

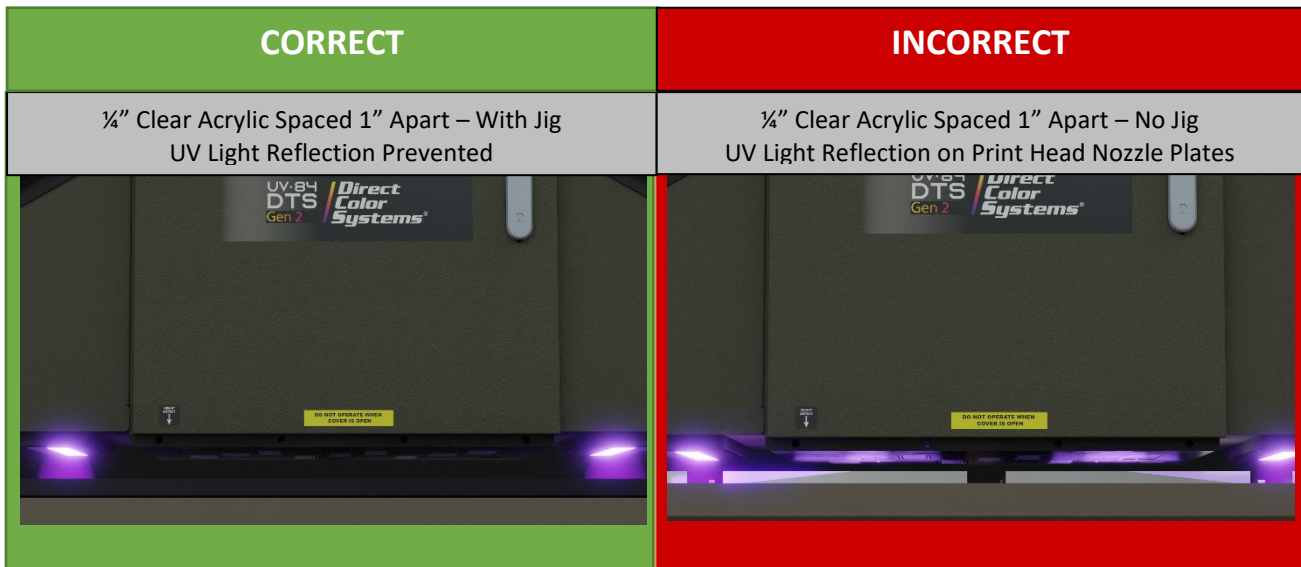
PREVENT PRINT HEAD FAILURES: USING & DESIGNING JIGS TO PREVENT PRINT HEAD FAILURES

What are jigs?

Jigs are tools that are designed to hold parts or products in a fixed location during printing. Jigs are often used in screen and pad printing, but they are even more important when UV inkjet printing.

Why are jigs necessary?

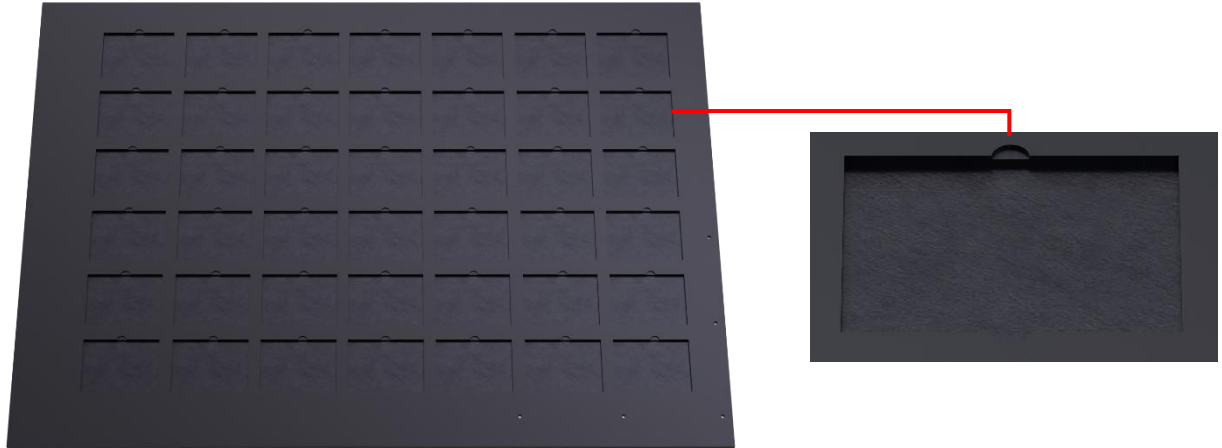
When UV inkjet printing, jigs are needed to create as flush a top surface as possible to reduce UV light reflection and ink mist. The UV light(s), which are attached to the Print Carriage next to the print head(s), are responsible for curing the UV ink as it is printed. When printing, the depth between the parts or products and the bed can cause light reflection. In some cases, this reflected light may be directed toward the print head nozzle plate(s). When this happens, it can result in ink curing or partially curing in the print nozzles. Oftentimes, these cured/partially cured nozzles cannot be recovered and will result in reduced print quality and eventually, the print head will need to be replaced.



What are the advantages of using a jig?

In addition to helping to protect the print head(s) from premature failure, jigs can help improve productivity. Jigs, allow for easier loading and unloading of parts while keeping the location consistent from job to job. Jigs are used in a wide variety of different applications (e.g., routing, engraving, machining, etc.). However, it is important to understand the requirements for designing and using a jig with a UV LED Inkjet printer.

Tip: Consider incorporating finger slots for easier unloading of parts or products flush to the top surface of the jig.

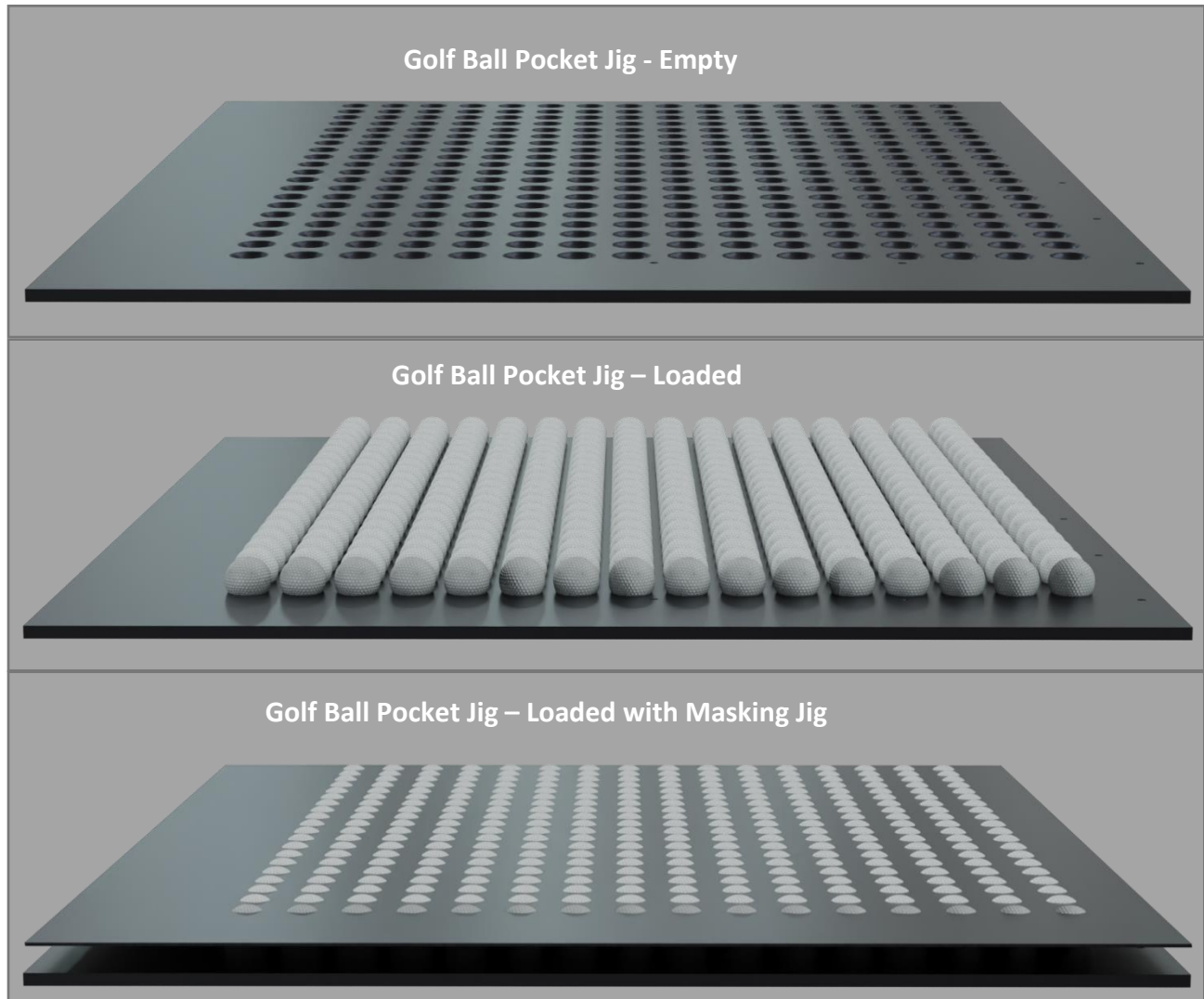


What attributes make a good jig?

- 1. The entire jig should be manufactured with non-reflective material. The material finish is very important. Matte black finishes are recommended for minimizing UV light reflection.** Be sure to consider the weight of the material and a full bed of parts or products and refer to the maximum weight specifications for your printer model. Some suggestions for lightweight materials, which are offered with a matte black finish, include Acrylic, Sintra, and Dibond.



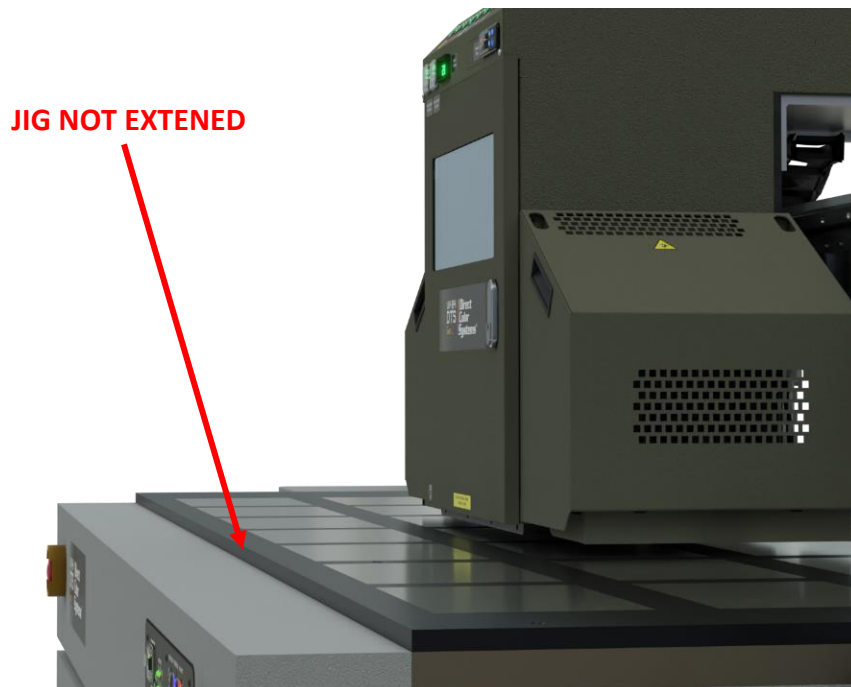
2. The jig should create a consistent and relatively flush top surface, which is level to the printable area of the part or product. Parts or products with a consistent flush top surface (e.g., non-beveled acrylic) can use a pocket-style jig. However, parts or products with a convex surface (e.g., golf balls) or which feature beveled edges (e.g., beveled acrylic) should also include a masking jig. A masking jig sits above the parts or products and the pocket jig. The masking jig exposes only the printable area of the part or product (see example images below).



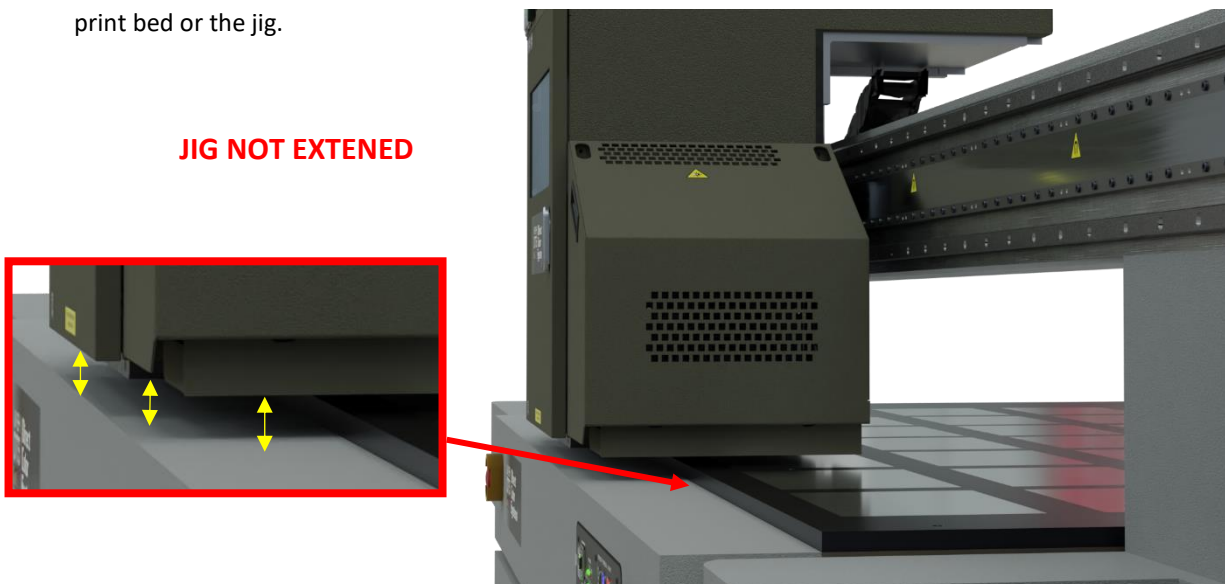
The length and width of the jig should be oversized to account for Print Carriage “overhang”. When printing, the Print Carriage must travel beyond the dimensions of the actual artwork to ensure an even cure throughout the print. To prevent UV light reflection, oversize the top, bottom, and sides of the jig to account for this (see example images below). The exact dimensions of the jig will vary depending upon the printer model and/or the dimensions of the print job.

Example A: Front Print Carriage Overhang

In this example, the print will begin near the very front of the print bed.



Notice that when the carriage advances to begin the print, the front of the carriage is not positioned over the print bed or the jig.



Here's a look from below the Print Carriage. As you can see, the front most print heads as well as the front of the UV lights are exposed.

JIG NOT EXTENDED



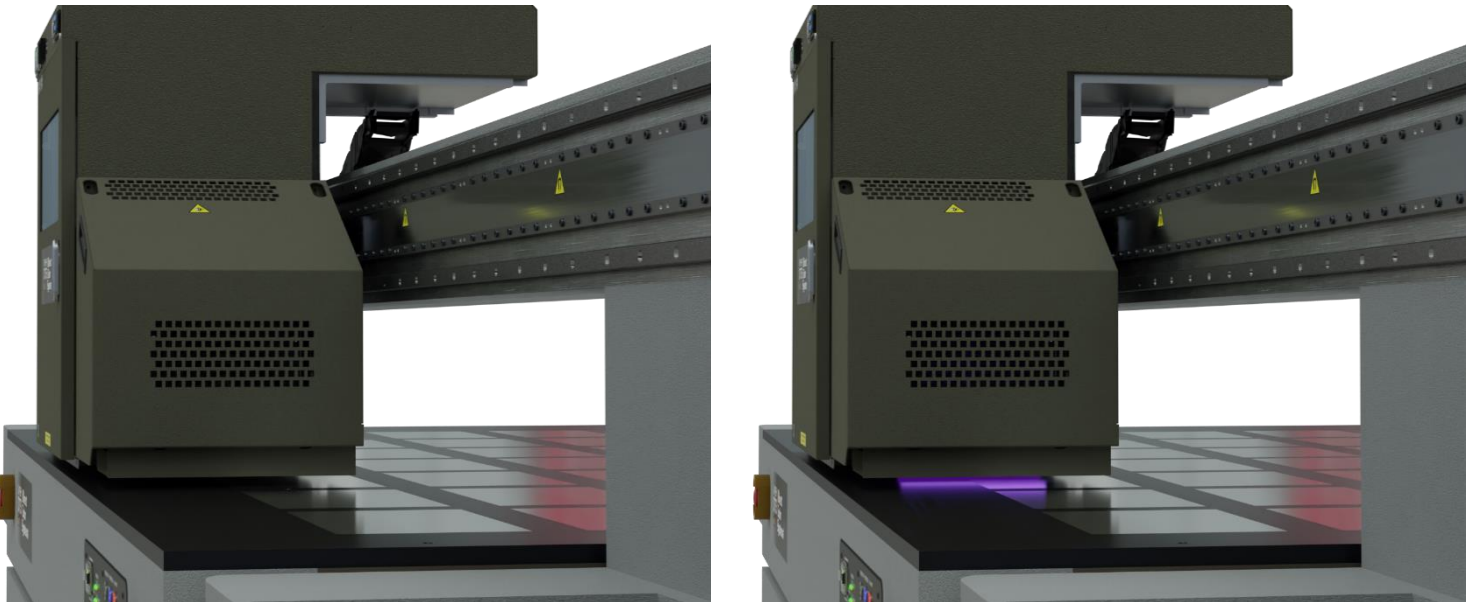
When the print begins and the UV lights engage, the void beneath the carriage will result in UV light reflection flooding the nozzle plates.

JIG NOT EXTENDED



How do we prevent this from happening? Simple. When designing your jig, account for carriage overhang. This will ensure that the carriage is always positioned over a flush surface to reduce UV light reflection and ink mist.

JIG EXTENDED



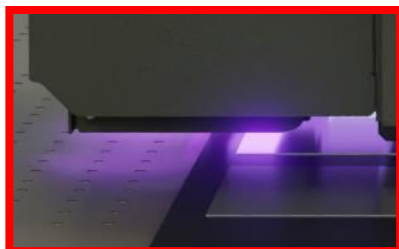
Example B: Left and/or Right Print Carriage Overhang

To cure the ink fully and consistently, the UV lights will remain on until they have traveled over the entire printable area.

When designing a jig, be sure to account for this and extend the left and/or right side(s) to ensure that the UV lights are always traveling over a flush top surface.

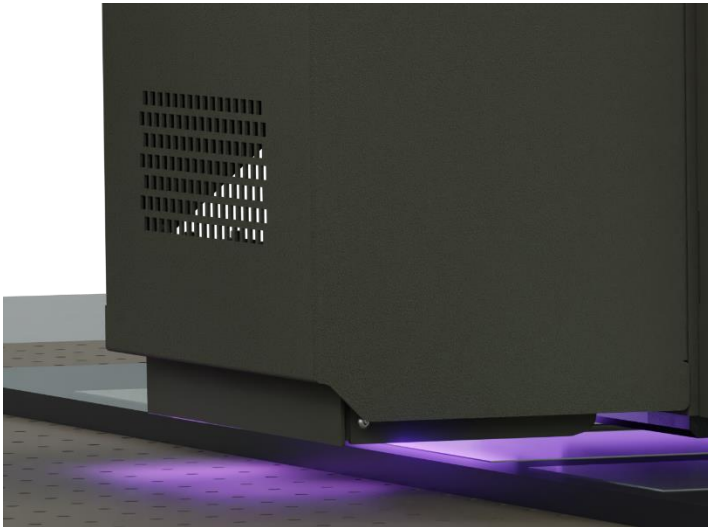
In this example, the edges of the jig have **NOT** been extended to account for carriage overhang. This results in UV light reflection which will flood the print head nozzle plates.

JIG NOT EXTENDED



By extending the side of the jig to account for the Print Carriage overhang, the Print Carriage is always positioned over a flush surface to reduce UV light reflection and ink mist.

JIG NOT EXTENDED



JIG EXTENDED



JIG NOT EXTENDED



JIG EXTENDED

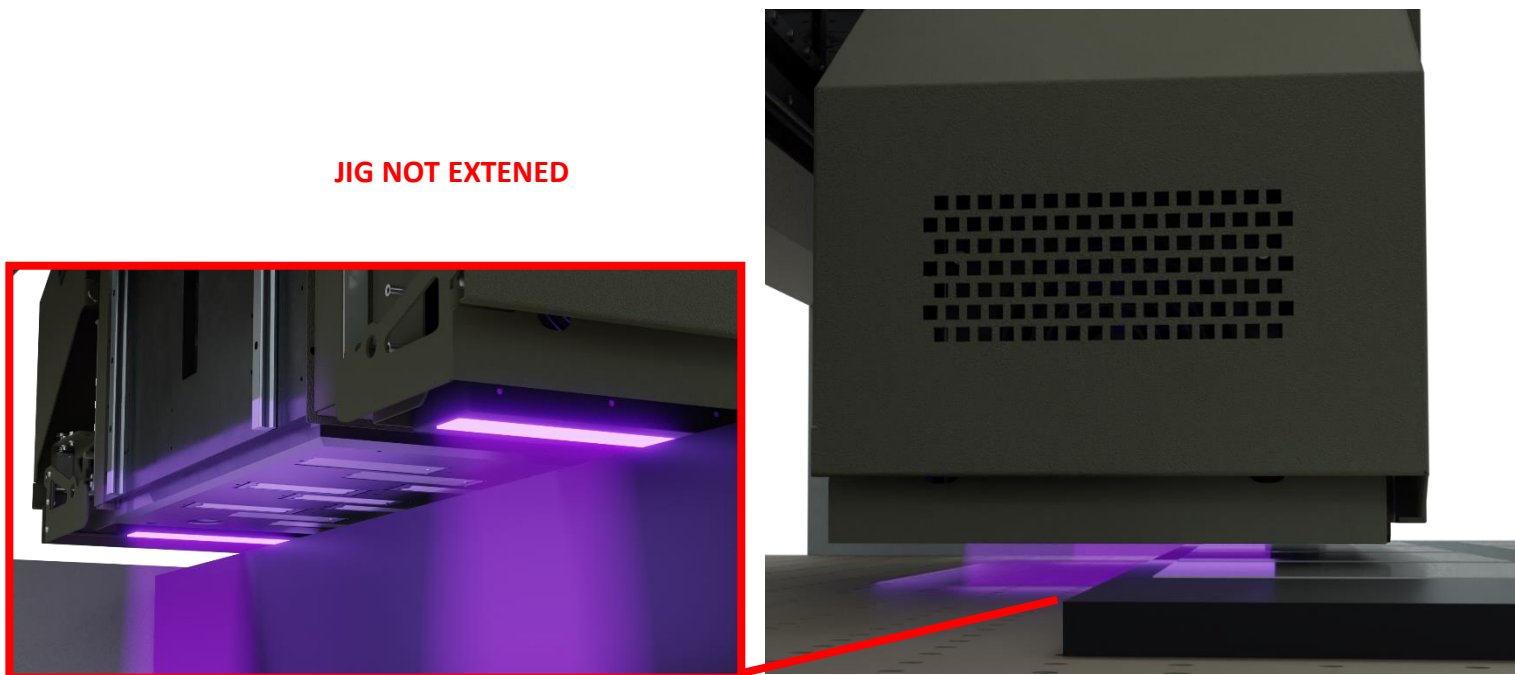


Example C: Back Print Carriage Overhang

Just as the Print Carriage will overhang the front of the jig or print bed, it will also overhang the back of the jig or print bed at the end of a print.



In the example below, the back of the jig has **NOT** been extended to account for Carriage overhang. This results in UV light reflection which will flood the print head nozzle plates.



By extending the back of the jig to account for the Print Carriage overhang, the Print Carriage will always be positioned over a flush surface to reduce UV light reflection and ink mist.

JIG EXTENDED

