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TECH TIPS July 2004



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- *This Issue Contains:*
- HP2100/2200 Attention Light. Part 2
- HP2300 Printer Specifications



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HP LASERJET 2100/2200 FLASHING ATTENTION LIGHT: WHAT DOES IT MEAN?

This article is the second part of a two-part series. The attention light mentioned in this article is not unique to the HP LaserJet 2100/2200. All of HP's status light type printers have a similar light, and the aspects of trouble-shooting the errors mentioned is generally the same.

Paper Jams

There are two basic types of paper jam errors: errors that occur on power up, before you try to print anything, or errors that occur only after requesting a print job.

In the first case (error on power up), the error may not be a paper jam at all—it could be one of the other three errors discussed above. But if it is a paper jam, there are only two possibilities: there is paper somewhere in the paper path, or the printer thinks there is, meaning one or more of the printer's paper jam sensors is malfunctioning. These are the same type of sensors as we discussed in the "Paper Out" section of Part One of this article.

Both the 2100 and the 2200 have one jam sensor under the registration assembly—lift the registration flap to see the tip of the sensor flag sticking up into the paper path—and one inside the fuser (Figure 5). In the 2100, these are the only two jam sensors. The 2200 has two additional sensors in the duplex path.

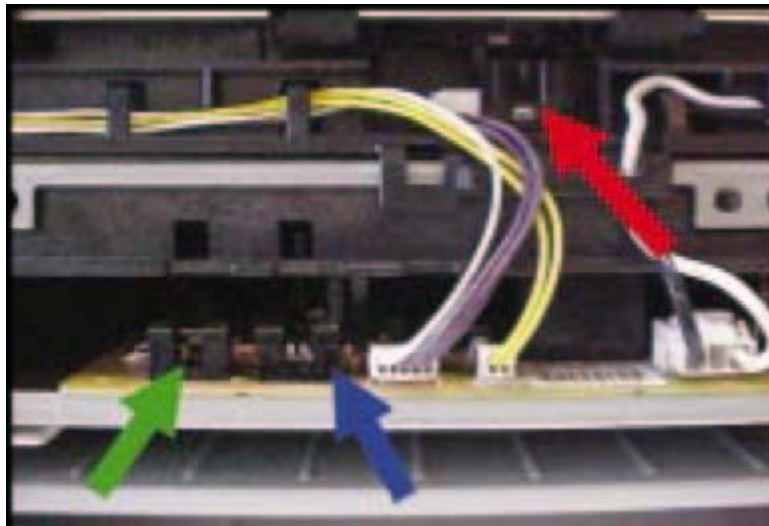


Figure 5 - The HP LaserJet 2200 with jam sensor in fuser (red arrow), duplex jam sensor (green arrow), and face-up sensor (blue arrow).

Parts on Demand Limited.

36 Shaddock Street
Eden Terrace
PO Box 8176
Symonds Street
AUCKLAND
NEW ZEALAND

Phone: +64 9 309-3137

Fax: +64 9 309-3353

Email: support@partsondemand.co.nz

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Figure 6 - HP LaserJet 2200 reverse guide assembly.

These sensors, along with all the duplexing hardware, are present even in the non-duplexing version of the printer, as the only difference between the 2200 and the 2200d is the formatter board. One of the duplex sensor flags is in the reverse guide assembly, the white plastic piece that covers the fuser in the rear (Figure 6). Note that this flag has two protrusions, and activates two sensors on the power supply board. Only one of these sensors is a jam sensor (green arrow in Figure 5); the other one is the face-up sensor (blue arrow in figure 5), which tells the printer when the rear tray is open, and will not cause an error of any kind.

The other duplex jam sensor is located in the duplex path on the bottom of the printer. To see this sensor, remove the paper tray and toner cartridge and turn the printer upside down. Figure 6 shows the approximate location of the sensor flag. To actually see the flag and sensor, follow the disassembly steps below:

1. Remove the rear cover of the printer and the reverse guide assembly (Figure 6).
2. Unplug four cables from the power supply board (in the back, below the fuser).
3. Remove the duplex feed guide assembly (the large metal plate in Figure 7), the plastic pin that this plate swivels on, and the position guide assembly (Figure 7).
4. Remove five screws (four on the bottom, one in the back) and tilt out the metal pan containing the power supply board. The sensor is soldered to this board and the flag is mounted to the metal pan next to the sensor (Figure 8).

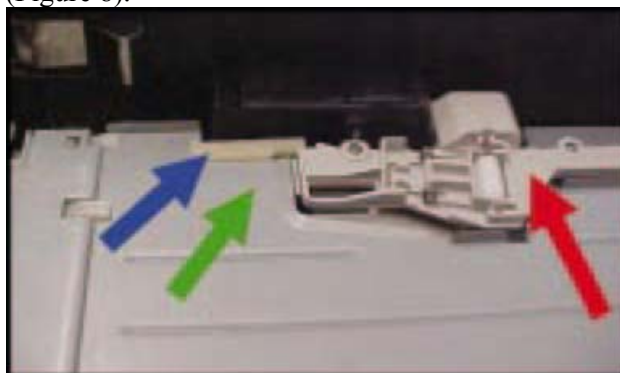


Figure 7 - The position guide assembly (red arrow), and plastic edging on metal plate (blue arrow). The green arrow denotes the approximate location of the sensor flag under the metal plate.

Parts on Demand Limited.

36 Shaddock Street
Eden Terrace
PO Box 8176
Symonds Street
AUCKLAND
NEW ZEALAND

Phone: +64 9 309-3137
Fax: +64 9 309-3353
Email: support@partsondemand.co.nz

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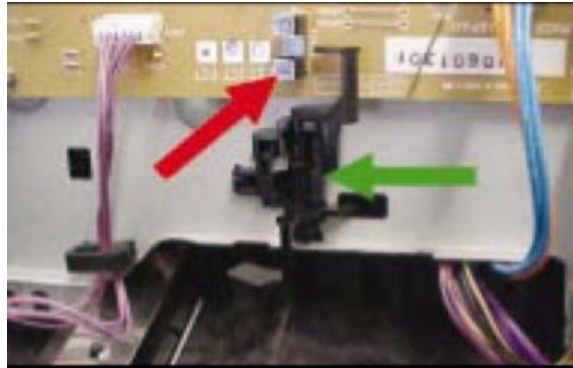


Figure 8 - The duplex paper jam sensor (red arrow) and flag (green arrow).

If you get the flashing attention light on power up and suspect a paper jam, check all four sensor flags (two in the 2100)—one of them is probably stuck or misaligned. The flag that seems to cause the most problems is the lower duplex flag in the 2200 (Figures 7 and 8). This flag can easily get hung up because it has very little clearance. We have seen problems caused in this area by the duplex feed guide assembly (the large metal plate) being warped, and in one case, because the plastic edging on this plate was missing (Figure 7). It doesn't take much to interfere with this flag.

If in doubt, remove the flag and trick the sensor by blocking the optical surfaces with paper or tape (if this sensor is not blocked, the printer will display an error after powering up). If the error goes away when you do this, then this flag is the problem. If it's a non-duplexing version of the printer, one solution is to simply leave the sensor blocked all the time, since this part of the paper path is only used when duplexing. It's also possible that one of the four optical sensors is defective, but it is rare for a sensor to go bad unless it is physically cracked or broken. Always thoroughly check the position and movement of all flags before replacing any circuit boards. We will discuss the types and locations of sensors (along with the two "paper out" sensors) a little later.

The other type of paper jam occurs only after requesting a print job. In this case, the flashing light always means a paper jam, so you can ignore the other three conditions mentioned above. Keep in mind that the printer's definition of a paper jam is not the same as our intuitive definition. Once a print job has started, each of the printer's jam sensors expects to see the leading edge of the paper arrive at a specific time, followed by the trailing edge a short time later. If this doesn't happen, the printer concludes that there is a "paper jam." The point is that you won't always find paper actually jammed in the printer when the printer displays a paper jam error.

Two examples of "false" paper jams are:

1. The printer is unable to pick up the paper at all, so it never gets out of the tray. Since the paper never reaches the first sensor, the printer thinks there is a paper jam.
2. Paper successfully passes through the printer, but one of the sensor flags gets stuck and fails to return to its initial position.

Parts on Demand Limited.

36 Shaddock Street
Eden Terrace
PO Box 8176
Symonds Street
AUCKLAND
NEW ZEALAND

Phone: +64 9 309-3137
Fax: +64 9 309-3353
Email: support@partsondemand.co.nz

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This makes the printer think that paper is still present at that sensor, once again causing it to display “paper jam.” Be sure to investigate these two possibilities if you don’t find any paper jammed anywhere.

Particularly common is example 1, where the printer fails to pick up. This can be due to worn-out pickup rollers, or it can be because the pickup roller isn’t turning at all. Strangely enough, this often happens after installing a new pickup roller, because the installation is a bit tricky.

A malfunctioning paper out sensor in either tray can also cause false paper jams, as the printer will try to pick up paper from an empty tray, not knowing that it’s empty. In particular, if tray 1 (the manual tray) is empty, and the printer won’t pick up from tray 2, check to see if the tray 1 pickup roller is turning. If it is, the printer thinks there is paper in tray 1, which indicates a malfunctioning sensor.

When paper is actually jammed or stopped somewhere in the printer, trouble-shooting is relatively straightforward. There are three basic causes for this type of jam:

1. Whatever roller is driving the paper in that location is either worn, slick, or not turning. This is especially apparent when the paper bunches up right at the roller.
2. There is an obstruction in the paper path at that location.
3. A sensor near the location failed to “see” the paper, either because of a sensor malfunction, or because the paper failed to reach the sensor in time due to feed problems (similar to #1). In this case, the paper will not be folded, crumpled, or otherwise mutilated—it will simply stop. If this happens within an inch or less after one of the sensors, there is a good chance that the sensor is malfunctioning.

Sensor Types and Locations

Table 1 - Photo sensors in the HP LaserJet 2100

Sensor Function Sensor Part Number Assembly Containing Sensor Assembly Part Number

PS 501 Tray 2 paper out sensor Engine controller asm. RG5-4150
 PS 502 Top of page sensor (paper jam) Engine controller asm. RG5-4150
 PS 503 Delivery sensor (paper jam) *WG8-5382 Fuser RG5-4133
 PS 504 Tray 1 paper out sensor *WG8-5382
 PS 2001 Tray 3 paper out sensor *WG8-5382

* WG8-5364 and WG8-5382 appear different, but we were able to interchange them with no problems. We consider these sensors to be functionally interchangeable.

All paper sensors in the printer (“paper out” and “paper jam”) are of the same basic type, but they come in three different styles. Some of them are only available as individual parts, meaning they are not part of any assembly. These usually clip into the frame of the printer, and have a connector built into them.

Some sensors are only available as part of an assembly (most of these are soldered into circuit boards), and a few are available both ways. Tables 1 and 2 list all photo sensors in both printers, their functions, and the part number of each photo sensor and/or the assembly containing it.

Parts on Demand Limited.

36 Shaddock Street
 Eden Terrace
 PO Box 8176
 Symonds Street
 AUCKLAND
 NEW ZEALAND

Phone: +64 9 309-3137
 Fax: +64 9 309-3353
 Email: support@partsondemand.co.nz

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NOTE: The 2100 and 2200 are very similar printers, but they use different nomenclature for circuit boards. Both printers have three circuit boards: one large one on the bottom, and two smaller ones mounted on the right side. In both printers, the front board on the right side is the formatter board, but the other two boards have different names in the two printers.

In the 2100, the large board on the bottom is the engine controller assembly, and the small board in the right rear is the interconnect PCA. In the 2200, the large board on the bottom is the power supply assembly and the small board in the right rear is the engine controller PCA. Keep this in mind when interpreting the above tables. In both machines, board-mounted sensors are on the large board on the bottom.

Conclusion

Errors indicated by the flashing attention light on the HP LaserJet 2100 and 2200 are conceptually basic, lowlevel errors, but they can be difficult to troubleshoot because of the multiple possible causes. If you approach the error logically, though, using this article as a checklist, trouble-shooting is relatively straightforward. Most of it involves checking various photo sensors and the flags/levers that activate the sensors. Remember that it is very rare for the photo sensors themselves to fail, so in most cases, you will find a flag that is stuck or misaligned. Many times you can cure the problem by simply readjusting the position of the misbehaving flag

Table 2 - Photo sensors in the HP LaserJet 2200

Sensor Function	Sensor Part Number	Assembly Containing Sensor	Assembly Part Number
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PS 501 Reversed paper sensor (paper jam)	Power supply asm.	RG5-5573
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PS 502 Face-up sensor	Power supply asm.	RG5-5573
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PS 503 Duplex pickup paper sensor (paper jam)	Power supply asm.	RG5-5573
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PS 1305 Tray 2 paper out sensor *WG8-5364	Cassette pickup asm	RG5-5551
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PS 2001 250-sheet feeder paper out sensor *WG8-5382		
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PS 2003 500-sheet feeder paper out sensor *WG8-5364		
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PS 2301 Delivery sensor (paper jam) *WG8-5382	Fuser	RG5-5569
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PS 2305 Top-of-page sensor (paper jam) *WG8-5382		
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PS 3208 Tray 1 paper out sensor *WG8-5382		
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- WG8-5364 and WG8-5382 appear different, but we were able to interchange them with no problems. We consider these sensors to be functionally interchangeable.

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36 Shaddock Street
Eden Terrace
PO Box 8176
Symonds Street
AUCKLAND
NEW ZEALAND

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HP 2300

Model	HP2300	2472A	
	DPI	1200	
Printer Speed		24 PPM	
Base Memory		HP2300 = 32Mb	HP2300n/d/dn/dtn = 48Mb

SPECIFICATIONS

Height	Width	Depth	Weight
260mm	413mm	450mm	14.3Kg

ACCESSORY / OPTIONS

Toner cartridge	Q2610A		
Memory 8Mb	C7842A	16Mb	C7843A
32Mb	C7845A		
Duplex	N/A		
Tray 250 Sheet	C4793-67901		
Tray 500 Sheet	C7065-67901		
Network	J4169A	10/100 Ethernet	
	J4135A	USB	

FREQUENTLY USED PARTS

Control Panel	RH6-0226		
Drive Assy	RM1-0334		
Engine Board	RG1-4307		
Fan	RH7-1591	Formatter	Q1395-60001
Fuser	RM1-0355		
Laser	RM1-0313		
Motor	RH7-1587		
Pickup Assy Tray1	RM1-0346	Pickup Assy Tray2	RM1-0332
PSU	RG1-4329		
Registration Assy	RM1-0347		
Roller Pickup Tray1	RC1-0945	Roller Pickup Tray2 250	RB2-6304
Roller Pickup Tray3 250	RB2-6304	Roller Pickup Tray3 500	RB2-6304
Roller Output	RM1-0371	Roller TX	RM1-0338
Separation Pad Tray1	RC1-0939	Separation Pad Tray2 250	RC1-0954
Separation Pad Tray3 500	RB2-9960		
Sep Pad Kit	RM1-0345		

SERVICE MODE

PIN # 11230002

1. Press [Select].
2. Use [UP] arrow or [DOWN] arrow to scroll to service and press [Select]
3. To type in the PIN number use the [UP] and [DOWN] arrows to scroll thru numbers
4. Use [Select] to select number. The number will then change to an *, ready for next number
5. [Select] to finish PIN number

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36 Shaddock Street
Eden Terrace
PO Box 8176
Symonds Street
AUCKLAND
NEW ZEALAND

Phone: +64 9 309-3137

Fax: +64 9 309-3353

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RMA- RETURN MERCHANDISE AUTHORIZATION

- An RMA number assigned by POD must be put on the outside and inside of your returned product package for adequate identification. Products returned without a valid RMA number will be refused at POD.
- The customers RMA number is valid only for 30 calendar days from date of issue.

EXCHANGE ITEMS

- Products must be:
 - 1) Returned within the specified date on the Exchange Docket.
 - 2) Repairable, no alterations, or missing parts.
 - 3) Be an exact equivalent of the part shipped out.

RETURNED PROCESS

- On receipt of RMA and Exchange parts POD will inspect it to confirm that it is:
 - 1) The correct part returned.
 - 2) Eligible for product return.
- If not, then POD will have the option of:
 - 1) Returning it with an explanation
 - 2) Providing no refund for a RMA
 - 3) Not accepting the part as an Exchange unit.

RESTOCKING FEE

- POD at its discretion may charge a restocking fee to recover costs in processing and re-testing goods returned. A minimum fee of \$20.00 may be applicable.

MISCELLANEOUS

- Manuals, rollers and special order items are not returnable.
- POD is not responsible for damages incurred in transit.
- The customer is responsible for return shipping.
- All products must be returned within the allocated time issued by POD.

WARRANTY PERIOD

- New products carry the Original Manufacturer Warranty.
- Exchange Units carry a 90 day warranty.

These policies are to be read in conjunction with PODs Terms and Conditions.

Parts On Demand Limited

36 Shaddock Street
Eden Terrace
PO Box 8176
Symonds Street
AUCKLAND
NEW ZEALAND

Phone +64 9 309-3137
0800 22-55-05

Fax +64 9 309-3353

Email support@partsondemand.co.nz

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