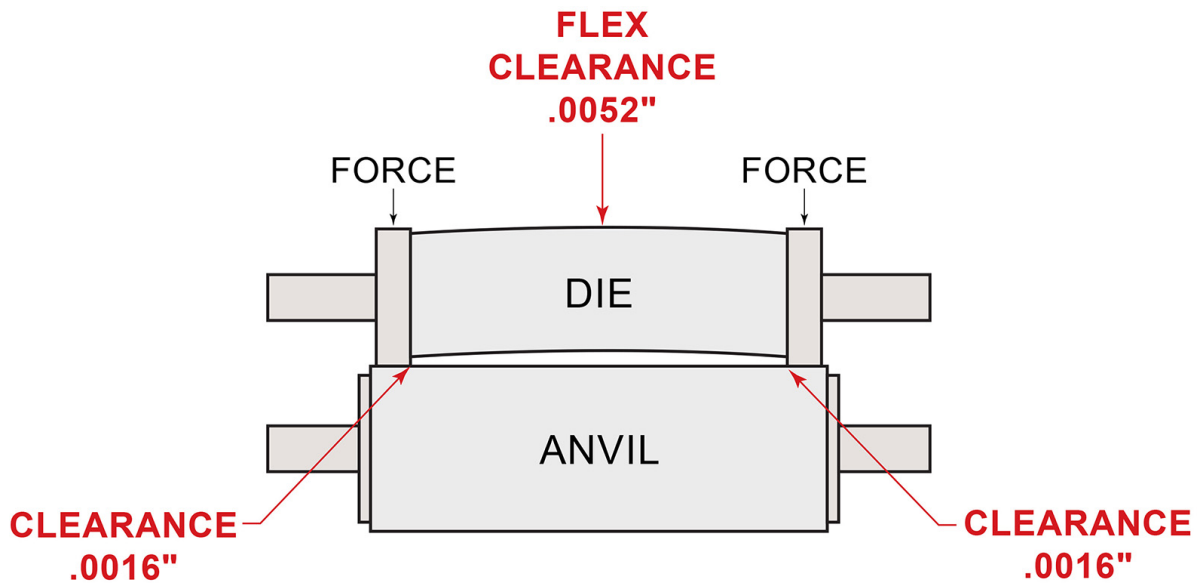


# FLEXING YOUR TOOLS



At Wilson, we're always focused on the technical aspects of flexography. TechTalk is your quick snapshot of key topics in our industry. Let us know what you think.

## Flexing Your Tools

When the die manufacturer tells you that the tool might flex, he is talking about the tool bending. There are three determining factors that cause the tool to flex. They are **FORCE**, **DIAMETER** and **LENGTH**.

### Force

The amount of force applied to a tool is determined by the material to be cut, the type of cut being performed, and the amount of cross blade on the tool. We use a formula of 75-100 lbs. per 1" of cross blades. For example, a 4x6 RCR 2 across a 2 around should be able to cut at between 600 to 800 lbs. depending on material. If the cross blade is perforated, it will change the calculation by a ratio of 1 to 1.5. So the same 4x6 RCR being perforated will now take between 900 to 1200 lbs. depending on the material.

### Diameter

A larger diameter will bend less than a smaller one. In the same example of the 2 around with a .125" space, the diameter of the tool is 3.8993". However, if you move it to 3 around, the diameter now becomes 5.8489". At 1,200 lbs. on a typical 10" machine, the 2-around tool will deflect .000091" in the center. The 3-around tool will only deflect .000017" in the center. This provides a more even die strike and longer-lasting die.

## Length

The length between the bearers on the tool is also a key factor. Let's use the same 4x6 RCR 2 around and change the machine from a typical 10" to a 16" tool. On the 10" tool, the deflection at 1,200 lbs. is only .000091". If we now put that same shape on a typical 16" tool, the deflection becomes .00358" or almost 40 times greater. This is due to the distance for each tool from the center. The length acts like a lever and creates more deflection.

## No Cut? Light Cut? Think Flexing

If you are experiencing no cut or light cut in the center of the web and proper or heavy die strikes on the ends, you are probably experiencing flexing. You can try to lower the force on the tool to see if the die will work, however, remember that there is a minimum amount of force needed to make the tool work. If you cannot get the same die strike across the web, consider making the tool larger around.

Combine all these factors when you order a die to determine how many around you should go.