When creating parts to be used in rigid pipe runs, several careful steps must be taken to make sure that your parts work the way you want them to work.

I have run into three specific issues:

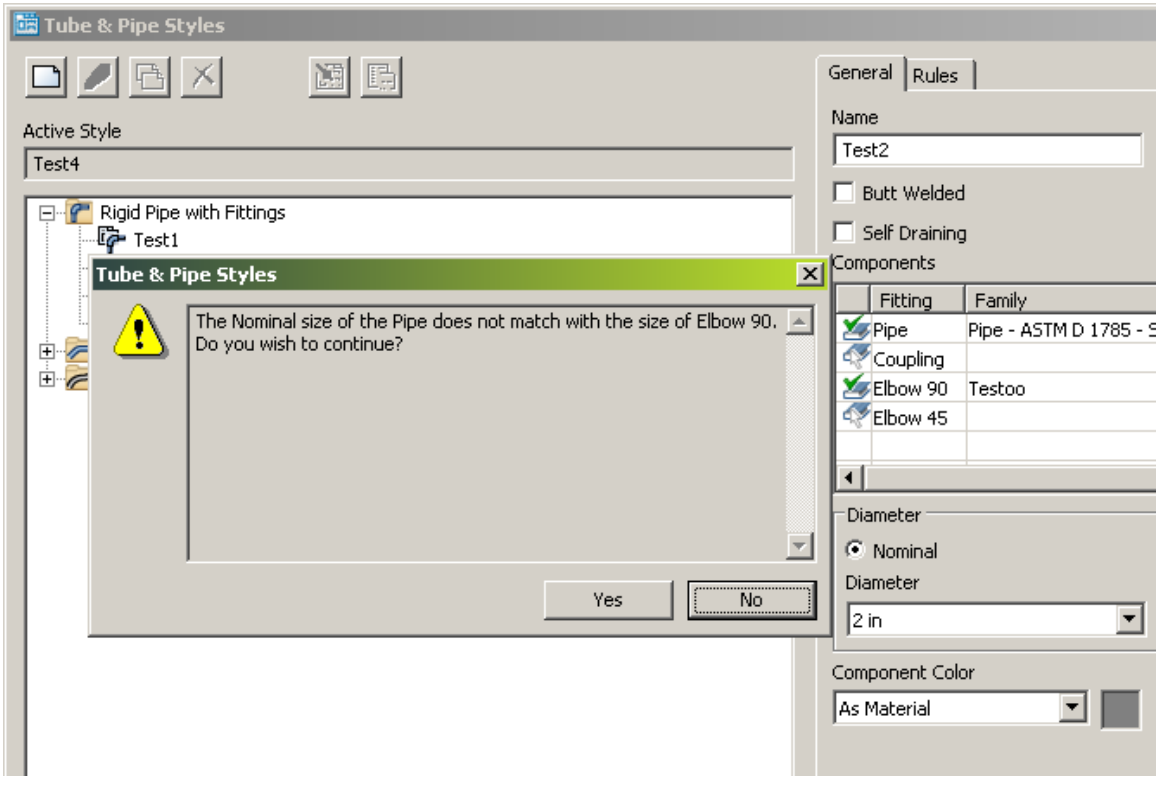
1. When creating a Pipe Style in a Tube & Pipe Run assembly, I receive the error: “The Nominal Size of the Pipe does not match with the size of Elbow 90.”

2. When populating a pipe run with custom pipe and fittings that I have authored and published myself, I wish them to have a specific color. But when they populate, they are the wrong color.

3. The “Socket Welded” end treatment for fittings has no corresponding end treatment for pipes.

Issue Number 1:

To author a part with the Tube & Pipe Authoring function, you must specify a “Nominal Size” from the parameters found in your iPart table. The iPart parameter you choose to map to the “Nominal Size” must be created in a certain way, otherwise, when you try to create a pipe style from your part, you risk encountering this infuriatingly deceptive error message:



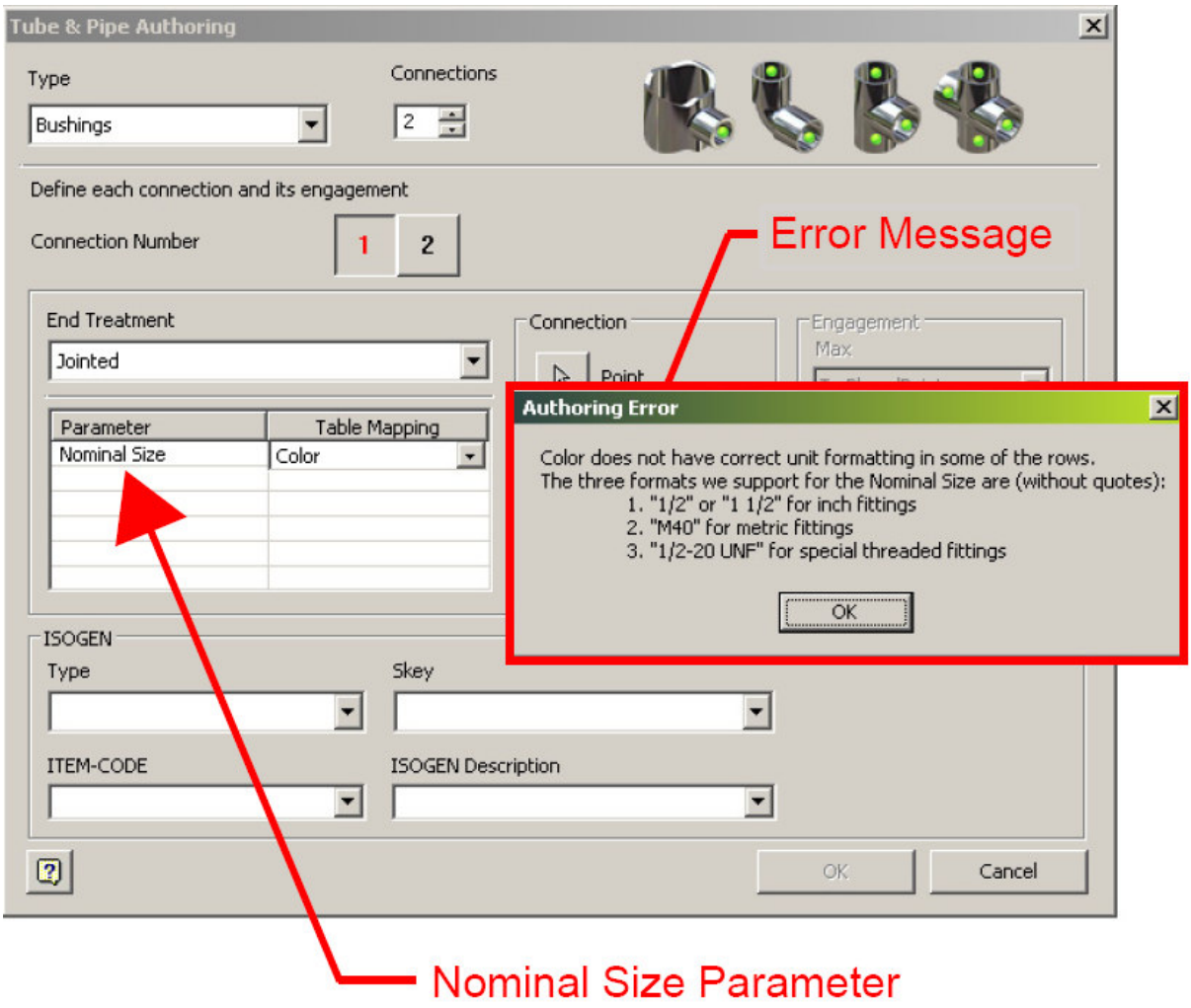
Even if your pipe style includes, for instance, a 2” nominal size, and your Elbow 90 also includes a 2” nominal size, you are out of luck. This message will still appear, leaving

you with no idea why this error is occurring. Obviously 2" matches 2", so what is the problem? The answer is rather obscure, and, with no help from Autodesk despite my attempts to seek their wisdom, and only after a few cracked walls and a very sore forehead, I finally figured it out.

As an example, I will describe my experience with creating a pipe fitting for use with the Tube & Pipe module. I have created a 90 degree, PVC elbow with socket joints. The parameter I used to designate the nominal size of the fitting is called **Size**. I created this parameter as a "Custom" parameter. I did this by opening the iProperties of the part and selecting the Custom tab. I typed "Size" in the Name field, set the Type to "Text", and gave it an initial value of "2".

To add my **Size** parameter to the iPart table, I selected the Properties tab in the iPart Author dialogue box. After expanding the Custom selection, I double click on "Size" to place it as a column in my iPart table. **This is where I went wrong.** For whatever reason, if the Nominal Size parameter is created this way (as a custom iProperty parameter), the Tube & Pipe module will not recognize it. At no point during the authoring, publishing, or attempted utilization of the part does Inventor alert you to this problem.

To prevent the deceitful error message pictured above from ruining your day, you must use a parameter created within the iPart Author dialogue box as your "Nominal Size" parameter. To create one of these beasts, select the Other tab in the iPart Author. In the pane to the right, a prompt displays "Click here to add value". Click there, and then type the name of your parameter. When you press enter, the parameter will appear as a column in your iPart table. When you fill in the nominal sizes, be sure to use the appropriate format. The formats accepted by the Tube & Pipe Authoring tool are displayed in an error message when you attempt to assign to the "Nominal Size" a parameter that doesn't meet the criteria. The error message is displayed below.



The above necessities hold not only for fittings, but also pipes. In fact, the problem is even harder to diagnose if you are unfortunate enough to first encounter it when working with a custom pipe. If your pipe was authored with the "Nominal Size" parameter mapped to a custom iProperty parameter (rather than the acceptable iPart Author "Other" parameter), you will receive no error message at all when you attempt to create a pipe style using your new pipe. It just won't let you save the pipe style. You can click the Save button all day long, but nothing will happen and nothing will be saved. Now tell me if that ain't pull-your-hair-out frustrating!

Issue Number 2:

When I created the aforementioned elbow, I wanted it to be a schedule 80 PVC elbow. I have decided to model all of my schedule 80 pipe and fittings as a gray color. My part material is PVC, but my styles library has the color style of PVC set to "Plastic (White)". This works just fine for my schedule 40 pipe and fittings since I have decided to model them as white. To get my schedule 80 PVC pipe and fittings to gray, I set the part color from "As Material" to "Gray".

This works just fine until I actually populate a pipe route with my pipe and fittings. The fittings all come out white. Apparently, the Tube & Piping module ignores the general color of the part as published to the Content Center, but uses the Styles Library to determine how to color the parts it generates. The parts I generate from the content center by placing into an assembly come out the right color, but not when I use the Tube & Pipe module.

To get around this, I could create a new material style with the color set to gray, but I want to use PVC for both my sch. 40 and sch. 80 stuff. They are, after all, the same material. So, creating a new material style was not my ideal solution.

I then tried to change the material color style in the part itself. For each sch. 80 part, I changed the color style of the PVC material style from "Plastic (White)" to "Gray", then I set the general part color back to "As Material". Again, no luck. Parts populated from this method were generated as white.

So, I went back to each part and changed the general part color from "As Material" to "Gray". I thought that perhaps with the material color style set to gray AND the general part color set to gray, I might get a gray part. This actually seems to have worked. I got gray parts when I populated my pipe route. This method seemed a little rickety and crude, so I decided to try one last approach that might prove to be more robust. After all, with such apparently irrational rules controlling the part color, who knows when this method will blow up on me.

Lastly, I tried controlling the part color from the iPart table. I added a custom parameter called **Color** and set the column to be the Display Style column. I set every instance to "Gray", then republished to the content center. This did the trick. The Tube & Pipe module couldn't care less that I set the general part color (unless I also change the material color style—I know, it really doesn't make much sense), but it does respect the authoritah of the iPart table.

Oddly enough, this problem only occurs with the fittings, not the pipe itself. All of my sch. 80 pipe turned out gray without having to change the material color style or use the display style column in the iPart table. Whatever.

Issue Number 3:

This is a minor thing, but the "Socket Welded" end treatment for fittings doesn't have a corresponding end treatment for pipe. I thought that perhaps the "Welded" end treatment for pipe would accept the "Socket Welded" end treatment for fittings, but this isn't the case. I just avoided this nonsense and went with the "Jointed" end treatment.