

UV Bulb Expectations

HP Designjet H35000/H45000 Printer
series (ColorSpan 5400 Series)



Introduction

Many customers have questions about the bulbs for the UV-curing lamps on the HP Designjet H35000/H45000 Printer series (ColorSpan 5400uv Series). This document defines the factors that contribute to bulb wear and what to expect from your UV system.

Terminology

The UV lamp system consists of these parts:

Lamp Housings

The two ventilated boxes on the left and right sides of the carriage. Each lamp housing is conceptually equivalent to a light fixture in your home or office: it is a reasonably permanent hardware item. The lamp housing is directly connected to the electrical current and contains the necessary components to light up a UV bulb (see below). The housing also has a self-contained cooling apparatus.

UV Bulb

The actual “light bulb” that emits visible and UV light energy. Just like a light bulb in any fixture in your home or office, the UV bulb is a consumable item and will eventually need to be replaced. Bulb life is a major topic of the remainder of this document.

The photographs below show each of these items.

		
Lamp Housing on Carriage	Lamp removed and inverted, showing bulb and reflector	Bulb Removed from Lamp Housing

Bulb Life

Bulb life is defined as the period in which the bulb will emit enough ultraviolet (UV) light energy to cure the ink within the available exposure time.

For the first 200-300 hours of on-time, the energy emitted by the bulbs is constant. After that the energy emission begins to decline. Between 300-500 hours of use, the decline is sufficient so that most bulbs no longer emit enough energy to cure output in the fastest printmodes with the lamp at its lowest power setting. If you are not printing in the faster modes, the number of hours before this occurs may be higher; but see the “Additional Notes on Bulb Life” section (below) for important details. Whenever this point is reached, there are two options to extend the life of the bulb:

1. Increase power from low to medium, and then from medium to high. Increasing the power setting causes the bulb to emit more UV energy. Heat output will increase as well, so see the section below about power settings and heat generation.

2. Change to the next slower print mode. Each mode moves the media through the lamp zone at a different rate. Slower print modes allow the printed ink to be exposed to the decreased lamp energy more times, resulting in an accumulation of enough UV energy to cure the ink.

At some later time, the energy output even at the high power setting combined with printing in the slowest mode will not expose the ink to enough UV energy to cure. At this point there is no option except to replace the bulbs. The estimated maximum life for a bulb is 1000 hours.

Additional Notes on Bulb Life

- “On-time” includes all time that the bulbs are on, including when the printer is not actively printing. The setting for idle on-time until automatic shut-off can be adjusted between 1 and 8 minutes.
- On-time alone is not the only factor that contributes to eventual energy decline. Each startup cycle of the bulb also contributes to the decline. To maximize bulb life, plan your printing schedule so that both idle on-time and lamp startup/shutdown cycles are kept to a minimum.
- Using the manual media measurement method, whereby the printer operator finds the width of the media by manually positioning the carriage over each edge, must turn off the lamps in order for the measurement to take place. This increases the number of startup cycles, which as noted above contributes to decreased bulb energy.

Bulb Power Settings and Heat Generation

Air flow

Each lamp assembly has a cooling system consisting of two fans that pull air through the top of the lamp housing, blow it over the bulb, and expel it out the front of the housing. The top of the assembly has a filter screen that keeps foreign particles from being blown by the fans onto the bulbs. This filter screen can become clogged, decreasing the air flow over the bulbs and therefore decreasing the efficiency of the cooling system. The Medium and High power settings create more heat than the Low power setting, and so if the cooling system is operating at anything less than peak efficiency, the temperature could exceed the safety limit and cause the lamp to turn off.

Clean the screen or replace it regularly. Printing with head heights greater than 0.085” (2.2mm) will create more airborne ink dust that can clog the filter screen more rapidly. Other environmental factors can also accelerate clogging of the filter. If in doubt, change the filter more frequently.

Shutter Aperture

Beginning in software version 1.07, you can select the aperture (opening amount) for each shutter, and/or completely close one of the shutters, during printing. This enables you to reduce the warping of rigid media by reducing the amount of light and heat emitted by the lamps. The aperture can be set in the Print Modes function or by touching the UV lamps info panel.

The UV lamp shutters are vertical when completely opened, and rotate to change the aperture. An aperture setting of 0 degrees is completely open; 20 degrees is half open, 40 degrees is the maximum closed setting. You cannot set both shutters to closed while printing. During printing, the lamp icons on the control panel are dynamically shaded to indicate the aperture setting. The icons will change as the carriage direction changes if the leading and trailing aperture settings are different from each other.

© Copyright 2008 Hewlett-Packard Development Company, L.P.

The information contained herein is subject to change without notice.

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

TN2767B

