable	Low
Reboot	Low

The Failed to Program Headboard error is most commonly related to a poor cable connection at the I/O board or headboard, a bad data cable, and a mix between headboard and I/O board failures. The following steps detail how to narrow down what component(s) may be causing this issue:

1. Find out if any of the cable connections to the headboard were reseated with the printer powered on. If this is the case, it is very likely that the headboard and/or the I/O have been damaged. The best way to determine if there is damage to the headboard or I/O board is to look directly below the data cable connector. You will see two chips directly below this, one or both of which may have a brownish tint. If these chips are bad, they will also feel very hot to the touch when the printer is powered on.



2. Power down the printer and reseat the data and power cable connections to the headboard and I/O board. Ensure the data cable does not have any strain on it that may cause the data cable connection to shift during carriage movement. The data cable should have an excess loop as it comes out of the track assembly as to allow this cable to plug in straight up and down.
3. Additional testing can be done to rule out a bad data cable by using a standard straight-thru Cat. 5 Ethernet cable. This cable does not need to be routed through the track assembly, just used to see if it allows the printer to get past the error message. Furthermore, the data cable within the track is shielded whereas a standard Ethernet cable would not be shielded and should therefore not be used as a permanent fix.
4. Try rebooting the printer multiple times as this has worked in the past to resolve this error. Try discharging capacitors by powering down the printer, unplugging the input power cord from the printer, turn the printer's power switch back on for 10 seconds and then back off, ensure the power switch has been turned back off, plug the input power cord back into the printer and power on.

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