

Hole Problems

Hole expansion

Irregular hole size

Low position accuracy

Hole perpendicularity

Bad cylindrical accuracy

Poor surface finish

Bad cylindrical shape

Problem	Causes	Solutions
Hole expansion	Run out of drill when attached to the machine	Check holder and/or select another one
	Loose hold	Check run out after fixing to the chuck
	Non-symmetric point angle Different lip height Run out of chisel edge	Regrind correctly Check preciseness after regrind
Problem	Causes	Solutions
Irregular hole size	Non-symmetric point angle Large lip height Run out of chisel edge Margin wear is large	Regrind correctly Check precision after regrind
	Large run out after attached to the machine Loose hold Low work holding rigidity	Check holder and select another one Check run out after fixing to the chuck
	Feed rate to high	Decrease feed rate
	Not enough lubrication	Use drill with an oil hole
Problem	Causes	Solutions
Low position accuracy	Large run out when attached to the machine Large spindle run out	Check holder and/or select another one Check run out after fixing to the chuck
	Run out when cutting material	Select more rigid tool and machine Increase work clamping rigidity Select a low cutting resistance thinning Use centering Work piece should be horizontal Use a drill bush
	Low alignment accuracy (for lathing)	Check alignment
Problem	Causes	Solutions
Hole perpendicularity	Excessive tool wear	Regrind
	Low position accuracy	Increase position accuracy
	Non-symmetric point angle Large lip height Run out of chisel edge Margin wear is large	Regrind correctly Check precision after regrinding
	Not enough drill rigidity	Increase drill rigidity
	Drilling surface is not horizontal Poor alignment (for center hole)	Work piece must be horizontal Make a center hole. Check alignment
Problem	Causes	Solutions
Bad cylindrical accuracy	Non-symmetric point angle Large lip height Run out of chisel edge Margin wear is large	Regrind correctly Check precision after regrinding
	Large run out after attached to machine Loose hold Low work holding rigidity	Check hole and/or select another one Check run out after fixing to the chuck
	Relief angle is too large	Regrind correctly
	Low drill rigidity	Use carbide drill or larger web drills
Problem	Causes	Solutions
Poor surface finish	Poor regrinding	Take off all the wear
	Not suitable coolant for the material Not enough coolant	Change supply method; increase volume Select higher coolant quality
	Large run out after attached to machine Loose hold Low work holding rigidity	Check holder and/or select another one Check run out after fixing to the chuck
	Feed rate is too high	Reduce feed rate
	Excessive tool wear Build up on margin is too large Chip packing	Regrind correctly Select a coated tool Select suitable drill (wide flute, high helix oil hole drill). Change cutting conditions (feed rate or adopt step
Problem	Causes	Solutions
Bad cylindrical shape	Non-symmetric point angle Large lip height Run out of chisel edge Margin wear is large Large margin wear	Regrind correctly Check precision after regrinding
	Feed rate is too low	Increase the feed rate

