

FFJournal FAQs

FREQUENTLY ASKED QUESTIONS

Choosing the right bending tools for the job:

How do you and your tooling supplier know what you need to process your parts? What information does your supplier need to give you what you need?

WHAT ARE YOUR MATERIAL SPECIFICATIONS?

To ensure the tooling is correct for your application, it's critical to know your material specifications when requesting a quote. The properties of each material react differently when being bent or formed. Part of the material and the final part is figuring out the wall factor. The wall factor is a calculation of the outside diameter of the tube divided by the wall thickness of the tube. The "D" of the bend is the bend centerline radius divided by the tube diameter. The specification of the material and the tolerance of the material decide how tight the tolerances of your finished part can be. It helps the supplier calculate the tools required for the application.

WHAT TYPE OF TOLERANCE DOES YOUR PART REQUIRE?

There are three factors that should be considered when discussing tolerance with the tooling supplier: part tolerance, material tolerance, and the tolerance that "needs" to be held during produc-

tion. Each is critical to help the supplier make sure the full range of the tolerances will work with the tooling, so you can reach the expected results for the finished part you are processing. The tolerance of your part may also play a part in the pricing of your tooling. Tighter tolerances mean tighter machining and additional processing. This may also determine how the tooling is processed. Remember, your finished part cannot



have a tighter tolerance than your material. You cannot achieve a tighter tolerance by bending or forming the material.

HOW TIGHT IS THE BEND?

The "D" of your bend defines the appropriate types of tooling necessary to make the part. Remember, the "D" of bend is determined by a ratio of the diameter of your tube to the centerline radius (CLR) of the part bend. For example, a 25mm tube with a 50mm CLR is a 2D bend. This, along with the wall factor, determines, whether a mandrel is required, the quantity of balls or links needed on the mandrel, and if a wiper die is necessary. Additionally, if the "D" of bend gets too tight/small, pedestal-style tooling may also be needed, which is a more expensive type of tooling. The type of tooling is also dependent on the machine that is being used to bend the part. Your tooling supplier can calculate this for you, but will need to know the tube diameter, the wall thickness, and the CLR of the part.

WHAT ARE THE STRAIGHT LENGTH REQUIREMENTS OF YOUR PART?

The straight length is the distance of straight between two bends. The straight length requirements will help decide what type of "grip" is needed for the clamp sections of your tooling. The straight length must not be shorter than the length of the balls required for the bend. If needed, and price isn't a factor, you can do multiple set-ups with different grip lengths. There are multiple types of grip and you may have a choice of what finish is used depending on how aggressive the "grip" needs to be based on the "grip length" of your parts. When designing, keep your grip lengths to a 2D or larger for a better grip without marring.

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WHAT TYPE OF COSMETIC FINISH DO YOU NEED/REQUIRE?

Cosmetic finish is how good the part looks after the bending process. Do you need a showroom finish or is the part going to be covered up and some slight marring allowable? This should be considered when requesting quote. A sup-

Define the cosmetic finish of your part upfront to help your supplier determine the best tooling for your needs.

plier will look first and foremost into what it takes to make the part and then into what can be added to make the part finish better. Knowing this detail helps you decide what tooling you should purchase. This should be a "Hot Topic" with your supplier so they can assist you in choosing the right tooling. The more information provided when purchasing tooling, the better the overall results will be with the finished part.

Taking a look back, provide information to your supplier that is comprehensive and reflects the part(s) you want to pro-

duce. Vagueness only leads to error and poor quality for a finished product. Most tooling suppliers can figure out what you need with limited information, but this takes longer and leaves them guessing at the variables. It's always easier in the long run to gather the information upfront to reduce lead time, avoid miscommunication, and frustration. Following these simple steps will allow you to receive long-lasting performance tooling that produces high-quality parts from the beginning of production.

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