Machine Tuning,
or
Parts are not cutting to design measurements—Troubleshooting

This short document advises you on how to troubleshoot and tune your machine so that it cuts true to the dimensions in PypeServer.

PypeServer does not make compensations for anything unless you specify it.

Here's the process of discovering the problem:

Expectations:

- If you create a 24" pipe, straight endcuts, with no weld/root gap, with no bevels then your pipe should come out 24" exactly.
- If you create a 24" pipe , straight endcuts, with no weld/root gap, <u>with</u> positive bevels then your pipe should come out 24" exactly on the inner bevel

Part design considerations:

- Make sure that you are not including a rootgap in the actual cuts (if you don't want the reduced length). That's a field in the cut settings.
- Entering actual pipe dimensions -- Wall thickness
    - If you don't enter the correct ACTUAL wall thickness of the pipe for beveled cuts, then the lengths will come up a little off--thick wall, more so. This is because the machine is trying to get the length right on the inner edge, while running the torch at the outer edge. It must make adjustments to the actual wall thickness. You set this right when you are loading the Part or Pipe to the machine.

If dimensions are right, then it's most likely a machine calibration and/or tuning issue. NOTE: <u>Don't take shortcuts here. If one is off, the issues downstream will be off as well, and then you'll be chasing the problem where it doesn't exist, plus your machine will get completely out of tune. The whole process takes maybe 30 minutes once you've done it.</u>

- Calibration

- o Does the machine move the correct distance when you move it (exactly). If not, then re-calibrate at least the Y axis.
- Beam Divergence
  - o Search "Beam Divergence" in PypeServer training. Find the video; "What beam divergence is and how to set it when tuning a machine."

- Kerf (the width of your plasma cutter as it cuts)

  - o If calibration is good, and your straight no-bevel cuts are not coming out the right length, then it could be kerf is not set right. Set your cutter comp (kerf) correctly. (Typically between .075 and .12)
  - o To measure kerf, get calibration right and Beam Divergence set, then
    - Set kerf to zero and cut a 1" long no-bevel part.
    - The kerf is 1" - the resulting pipe length is (1 - 0.9" = 0.1" kerf)
- Torch Pivot Height (most common)
  - o If your straight no-bevel cuts are coming out correct, but your beveled cuts are coming up wrong, it's probably pivot height. (See PypeServer training --type the word "pivot" in the search and find: