

When is a paper jam not a paper jam

Paper jams are probably the most common of printer problems. And, more than any other type of problem, they require troubleshooting, because there are so many things that can cause jams. It's not as simple as "You have a paper jam? You need X!", because "X" can be many different things. It gets even trickier when the paper jam is disguised as some other kind of problem. We recently discovered just such a case on the HP LaserJet 4250/4350 series of printers.

First, some background. There are two basic types of paper jams: (1) The printer comes to a "Ready" state when powered up, but jams when you try to print something. We won't go into detail on this type of jam, since we are mainly concerned with the second type: (2) The paper jam error occurs during or immediately after the initial power-on sequence (before you try to print anything). This second type of jam always indicates that there is either a piece of paper somewhere where it shouldn't be, or the printer thinks that this is the case – i.e., one of the jam sensors is malfunctioning.

Normally, in either of these cases, the message you will get on the printer is "13 PAPER JAM" or something similar. But the case we encountered on the 4250/4350 had different symptoms. The message that came up after the power-on sequence was "Waiting for tray to lift". The tray would not lift, the printer would not come to a "Ready" state, and you would be unable to print from any tray (including the manual tray). This sounds like it ought to be a lifter problem, but those always produce a "60.x" error (where "x" is the tray number) on this series of printers.

What it turned out to be was the second type of paper jam. Specifically, the registration sensor (under the registration flap, all the way to the right side) was reporting paper present at that location. This can be literally true (especially if a real paper jam has been removed from this area, and the paper ripped, leaving a piece behind), or it can be a sensor malfunction:

- the actuator flag is stuck in the wrong position;
- the optical sensor is bad or dirty;
- there is a bad electrical connection between the sensor and the DC Controller board;
- the DC Controller board is bad.

By far the most common of these is a stuck actuator flag, so that's always the first thing to check (at the same time, you can check for the presence of paper). If the actuator flag is properly positioned and operational, you should be able to push it with your finger toward the back of the printer (i.e., in the direction that paper would push it), and when you let it go, it should come back to the forward position. If it does not act this way, it's not positioned correctly. In almost all cases, all you have to do is reposition it.

The same logic applies to a paper jam condition on power-up in any printer. First, check for paper in the paper path; then, check all paper jam sensors. Every laser printer has an exit sensor in or near the fuser. Most models also have one or more sensors in the input area and another one in the registration area. Some also have a second exit sensor in the output area (after the fuser). And any additional paper-handling accessories (duplexers, high-capacity feeders, output stackers/sorters, etc.) will also have jam sensors. Check them all, paying special attention to the actuator flags. In most cases, one of these will be missing, bent, or stuck in the wrong position.

But if the printer is a 4250 or 4350, also be aware of the condition described above: if you get a "Waiting for tray to lift" message, but no "60.x" error, chances are that something is wrong with the registration sensor (again, this will usually be a stuck actuator flag, and usually all you have to do is reposition it). Why this doesn't produce a "13 PAPER JAM" error is a mystery. Maybe it's a firmware bug that will be corrected in the future. But as long as you know what message this condition does produce (and now you do!), you can troubleshoot it correctly.

When is a paper jam not a paper jam? When it is masquerading as something else. In the situation we have covered (on the HP LaserJet 4250/4350 series), it actually is a paper jam, but the printer is not telling you that. You have to be smarter than the printer, and we hope that this article will help you accomplish that.

—Dennis Kosterman

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