

ROUGH BORING TROUBLESHOOTING GUIDE



Rough boring getting... rough? Keep this cheat sheet handy and be ready when issues arise.

Issue 1: Poor Chip Control or Evacuation

Feed Rate too Low

- Increase feed rate

Excessive Height Variation of Inserts

- Preset tool to max. .0002" variation of both inserts

Excessive Stock Allowance

- Consult cutting data tables and/or reset tool for stepped cutting

Boring Bar Diameter too Large

- Reduce to smaller head and extended range holder

Inadequate Space Below Bore

- Elevate workpiece from table more

PRO TIP

Consider stepped cutting in boring—in which the insert cutting edges are staggered, both in length and in diameter, effectively creating two tools in one operation.

This method produces narrower chips for easier evacuation, especially helpful when dealing with long-chipping, gummy materials like aluminum or mild steels.

Issue 2: Chatter & Vibration

Excessive Speed

- Reduce SFM, check cutting data tables

Extreme Length/Diameter Ratio

- Shorten tool to increase stiffness
- Increase boring bar diameter to larger size and use reduction adapters
- Change boring head to SMART DAMPER

Insert Radius Too Large

- Reduce nose radius of insert

Unstable Workpiece

- Improve fixture and clamping support

Lead Angle On Insert Holders

- Change to 90-degree insert holders (type CC)

PRO TIP

Deep holes or long-reach applications?

Try Smart Damper technology, which damps vibrations and reduces chatter to achieve better surface finishes and improved metal removal rates while allowing for higher cutting parameters.

Issue 3: Inserts Breaking or Wearing Prematurely

Wrong Insert

- Change to tougher/higher wear-resistant grade
- Use a larger radius if available

Excessive Cutting Speed

- Reduce speed

Inserts Chipping

- Check stock allowance and feed rate

Coolant Pressure Too Low

- Increase through-tool coolant pressure
- Adjust the coolant ports of head, if available

Severe Interruption

- Decrease speed and feed

Chips Packing And Re-Cutting

- Check for boring bar/bore diameter clearance

PRO TIP

Insert grades and coatings go a long way in preventing breaks and premature tool wear. Consider cermet and triple-coated carbide grades for steel. For cast iron, coated carbide grades are best, but Silicon Nitride and some other grades can work in stable conditions.

Issue 4: Insufficient Machine Power

Excessive Feed Rate

- Reduce feed; minimum 25% of insert radius

Stock Allowance Excessive

- Reset tool for stepped cutting method

Low Machine Torque

- RPM in area of low spindle torque; increase speed
- RPM in area of gear change; decrease speed slightly
- Change insert to higher rake angle
- Reduce depth of cut

PRO TIP

Consult your machine manual to identify where the spindle has the highest torque and adjust the cutting speed at or close to the highest torque area.

Issue 5: Excessive Exit Burr

Excessive Feed Rate

- Reduce feed rate as tool exits workpiece material

CC Type Insert Holders

- Use square insert holders with 6-degree lead

Cutting Forces Too High

- Reduce depth of cut

PRO TIP

SCMT inserts with four cutting edges and a 6-degree negative lead reduce thrust forces upon exit, avoiding the punch-out ring and breakout where the bore ends.

**STILL HAVING ROUGH BORING ISSUES?
CALL IN THE EXPERTS.**

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