

Trouble Shooting (Drilling)

PROBLEM	CAUSE	REMEDY
Poor surface finish in drilled hole	1. Cutting speed too low, support pads experiencing build up and galling hole surface.	Increase speed (RPM)
	2. Wrong cutting oil, temperature too high, over 135F. Sulfur or lubricant is being disapated by heat.	Check oil sample.
	3. Poor filtration, small particles being reproduced over support pads.	Increase filtration (40 microns)
	4. Worn support pads.	Replace drill and check (RPM). Check for proper drill grades.
	5. Vibration, unstable machine or fixturing.	Strengthen machine &/or set up.
Chip jamming in the drill or tube	1. Inadequate cutting fluid volume.	Check pump, fluid viscosity, and filter. Check pump rotation. Check the plumb between pump and connector. Check slope of drain line to tank.
Correct volume and pressure but cutting fluid is not reaching drill adequately	1. Inner tube too short in relation to outer tube.	Replace with correct length.
	2. Worn support surface in sealing sleeve for inner tube or missing "o" ring in I.D. of sealing sleeve.	Replace sealing sleeve or inner "O" ring.
	3. Venturi slots of inner tube are worn so that excessive amount of cutting fluid escapes the exhaust.	Replace inner tube.
	4. Clogged exhaust line, blocked inner tube.	Clear blockages.
Cutting fluid leaks out between drill brushing and outer tube excessively	1. Chip jamming in drill or flare in inner tube.	Clear system blockages.
	2. Exhaust line does not slope towards chip disposal area.	Adjust line in downward position.
	3. Inner tube inverted in wrong direction.	Correct direction (flare in drill).
Drill breakage or insert or inserts chipping prematurely, despite good chip-breaking.	1. Poor chip evacuation.	Check I.D. of the connections for blockage, slope of drain line, if inner tube is constricted or if venturi slots are deformed.
	2. Chip jamming in drill or inner tube.	Built up edge on the central tip can cause crumbling so that long chips form and block chip flow. Decrease feed per revolution.
	3. Incorrect start of drilling I.e. center drilled hole, irregular surface, oversize bushing.	Check stability of workpiece. Replace worn bushing. Check alignment of bushing. Enlarge center hole so periphery cuts 1st or reduce so central cuts 1st.
	4. Cross drilling (intersecting holes)	Use EJ cross-hole adapters.
	5. Overloading of the insert.	Decrease feed per revolution.
	6. Lack of stability.	Strengthen machine or fixture, check connections / connector.
Center line deviation of hole.	1. Machine is out of alignment.	Align machine (.001" T.I.R. head stock to tailstock or fixture).
	2. Component is misaligned.	Align component (same tolerance as machine).
	3. Oversize bushing	Replace bushing
	4. Excessive tube length.	Apply tube support (every 48").
	5. Workpiece material(e.g. cast iron often gives poor support).	Adjust cutting data.
Premature tool life and or insert breakage.	1. Cutting speed and feed too low.	Increase cutting data.
	2. Misalignment (machine & component).	Align machine (.001" T.I.R.)
	3. Cutting speed too high.	Reduce cutting speed.
	4. Heavy wear on support pad & peripheral.	Change cutting fluid. Check fluid filtration. Check bushing wear & be sure it is within tolerances.
	5. Unsuitable drill grade.	Switch to recommended grade.
	6. Incorrect G.P.M. and P.S.I., or poor quality coolant.	Check volume and pressure.
Oversize hole.	1. New drill.	Hone periphery corner.
	2. Oversize bushing or misalignment of bushing.	Replace bushing, realign bushing (.001" T.I.R.)
	3. Instable machine or set up.	Stabilize machine or fixture.
Spiraling effect in hole.	1. Fragmented support pad.	Replace drill.
	2. Misalignment of machine or component.	Align machine or component (.001" T.I.R.)
	3. Lack of lubricity in coolant	Increase additives (E.P., sulfur).

	4. Lack of coolant volume.	Check for blockages, adjust pressure relief valve, check tubes.
Bell mouth at start of hole.	1. Oversize bushing.	Replace bushing.
	2. Lack of rigidity in bushing housing.	Strengthen housing.