

# Rules for Designing Masks for Heidelberg DWL 66 Laser writer

## Common Rules

(A polyline without width, will be referred to as a polyline, while a polyline with width will be referred to as a "polyline with width" in this document. Always be aware of the particular differences between this kind of structures!)

- All Polylines should be closed. Some data formats allow automatic closing of polylines, but be aware of the possible ambiguities of not properly closed polylines especially, when there is only a little gap between start and end point of the polyline. Simply avoid any problems by closing them properly.
- All closed polylines will be **completely** filled out on the inside. If you put a frame around something, make sure it does not shadow all of the structures inside. This can only be avoided by using the XOR mode feature. See the instructions about the XOR mode below.
- If you want to create structures within structures, read the previous hint carefully.
- Polylines crossing **themselves** will produce data errors.
- "Doubled" vertices in polylines (which means the same coordinates are used twice without any other point between them) will produce data errors.
- Single lines with no width will be ignored (best case) or will cause the conversion to fail.
- Polygons must have not more than 128000 vertices.
- Definition or reference depth can be at maximum 16.
- The number of definitions or references can be at maximum 8192.
- Text is not supported (except for DXF).
- Designs must not exceed the limits of 2000 mm from (0,0) in any axis.

## Data Format Specific Rules

(note that these rules generally apply IN ADDITION to those above):

### 1. DXF

- The conversion software of Heidelberg laser writer does not recognize dxf files created with AutoCAD 2005 software version. Use AutoCAD 2000, or, if using AutoCAD 2005, save the dxf files as AutoCAD 2000.
- Use a 100% Autocad compatible editor. Try to load the file to Autocad itself and make sure, it can be loaded.

- Always properly join polylines, be especially cautious, when using arcs within a polyline.
- Only one font is provided with the dxf conversion package. Any font you select in the DXF-design will be replaced by this standard font.
- Only the following attributes assigned to a text are supported: ROTATION, MIRRORING, SCALING.
- Avoid putting structures to layer 0.
- Do not use special characters in the layer names.
- Try to design in the metric system! Use mm as the standard unit. (Some design programs will not accept inches!)
- Polylines with widths must not have a change in its widths (Tapered lines).
- Different scaling in x and y when inserting a block is not supported.
- External blocks are not supported.
- Avoid using BLOCK insertions. Try to make the design flat. Use the conversion software step and repeat function instead (keeps the DXF data file small!).
- Try to use only the following entities: CIRCLE, POLYLINE ( with or without width, but see the remark above), TEXT.
- Also read the chapter on converting DXF-files in the convert software documentation.

## **2. GDSII**

- The inclusion of other gdsii files or text libraries will be ignored.
- Node statements in gdsii are ignored.
- Definition or reference depth can be at maximum 16.
- Number of structures is limited to 8192

