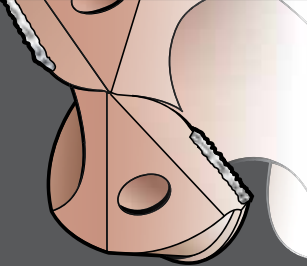
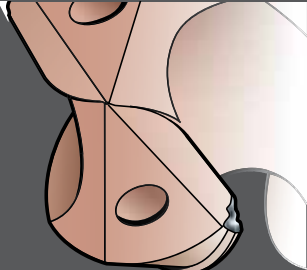


Solid carbide drills

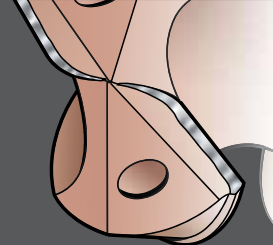
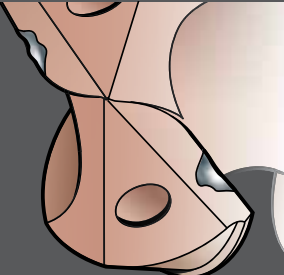
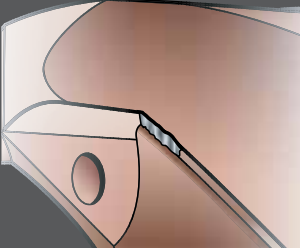
Hints & Tips



Tool wear

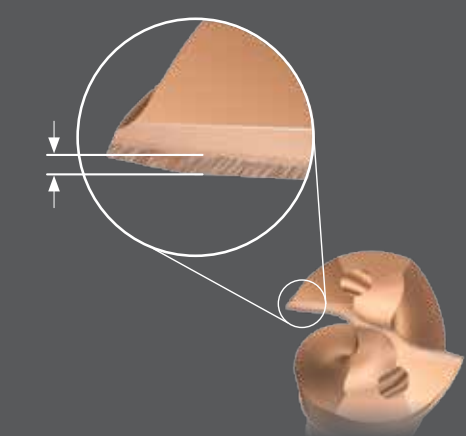
Cause	Solution
Built-up edge 	1. Cutting speed too low and edge temperature too high. 2. No coating. 3. Percentage of oil in the cutting fluid too low. 1. Increase cutting speed or use external cutting fluid. 2. Send for Reconditioning. 3. Increase the percentage of oil in the cutting fluid.
Chipping on the edge corner 	1. Unstable fixturing. 2. Total Indicated Runout (TIR) too large. 3. Intermittent cutting. 4. Insufficient cutting fluid (thermal cracking). 5. Unstable tool holding. 1. Check fixture. 2. Check radial runout. 3. Decrease the feed. 4. Check cutting fluid supply. 5. Check the tool holder.

Tool life

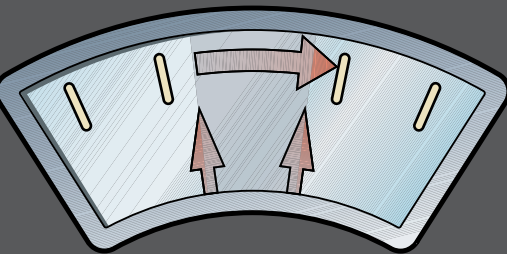
Cause	Solution
Large wear on the cutting edge 	1. Cutting speed too high. 2. Feed too low. 3. Lack of cutting fluid. 1. Decrease the cutting speed. 2. Increase the feed. 3. Check for proper cutting fluid supply.
Chipping on the cutting edge 	1. Unstable conditions. 2. Maximum allowed wear exceeded. 1. Check the setup. 2. Replace drill sooner.
Wear on the circular lands 	1. TIR too large. 2. Cutting fluid too weak. 3. Cutting speed too high. 4. Abrasive material. 1. Check the radial runout. 2. Use neat oil or stronger emulsion. 3. Decrease cutting speed. 4. Adjust cutting parameters or product.

Indications of excessive tool wear

1. Tool wear



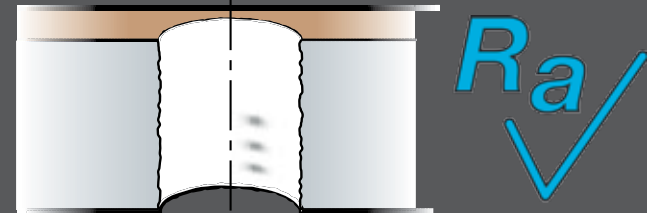
2. Rise in machine power



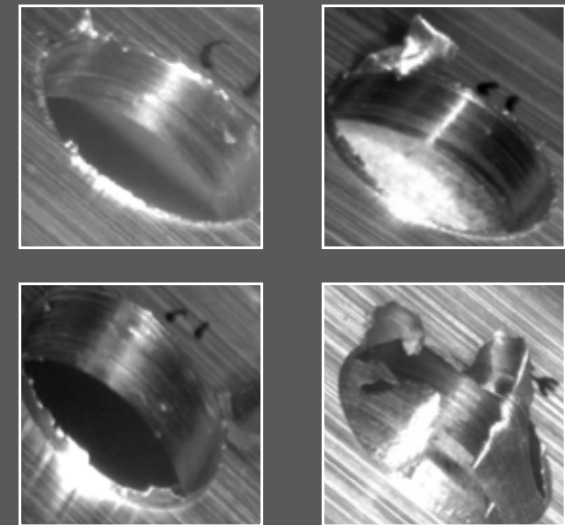
3. Component out of tolerance



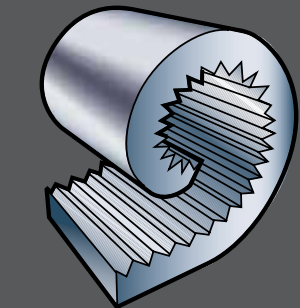
4. Poor surface finish



5. Increased exit burr



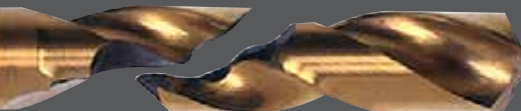
6. Poor chip control



7. Excessive heat generated



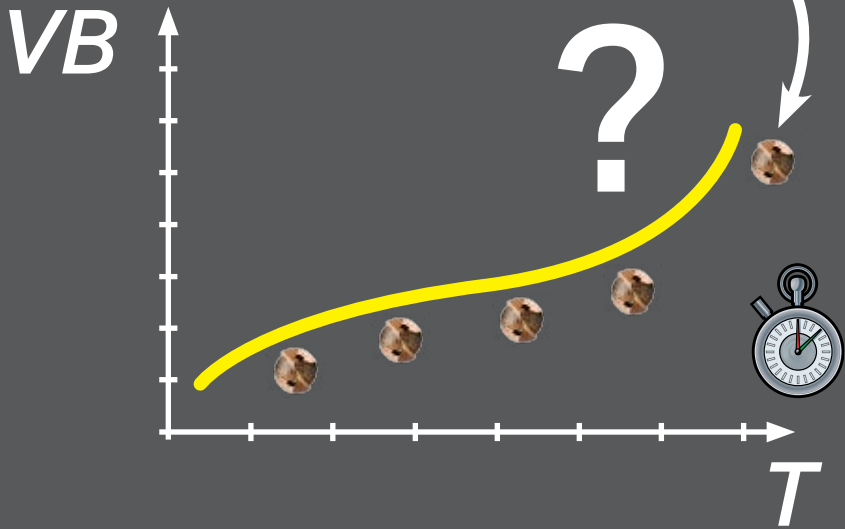
8. Radial run out >0.020mm



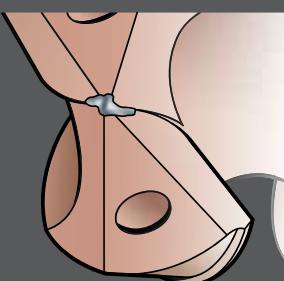
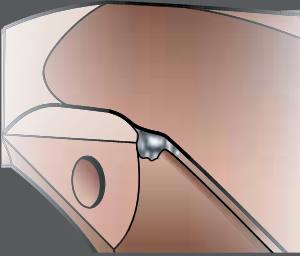
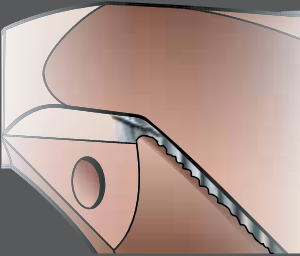
9. Excessive noise during machining



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Wear on the chisel edge 	1. Cutting speed too low. 2. Feed too high. 3. Chisel edge too small. 1. Increase cutting speed. 2. Decrease feed. 3. Check dimensions.
Wear due to plastic deformation 	1. Cutting speed and/or feed too high. 2. Not enough cutting fluid supply. 3. Unsuitable drill. 1. Decrease the cutting speed and/or feed. 2. Increase cutting fluid pressure. 3. Adjust cutting parameters or product.
Thermal cracks (notches) 	1. Inconsistent cutting fluid 1. Check cutting fluid supply. 2. Fill cutting fluid tank.

Chip evacuation - general recommendations



Checkpoints and remedies

1. Make sure the right cutting data and drill geometry are used.
2. Inspect chip form.
3. Check if the cutting fluid flow and pressure can be increased.
4. Inspect the cutting edges. Chipping on the edge can cause long chips because the chip is divided.
5. Check if the machinability has changed due to a new batch of workpiece material. Cutting data may need to be adjusted.
6. Adjust feed and speed.