

Drilling Problems

CHIPPING OR BREAKING OF LIPS

Cause: Excessive lip clearance angles behind cutting edge.
 Solution: Reduce lip clearance per as per charts.

WORN OUTER CORNERS

Cause: Peripheral speed too great for material being drilled.
 Solution: Reduce cutting speed to correct speed.
 Increase feed rate.
 Improve coolant flow.
 Check clearance and alignment.
 Add corner break.

BROKEN OUTER CORNERS

Cause: Drilling thin material that is insufficiently supported.
 Using a two flute drill to enlarge the diameter of an existing hole.
 Solution: Use a sheet metal drill and clamp the workpiece securely. Ream the hole to correct size.

DRILL SPLITS UP WEB

Cause: Feed rate too great.
 Not enough lip clearance behind cutting edge.
 Excessive web thinning.
 Using hard object to seat the drill in sleeve.
 Solution: Reduce feed to correct rate (see charts).
 Ensure lip clearance is correct.
 Ensure web thickness is not less than 10% of the drill diameter.
 Use soft object to seat the drill in sleeve (e.g. copper or wood).

OVERSIZE OR OUT-OF-ROUND HOLES

Cause: Unequal point angles.
 Flutes are congested with chips.
 Loose spindle or worn drill sleeve.
 Unsecured workpiece which moves during drilling.
 Solution: Ensure points are resharpened accurately.
 Ensure flutes are kept free from swarf.
 Ensure spindle or drill sleeve is in good condition.
 Secure workpiece.

ROUGH HOLE FINISH

Cause: Drill is blunt.
 Insufficient coolant supply to drill point.
 Feed rate too great.
 Possible chip congestion in flutes.
 Solution: Sharpen the drill.
 Ensure coolant is reaching the drill point.
 Use correct feed rate (see charts).
 Ensure flutes are kept free from swarf.

BROKEN OR DAMAGED TANG

Cause: Poor fit between drill sleeve and the drill shank.
 Solution: Only use sleeves that are in good condition.
 Ensure both drill shank and sleeve are clean.

DRILL RUBBING AND NOT ENTERING WORKPIECE

Cause: Insufficient lip clearance.
 Web too thick.
 Chisel angle too high.
 Solution: Increase lip clearance (see charts).
 Reduce web thickness as per charts.
 Sharpen drill correctly to ensure correct chisel angle.

CRACKS IN CUTTING EDGES

Cause: Point was overheated and cooled too quickly when resharpened.
 Solution: Use coolant when grinding, and quench frequently in soluble oil.

DRILL BREAKS AT FLUTE RUNOUT

Cause: Workpiece moved during drilling.
 Flutes clogged with swarf.
 Incorrect drill for application.
 Solution: Secure workpiece.
 Maintain clear flutes by peck drilling.
 Use correct drill for application.

Drill Point Styles

STANDARD POINT



Standard point is suitable for general purpose drilling.

SPLIT POINT (also CRANKSHAFT POINT)



Split point is self centering and reduces need for end thrust. Friction at workpiece is reduced.

HEAVY DUTY NOTCHED POINT



Reduces need for end thrust while optimising cutting efficiency with chisel strength. Recommended for hard and high strength materials.

WEB THINNED POINT



Reduces need for end thrust and improves centre cutting efficiency.