

3-D and 2-D File Requirements & Quality List

□ In order for the toolmaker to take a set of files (iges wire frame, iges surface and an original solids file) and to create a successful tool, the customer should have created a 3-D File and have done market survey and research on their part or product. In addition the customer will work with Control Plastics & Metals to refine their part or product prior to tool creation.

□ When Control Plastics & Metals quotes on your 3-D Files, the following characteristics should be assumed:

- a) The 3-D File is fully complete and consistent without discontinues.
 1. All of the draft is included in the file
 2. All corners are blended and uniform (all corners are required to have a radius).
 3. The files should not contain holes down to a 0005" level of fineness.
- b) With the **3-D File should be a Q.C. Print (isometric or 2-D)**, which provides anticipated critical dimensions and features.
- c) **Recommended:** Please include a set of notes and default tolerances which include: appearance and texture notes; and default tolerances (in case of questions, these default tolerances will be guides). The notes should not overrule the 3-D Model.
- d) Any inconsistencies and additional manipulation of the files required to make the files entirely useable will require additional costs and time in the construction of the tool. Just because an S.L.S. has been produced, does not imply that the files are ready to machine a useable mold. Machining requires much finer integrity, which will be analyzed.
- e) The advantage of 3-D files is that programming for tool making is very adaptable. When you edit the file or create minor changes, the toolmaker may have to reprogram all of the cutting paths for a particular core or cavity; and this can lead to a complete reprogramming of the tool making process (which can lead to time delays). Delays in the process will equate to added service charges.
- f) **Important:** All changes on the 3-D File after the tool construction has started will require:
 1. An isometric or 2-D of the original 3-D File details.

2. The revised details on the updated design.
3. A dated detailed ECN (Engineering Change Notice). All files must contain some updated form of labeling the will ensure that the most recent files will be used.
4. Some CAD systems (such as PRO-E, et. al.) allow live comparisons to the previous and revised files to display the updated additions. Please provide both the original 3-D File and the updated 3-D File. However for the 3-D File remove the previous differences. This will simplify the process in keeping track of the necessary updates, and will minimize reprogramming.

g) Tips to Prevent Problems with your 3-D and 2-D Files:

1. Run and print a “script” file, or “part check” file and review and correct the file from warnings indicated. This will help ensure file integrity.
2. Run a “show draft” file, and then print an isometric of all surfaces, which are under 5o draft, or manually inspect all sidewalls. If applicable try to get a secondhand review from a molder, or a designer, or even a toolmaker. Revise the 3-D File with the data gained from your reviews.
3. Print out the isometric file that shows all inside corners and review each corner for radii; then update the 3-D File.
4. If you know of a molder or toolmaker, have them review each dimension on the Q.C. File (the print out). Then print out the views of the file, which indicate all the shut-offs, features and details. Review the print outs to examine each of the sectional wall thickness.
5. Remember it is the toolmaker’s / mold maker’s responsibility to review your file with revise it if:
 - Drafts are less than 3 degrees.
 - Shut Offs are less than 5 degrees.
 - Ejector pins are less than 0.78” diameter.
 - Anticipated areas may sink.
 - There are any other error or potential problem that why interfere with the result.

h) As the toolmaker reviews your file, you can elect to modify your designs to eliminate anticipated problems, or you can choose to keep them in the design. You the customer and designer of your files are responsible for the product / part tool design and all of its ramifications which the molder / toolmaker may point out. In creating your mold, the end goal would be to create a strong, long-lasting high-quality mold to produce beautiful top-notch parts. Remember if you have any questions or concerns, Control Plastics & Metals is there for you- 100%.

□ Here is Control Plastics & Metals’ Quality Review list, so that you can also examine what we look for in quoting your files:

Customer:

Part:

Material:

- Mold Temperature
- Areas to stay Steel-Safe
- Surface Finish
- Tolerances + QC
- Linear + OR-.001”/”
- Hole Diameter
- Flatness
- Mold Spray Permitted
- Perpendicularity
- Sidewall – Warp / Bow
- Critical Fits
- Uniformity of Linear Dimensions after approval
- Appearance Tolerances
- Sinks
- Voids (Clear Parts)
- Parting Line Match
- Scratches
- Shorts
- Flash
- Ejector Marks
- Black Specs
- Splay
- Surface Finish
- Packaging:
- Molder / Toolmaker:
- In Mold with:
- Shrinkage:
- Weight
- Customer Check List: Parts are on 3-D Files; these designs are considered as default tolerances + Notes which are not placed on files.