DATA FORMATS

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Data formats that we can use vary according to the end process for which they are supplied. Often we can convert from one format to another if needed or create new data based on what you can supply. Note that revising or reworking files may incur additional cost. Preferred file formats are shown in **Bold Red**.

The sections below explain the formats in detail and also, where applicable, how variations in formatting affect processes.

Data for CNC Routing and Engraving

CNC Routing and Engraving can use vector files, image files and 3D model files:

Vector Files:

File Format	Description
DXF	CAD Drawing Exchange format
EPS	Adobe Illustrator and Corel Draw Encapsulated Postscript
AI	Adobe Illustrator
PDF	Print data standard Portable Data Format
SKP	Google SketchUp files

If you are generating an EPS file from Adobe Illustrator or Corel Draw it's best to switch off all patterns or colour fills and to convert the vector geometry to text and curves before exporting.

Image Files:

File Format	Description
BMP	Windows Bitmap
JPG, JPEG	Compressed data format for photographs
GIF	Graphic Interchange Format
TIF, TIFF	Tagged Image File Format
PNG	Portable Network Graphics format

3D Model Files

File Format	Description
STL	Stereo-lithography file for 3D surfaces
DXF	CAD Drawing Exchange format but for 3D data must be in meshes or triangles
3DS	3D Studio and other animation packages
OBJ	Wavefront format
SKP	Google SketchUp files
V3M	VectorArt 3D clip-art models

Note that we can import other design data into our SolidWorks design system and export into many of these formats if needed; see "*Data for Design*" below.

Data for Laser Cutting and Engraving

Laser cutting and engraving can use vector files and Image files

Vector Files:

File Format	Description
DXF	CAD Drawing Exchange format

Image Files:

File Format	Description
BMP	Windows Bitmap

Note that we can import many other data formats into our SolidWorks design system and also import many other graphics formats and output them as required. See '*Data for Design*' and '*General Graphics Data*' below.

Engraving Photographs

Photographs, or other graphics images can be engraved onto most metallic and non-metallic materials. When imported, images are scaled at 1 Pixel to 0.1mm, though we can change this if needed. Images need to be converted to a 2 colour (or 2 bit) palette, which means they are then only made up of black and white pixels. To reproduce the image correctly you also need to carry out this conversion using **non-weighted Floyd-Steinberg error diffusion**, but again we can do this for you if you prefer.

Even if you do supply 2 bit images please also supply a copy of the original image in .jpg or .tif format with as high a resolution as possible so that we can see what we are trying to achieve.

Engraving, Cutting and Slitting Depths

Laser cutting cuts right through the material (as you might expect) and cut lines should be indicated by **BLACK** lines. These don't all have to be closed profiles, only the external profile needs to be closed to ensure the part falls out of the sheet. You don't need to design micro-tabs to hold the part to the sheet as laser cutting is a non-contact process and the parts will not move during processing.

Laser Slitting cuts partially through the material but in a single laser line rather than an area engraving. The slit is nominally 0.2mm wide though this will vary with depth and material. This is useful for marking line features such as brickwork on models and fold-lines on card. Slit lines should be indicated by **BLUE** lines.

Laser Engraving removes areas of material. Control of engraving depth is not precise as depth varies with material. It is possible to engrave multiple depths on one part. The main engraved area should be indicated by **RED** lines, other engraving depth areas should be indicated by different colours, one colour for all features of a certain depth. Engraved areas should be closed profiles but not hatched.

Please also supply reference information indicating how deep you would like the laser engraving or slitting, for example:

- Engrave photo image- surface etch only.
- Engrave blue outlined areas to 3mm deep
- Engrave red outline areas to 1mm deep
- Slit green lines 2mm deep

Call us to discuss any queries or to to find out how to lay out your project: 01723 336322

Data for Design

For design data the following chart shows which formats we can import and export to and from SolidWorks, in addition to native SolidWorks file formats:

Application	Parts Import	Parts Export	Assemblies Import	Assemblies Export	Drawings Import	Drawings Export
3D XML		X		X		
ACIS	X	X	X	X		
Adobe Illustrator	X	X		X	X	
Adobe Photoshop	X	X	X	X	X	X
Adobe Portable Document Format		X		X		X
Autodesk Inventor	X		X			
CADKEY	X		X			
CATIA Graphics	X	X	X	X		
CATIA V5	X		X			
DXF/DWG files	X				X	X
DXF 3D	X	X				
eDrawings		X		X		X
Highly Compressed Graphics		X		X		
HOOPS		X		X		
IDF 2.0, 3.0 (CircuitWorks Lite)	X					
IDF 2.0, 3.0, 4.0 (CircuitWorks)		X	X	X		
IFC	X	X	X	X		
IGES	X	X	X	X		
JPEG		X		X		X
Mechanical Desktop	X		X			
PADS (*.asc) (CircuitWorks)		X	X	X		
Parasolid	X	X	X	X		
PDF		X		X		X
Pro/ENGINEER	X	X	X	X		
ProStep EDMD (*.idx) (CircuitWorks)		X	X	X		
Rhino	X					
ScanTo3D	X	X				
Solid Edge	X		X			
STEP	X	X	X	X		
STL	X	X	X	X		
TIFF	X	X	X	X		X
Unigraphics	X		X			
VDAFS	X	X				
Viewpoint		X		X		
VRML	X	X	X	X		
XPS		X		X		X

General Graphics Data

We can accept most general graphics data formats and convert them into formats suitable for processing. The table below shows most of the more common formats:

File Type	Description	File Extension
BMP	Windows or OS/2 Bitmap (*.bmp)	
CAL	CALS Raster	(*.cal, *.cals)
EMF	Windows Enhanced Metafile (".emf)	
GIF	Graphic Interchange Format	(*.gif)
JPEG		(*jpg, *.jif, *.jpe, *.jpeg)
MAC	MacPaint	(*.mac)
MSP	Microsoft Paint	(*.msp)
PDF	Adbobe Portable Data Format	(*.pdf)
PGM	Portable Greymap	(*.pgm)
PNG	Portable Network Graphics	(*.png)
PPM	Portable Pixelmap	(*.ppm)
PSD	Photoshop	(*.psd)
PSPIMAGE		(*.pspimage, *.psp etc.)
RAW	RAW (graphics) file format	(*.raw)
TGA	Truevision Targa	(*.tga)
TIF Tagged Image File Format		(*.tif, *.tiff)
WMF Windows Meta File		(*.wmf)

If you have any questions about formatting or handling data please contact us: **01723 336322** or email makeit@makersmith.works

If you have a large amount of data to send we can allocate you space on Dropbox where you can securely upload and maintain your files, just let us know.

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