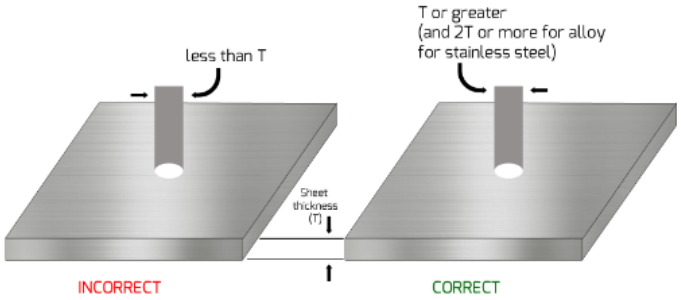
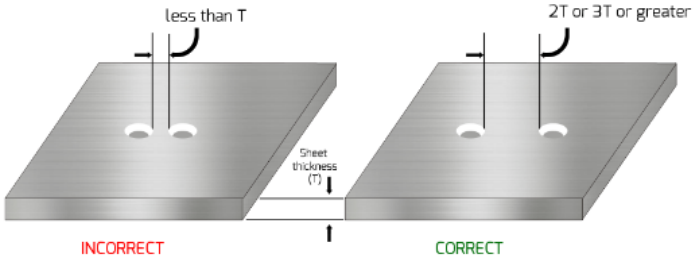
Preparing technical drawings for your sheet metal fabricator

Design precision can be critical for many sheet metal fabricated parts. The difference of a very small margin can result in something that fails, can't be assembled, or simply doesn't meet your expectations.

In Chapter 3 of the Sheet Metal Fabrication Guide, we discuss the importance of tolerances for both laser cutting and bending. A simple error in something like the size or spacing of a hole can have a big impact on the manufacturability of a part. Please review Chapter 3 with your design team so you're confident you've met all the tolerance requirements before you send your drawings to your fabricator.





Design for manufacturability

Not all sheet metal custom fabricators have design capacity, so getting the design, tolerances, and dimensions correct before you send drawings will save you a lot of headache. In general, the more information you can include in your drawing the better and taking a "design for manufacturability" approach is always recommended.

Designing for manufacturability (DFM) means that parts are engineered in a way that makes manufacturing easy and cost effective without reducing the product performance. Designing to make the process as efficient as possible will save time and money.

General tips for your design process:

- Get to understand the actual processes in the shop if possible. It helps to see first-hand how things are cut, bent, and assembled
- If your fabrication involves assembly, keep the entire manufacturing process in mind when designing individual parts. Designing parts that are difficult to assemble can cost you in both time and budget.
- Keep the number of parts to a minimum. If its possible to combine two parts that are manufactured of the same material, it is generally more cost effective to do so.
- Simplifying the features of your part will reduce the time of production and likely your costs.
- Know your fabricators capabilities and design around what they can do. This includes equipment, finishing, assembly, fastening, and the availability of standard dies.
- Confirm the drawing formats with your fabricator to be sure they have no difficulty reading or interpreting your design.

What your drawings should include

Always ask your fabricator for their requirements for the drawings before you send them. However, in general, you should include the 3D drawings and the 2D drawings with the following information:

- A fully dimensioned drawing including dimensions for formed bends, countersinks, holes, flanges
- Aim for three views of the part – front, top, and sides, or more if necessary
- A title block with your company name, part number, part description, scale, tolerances, units, etc
- Material type
- Material thickness
- Grain direction if using stainless steel
- Finish details including things like brand and number for powder coating etc
- Key or critical specifications and tolerances
- Indicate revisions changes/ details from previous versions
- Hardware specifications and torque/ loctite requirements for assembly
- Assembly print if multiple parts are being manufactured and assembled with
- Weld locations, type and length

In case of discrepancies between the 2D and 3D designs, the 2D will prevail. This being said, good design practices should be followed so that the 3D dimensions match the 2D design.