

PRODUCTS

The NEW *Technician's Service Edge* is in Stock

LPT's repetitive defect ruler and reference book *Technician's Service Edge* is in stock. It has repetitive defect rulers for 64 HP printers, plus many other interesting features.



- Error code summaries for Lexmark
- Paper jam troubleshooting steps
- Expanded HP Error code summaries
- PIN codes, Maintenance instructions & JetDirect info.

CORRECTIONS

Inventory Size

In the autumn edition of *Service Edge* there was a misprint regarding the size of the company inventory. In fact, it was our 2008 sales which were \$25 million.

PRINTER TECH ARTICLE

"Hung" Displays and the HP LaserJet 4345

A hung display is one that is stuck with the screen displaying "initializing," "warming up," "calibrating," or sometimes nothing but a row of asterisks or blocks. Essentially, the printer has failed to initialize. This article will offer an efficient way of tackling a particularly challenging case: the LJ 4345 MFP. First, we will describe the procedure for most other HP Laserjets.

General Hung Display Troubleshooting

For most Laserjets, failure to initialize can be traced to a bad formatter or something plugged into this board (firmware, memory, network card, hard disk drive, etc.). The normal troubleshooting sequence is to remove everything from the formatter that isn't absolutely necessary for basic operation, leaving you with a formatter board with nothing plugged in it except perhaps the firmware DIMM. If it now comes to "Ready," one of the removed items is bad, and you can find out which one by re-installing them one at a time. If the formatter/firmware combination still "hangs," then one of those two items is defective, and the only solution is to replace them one at a time, since the printer cannot function at all with either of them missing.

Caution: always turn the power off before removing anything from the formatter board, or plugging anything into it.

In a few specific cases, hung displays can be caused by other parts. Fuser warm-up issues can cause it in the LaserJet 9000 series, as we pointed out in the Fall 2009 *Service Edge*.

LJ 4345 Hung Display

After the memory count, the normal initialization display is a small HP logo that grows and shrinks in size for

COMPANY NEWS

LPT Tech Support is Direct and Toll Free

LPT clients can now contact technical support direct and toll-free at 866-947-9295.

To expedite your call, please be able to tell us...

1. WHAT is happening
2. WHEN it happens
3. FOR HOW LONG it has been happening.
4. WHICH TESTS you have run.
5. WHICH REPAIRS you have tried.

After you have told us this information, our tech support providers should be able to help you very quickly. Their expertise comes from many years in the laser printer service industry (more than 17 years each, on average).

Part numbers for laser printers can be found on our website, www.lbrty.com.

about three minutes before displaying "Ready." If it continues cycling for much more than three minutes, the printer probably has an initialization problem.

There are two main types of problems that cause hung displays on the 4345. On the one hand, it could be the formatter or something plugged into the formatter. On the other hand, it could be caused by the engine power supply or the FN101 fan. The following troubleshooting sequence will help you discover which part is causing the problem.

Ideally, you would have all parts available that are listed at the end of the article. If not, the procedures described in this article will probably require two service calls:

1. Troubleshooting, to determine which parts are needed.
2. Repair (installing the parts). If the printer is at a remote site, much of the troubleshooting can be done over the phone with the customer. Alternatively, you may want to treat this as a depot repair, where the printer is brought to your shop.

I. Is it the Formatter/Formatter Plug-ins or the Power Supply/Fan?

- A. Observe the "heartbeat LED" (visible just below the parallel port, or on the M4345, below the USB port – see figure 1). In a working printer, this LED will flash briefly on power-up, turn off during the memory count, and then pulse on and off in a regular pattern while the HP logo is cycling. If this LED is not pulsing while the logo is cycling, the problem is formatter-related. If the LED is pulsing, it's hard to be sure, so we need to run an engine test. Go to step B.
- B. Running an engine test on the 4345 mfp

1. Remove the formatter (with all its accessories and plug-ins), and power up without it.
 2. Let it warm up a few minutes.
 3. Make sure there is paper in all cassettes.
 4. Press the engine test button.
 - a. The engine test button is accessible through a small single hole on the back of the printer (see figure 2). Use a long, thin, non-metallic object to reach through and press the switch.
 - b. This may require several attempts, as you may miss the switch if you don't go straight in.
 5. If the printer prints an engine test sheet (a page containing just lines), then the fan and power supply are working. The problem is with something that plugs into the formatter or the formatter itself. Go to II.
- C. If the printer does not print an engine test sheet, either the fan or the power supply is defective. If you have a voltmeter, you should be able to tell which part is bad by observing fan rotation and/or measuring the voltage going to the fan. This will require some disassembly. You will find instructions on page six.

II. Is it the formatter or one of the plug-ins?

A. Hard Drive.

1. Turn the printer off
2. Unplug and remove the cable that connects the hard drive to the formatter.
3. Turn the printer back on.
4. In a normally working printer, you may get a message that tells you that copy & send functions are disabled, and/or that the internal disk was not found, but you will still be able to print from the menus or from the computer. If it still hangs or will not print, go to 2B. If it prints,

there is a problem with the hard drive. You can sometimes cure this by initializing the hard drive.

a. Hard drive initialization

1. With the hard drive installed and connected, turn the printer on and watch the display.
2. When the memory count begins, press and hold the right side of the "Start" button until all three LEDs are lit, then release it.
3. Press and release the "5" key. "INITIALIZE DISK" should appear on the display.
4. Press and release the "6" key. A row of asterisks should appear on the display. Wait for the printer to complete the initialization sequence.

b. If initialization of the hard drive does not work, replace it.

B. Other plug-ins.

1. Remove the formatter from the printer.
2. Reseat the compact flash firmware and base memory. These are the only two plug-ins that the formatter requires to function.
3. Remove all other accessories (fax card, extra DIMMs, etc.).
4. Reseat the "daughter card" that connects the formatter to the copy processor.
5. Then re-install the formatter and power up. If the machine now works normally, one of the removed items is bad. Re-install them one at a time (cycling power each time) to find out which one. If you still have a hung display with all those items removed, one of the remaining items (formatter, firmware, base memory) is bad, and all you can do is replace them one at a

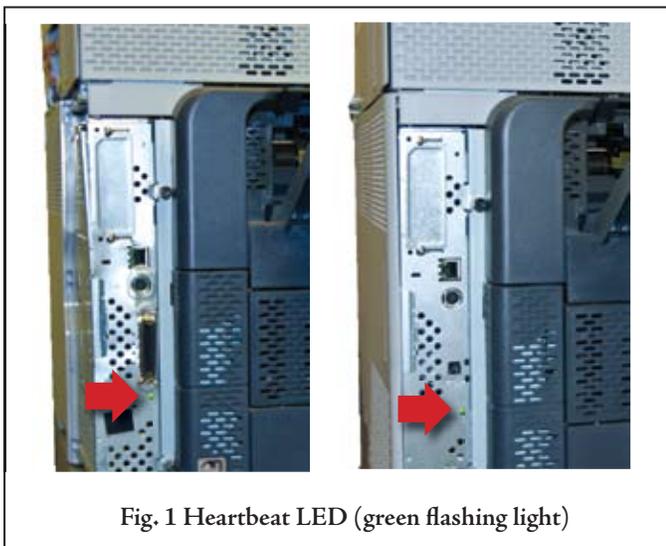


Fig. 1 Heartbeat LED (green flashing light)

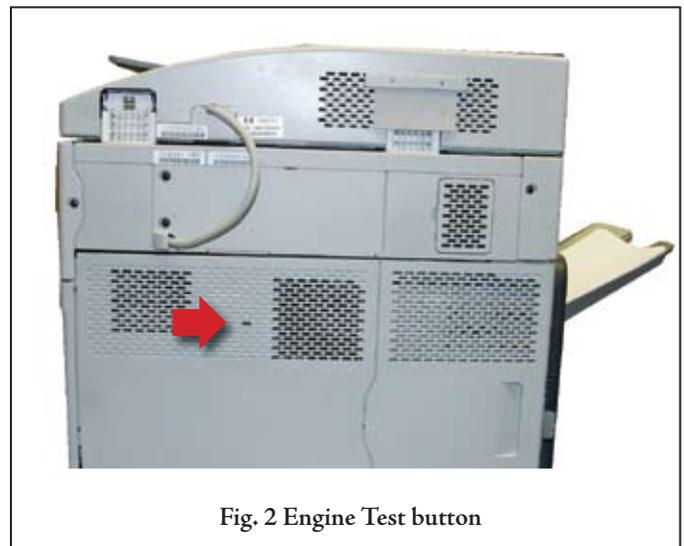


Fig. 2 Engine Test button

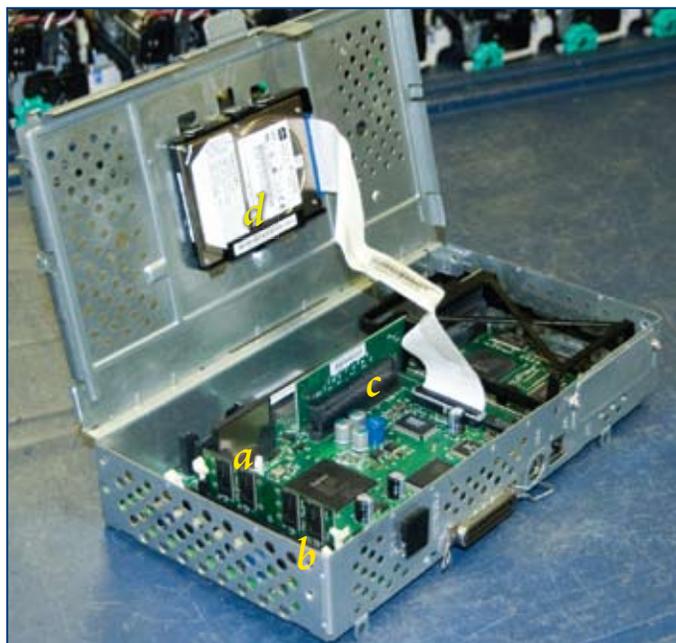


Fig. 3 Formatter and cage: a. Compact Flash (firmware), b. Memory, c. Daughter Board, d. Hard drive.

time. But before doing that, there are two more resets you can try.

a. Cold reset

1. Turn the printer on and watch the display.
2. When the memory count begins, press and hold the “6” key until all three LEDs are lit, then release it. The display should show “Select Language.”
3. Use either the “3” key (up arrow) or the “9” key (down arrow) to scroll the display until “Cold Reset” is highlighted.
4. Press and release the “6” key to select the cold reset, and wait for the printer to complete the initialization sequence.

b. NVRAM Initialization reset

1. Turn the printer on and watch the

display.

2. When the memory count begins (on the M4345, before the memory count begins), press and hold the “9” key until all three LEDs flash once and then stay on (this may take up to 20 seconds), then release it.
3. Press and release the “3” key, and then the “Start” key.
4. Press and release the “3” key as many times as needed, until “NVRAM INIT” appears on the display.
5. Press and release the “6” key to select this, and wait for the printer to complete the initialization sequence.
6. If neither reset solves the problem, replace the firmware DIMM, then the base memory, then the formatter (if necessary).

NOTE: Almost everything in this article applies equally to the LaserJet 4345 and the LaserJet M4345. However, note that the NVRAM initialization procedure is slightly different on the M4345. Also, it does not have a separate firmware DIMM or base memory DIMM – these are built into the formatter board.

Parts Mentioned in this article

Ideally, you would have all parts below. If not, the procedures described in this article will probably require two service calls.

Part Required	Part # (4345)	Part # (M4345)
Compact Flash (Firmware)	Q7725-67996	N/A
Memory	Q2627A	N/A
Formatter	Q3942-67901	CB425-67910
Fan 1 (FN101)	RK2-0278	RK2-0278
Engine Power Supply	RM1-1041	RM1-1041
Internal Hard Drive	J7948A	5851-3231



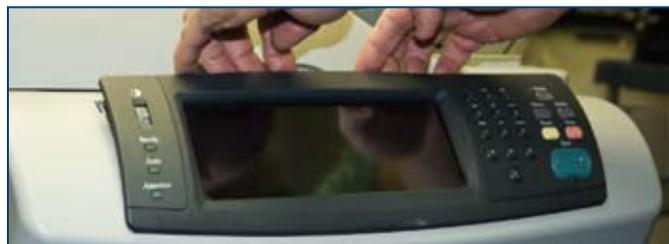
LJ 4345 TECHNICAL SIDEBAR

Shortcut: How to Tell if the LJ 4345 Power Supply is Bad

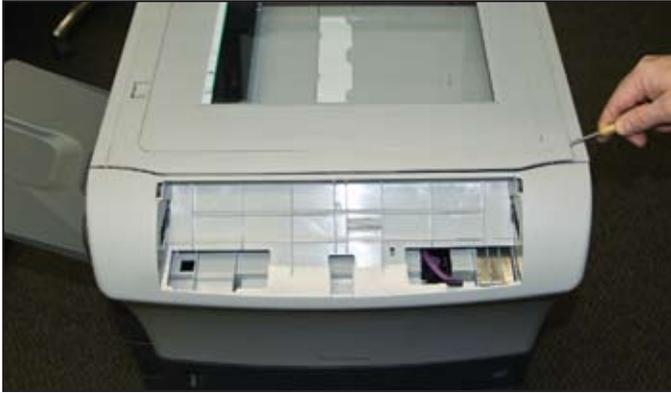
When troubleshooting a hanging display on a LJ 4345, once you have ruled out the formatter, that leaves either Fan 1 (FN101) or the Engine Power Supply. We at Liberty have found a way to test the power supply without swapping parts, saving time and money.

This will require removing the front cover. This involves manipulating hidden plastic tabs and removing screws.

Some of these tabs may break when you remove the cover. Do not worry, this does not cause problems, as the screws hold the cover in place perfectly well.



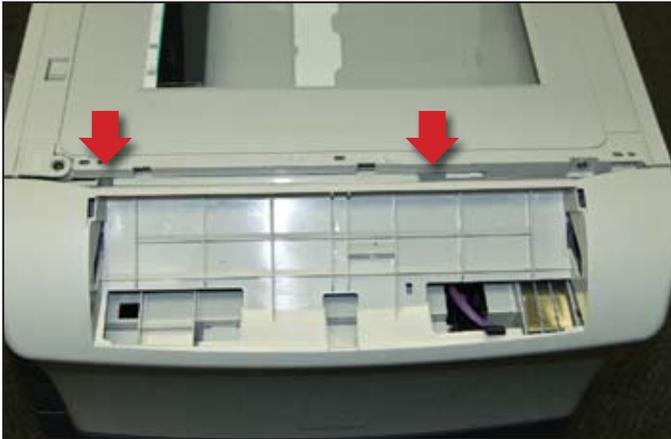
- A. Pull the control panel away from the printer to release the upper locking tabs. Then rotate it away from the printer and unplug one connector from the back.



B. Pop up one end of the top cover flatbed flange with a pick or small flat screwdriver, then remove it.



F. Slide the output bin from the MFP.



C. Remove two screws with a long Phillips screwdriver.



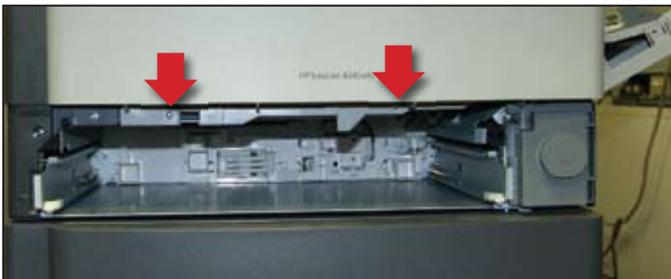
G. Release the retaining tab on the left side of the front cover. This one seems prone to breaking.



D. Open the top cover and remove one screw.



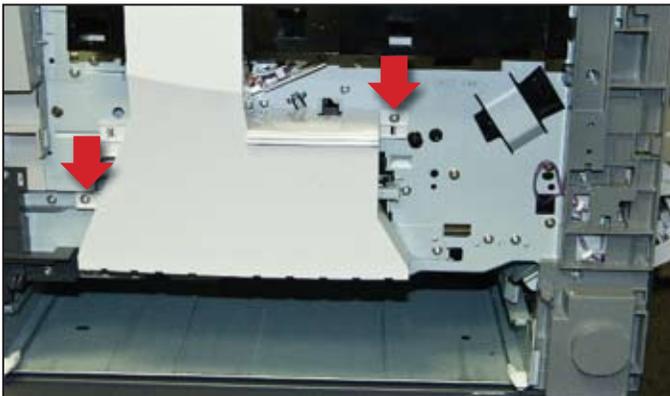
H. Remove two locking tabs on the right side (1 of 2).



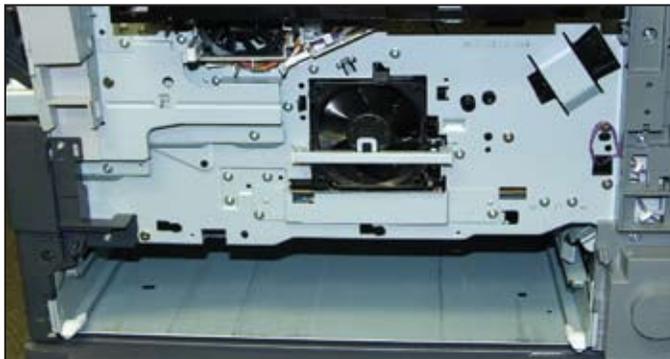
E. Remove Tray 2 and remove two screws.



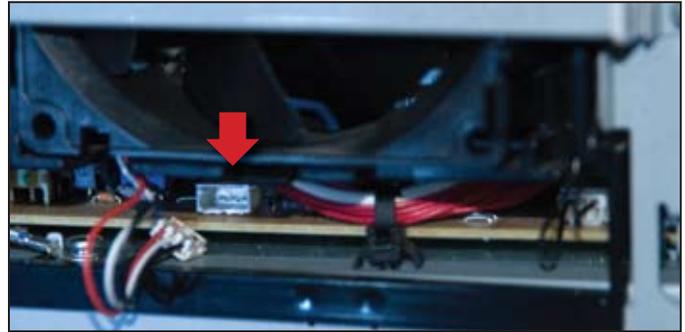
- I. Remove two locking tabs on the right side (2 of 2).
- J. We now quote from the manual: "Flex the bottom of the (front) cover away from the MFP to release the locking tab at the mid-bottom, and then push up on the cover to raise it slightly. Pull the front cover away from the MFP to remove it."



- K. Remove two screws to remove the fan duct.

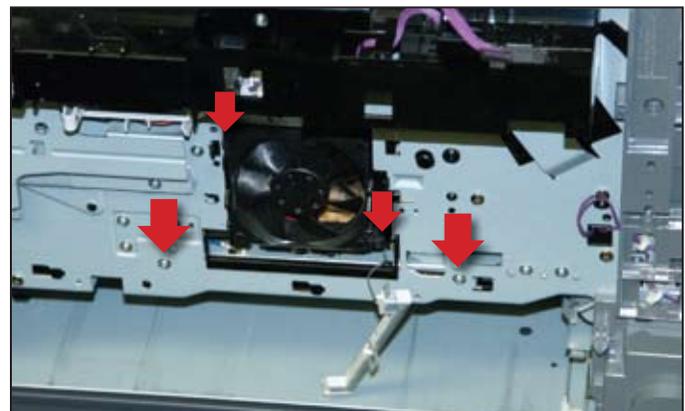
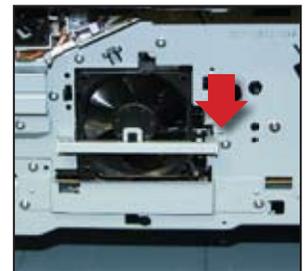


- L. Once you have gotten down to where the fan is visible, you can observe whether or not it is turning during the time that the HP logo is pulsing. If the fan is turning, the power supply is the bad part. Go to O. If the fan is not turning, further tests are required. Go to M.



- M. Testing voltage.

1. Remove one screw (photo, right) and unhook the thermistor. Move it to the side.
2. Remove two screws (large arrows in photo below) and remove the power supply shield. (Later, if you replace the fan, you will squeeze two tabs (small arrows) and pull the fan out.)
3. To check the voltage, unplug the fan connector from the board below it (do this with the printer powered off), and look at the connector on the board. It should have three pins, as in the photo above.
4. Turn the printer back on and use the voltmeter to measure across the outermost pins (see figure). You should see something between 15 and 25 volts DC while the HP logo is pulsing. If you do see this voltage, the power supply is probably OK and the fan is bad. If you do not see the voltage, the power supply is bad. NOTE: Make sure that the voltmeter is set to the proper range (at least 25 VDC, or better yet, set it to auto-ranging), and that the voltmeter probes are touching the connector pins. This requires a good eye and a steady hand.



- N. If the power supply needs replacement, consult the service manual for this lengthy procedure.

