

## 1. DRAWINGS AND ENQUIRIES

### 1.1 ENQUIRY

1.1.1 Operations for manufacture must be stated on enquiry other than the drawing. If not, items shall be quoted and produced as a flat component. The quote document will state on each line items what form of operations have been quoted and what will be carried out.

1.1.2 Verbal drawings will be converted to PDF and sent for approval. Manufacture will not take place until confirmation in writing is received.

1.1.3 Templates may be accepted for use on enquiry, however drawings will be sent for confirmation of conformity which is required in writing.

1.1.4 Mill Stainless and Aluminium will not be processed with coating on. If the components are to be manufactured with coating, this needs to be specified on the enquiry.

### 1.2 CAD AND DRAWINGS

1.2.1 Files accepted; DWG (.dwg) DXF (.dxf) PDF (.pdf) NUMERICAL CONTROL (.nc1)

1.2.2 Hand drawings can be accepted; however if unclear, our interpretation shall be sent for confirmation and will not be processed until accepted in writing.

1.2.3 CAD geometry and dimensions must be supplied with scale of 1:1 or clearly annotate the scale within the drawing border or part if different. PDF's, if supplied, will be master.

1.2.4 On formed components, isometrics and end elevations should be seen on the drawing to ensure end requirement is met. Dimensions must also be present on all folded flanges along with angular requirements.

1.2.5 Any revisions or alterations to the drawings after the initial quotation must be highlighted to FC Laser Ltd in writing otherwise original geometry will be used.

1.2.6 Parts which are produced in DP1 brushed finished must clearly state the directional requirement of the grain.

1.2.7 Features such as tread plate, patterned plate, post polished plate or coated materials will be on the top or outside face unless clearly specified otherwise.

1.2.8 Ensure CAD is layered where necessary (e.g. Cut, Etch, Text and Machining operation) and is appropriately set up with clear definition of what is to be cut, etched or is text.

1.2.9 NC1 files do not show specific information such as finished sides etc. Accompanying them shall be PDFs, DXFs or DWGs file to ensure clarity.

## 2. PROCESSING

### 2.1 GENERAL

2.1.1 All care will be taken to protect both surfaces of the material, however we can only guarantee one scratch/blemish free side which will be the top face as seen on the drawing.

### 2.2 FORMING

2.2.1 Stainless and Aluminium components can be subjected to cross contamination with the laser bed and tooling. Where this is to be avoided, please state the use of protective neoprene and stainless slats.

2.2.2 Witness/tooling marks will be seen on formed components.

2.2.3 Where formed items can only be cut with the grain or where specified radius are smaller than the material thickness, this fold is at risk of cracking. Any re-cuts or rectification work shall be chargeable as an addition to the order original prices quoted.

2.2.4 Required internal radii stated on the drawing cannot always be produced due to what we possess in our tooling library. Where the drawing specification cannot be met, we shall advise what radius we can do and not commence manufacture until written approval is received.

### 2.3 LASER

2.3.1 Parts cut with coating on will leave light residue around the internal and external profiling of the component.

2.3.2 Material can only be Laser cut with coating on the top side only.

2.3.3 Profile edges will be hardened during the thermal cutting process, the values have been validated to be within EU standards (see CE Marking).

2.3.4 On certain materials, oil coating will be present to aid the cutting process and prevent splatter from attaching to the material.

2.3.5 Long components with thin widths are likely to distort/bow during processing.

2.3.6 Aluminium over 3mm in thickness will be subject to burr.

2.3.7 Coating is likely to blow off small components due to assist gas pressure.

2.3.8 External and internal radius may be applied to the component to aid the cutting process (see table 'NC Fillet Radius'). This may affect assembled or mating parts.

### 2.4 MACHINING

2.4.1 Countersinking may produce a raised burr on the side of the operation. It may also leave circular marks around the area of operation.

2.4.2 Where drilling, tapping and countersinking has taken place, a light coating of oil may be present.

### 2.5 DOCUMENTATION

2.5.1 Where mill certification is required with the finished goods, this needs to be specified on enquiry. Also confirm what level of mill certificates is required for the order e.g. 2.2, 3.1, 3.2 etc

2.5.2 FC Laser Ltd can provide certificates of Conformity (C of C) with the finished products where clearly requested on enquiry.

2.5.3 CE Label/Mark is issued with the order - see CE Marking section for more details.

2.5.4 Declaration of Performance (DoP) can only be issued for EN 1090:2009 + A1 2011 processed orders - See CE Marking section for more details.

### 2.6 CE MARKING

2.6.1 Where compliance to EN 1090:2008 + A1 2011 is referenced or implied but no Execution Class specified, we shall process to our default of Execution Class 2.

2.6.2 We comply with method 3A in regarding of EN 1090:2008 + A1 2011. The responsibility of design rests with the Purchaser.

2.6.3 CE Label/Mark is sent with the finished goods and is also the delivery note, this is sent with a C of C and mill certificates as standard on orders requiring the CE Compliance.

2.6.4 Declaration of Performance (DoP) is sent on request after an order has been processed for EN 1090:2009 + A1 2011.

### 2.7 PACKAGING

2.7.1 Please specify on enquiry if pallet sheets are required on finished goods. Packaging of boxes and pallets will be to our standard level of packaging. If there are any

special packaging requirements, please make these clear on enquiry.

### 2.8 FREE ISSUE

2.8.1 All deliveries of free issue material must be accompanied by a delivery note stating quantity, thickness, size of sheet and grade of material.

2.8.2 The material must be clearly identified on delivery.

2.8.3 Deliveries must not exceed 1 tonne per pack.

2.8.4 We cannot process free issue smaller than 1m<sup>2</sup>.

2.8.5 If poor quality material is issued, we cannot guarantee a good cut quality due to material deflections affecting the cut.

2.8.6 Free Issue material is processed at the Customer's risk and FC Laser Ltd will only accept liability for cutting charges and not the material costs.

2.8.7 Any scrap or off cuts of free issue will not be supplied back unless clearly requested on enquiry. This shall be seen on the quotation and an extra itemised delivery cost will be added.

2.8.8 Material will only be held for 30 days after processing unless prior approval with FC Laser Ltd.

<u>NC Fillet Radius</u>			
Mild Steel		Stainless Steel	
Thickness	Radius	Thickness	Radius
1-6mm	0.5mm	1-6mm	0.5mm
8-15mm	1.0mm	8-15mm	1.0mm
20-25mm	2.0mm	20mm	2.0mm
Aluminium			
Thickness	Radius		
1-6mm	0.5mm		
8-10mm	1.0mm		
<u>Internal Tolerances</u>			
Process	Thickness/ Material	Tolerance	
Laser Cutting	1-20mm	+/-0.25mm	
Folding	<4mm	+/-0.5mm	
Folding	>4mm	+/-0.75mm	
Drilling Diameter	Dependant	+/-0.2mm	
Drilling (Manual Positioning)	Dependant	+/-0.75mm	
Countersunk DIA + Depth	Dependant	+/-0.5mm	
Hole Sizes in Material	All	60% of material thickness	
Reaming	Dependant	Can be processed but not validated	