

Drill Problems

Drill breakage

Chipping of corner edge

Chipping of cutting edge

Abnormal wear on corner part

Large wear and chipping, crushing of the chisel edge

Chipping of margin


Margin build-up

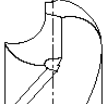
Tang breakage

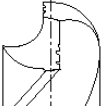
Noise of chattering

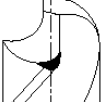
Chip rolled around drill

One-side wear

| Problem | Causes | Solutions |
|---|---|--|
|  | In accurate machine Work material deformation | Increase the rigidity of machine, drill and work clamping |
| | Relief angle is too small | Regrind correctly |
| | Feed rate is too high | Decrease the feed rate |
| | Excessive tool wear | Regrind |
| | Chip packing | Select suitable drill (wide flute, high helix oil hole drill). Change cutting conditions (feed rate or adopt step drilling). |
| Difficulty entering the material | Select high rigid tool & rigid machine Increase work clamping rigidity Select a low cutting resistance thinning Use centering Work piece should be horizontal | |

| Problem | Causes | Solutions |
|---|---|---|
|  | In appropriate tool material | Choose suitable tool material |
| | Uneven hardness distribution on the work material | Iso static treatment Change tool, material & cutting conditions, machining method (EDM) |
| | Cutting or feed speed is too high | Reduce cutting speed or feed |
| | Not enough coolant | Change lubrication method |


| Problem | Causes | Solutions |
|---|---|--|
|  | Large run out after attached to machine | Check holder and/or select another one |
| | Loose hold | Check run out after fixing to the |
| | Relief angle is too small | Regrind correctly |
| | Tool material is not suitable | Choose suitable tool material |
| | Cutting speed or feed is too high | Reduce cutting speed or feed |

| Problem | Causes | Solutions |
|---|-----------------------------------|-------------------------------------|
|  | Tool late regrinding | Regrind after a shorter time of use |
| | Bad alignment (for lathe turning) | Check/adjust the alignment |
| | Cutting speed too high | Decrease the cutting speed |
| | Point dimensions are not suitable | Select correct point dimensions |
| | Tool materials not suitable | Choose suitable tool material |
| | Coolant is not suitable | Change coolant |

| Problem | Causes | Solutions |
|--|-----------------------------------|---------------------------------|
| Large wear and chipping, crushing of the chisel edge | Feed rate is too large | Decrease feed rate |
| | Point dimensions are not suitable | Select correct point dimensions |
| | Tool materials is not suitable | Choose suitable tool material |
| | Relief angle is too small | Increase relief angle |

| Problem | Causes | Solutions |
|--------------------|--|---|
| Chipping of margin | Bush diameter is too small Chip packing between drill & bush | Select correct bush diameter or select drill with chip breakers |

| Problem | Causes | Solutions |
|-----------------|--|-----------------------------|
| Margin built-up | High heat generation due to large wear on the cutting edge | Regrind |
| | Lubrication is insufficient | Change lubrication method |
| | Coolant is not suitable | Change coolant |
| | Bad chip ejection Ductile material | Change drill or the cutting |

| Problem | Causes | Solutions |
|---|---|--|
|  | Shank slippage due to some kind of defect | Take off the defect by honing the surface |
| | Defect of the inner surface of Morse taper holder | Change holder or correct the surface of Morse taper holder |
| | Low accuracy of regrinding | Regrind correctly |

| Problem | Causes | Solutions |
|---------------------|--------------------------|------------------------------|
| Noise of chattering | Relief angle is too big | Grind a smaller relief angle |
| | Low rigidity of the tool | Use drill with high rigidity |

| Problem | Causes | Solutions |
|------------------------------|---|-------------------------------------|
| Chip rolled around the drill | Low extended and curly chips Chips are stubbed in the flute | Change drill and cutting conditions |

| Problem | Causes | Solutions |
|---------------|---|--|
| One side wear | Large run out after attached to machine | Check holder and/or select another one Check run out after fixing to the |
| | Bad alignment (for lathe turning) | Check/adjust the alignment |