

PS112 Media Width Sensor Failure Modes and Diagnostics HP 4345MFP and M4345MFP

Issue

The media width sensor in HP LaserJet 4345 and M4345 multifunction products fails.

NOTE: Diagnosing a failure of this sensor can be difficult and time consuming. PS112 is not included in the switch tests performed at the control panel. PS112 is the only photo sensor in the HP LaserJet 4345 MFP and M4345 MFP that can not be tested via the Manual Sensor test or the Paper Path Sensor test from the control panel Diagnostics and Troubleshooting menus.

The HP LaserJet 4345 and M4345 multifunction products contain two paper width sensors (PS106 and PS112).

Both sensors are located in the EP Cavity next to the gear train. To view them, remove the toner cartridge and the jam access plate, and then rotate the Registration Assembly upward (see figure below).

PS112 is a photo sensor used by the device to sense media that is narrower than 7.4 inches (188mm) as well as residual media present in the paper path.

Figure 1: Paper width sensors (PS106 and PS112)



Causes

The photo sensor is made up of two components, a light emitting diode and a receptor. The PS112 photo sensor is actuated by a flag which can be impacted if one or both of these components fail. Photo sensors can have two failure modes:

- **The light emitting diode fails.** If this happens, the photo sensor behaves like the flag is engaged and the light path is always closed.
- **The receptor or sensor flag fails.** This cause is rarely seen (*Corner Case, Rarely Seen*). If this happens, the photo sensor behaves like the flag is never engaged and the light path is always open.

Symptoms

These failures typically have one or more of the following symptoms:

- When the device is powered on, a '13.20 Jam in top cover area remove print cartridge' error message displays on the product control panel when there is no paper found in the paper path under the toner cartridge (photo sensor diode failure).
- The control panel displays 'Mismatch paper size from Tray n' and '41.3 Unexpected paper size errors' when Letter/A4 or Legal media is processed from any tray where paper size is indicated.
- Actuating the flag has no effect on the device.
- Media will feed from Tray 1 without error messages when paper size is set to Any
- Media narrower than 7.4 inches transits the MFP without error, but wider media (Letter/A4) causes the error message.
- If the printer goes into Sleep Mode with the failed sensor, the device may not come out of or 'wake up' from Sleep mode.
- The device displays Processing job continuously, or when attempting to copy or print, the MFP hangs in a Processing job state.
- The MFP displays READY on the product control panel after the device is powered on when it should display an error message.

If any of the above exist, it is likely that the PS112 photo sensor is defective. See the following troubleshooting steps.

Receptor failure

To determine whether there is a PS112 receptor failure, perform the following steps:

1. Turn off the MFP.
2. Remove the toner cartridge and then tape down the PS112 flag found under the Registration assembly jam access flap.
3. Reinstall the toner cartridge.
4. Power on the MFP.

If after you power on the MFP, READY appears on the control panel, the PS112 sensor is defective.

If after you power on the MFP, a '13.20 Jam in top cover area remove print cartridge' error message appears on the control panel, the sensor is not causing the issue. See Diode failure .

Diode Failure

To determine whether there is a PS112 diode failure, perform the following steps:

1. Make sure there is no paper stuck in the sensor flag and that the flag moves freely.
2. Look for toner dumping in this area. If there is toner build up in the flag slot, it may be partially or fully blocking the photo sensor.

Try cleaning the sensor using compressed air.

3. Perform a Paper Path Sensor test. Make sure all sensors are active, moving from 0 to 1 as the media transits the paper path.

If all of the Paper Path sensors are functioning normally, the media width sensor PS112 is defective.

Workaround

We have seen instances where the PS112 sensor fails because of toner buildup in the sensor. In the cases we have investigated, this is due to toner dumping caused by remanufactured toner cartridges. We have had success in resolving the failure by cleaning the sensor using compressed air.

Solution

A change to DC Controller firmware was implemented in version 17 to correct these issues, but the behavior is ultimately cause by a defective PS112 sensor.

The page width sensor PS112 is part of the central printer block and this part is not replaceable. To resolve the issue, the entire printer should be replaced. The DC Controller should *not* be replaced.