



# Manigley Problem Solving

Oversize Thread	Causes	Solution
	Improper selection of tap	Select a suitable tap as per application chart
	Angle or position error	Correct alignment of tap and drilled hole
	Countersink is missing	Provide the core hole, before cutting the thread, with a countersink 90°
	Core hole drill to small	Choose the core hole as per chart, for hard materials aim for the upper tolerance limit
	Tap is damaged or has cold welding	Use a new tap, evaluate coolant being used, possibly use a tap with surface treatment
	Cutting speed to high or too low	Choose the correct speed as per chart, according to the working material
	Machine spindle or compensation chuck do not function axially	Check the function of the spindle and the compensation chuck, if possible use a smaller machine
	Chip packing in tap flutes	Avoid chip packing in the flutes or under the work piece
	Tap has the wrong tolerance class	Use a gauge and a tap with the same tolerance class.
	Tap has been reground	Tap has the wrong geometry or a burred edge. Regrind the tool. Possible choose a new tap

Undersized Thread	Causes	Solution
	Working Piece thin walled and/or material with high expansion	Use a tap with a higher tolerance class respectively oversize
	Wrong choice of tap (geometry not adapted)	Select a suitable tap as per application chart
	Tap has the wrong tolerance class	Use a gauge and a tap with the same tolerance class
	Tap has been reground	See under "axial pitch error"

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Axial Pitch Error	Causes	Solution
	Wrong choice of tap (geometry not adapted)	Use a tap with a higher tolerance class respectively with oversize
	The countersink is missing	Provide core hole, before cutting the thread, with a countersink 90°
	The cutting force is too high (feed)	With a manual feed reduce the pressure; use a compensation chuck/tap holder. Verify the adjusted feed on the machine, possibly reduce the feed (only possible with a compensation chuck)
	The cutting force is too low (feed)	Verify the adjusted feed on the machine. With manual feed increase the pressure
	Spindle and feed are not synchronised	The adjustment of the machine is not correct. Use a compensation chuck. Verify the machine settings

Widening in a Curve	Causes	Solution
	Wrong choice of tap (geometry not adapted)	Select a suitable tap as per application chart.
	Angle or position error	Correct alignment of tap and drilled hole
	Countersink is missing	Provide the core hole before cutting the thread with a countersink 90°
	The cutting force is to high (feed)	With a manual feed reduce the pressure, use a compensation chuck/tap holder. Verify the adjusted feed on the machine, possible reduce the feed (only possible with a compensation chuck)
	The cutting force is to low (feed)	Verify the adjusted feed on the machine. With manual feed increase the pressure
	Tap has been reground	Tap has the wrong geometry or a burred edge. Regrind the tool again, eventually choose a new tap.
	Machine spindle and compensation chuck do not function axially	Check the function of the spindle and the compensation chuck, if possible use a smaller machine

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Rough Thread Surface	Causes	Solution
	Wrong choice of tap (geometry not adapted)	Select a suitable tap as per application chart
	Dull Tap	Use a new tap
	Tap is damaged or has cold welding	Use a new tap, evaluate coolant being used, possible use a tap with surface treatment
	Insufficient lubrication	Improve the lubrication, if possible use cutting oil
	Chip packing in tap flutes	Avoid chip packing in the flutes or under the work piece
	Cutting speed too high or too low	Choose the correct speeds as per chart, please also consider the working material
	Core drill too small	Choose the core hole as per chart, for hard materials aim for the upper tolerance
	Tap has been reground	Tap has the wrong geometry or a burred edge. Regrind the tool again, choose a new tap

Tool Life Too Short	Causes	Solution
	Wrong choice of tap (geometry not adapted)	Select a suitable tap as per application chart
	Cutting Speed too high or too low	Choose the correct speed as per chart, please also consider the working material
	The working material is abrasive (grey cast, iron, aluminium/cast alloy with Si, plastic with glass fibres reinforced etc)	Use a tap with surface treatment
	Insufficient lubrication	Improve the lubrication if possible use cutting oil
	Work-hardened surface of the core hole, due to blunt or not suitable drills	Use sharp and suitable drills. For hard materials avoid use of carbide drills

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Tap Breakage	Causes	Solution
	Wrong choice of tap (geometry not adapted)	Select a suitable tap as per application chart
	Taps bottoming in the hole	Verify the adjustment of the thread length consider the chamfer length and possibly the centre point. Avoid the use of a safety clutch on a machine with force feed
	Angle or position error	Correct alignment of tap and drilled hole
	Countersink is missing	Providing the core hole before cutting the thread with a countersink 90°
	Core hole drill is too small	Choose the core hole as per chart, for hard materials aim for the upper tolerance limit
	Dull tap	Use a new tap
	Working piece thin walled and/or material with high expansion	During the return the tap is gripped by the work piece. Use a tap with a higher relief, possibly use a special execution
	Chips packing in tap flutes	Avoid chips packing in the flutes or under the working piece
	Tap has been reground	Use a new tap

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Breakage or Chamfer and/or guiding teeth	Causes	Solutions
	Wrong choice of tap (geometry not adapted)	Select a suitable tap as per application chart
	Chip packing in tap flutes	Avoid chip packing in the flutes or under the working piece. Blind holes being tapped in a recessed hole can cause the breakage of individual teeth on the upper part of the tap
	Core hole drills too small	Choose the core hole as per chart, for hard materials aim for the upper tolerance limit
	Dull tap	Use a new tap
	Taps bottoming in the hole	Verify the adjustment of the thread length; consider the chamfer length and possibly the centre point. Avoid the use of a safety clutch on a machine with forced feed
	Angle or position error	Choose the core hole as per chart, for hard materials aim for the upper tolerance limit
	Material too hard	Use a tap with more flutes, or use a set of taps