

Locating the Far End of the Pipe When Using Pipe Far End

This document presents features specifically for using the far end of the pipe with “roller-bed” type machines that do not have a chuck, and therefore cannot hold the pipe in place relative to the gantry.

1 Pipe-walk

On roller-bed type machines (those without a chuck), pipes can walk up and down the bed as they are rolled. Pipe-walk can be caused by an uneven or unlevel roller bed, or the pipe being bent or out of round. For any of these causes, pipe-walk can change as parts are cut off the pipe. This makes checking for pipe-walk in advance difficult to predict; one cannot just roll the pipe to see if it is creeping, and expect it to behave the same way as parts are cut.

Usually not a problem with nestings not using the far pipe end as a cut

Pipe-creep is usually not a problem because pipe-creep inaccuracies are cleared between parts. Each time you start cutting a new part, any previous creep doesn't apply.

It can be a problem with many holed parts

If a part has many holes requiring numerous pipe rotations, then creep can become a factor for even a single part. If this is a problem consider ordering your hole cuts in a way to minimize pipe rotation. For example if you have 10 holes at a rotation of zero moving down the pipe, and 10 holes at rotation 180, order all zero rotation holes to be cut first, then all 180 degree holes last.

It can be a problem using the far end of the pipe as the last cut

Pipe-creep can become noticeable when using the pipe far end as the final cut and the system relies on a specific starting point at the beginning of the entire program. This situation is where the NC code instructs the operator to start the entire program at a measured distance down the pipe, counting on the pipe to stay in place so that the last part comes out the right length. This method is described in section 3 below.

Solving pipe-creep when using the far end of the pipe as the last cut

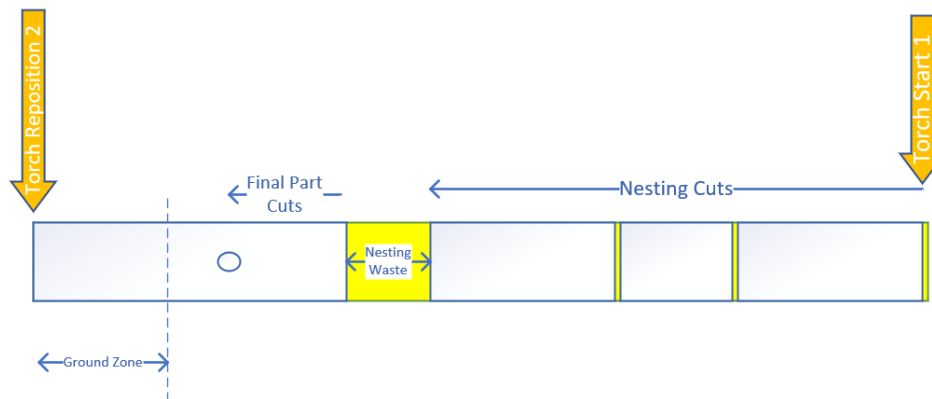
To eliminate this possibility of pipe-creep over multiple nested parts, PypeServer has implemented a new setting, “Locate Far Pipe-End at Last Part”, whereby the NC code will instruct the user to locate the far (grounded) end of the pipe just prior to cutting the final part. See section 2 below.

2 Locating the far end of the pipe -- options

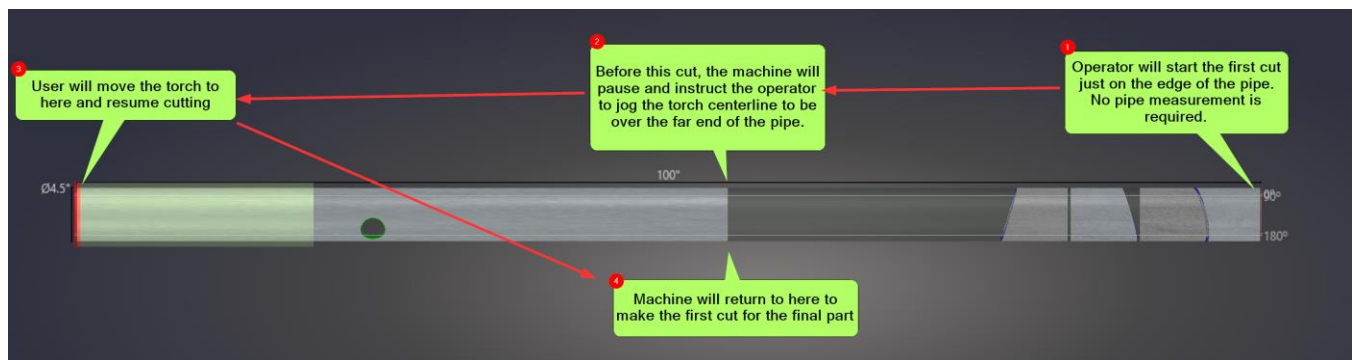
This only applies when a pipe's "Use Far Pipe End" is checked such that the final part is nested at the far end of the pipe—the left end in the PypeServer display.

2.1 Machine Property: *LocateFarPipeEndAtLastPart* = True

With this setting the user is instructed to start the nesting program at the far right end of the pipe, and when the machine gets to the final part, the machine will stop (at an M0 command) and will instruct the user to move the centerline of the torch to the centerline of the far end of the pipe and then hit Go. This step is only for getting the position of the end of the pipe. The torch will not attempt to touch down or cut at this point.



In this mode, the nesting waste (or drop) is just before the last part to be cut. The nesting will look like this:

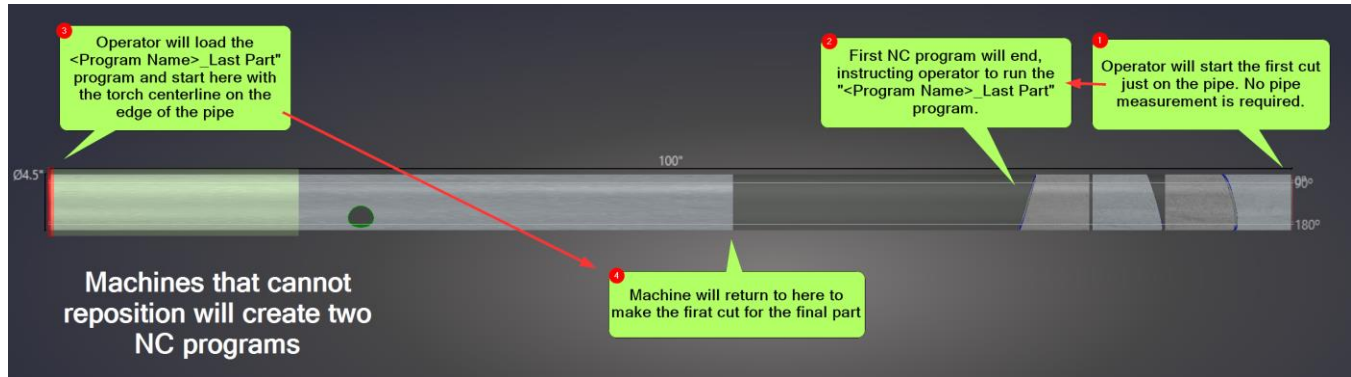


The advantages to this mode over starting the entire program at a measured distance include:

- The user does not have to measure out a distance on the pipe. They just move the torch over the far end of the pipe and hit go.
- Any shifting of the pipe up or down the pipe bed will not be cumulative for all parts cut, thus the length of the last part will not incur any cumulative pipe-creep or other machine inaccuracies.

2.1.1 Some machines must create two files for this feature

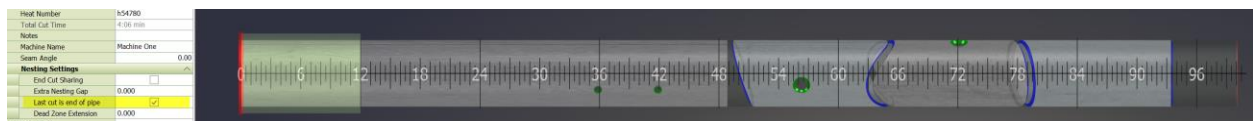
Some machines cannot reposition in the middle of an NC program. To serve these machines, PypeServer creates two files. The first NC program cuts all but the final part. The second program "<program name>_LastPart" has the user place the torch centerline on the far (grounded) end of the pipe before starting the program.



NOTE: When running a machine with height sensors left and right of the torch, DO NOT switch sensor ends. At the start of the second "_Last Part" file, the sensor will be off the pipe, but at the start, the torch will raise up and move to the sensor onto the pipe as it goes to the first actual cut.

2.2 Machine Property: *LocateFarPipeEndAtLastPart* = False

When set to false, the NC program will instruct the user to position the torch an exact measured distance from the left pipe end, at the start of the entire program. The nesting will push all pipes to the left and your nesting waste or drop will be to the right as shown here:



- Advantages: A single program can be run from start to end without interruption (after measuring a start distance).
- Disadvantages: The pipe might creep through the course of cutting numerous nested parts. The creep error will be cumulative and affect the length of the final part.