

ELIMINATING CHATTER FROM DEEPLY-BORED HOLES

By David Smith, Field Service Engineer-Trainer

Problem: One of the more difficult problems we encounter when setting up a process is chatter issues within a bored hole, especially deeply-bored holes. These issues are caused when the boring tool has to be extended out of the holder further than what is recommended by the manufacturer. This can cause the tool to bounce while making a cut causing the chatter.

Solution: There are many things you can try from varying depths of cut to changing the boring bar itself to correct chatter problems, so lets explore a few.

1. **Reposition the boring bar.** Even though most boring bars have a flat ground on them to help with alignment, they can still be installed incorrectly. By breaking the tool loose and realigning, you can sometimes fix a chatter issue.
2. **Shorten the boring bar as short as possible.** If you are boring 50 mm (2") deep, there is no need to have the boring bar out 75 mm (3"). Three mm-4 mm (.12"-.16") will give plenty of boring clearance.
3. **Change your cutting speed.** By varying your cutting speed, you put different loads on the tool which could help with chatter.
4. **Change your cutting depth.** Same as your cutting speed, by varying your depth of cut, different loads will be put on the tool which could help with chatter issues.
5. **Try different grades and styles of inserts.** Go to a different grade or style of insert which has a better chip breaker. Chatter issues can be caused by using the wrong grade or style of insert.
6. **Use a bigger boring bar (if possible).** By going to a bigger bar, you will improve rigidity which will also help with chatter.
7. **Change the style of boring bar being used.** Cutting tool manufacturers make a variety of tools with different shapes and styles. If you are using a tool with -17.5 degree lead angle, you can change to one with a -3 degree lead angle which adds a little more load and improves rigidity. Also, you could change from standard steel boring bar to a solid carbide boring bar (my recommendation when doing deep boring) which helps improve rigidity and improves chatter.

These are just a few suggestions to try if you are having chatter issues. If you are having problems of any kind, Murata Machinery USA has staff available to help resolve your issues.