

Forming Taps

Chip-free internal threading tools

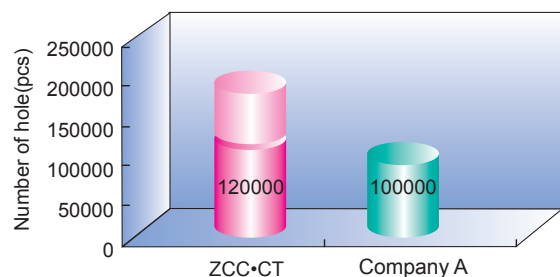
- ◆ Super micro grain cemented carbide with good toughness and abrasion resistance has long tool life.
- ◆ With particularly section-sharp design has good rigidity and strength.
- ◆ Thanks to the special technique treatment on cutting edge surface, ensuring good threading machining quality and high dimensional accuracy.

It is apply for high efficiency through-hole and blind-hole machining of high tensility material such as soft steel, stainless steel, Al alloys and cast Al alloy, etc.

Application case

Work piece: auto engine shell
 Work piece material: Al alloy (HB90~120)
 Tool type: 4222ACS-M10×1.25-6H
 Cutting parameters: n=1300r/min
 F=1625mm/min
 h=29mm, through hole or blind hole machining
 Machining tool: horizontal machining center
 Cooling style: emulsified liquid cooling

Comparison of hole number



ZCC-CT: 120000 holes (still usable)
 Company A: 100000 holes (failure)



BORING TOOL Threading tools

How to choose the right solid carbide threading tools

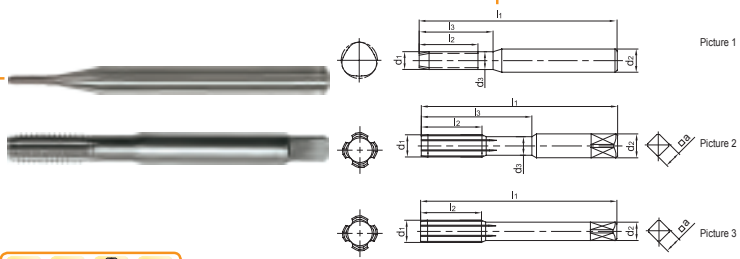
How to choose the right solid carbide threading tools

Shape
Product name
Product category
Solid carbide threading cutter

Application

Shape size

Forming taps -Al alloys machining



Type	Cooling mode	Basic dimension(mm)										Thread profile	Geometry	Number of teeth	Grade		Pre-hole diameter d
		Length of Forming taper	d1	P	d2	d3	l1	l2	l3	a × a	KTG402				YK40F		
4122M-M1*0.25-6H	External coolant	3P	M1	0.25	3		40	5				60°	Picture 1	4	●	○	0.9
4122MS-M1*0.25-6H		2P	M1	0.25	3		40	5				60°	Picture 1	4	●	○	0.9
4122M-M1.2*0.25-6H		3P	M1.2	0.25	3		40	5				60°	Picture 1	4	●	○	1.1
4122MS-M1.2*0.25-6H		2P	M1.2	0.25	3		40	5				60°	Picture 1	4	●	○	1.1
4122M-M1.6*0.35-6H		3P	M1.6	0.35	3	1.1	40	5	11			60°	Picture 1	4	●	○	1.47
4122MS-M1.6*0.35-6H		2P	M1.6	0.35	3	1.1	40	5	11			60°	Picture 1	4	●	○	1.47
4122M-M2*0.4-6H		3P	M2	0.4	3	1.5	45	6	12			60°	Picture 1	4	●	○	1.85
4122MS-M2*0.4-6H		2P	M2	0.4	3	1.5	45	6	12			60°	Picture 1	4	●	○	1.85
4122M-M2.5*0.45-6H		3P	M2.5	0.45	3	1.9	50	6	14			60°	Picture 1	4	●	○	2.33
4122MS-M2.5*0.45-6H		2P	M2.5	0.45	3	1.9	50	6	14			60°	Picture 1	4	●	○	2.33
4222M-M3*0.5-6H		3P	M3	0.5	3.5	2.3	56	6	18	2.7		60°	Picture 2	4	●	○	2.8
4222MS-M3*0.5-6H		2P	M3	0.5	3.5	2.3	56	6	18	2.7		60°	Picture 2	4	●	○	2.8
4222M-M4*0.5-6H		3P	M4	0.5	4.5	3.1	63	8	21	3.4		60°	Picture 2	4	●	○	3.8
4222MS-M4*0.5-6H		2P	M4	0.5	4.5	3.1	63	8	21	3.4		60°	Picture 2	4	●	○	3.8
4222M-M4*0.7-6H		3P	M4	0.7	4.5	3.1	63	8	21	3.4		60°	Picture 2	4	●	○	3.7
4222MS-M4*0.7-6H		2P	M4	0.7	4.5	3.1	63	8	21	3.4		60°	Picture 2	4	●	○	3.7
4222M-M5*0.5-6H		3P	M5	0.5	6	4.3	70	10	25	4.9		60°	Picture 2	4	●	○	4.8
4222MS-M5*0.5-6H		2P	M5	0.5	6	4.3	70	10	25	4.9		60°	Picture 2	4	●	○	4.8

● Stock available ○ Make-to-order

Applicable material table ● Very suitable ○ Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, ~40HRC	Hardened steel, ~50HRC	Hardened steel, ~60HRC	Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
KTG402	○					○					
YK40F	○					○			○		



Applicable workpiece material range
Thread profile angle, shank type, precision class

Specification
Type, basic dimensions, number of tooth and grade.
Code key, cutting parameter, technical information, Non-standard customization



BORING TOOL



Threading tools

Solid carbide threading tools overview ● C160

Icons information of solid carbide ● C160
threading tools

Code key of solid carbide threading tools ● C161

Detail information of solid carbide ● C162-C175
threading tools

Solid carbide threading cutters C162-C173

Solid carbide threading end mills C174-C175

Recommended cutting parameters of solid ● C176
carbide threading tools


Technical information of solid carbide ● C177-C182
threading tools

Non-standard customization for ● C183-C184
threading tools





Threading tools overview

Name	Type	Shape	Diameter range	Workpiece material						Page		
				P	M	K	N	S	H	Specification	Cutting parameters	
				Mild steel	Common steel	Stainless steel	Cast iron	Aluminum alloy	Heat resistant alloy			High hardness steel
Forming tap	4122A		M1~M2.5					○			C162	C176
	4222A		M3~M16					○			C163	C176
	4122M		M1~M2.5	○		○		○			C164	C176
	4222M		M3~M16	○		○		○			C165	C176
Helical-flute cutting taps	4201C		M3~M16					○			C166-C167	C176
	4201A							○			C170-C171	C176
Straight-flute cutting tap	4202C		M3~M16					○			C168-C169	C176
	4202A							○			C172-C173	C176
Threading end mills	4111		M3~M20	○	○		○	○			C175	C176

○ Very suitable ○ Suitable

Icons information

Shank type



Straight shank



Square straight shank as per DIN10

Thread profile angle of tap



60° shown

Precision class of screw thread



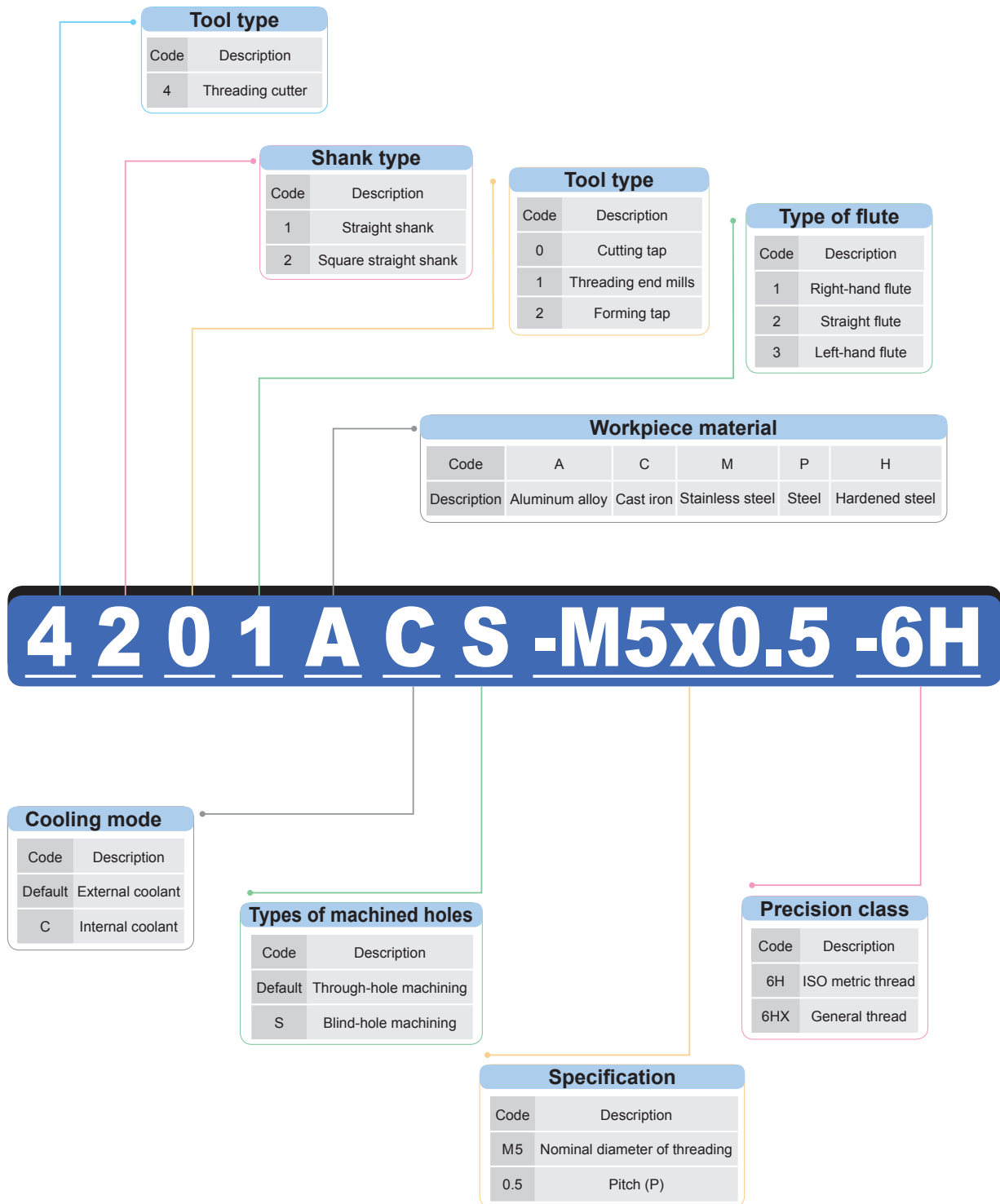
Precision class of screw thread



Precision class of screw thread



Threading tools code key



- Drilling tools
- Reaming Tools
- Threading Cutter**

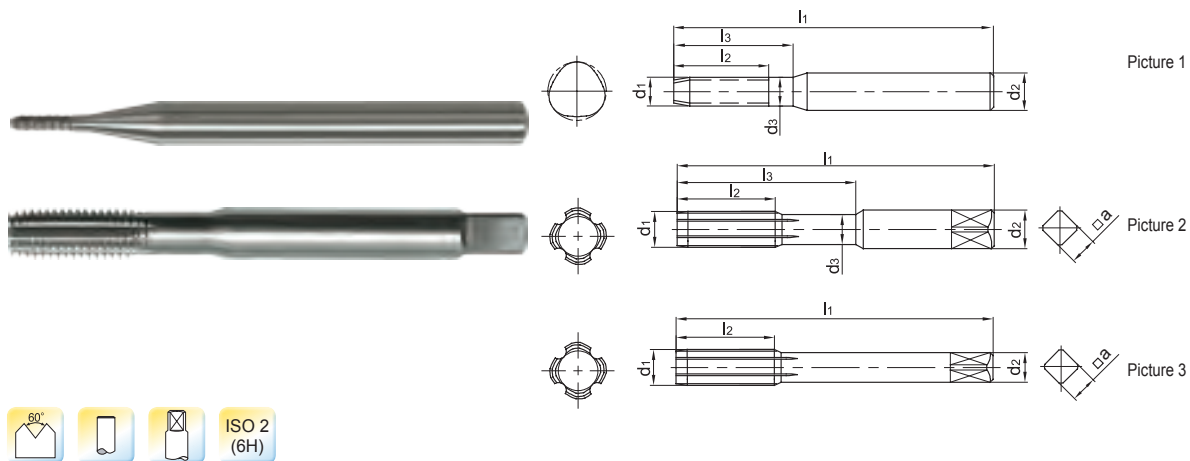
Threading cutter code key



BORING TOOL / Threading tools

Forming taps -Al alloys machining

Forming taps -Al alloys machining



Type	Cooling mode	Basic dimension(mm)											Grade	Pre-hole diameter		
		Length of Forming taper	d1	P	d2	d3	l1	l2	l3	a × a	Thread profile	Geometry			Number of teeth	YK40F
4122A-M1*0.25-6H	External coolant	3P	M1	0.25	3		40	5					Picture 1	3	●	0.9
4122AS-M1*0.25-6H		1.5P	M1	0.25	3		40	5						3	●	0.9
4122A-M1.2*0.25-6H		3P	M1.2	0.25	3		40	5					Picture 1	3	●	1.1
4122AS-M1.2*0.25-6H		1.5P	M1.2	0.25	3		40	5						3	●	1.1
4122A-M1.6*0.35-6H		3P	M1.6	0.35	3	1.1	40	5	11				Picture 1	3	●	1.47
4122AS-M1.6*0.35-6H		1.5P	M1.6	0.35	3	1.1	40	5	11					3	●	1.47
4122A-M2*0.4-6H		3P	M2	0.4	3	1.5	45	6	12				Picture 1	3	●	1.85
4122AS-M2*0.4-6H		1.5P	M2	0.4	3	1.5	45	6	12					3	●	1.85
4122A-M2.5*0.45-6H		3P	M2.5	0.45	3	1.9	50	6	14				Picture 1	3	●	2.33
4122AS-M2.5*0.45-6H		1.5P	M2.5	0.45	3	1.9	50	6	14					3	●	2.33
4222A-M3*0.5-6H		3P	M3	0.5	3.5	2.3	56	6	18	2.7			Picture 2	4	●	2.8
4222AS-M3*0.5-6H		1.5P	M3	0.5	3.5	2.3	56	6	18	2.7				4	●	2.8
4222A-M4*0.5-6H		3P	M4	0.5	4.5	3.1	63	8	21	3.4	60°		Picture 2	4	●	3.8
4222AS-M4*0.5-6H		1.5P	M4	0.5	4.5	3.1	63	8	21	3.4	60°			4	●	3.8
4222A-M4*0.7-6H		3P	M4	0.7	4.5	3.1	63	8	21	3.4	60°		Picture 2	4	●	3.7
4222AS-M4*0.7-6H		1.5P	M4	0.7	4.5	3.1	63	8	21	3.4	60°			4	●	3.7
4222A-M5*0.5-6H		3P	M5	0.5	6	4.3	70	10	25	4.9	60°		Picture 2	4	●	4.8
4222AS-M5*0.5-6H		1.5P	M5	0.5	6	4.3	70	10	25	4.9	60°			4	●	4.8
4222A-M5*0.8-6H		3P	M5	0.8	6	4	70	10	25	4.9	60°		Picture 2	4	●	4.65
4222AS-M5*0.8-6H		1.5P	M5	0.8	6	4	70	10	25	4.9	60°			4	●	4.65
4222A-M6*0.75-6H		3P	M6	0.75	6	5	80	12	30	4.9	60°		Picture 2	4	●	5.7
4222AS-M6*0.75-6H		1.5P	M6	0.75	6	5	80	12	30	4.9	60°			4	●	5.7
4222A-M6*1-6H		3P	M6	1	6	4.7	80	12	30	4.9	60°		Picture 2	4	●	5.6
4222AS-M6*1-6H		1.5P	M6	1	6	4.7	80	12	30	4.9	60°			4	●	5.6
4222A-M7*1-6H		3P	M7	1	7	5.7	80	14	30	5.5	60°		Picture 2	4	●	6.6
4222AS-M7*1-6H		1.5P	M7	1	7	5.7	80	14	30	5.5	60°			4	●	6.6

● Stock available ○ Make-to-order

Drilling tools

Reaming Tools

Threading Cutter

Forming taps-Al alloys machining



Type	Cooling mode	Basic dimension(mm)												Grade	Pre-hole diameter
		Length of Forming taper	d ₁	P	d ₂	d ₃	l ₁	l ₂	l ₃	a × a	Thread profile	Geometry	Number of teeth	YK40F	d
4222A-M8*1-6H	External coolant	3P	M8	1	8	6.7	90	16	35	6.2	60°	Picture 2	4	●	7.6
4222AS-M8*1-6H		1.5P													
4222A-M8*1.25-6H		3P	M8	1.25	8	6.4	90	16	35	6.2		Picture 2	4	●	7.45
4222AS-M8*1.25-6H		1.5P													
4222A-M10*1-6H		3P	M10	1	10	8.7	100	20	39	8		Picture 2	5	●	9.6
4222AS-M10*1-6H		1.5P													
4222A-M10*1.25-6H		3P	M10	1.25	10	8.4	100	20	39	8		Picture 2	5	●	9.45
4222AS-M10*1.25-6H		1.5P													
4222A-M10*1.5-6H	3P	M10	1.5	10	8.1	100	20	39	8	Picture 2	5	●	9.35		
4222AS-M10*1.5-6H	1.5P														
4222AC-M10*1.5-6H	Internal coolant	3P	M12	1.25	9	110	24	7	7	Picture 3	5	●	11.45		
4222ACS-M10*1.5-6H		1.5P													
4222A-M12*1.25-6H	External coolant	3P	M12	1.5	9	110	24	7	7	Picture 3	5	●	11.35		
4222AS-M12*1.25-6H		1.5P													
4222A-M12*1.5-6H		3P	M12	1.75	9	110	24	7	7	Picture 3	5	●	11.25		
4222AS-M12*1.5-6H		1.5P													
4222A-M12*1.75-6H	Internal coolant	3P	M14	1.5	11	110	26	9	9	Picture 3	6	●	13.35		
4222AS-M12*1.75-6H		1.5P													
4222AC-M12*1.75-6H	External coolant	3P	M14	2	11	110	26	9	9	Picture 3	6	●	13.1		
4222AS-M14*1.5-6H		1.5P													
4222A-M14*2-6H	External coolant	3P	M16	1.5	12	110	27	9	9	Picture 3	6	●	15.35		
4222AS-M14*2-6H		1.5P													
4222A-M16*1.5-6H	Internal coolant	3P	M16	2	12	110	27	9	9	Picture 3	6	●	15.1		
4222AS-M16*1.5-6H		1.5P													
4222A-M16*2-6H	Internal coolant	3P	M16	2	12	110	27	9	9	Picture 3	6	●	15.1		
4222AS-M16*2-6H		1.5P													
4222AC-M16*2-6H	Internal coolant	3P	M16	2	12	110	27	9	9	Picture 3	6	●	15.1		
4222ACS-M16*2-6H		1.5P													

● Stock available ○ Make-to-order

Drilling tools
 Reaming Tools
 Threading Cutter

Forming taps-Al alloys machining

▶ Applicable material table

◎Very suitable ○Suitable

Grade	Workpiece material									
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy
YK40F			~40HRC	~50HRC	~60HRC				◎	

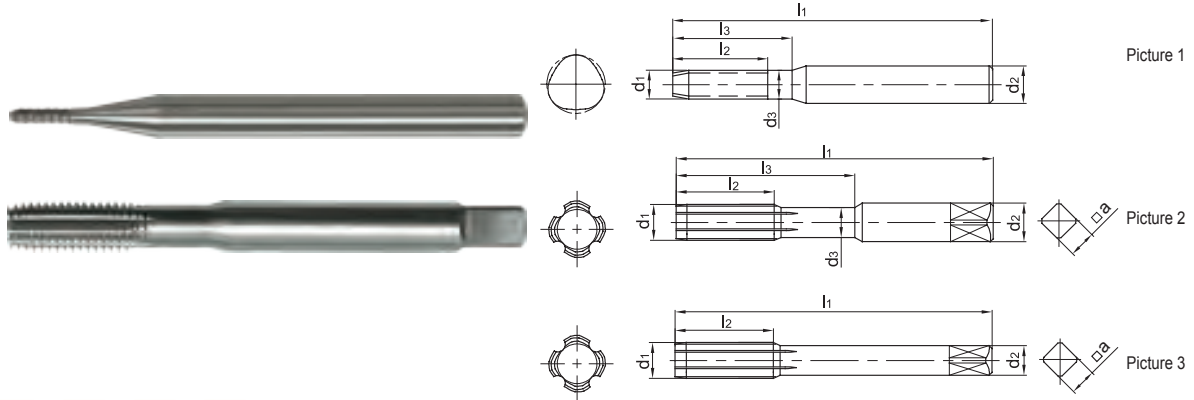




BORING TOOL / Threading tools

Forming taps -stainless steel machining

Forming taps -stainless steel machining



Type	Cooling mode	Basic dimension(mm)											Grade		Pre-hole diameter				
		Length of Forming taper	d ₁	P	d ₂	d ₃	l ₁	l ₂	l ₃	a × a	Thread profile	Geometry	Number of teeth	KTG402		YK40F	d		
4122M-M1*0.25-6H	External coolant	3P	M1	0.25	3		40	5						60°	Picture 1	4	●	○	0.9
4122MS-M1*0.25-6H		2P	M1	0.25	3		40	5							Picture 1	4	●	○	0.9
4122M-M1.2*0.25-6H		3P	M1.2	0.25	3		40	5							Picture 1	4	●	○	1.1
4122MS-M1.2*0.25-6H		2P	M1.2	0.25	3		40	5							Picture 1	4	●	○	1.1
4122M-M1.6*0.35-6H		3P	M1.6	0.35	3	1.1	40	5	11						Picture 1	4	●	○	1.47
4122MS-M1.6*0.35-6H		2P	M1.6	0.35	3	1.1	40	5	11						Picture 1	4	●	○	1.47
4122M-M2*0.4-6H		3P	M2	0.4	3	1.5	45	6	12						Picture 1	4	●	○	1.85
4122MS-M2*0.4-6H		2P	M2	0.4	3	1.5	45	6	12						Picture 1	4	●	○	1.85
4122M-M2.5*0.45-6H		3P	M2.5	0.45	3	1.9	50	6	14						Picture 1	4	●	○	2.33
4122MS-M2.5*0.45-6H		2P	M2.5	0.45	3	1.9	50	6	14						Picture 1	4	●	○	2.33
4222M-M3*0.5-6H		3P	M3	0.5	3.5	2.3	56	6	18	2.7					Picture 2	4	●	○	2.8
4222MS-M3*0.5-6H		2P	M3	0.5	3.5	2.3	56	6	18	2.7					Picture 2	4	●	○	2.8
4222M-M4*0.5-6H		3P	M4	0.5	4.5	3.1	63	8	21	3.4					Picture 2	4	●	○	3.8
4222MS-M4*0.5-6H		2P	M4	0.5	4.5	3.1	63	8	21	3.4					Picture 2	4	●	○	3.8
4222M-M4*0.7-6H		3P	M4	0.7	4.5	3.1	63	8	21	3.4					Picture 2	4	●	○	3.7
4222MS-M4*0.7-6H		2P	M4	0.7	4.5	3.1	63	8	21	3.4					Picture 2	4	●	○	3.7
4222M-M5*0.5-6H		3P	M5	0.5	6	4.3	70	10	25	4.9					Picture 2	4	●	○	4.8
4222MS-M5*0.5-6H		2P	M5	0.5	6	4.3	70	10	25	4.9					Picture 2	4	●	○	4.8
4222M-M5*0.8-6H		3P	M5	0.8	6	4	70	10	25	4.9					Picture 2	4	●	○	4.65
4222MS-M5*0.8-6H		2P	M5	0.8	6	4	70	10	25	4.9					Picture 2	4	●	○	4.65
4222M-M6*0.75-6H		3P	M6	0.75	6	5	80	12	30	4.9					Picture 2	4	●	○	5.7
4222MS-M6*0.75-6H		2P	M6	0.75	6	5	80	12	30	4.9					Picture 2	4	●	○	5.7
4222M-M6*1-6H		3P	M6	1	6	4.7	80	12	30	4.9					Picture 2	4	●	○	5.6
4222MS-M6*1-6H		2P	M6	1	6	4.7	80	12	30	4.9					Picture 2	4	●	○	5.6
4222M-M7*1-6H		3P	M7	1	7	5.7	80	14	30	5.5					Picture 2	4	●	○	6.6
4222MS-M7*1-6H		2P	M7	1	7	5.7	80	14	30	5.5					Picture 2	4	●	○	6.6

● Stock available ○ Make-to-order

Drilling tools

Reaming Tools

Threading Cutter

Forming taps-stainless steel machining



Type	Cooling mode	Basic dimension(mm)											Grade		Pre-hole diameter																		
		Length of Forming taper	d ₁	P	d ₂	d ₃	l ₁	l ₂	l ₃	a × a	Thread profile	Geometry	Number of teeth	KTG402		YK40F	d																
4222M-M8*1-6H	External coolant	3P	M8	1	8	6.7	90	16	35	6.2	60°	Picture 2	4	●	○	7.6																	
4222MS-M8*1-6H		2P																															
4222M-M8*1.25-6H		3P	M8	1.25	8	6.4	90	16	35	6.2																							
4222MS-M8*1.25-6H		2P																															
4222M-M10*1-6H		3P	M10	1	10	8.7	100	20	39	8																							
4222MS-M10*1-6H		2P																															
4222M-M10*1.25-6H		3P	M10	1.25	10	8.4	100	20	39	8																							
4222MS-M10*1.25-6H		2P																															
4222M-M10*1.5-6H		3P	M10	1.5	10	8.1	100	20	39	8							Picture 2	5	●	○	9.35												
4222MS-M10*1.5-6H		2P																															
4222MC-M10*1.5-6H		3P																															
4222MCS-M10*1.5-6H		2P																															
4222M-M12*1.25-6H	3P	M12									1.25	9	110	24	7	Picture 3						5	●	○	11.45								
4222MS-M12*1.25-6H	2P																																
4222M-M12*1.5-6H	3P	M12									1.5	9																					
4222MS-M12*1.5-6H	2P																																
4222M-M12*1.75-6H	3P	M12									1.75	9														110	24	7	Picture 3	5	●	○	11.25
4222MS-M12*1.75-6H	2P																																
4222MC-M12*1.75-6H	3P																																
4222MCS-M12*1.75-6H	2P																																
4222M-M14*1.5-6H	3P		M14	1.5	11	110	26	9	Picture 3	6							●	○	13.35														
4222MS-M14*1.5-6H	2P																																
4222M-M14*2-6H	3P		M14	2	11																												
4222MS-M14*2-6H	2P																																
4222M-M16*1.5-6H	3P		M16	1.5	12								110	27	9	Picture 3				6	●	○	15.35										
4222MS-M16*1.5-6H	2P																																
4222M-M16*2-6H	3P																																
4222MS-M16*2-6H	2P																																
4222MC-M16*2-6H	3P	M16									2	12												110	27	9	Picture 3	6	●	○	15.1		
4222MCS-M16*2-6H	2P																																

● Stock available ○ Make-to-order

Drilling tools
 Reaming Tools
Threading Cutter

➤ Applicable material table

◎Very suitable ○Suitable

Grade	Workpiece material									
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy
			~40HRC	~50HRC	~60HRC					
KTG402	◎					◎				
YK40F	○					○		○		

Code key C161 Cutting parameters C176 Technical information C177-C182 Non-standard customization C183

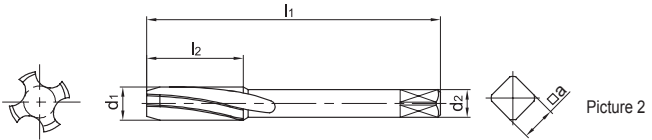
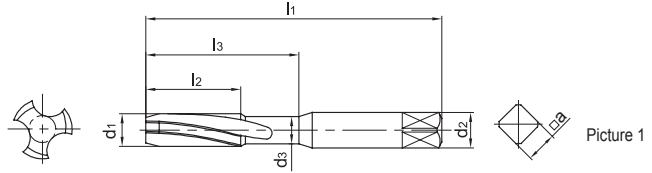
Forming taps-stainless steel machining



BORING TOOL / Threading tools

Helical-flute cutting taps - cast iron machining

Helical-flute cutting taps - cast iron machining



Type	Basic dimension(mm)											Grade	Pre-hole diameter	
	Length of Cutting tap	d1	P	d2	d3	l1	l2	l3	a × a	Thread profile	Geometry			Number of teeth
4201C-M3*0.5-6H	3P	M3	0.5	3.5	2.3	56	11	18	2.7	60°	Picture 1	3	●	2.5
4201C-M3*0.5-6HX	3P													
4201CS-M3*0.5-6H	1.5P													
4201CS-M3*0.5-6HX	1.5P	M4	0.7	4.5	3.1	63	13	21	3.4	60°	Picture 1	3	●	3.3
4201C-M4*0.7-6H	3P													
4201CS-M4*0.7-6H	1.5P													
4201CS-M4*0.7-6HX	1.5P	M5	0.8	6	4	70	16	25	4.9	60°	Picture 1	3	●	4.2
4201C-M5*0.8-6H	3P													
4201CS-M5*0.8-6H	1.5P													
4201CS-M5*0.8-6HX	1.5P	M6	0.75	6	5	80	19	30	4.9	60°	Picture 1	3	●	5.25
4201C-M6*0.75-6H	3P													
4201CS-M6*0.75-6H	1.5P													
4201CS-M6*0.75-6HX	1.5P	M6	1	6	4.7	80	19	30	4.9	60°	Picture 1	3	●	5
4201C-M6*1-6H	3P													
4201CC-M6*1-6H	3P													
4201C-M6*1-6HX	3P	M7	1	7	5.7	80	19	30	5.5	60°	Picture 1	3	●	6
4201CS-M6*1-6H	1.5P													
4201CCS-M6*1-6H	1.5P													
4201CS-M6*1-6HX	1.5P	M8	1	8	6.7	90	20	35	6.2	60°	Picture 1	3	●	7
4201C-M7*1-6H	3P													
4201CS-M7*1-6H	1.5P													
4201C-M8*1-6H	3P	M8	1.25	8	6.4	90	22	35	6.2	60°	Picture 1	3	●	6.75
4201CS-M8*1-6H	1.5P													
4201CC-M8*1.25-6H	3P													
4201C-M8*1.25-6H	3P	M8	1.25	8	6.4	90	22	35	6.2	60°	Picture 1	3	●	6.75
4201CS-M8*1.25-6H	1.5P													
4201CCS-M8*1.25-6H	1.5P													
4201CS-M8*1.25-6HX	1.5P													

● Stock available ○ Make-to-order

Drilling tools
 Reaming Tools
 Threading Cutter

Helical-flute cutting taps-cast iron machining



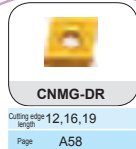
Guide to selecting general turning tools

General turning

Guide to selecting turning tools

Selection A

For roughing									
Cutting edge length	12, 16, 19	15	12	16	16	16	16	16	16
Page	A58	A65	A71	A78	A82	A86	A88	A88	A88
For heavy roughing									
Cutting edge length	19, 25	19, 25	12, 16, 19	15	12, 15, 19, 25	12, 16, 19	12, 16, 19, 25	12, 16, 19	16, 22, 27
Page	A59	A72	A59	A66	A72	A79	A79	A79	A79



CNMG-DR
Cutting edge length 12, 16, 19
Page A58



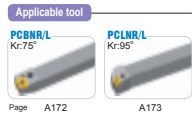
Step 1: I want to order inserts
•Shape, •Size, •Chipbreaker

CN (Negative inserts) Good working condition Normal working condition Bad working condition

Inserts shape	Type	Dimensions(mm)						Coated cemented carbide											
		L	R	C	S	d	r	PC9002	PC9003	PC9004	PC9005	PC9006	PC9007	PC9008	PC9009	PC9010	PC9011	PC9012	
NM	CNMG120404-NM	12.0	12.7	4.76	5.16	0.4	★	★	★	★	★	★	★	★	★	★	★	★	★
	CNMG120405-NM	12.0	12.7	4.76	5.16	0.8	★	★	★	★	★	★	★	★	★	★	★	★	★
	CNMG120412-NM	12.0	12.7	4.76	5.16	1.2	★	★	★	★	★	★	★	★	★	★	★	★	★
	CNMG120415-NM	12.0	12.7	4.76	5.16	1.5	★	★	★	★	★	★	★	★	★	★	★	★	★
LR	CNMM180804-LR	16.1	11.875	0.35	0.35	0.8	★	★	★	★	★	★	★	★	★	★	★	★	★
	CNMM180812-LR	16.1	11.875	0.35	0.35	1.2	★	★	★	★	★	★	★	★	★	★	★	★	★
	CNMM180815-LR	16.1	11.875	0.35	0.35	1.5	★	★	★	★	★	★	★	★	★	★	★	★	★
	CNMM180820-LR	16.1	11.875	0.35	0.35	2.0	★	★	★	★	★	★	★	★	★	★	★	★	★
	CNMM180824-LR	16.1	11.875	0.35	0.35	2.4	★	★	★	★	★	★	★	★	★	★	★	★	★
	CNMM180828-LR	16.1	11.875	0.35	0.35	2.8	★	★	★	★	★	★	★	★	★	★	★	★	★
	CNMM180832-LR	16.1	11.875	0.35	0.35	3.2	★	★	★	★	★	★	★	★	★	★	★	★	★
	CNMM180836-LR	16.1	11.875	0.35	0.35	3.6	★	★	★	★	★	★	★	★	★	★	★	★	★

Dimensions(mm)				
L	I.C	S	d	r
12.9	12.7	4.76	5.16	0.4

Step 2: Details of inserts
•Shape, •Size, •Chipbreaker, •Grade, •Stock
Applicable tool holders
•Approach angle, Page



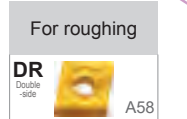
Applicable tool
PCBNR/L Kc72 Page A172
PCNLR/L Kc95 Page A173



Step 3: Selecting tool holder
•Tool holder type, Size, •Stock
•Operation gener, •Applicable inserts

Corresponding tool holders of insert CN **R-type design**

Type	Stock	Basic dimensions(mm)						Screw	Shut	Wrench	Lever	Shut pin	
		R	L	A	T	H	+						
PCBNR/L Kc72	2020K12	A	25	20	155	30	11	27					
	2020M12	A	25	20	150	25	22	27	LEM8-21	CT5AP	WH05L	L4	SP4
	3232P12	A	35	32	170	32	27	33					
	3232M12	A	35	32	160	25	22	33	LEM8-25	CT5AP	WH05L	L5	SP5
PCNLR/L Kc95	4040R16	A	40	40	200	40	35	35					
	3232P16	A	35	32	170	32	27	38	LEM10-27	CT5AP	WH05L	L6	SP6
	4040R16	A	40	40	200	40	35	35	LEM12-30A	CT5AP-07	WH05L	L6	SP6
	4040S200	A	40	40	200	40	35	35					



Step 4: Return to locate inserts



Helical-flute cutting taps - cast iron machining

Type	Basic dimension(mm)												Grade	Pre-hole diameter
	Length of Cutting tap	d ₁	P	d ₂	d ₃	l ₁	l ₂	l ₃	a × a	Thread profile	Geometry	Number of teeth	YK40F	d
4201C-M10*1-6H	3P	M10	1	10	8.7	100	20	39	8	60°	Picture 1	4	●	9
4201CS-M10*1-6H	1.5P													
4201C-M10*1.25-6H	3P	M10	1.25	10	8.4	100	24	39	8		Picture 1	4	●	8.75
4201CS-M10*1.25-6H	1.5P													
4201C-M10*1.5-6H	3P	M10	1.5	10	8.1	100	24	39	8		Picture 1	4	●	8.5
4201CC-M10*1.5-6H	3P													
4201C-M10*1.5-6HX	3P													
4201CS-M10*1.5-6H	1.5P													
4201CCS-M10*1.5-6H	1.5P													
4201CS-M10*1.5-6HX	1.5P													
4201C-M12*1.25-6H	3P	M12	1.25	9		110	29		7		Picture 2	4	●	10.75
4201CS-M12*1.25-6H	1.5P													
4201C-M12*1.5-6H	3P	M12	1.5	9		110	29		7			4	●	10.5
4201CS-M12*1.5-6H	1.5P													
4201C-M12*1.75-6H	3P	M12	1.75	9		110	29		7		Picture 2	4	●	10.25
4201CC-M12*1.75-6H	3P													
4201C-M12*1.75-6HX	3P													
4201CS-M12*1.75-6H	1.5P													
4201CCS-M12*1.75-6H	1.5P													
4201CS-M12*1.75-6HX	1.5P													
4201C-M14*1.5-6H	3P	M14	1.5	11		110	30		9		Picture 2	4	●	12.5
4201CS-M14*1.5-6H	1.5P													
4201C-M14*2-6H	3P	M14	2	11		110	30		9		Picture 2	4	●	12
4201CS-M14*2-6H	1.5P													
4201C-M16*1.5-6H	3P	M16	1.5	12		110	32		9	Picture 2	4	●	14.5	
4201CS-M16*1.5-6H	1.5P													
4201C-M16*2-6H	3P	M16	2	12		110	32		9	Picture 2	4	●	14	
4201C-M16*2-6HX	3P													
4201CS-M16*2-6H	1.5P													
4201CS-M16*2-6HX	1.5P													

● Stock available ○ Make-to-order

Drilling tools

Reaming Tools

Threading Cutter

Helical-flute cutting taps-cast iron machining

➤ Applicable material table

○ Very suitable ○ Suitable

Grade	Workpiece material									
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy
YK40F			~40HRC	~50HRC	~60HRC		○	○		

Code key

C161

Cutting parameters

C176

Technical information

C177-C182

Non-standard customization

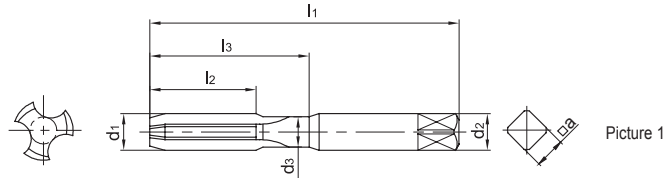
C183



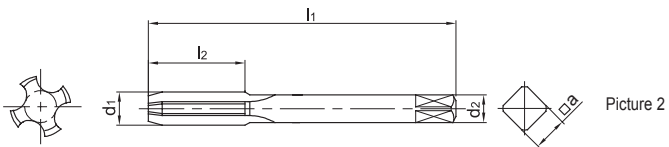
BORING TOOL / Threading tools

Straight-flute cutting taps - cast iron machining

Straight-flute cutting taps - cast iron machining



Picture 1



Picture 2



Type	Basic dimension(mm)											Grade	Pre-hole diameter	
	Length of Cutting tap	d1	P	d2	d3	l1	l2	l3	a × a	Thread profile	Geometry			Number of teeth
4202C-M3*0.5-6H	3P	M3	0.5	3.5	2.3	56	11	18	2.7	60°	Picture 1	3	●	2.5
4202C-M3*0.5-6HX	3P													
4202CS-M3*0.5-6H	1.5P	M3	0.5	3.5	2.3	56	11	18	2.7	60°	Picture 1	3	●	2.5
4202CS-M3*0.5-6HX	1.5P													
4202C-M4*0.7-6H	3P	M4	0.7	4.5	3.1	63	13	21	3.4	60°	Picture 1	3	●	3.3
4202C-M4*0.7-6HX	3P													
4202CS-M4*0.7-6H	1.5P	M4	0.7	4.5	3.1	63	13	21	3.4	60°	Picture 1	3	●	3.3
4202CS-M4*0.7-6HX	1.5P													
4202C-M5*0.8-6H	3P	M5	0.8	6	4	70	16	25	4.9	60°	Picture 1	3	●	4.2
4202C-M5*0.8-6HX	3P													
4202CS-M5*0.8-6H	1.5P	M5	0.8	6	4	70	16	25	4.9	60°	Picture 1	3	●	4.2
4202CS-M5*0.8-6HX	1.5P													
4202C-M6*0.75-6H	3P	M6	0.75	6	5	80	19	30	4.9	60°	Picture 1	3	●	5.25
4202C-M6*0.75-6HX	3P													
4202CS-M6*0.75-6H	1.5P	M6	0.75	6	5	80	19	30	4.9	60°	Picture 1	3	●	5.25
4202CS-M6*0.75-6HX	1.5P													
4202C-M6*1-6H	3P	M6	1	6	4.7	80	19	30	4.9	60°	Picture 1	3	●	5
4202CC-M6*1-6H	3P													
4202C-M6*1-6HX	3P	M6	1	6	4.7	80	19	30	4.9	60°	Picture 1	3	●	5
4202CS-M6*1-6H	1.5P													
4202CCS-M6*1-6H	1.5P	M6	1	6	4.7	80	19	30	4.9	60°	Picture 1	3	●	5
4202CS-M6*1-6HX	1.5P													
4202C-M7*1-6H	3P	M7	1	7	5.7	80	19	30	5.5	60°	Picture 1	3	●	6
4202CS-M7*1-6H	1.5P													
4202C-M8*1-6H	3P	M8	1	8	6.7	90	20	35	6.2	60°	Picture 1	3	●	7
4202CS-M8*1-6H	1.5P													
4202C-M8*1.25-6H	3P	M8	1.25	8	6.4	90	22	35	6.2	60°	Picture 1	3	●	6.75
4202CC-M8*1.25-6H	3P													
4202C-M8*1.25-6HX	3P	M8	1.25	8	6.4	90	22	35	6.2	60°	Picture 1	3	●	6.75
4202CS-M8*1.25-6H	1.5P													
4202CCS-M8*1.25-6H	1.5P	M8	1.25	8	6.4	90	22	35	6.2	60°	Picture 1	3	●	6.75
4202CS-M8*1.25-6HX	1.5P													

● Stock available ○ Make-to-order

Drilling tools
 Reaming Tools
 Threading Cutter

Straight-flute cutting tap-cast iron machining



Straight-flute cutting taps - cast iron machining

Type	Basic dimension(mm)												Grade	Pre-hole diameter
	Length of Cutting tap	d ₁	P	d ₂	d ₃	l ₁	l ₂	l ₃	a × a	Thread profile	Geometry	Number of teeth	YK40F	d
4202C-M10*1-6H	3P	M10	1	10	8.7	100	20	39	8	60°	Picture 1	4	●	9
4202CS-M10*1-6H	1.5P													
4202C-M10*1.25-6H	3P	M10	1.25	10	8.4	100	24	39	8		Picture 1	4	●	8.75
4202CS-M10*1.25-6H	1.5P													
4202C-M10*1.5-6H	3P	M10	1.5	10	8.1	100	24	39	8		Picture 1	4	●	8.5
4202CC-M10*1.5-6H	3P													
4202C-M10*1.5-6HX	3P													
4202CS-M10*1.5-6H	1.5P													
4202CCS-M10*1.5-6H	1.5P													
4202CS-M10*1.5-6HX	1.5P													
4202C-M12*1.25-6H	3P	M12	1.25	9		110	29		7		Picture 2	4	●	10.75
4202CS-M12*1.25-6H	1.5P													
4202C-M12*1.5-6H	3P	M12	1.5	9		110	29		7			4	●	10.5
4202CS-M12*1.5-6H	1.5P													
4202C-M12*1.75-6H	3P	M12	1.75	9		110	29		7		Picture 2	4	●	10.25
4202CC-M12*1.75-6H	3P													
4202C-M12*1.75-6HX	3P													
4202CS-M12*1.75-6H	1.5P													
4202CCS-M12*1.75-6H	1.5P													
4202CS-M12*1.75-6HX	1.5P													
4202C-M14*1.5-6H	3P	M14	1.5	11		110	30		9		Picture 2	4	●	12.5
4202CS-M14*1.5-6H	1.5P													
4202C-M14*2-6H	3P	M14	2	11		110	30		9		Picture 2	4	●	12
4202CS-M14*2-6H	1.5P													
4202C-M16*1.5-6H	3P	M16	1.5	12		110	32		9	Picture 2	4	●	14.5	
4202CS-M16*1.5-6H	1.5P													
4202C-M16*2-6H	3P	M16	2	12		110	32		9	Picture 2	4	●	14	
4202C-M16*2-6HX	3P													
4202CS-M16*2-6H	1.5P													
4202CS-M16*2-6HX	1.5P													

● Stock available ○ Make-to-order



Straight-flute cutting tap-cast iron machining

➤ Applicable material table

○ Very suitable ○ Suitable

Grade	Workpiece material									
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy
YK40F			~40HRC	~50HRC	~60HRC		○	○		

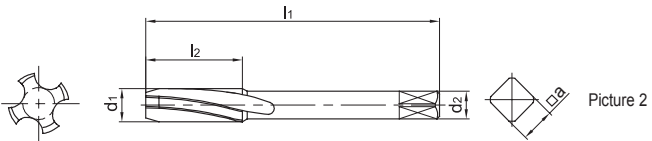
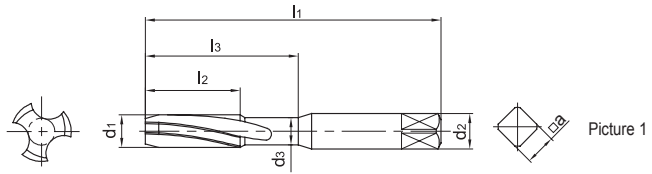




BORING TOOL / Threading tools

Helical-flute cutting taps - Al alloys machining

Helical-flute cutting taps - Al alloys machining



Type	Basic dimension(mm)											Grade	Pre-hole diameter	
	Length of Cutting tap	d1	P	d2	d3	l1	l2	l3	a × a	Thread profile	Geometry			Number of teeth
4201A-M3*0.5-6H	3P	M3	0.5	3.5	2.3	56	11	18	2.7	60°	Picture 1	3	●	2.5
4201A-M3*0.5-6HX	3P													
4201AS-M3*0.5-6H	1.5P													
4201AS-M3*0.5-6HX	1.5P													
4201A-M4*0.7-6H	3P	M4	0.7	4.5	3.1	63	13	21	3.4		Picture 1	3	●	3.3
4201A-M4*0.7-6HX	3P													
4201AS-M4*0.7-6H	1.5P													
4201AS-M4*0.7-6HX	1.5P													
4201A-M5*0.8-6H	3P	M5	0.8	6	4	70	16	25	4.9		Picture 1	3	●	4.2
4201A-M5*0.8-6HX	3P													
4201AS-M5*0.8-6H	1.5P													
4201AS-M5*0.8-6HX	1.5P													
4201A-M6*0.75-6H	3P	M6	0.75	6	5	80	19	30	4.9	Picture 1	3	●	5.25	
4201A-M6*0.75-6HX	3P													
4201AS-M6*0.75-6H	1.5P													
4201AS-M6*0.75-6HX	1.5P													
4201A-M6*1-6H	3P	M6	1	6	4.7	80	19	30	4.9	Picture 1	3	●	5	
4201AC-M6*1-6H	3P													
4201AS-M6*1-6H	1.5P													
4201AS-M6*1-6HX	1.5P													
4201A-M7*1-6H	3P	M7	1	7	5.7	80	19	30	5.5	Picture 1	3	●	6	
4201AS-M7*1-6H	1.5P													
4201A-M8*1-6H	3P	M8	1	8	6.7	90	20	35	6.2	Picture 1	3	●	7	
4201AS-M8*1-6H	1.5P													

● Stock available ○ Make-to-order

Drilling tools
 Reaming Tools
 Threading Cutter

Helical-flute cutting taps --Al alloys machining



Helical-flute cutting taps - Al alloys machining

Type	Basic dimension(mm)												Grade	Pre-hole diameter												
	Length of Cutting tap	d ₁	P	d ₂	d ₃	l ₁	l ₂	l ₃	a × a	Thread profile	Geometry	Number of teeth	YK40F	d												
4201A-M8*1.25-6H	3P	M8	1.25	8	6.4	90	22	35	6.2	60°	Picture 1	3	●	6.75												
4201AC-M8*1.25-6H	3P																									
4201A-M8*1.25-6HX	3P																									
4201AS-M8*1.25-6H	1.5P																									
4201ACS-M8*1.25-6H	1.5P																									
4201AS-M8*1.25-6HX	1.5P																									
4201A-M10*1-6H	3P	M10	1	10	8.7	100	20	39	8		Picture 1	4	●	9												
4201AS-M10*1-6H	1.5P																									
4201A-M10*1.25-6H	3P																									
4201AS-M10*1.25-6H	1.5P	M10	1.25	10	8.4	100	24	39	8			Picture 1		4	●	8.75										
4201A-M10*1.5-6H	3P																									
4201AC-M10*1.5-6H	3P																									
4201A-M10*1.5-6HX	3P																									
4201AS-M10*1.5-6H	1.5P																									
4201ACS-M10*1.5-6H	1.5P																									
4201AS-M10*1.5-6HX	1.5P	M10	1.5	10	8.1	100	24	39	8		Picture 1	4	●	8.5												
4201A-M12*1.25-6H	3P																									
4201AS-M12*1.25-6H	1.5P																									
4201A-M12*1.5-6H	3P														M12	1.25	9		110	29		7	Picture 2	4	●	10.75
4201AS-M12*1.25-6H	1.5P																									
4201A-M12*1.5-6H	3P																									
4201AS-M12*1.5-6H	1.5P	M12	1.5	9		110	29		7		Picture 2	4	●	10.5												
4201A-M12*1.75-6H	3P																									
4201AC-M12*1.75-6H	3P																									
4201A-M12*1.75-6HX	3P																									
4201AS-M12*1.75-6H	1.5P																									
4201ACS-M12*1.75-6H	1.5P																									
4201AS-M12*1.75-6HX	1.5P	M12	1.75	9		110	29		7	Picture 2	4	●	10.25													
4201A-M14*1.5-6H	3P																									
4201AS-M14*1.5-6H	1.5P																									
4201A-M14*2-6H	3P													M14	1.5	11		110	30		9	Picture 2	4	●	12.5	
4201AS-M14*1.5-6H	1.5P																									
4201A-M14*2-6H	3P																									
4201AS-M14*2-6H	1.5P	M14	2	11		110	30		9	Picture 2	4	●	12													
4201A-M16*1.5-6H	3P																									
4201AS-M16*1.5-6H	1.5P																									
4201A-M16*2-6H	3P													M16	1.5	12		110	32		9	Picture 2	4	●	14.5	
4201AS-M16*1.5-6H	1.5P																									
4201A-M16*2-6H	3P																									
4201A-M16*2-6HX	3P	M16	2	12		110	32		9	Picture 2	4	●	14													
4201AS-M16*2-6H	1.5P																									
4201A-M16*2-6H	3P																									
4201A-M16*2-6HX	3P																									
4201AS-M16*2-6H	1.5P																									
4201AS-M16*2-6HX	1.5P																									

● Stock available ○ Make-to-order

➤ Applicable material table

○ Very suitable ○ Suitable

Grade	Workpiece material									
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy
YK40F			~40HRC	~50HRC	~60HRC				○	



Drilling tools
 Reaming Tools
 Threading
 Cutter

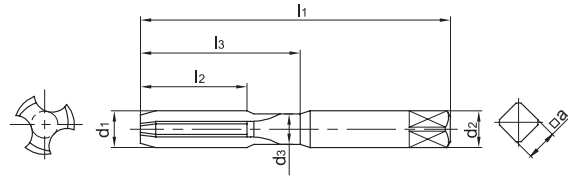
Helical-flute cutting taps --Al
 alloys machining



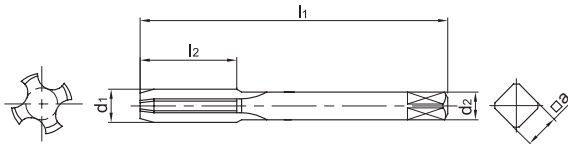
BORING TOOL / Threading tools

Straight-flute cutting taps - Al alloys machining

Straight-flute cutting taps - Al alloys machining



Picture 1



Picture 2



Type	Basic dimension(mm)											Grade	Pre-hole diameter	
	Length of Cutting tap	d1	P	d2	d3	l1	l2	l3	a × a	Thread profile	Geometry			Number of teeth
4202A-M3*0.5-6H	3P	M3	0.5	3.5	2.3	56	11	18	2.7	60°	Picture 1	3	●	2.5
4202A-M3*0.5-6HX	3P													
4202AS-M3*0.5-6H	1.5P	M4	0.7	4.5	3.1	63	13	21	3.4		Picture 1	3	●	3.3
4202AS-M3*0.5-6HX	1.5P													
4202A-M4*0.7-6H	3P	M5	0.8	6	4	70	16	25	4.9		Picture 1	3	●	4.2
4202A-M4*0.7-6HX	3P													
4202AS-M4*0.7-6H	1.5P	M6	0.75	6	5	80	19	30	4.9		Picture 1	3	●	5.25
4202AS-M4*0.7-6HX	1.5P													
4202A-M5*0.8-6H	3P	M6	1	6	4.7	80	19	30	4.9		Picture 1	3	●	5
4202A-M5*0.8-6HX	3P													
4202AS-M5*0.8-6H	1.5P	M7	1	7	5.7	80	19	30	5.5		Picture 1	3	●	6
4202AS-M5*0.8-6HX	1.5P													
4202A-M6*0.75-6H	3P	M8	1	8	6.7	90	20	35	6.2	Picture 1	3	●	7	
4202A-M6*0.75-6HX	3P													
4202AS-M6*0.75-6H	1.5P													
4202AS-M6*0.75-6HX	1.5P													
4202A-M6*1-6H	3P													
4202AC-M6*1-6H	3P													
4202A-M6*1-6HX	3P													
4202AS-M6*1-6H	1.5P													
4202ACS-M6*1-6H	1.5P													
4202AS-M6*1-6HX	1.5P													
4202A-M7*1-6H	3P													
4202AS-M7*1-6H	1.5P													
4202A-M8*1-6H	3P													
4202AS-M8*1-6H	1.5P													

● Stock available ○ Make-to-order

Drilling tools
 Reaming Tools
 Threading Cutter

Helical-flute cutting taps --Al alloys machining



Type	Basic dimension(mm)												Grade	Pre-hole diameter											
	Length of Cutting tap	d ₁	P	d ₂	d ₃	l ₁	l ₂	l ₃	a × a	Thread profile	Geometry	Number of teeth	YK40F	d											
4202A-M8*1.25-6H	3P	M8	1.25	8	6.4	90	22	35	6.2	60°	Picture 1	3	●	6.75											
4202AC-M8*1.25-6H	3P																								
4202A-M8*1.25-6HX	3P																								
4202AS-M8*1.25-6H	1.5P																								
4202ACS-M8*1.25-6H	1.5P																								
4202AS-M8*1.25-6HX	1.5P																								
4202A-M10*1-6H	3P	M10	1	10	8.7	100	20	39	8		Picture 1	4	●	9											
4202AS-M10*1-6H	1.5P																								
4202A-M10*1.25-6H	3P																								
4202AS-M10*1.25-6H	1.5P	M10	1.25	10	8.4	100	24	39	8						Picture 1	4	●	8.75							
4202A-M10*1.5-6H	3P																								
4202AC-M10*1.5-6H	3P																								
4202A-M10*1.5-6HX	3P																								
4202AS-M10*1.5-6H	1.5P																								
4202ACS-M10*1.5-6H	1.5P																								
4202AS-M10*1.5-6HX	1.5P	M10	1.5	10	8.1	100	24	39	8		Picture 1	4	●	8.5											
4202A-M12*1.25-6H	3P																								
4202AS-M12*1.25-6H	1.5P																								
4202A-M12*1.5-6H	3P																								
4202AS-M12*1.5-6H	1.5P																								
4202A-M12*1.75-6H	3P																								
4202AC-M12*1.75-6H	3P	M12	1.25	9		110	29		7		Picture 2	4	●	10.75											
4202AS-M12*1.75-6H	1.5P																								
4202A-M12*1.5-6H	3P																								
4202AS-M12*1.5-6H	1.5P																								
4202A-M12*1.75-6H	3P																								
4202AC-M12*1.75-6H	3P																								
4202A-M12*1.75-6HX	3P	M12	1.75	9		110	29		7		Picture 2	4	●	10.25											
4202AS-M12*1.75-6H	1.5P																								
4202ACS-M12*1.75-6H	1.5P																								
4202AS-M12*1.75-6HX	1.5P																								
4202A-M14*1.5-6H	3P									M14					1.5	11		110	30		9	Picture 2	4	●	12.5
4202AS-M14*1.5-6H	1.5P																								
4202A-M14*2-6H	3P																								
4202AS-M14*2-6H	1.5P																								
4202A-M16*1.5-6H	3P	M16	1.5	12		110	32		9		Picture 2	4	●	14.5											
4202AS-M16*1.5-6H	1.5P																								
4202A-M16*2-6H	3P																								
4202AS-M16*2-6H	1.5P																								
4202A-M16*2-6HX	3P																								
4202AS-M16*2-6H	1.5P																								
4202AS-M16*2-6HX	1.5P	M16	2	12		110	32		9	Picture 2	4	●	14												
4202AS-M16*2-6H	1.5P																								

● Stock available ○ Make-to-order

➤ Applicable material table

○ Very suitable ○ Suitable

Grade	Workpiece material									
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy
YK40F			~40HRC	~50HRC	~60HRC				○	

Code key
C161

Cutting parameters
C176

Technical information
C177-C182

Non-standard customization
C183

Drilling tools
Reaming Tools
Threading
Cutter

Helical-flute cutting taps --Al
alloys machining

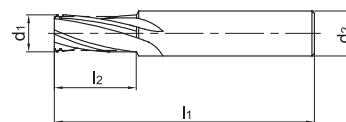


Newly upgraded!

Solid carbide
Thread mills



Thread mills



Type	Basic dimension(mm)							Recommended grade		Pre-hole diameter d
	D	d ₁	P	d ₂	l ₁	l ₂	Number of teeth	KTG4015	YK40F	
4111-M3*0.5	M3	2.35	0.5	4	50	6	3	●	○	2.5
4111-M4*0.7	M4	3.15	0.7	4	50	8	3	●	○	3.3
4111-M5*0.5	M5	4.3	0.5	6	50	10	3	●	○	4.5
4111-M5*0.8	M5	4	0.8	6	50	10	3	●	○	4.2
4111-M6*0.75	M6	5	0.75	6	60	12	4	●	○	5.25
4111-M6*1	M6	4.75	1	6	60	12	4	●	○	5
4111-M8*1	M8	6.65	1	8	60	16	4	●	○	7
4111-M8*1.25	M8	6.45	1.25	8	60	16	4	●	○	6.75
4111-M10*1	M10	8.55	1	10	75	20	4	●	○	9
4111-M10*1.5	M10	8.1	1.5	10	75	20	4	●	○	8.5
4111-M12*1.25	M12	10.25	1.25	12	75	24	4	●	○	10.75
4111-M12*1.75	M12	9.75	1.75	12	75	24	4	●	○	10.25
4111-M14*1	M14	12.35	1	14	75	20	4	●	○	13
4111-M14*1.5	M14	11.9	1.5	14	75	28	4	●	○	12.5
4111-M14*2	M14	11.4	2	14	75	28	4	●	○	12
4111-M16*2	M16	13.3	2	16	90	32	6	●	○	14
4111-M18*1	M18	16.15	1	18	90	20	6	●	○	17
4111-M18*2.5	M18	14.75	2.5	18	90	36	6	●	○	15.5
4111-M20*2	M20	17.1	2	18	100	40	6	●	○	18
4111-M20*2.5	M20	16.65	2.5	18	100	40	6	●	○	17.5

● Stock available ○ Make-to-order

Drilling tools

Reaming Tools

Threading
Cutter

Thread milling cutter

▶▶ Applicable material table

○ Very suitable ○ Suitable

Grade	Workpiece material									
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy
			~40HRC	~50HRC	~60HRC					
KTG4015	○	⊙	○				○	○		
YK40F							○	○	○	

Code key C161

Cutting parameters C176

Technical information C177-C182

Non-standard customization C184



Recommended cutting parameters

Forming tap

Workpiece material	Cutting speed (m/min)
Stainless steel / Mild steel	5~20
Aluminium alloy	20~50
Cast aluminium alloy(Si<10%)	15~40

Cutting tap

Workpiece material	Cutting speed (m/min)
Grey cast iron	15~30
Nodular cast iron	10~20
Aluminium alloy	20~50
Cast aluminium alloy (Si < 10%)	20~45
Cast aluminium alloy (Si ≥ 10%)	15~40

Thread mills

Workpiece material	Cutting speed (m/min)		Feed rate (mm/z)	
	Uncoated	Coated	D≤8	D>8
Alloy steel、Common steel	20~60	40~120	0.02~0.05	0.04~0.12
Aluminium alloy	100~250	---	0.05~0.2	

Note:

The tool entering feed is less than 70% of threading feed. It is in direct proportion to the diameter of the tap. The above cut parameters are suitable for thread cutters with helical flute. Please reduce feed rate and cutting speed by 20% ~ 40% if it is straight-flute tools.

Drilling tools

Reaming Tools

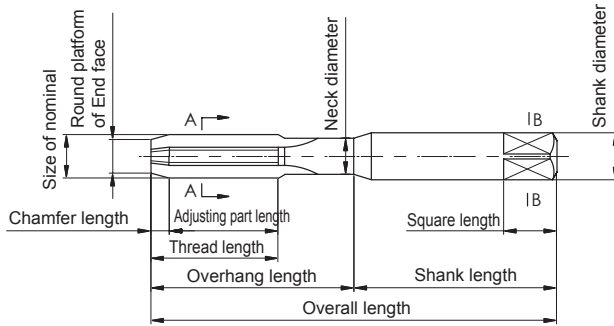
Threading Cutter

Recommended cutting parameters

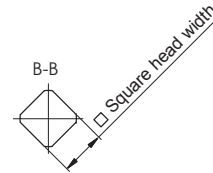
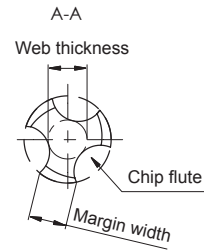
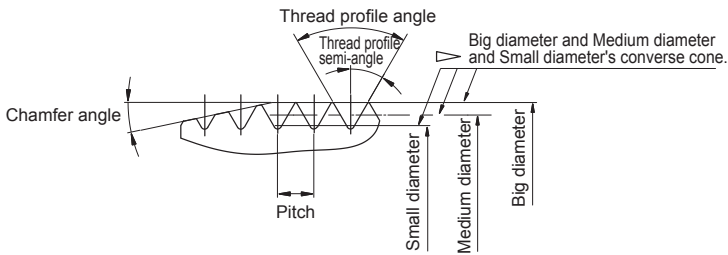


Tap

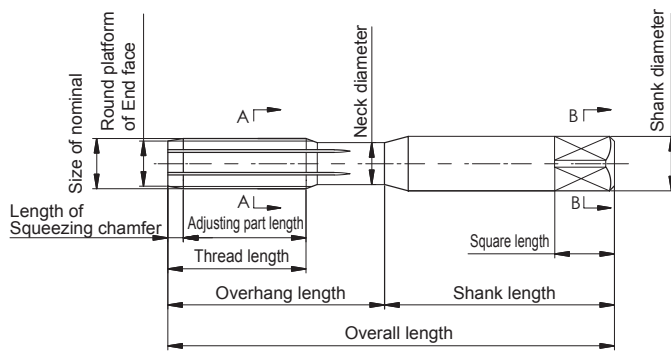
Parts terminology of cutting taps



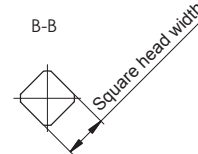
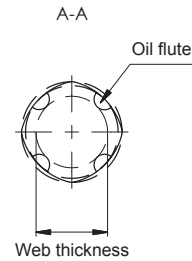
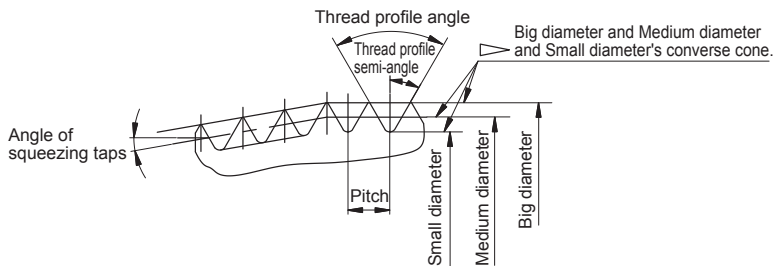
Magnifying fig of chamfer and thread profile



Parts terminology of forming taps

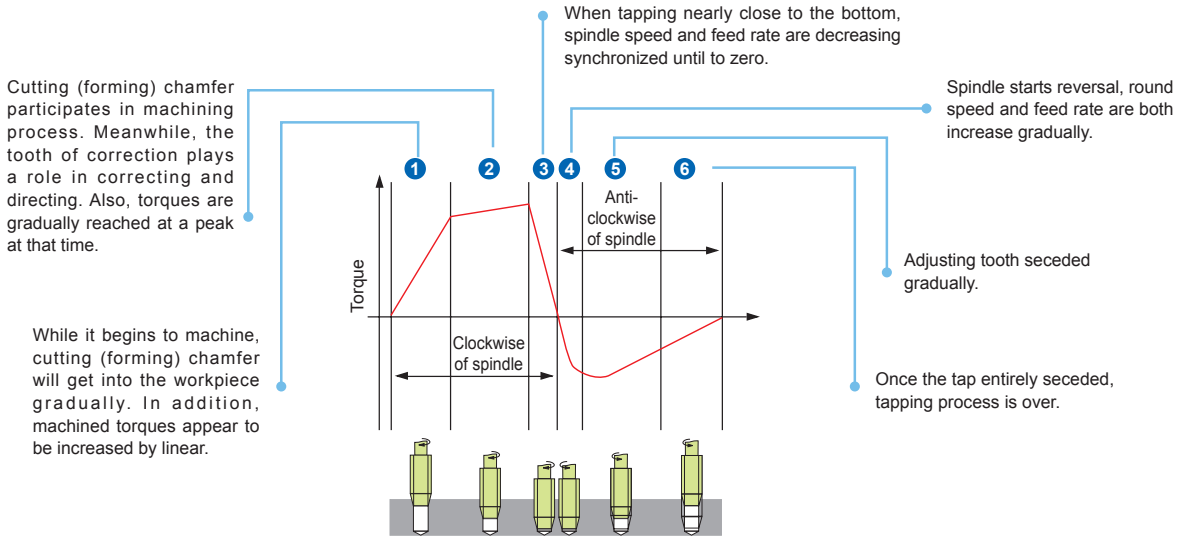


Magnifying fig of squeezing chamfer and guided threads

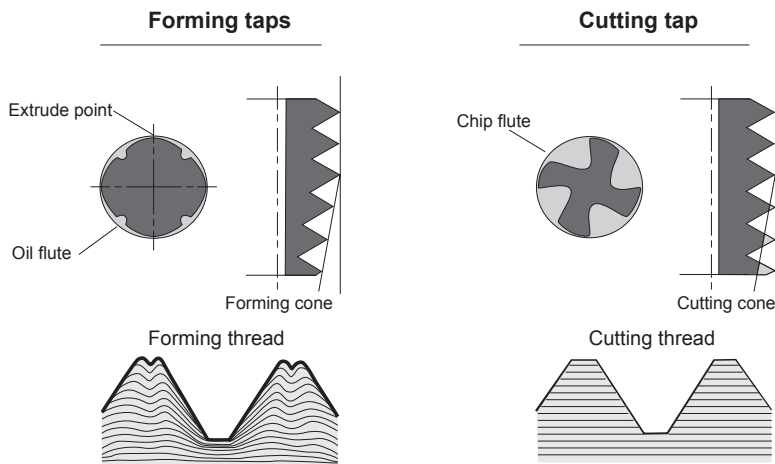




Process of tapping and tapping torques



Comparison of forming taps and cutting taps



Tapping types of cutting taps

Due to different machines, tapping types of cutting taps can be broadly divided into flexible tapping and rigid tapping. Due to different pre-hole, it can also be divided into through-hole tapping and blind-hole tapping.

Rigid tapping: Machine tool has good precision, the spindle feed rate is consistent with the tap pitch. Used general chunks.




Flexible tapping: Machine tool has poor precision, the spindle feed rate cannot be strictly in accordance with the pitch. Compensating floating chucks should be used to compensate the error between the tapping feed and the tap pitch, so that the tap can feed in accordance with the pitch.

Through-hole tapping: chip removal along the direction of tapping feed, so that the chip clogging and scratching and squeezing on the machined surface caused by chips can be reduced and the accuracy of thread processing can be improved.

Bind-hole tapping: chips removal along the direction of tap shank. Increase of cutting force, which is caused by chips blocked in the groove, can be prevented.



Features and applications of tap flute

Classification	Advantages	Disadvantages	Recommend applications
<p>Straight-flute taps</p> 	<ul style="list-style-type: none"> ● general performance is good ● high cutting edge strength ● easy to regrind 	<ul style="list-style-type: none"> ● large cutting torque by machining ● bad chip-breaking and chip removal ability ● cannot tapping to the bottom of blind holes 	<ul style="list-style-type: none"> ● for machining of high hardness material ● material generating powdered chips ● material easy to cause abrasion ● tap shot through and blind hole
<p>Helical-flute taps</p> 	<ul style="list-style-type: none"> ● small cutting torque by machining ● better chip-breaking and chip removal ability ● available for tapping to the bottom of blind holes ● penetrate to pre-hole easily 	<ul style="list-style-type: none"> ● bad cutting edge strength ● easily fall in tooth when seceding 	<ul style="list-style-type: none"> ● tap long through and blind hole ● material generating long curling chips ● the hole with axial slot on inner wall
<p>Forming taps</p> 	<ul style="list-style-type: none"> ● no chips ● high precision of internal thread ● high tool strength ● available for tapping to the bottom of blind holes 	<ul style="list-style-type: none"> ● only for machining of specific material ● high requirement of pre-hole ● high requirement of lubrication liquid 	<ul style="list-style-type: none"> ● for soft materials with good toughness and ductility ● tap through and blind hole

Drilling tools

Reaming Tools

Threading Cutter

Technical information





The common problems in tapping

Common problems	Reasons	Solutions
Too large Internal thread	Wrong tap type selection	Selecting right tap according to work materials and requirement
	Pre-hole is too large	Select appropriate prehole drills
	Pre-hole is off center	Improve prehole quality
		Change to floated tapping method
	Axial feed not equable	Mechanical feed
		Use flexible tapping
	Build-up edge	Regrinding in time or change taps
		Adopt coated taps
		Fully lubricated
	Extremely high cutting speed	Lower cutting speed
Insufficient lubrication or cooling	Check lubricating oil density	
	Increase cooling liquid pressure and volume	
Wrong selection of tap tolerance level	Select taps with right tolerance	
Too small internal thread	Wrong selection of tap tolerance level	Select taps with right tolerance
	Wrong tapping	Avoid taps bear higher axial stress in the process of tapping
	The rigidity of machine tool spindle is too well	Adopt axial floated chuck
Thread disorderly buckle	When starts tapping, force too much press on right helical taps	Decrease pressure when starts tapping
	When starts tapping, force too small press on left helical taps	increase pressure when starts tapping
	Unmatched of machine tool feed and thread pitch	Change to floated tapping
Unsmooth on internal thread surface	Wrong selection of taps	Selecting right tap according to work materials and requirement
	Too high Cutting speed	Lower cutting speed
	Insufficient cooling	Use right cooling liquid and enough volume or select taps with inner coolant
	Obstructed chip removal	Select helical flute taps
	Too small pre-hole diameter	Adjust pre-hole drill
	Build-up edge	Adopt coated taps
Fully lubricated		
Tap breakage	Too small pre-hole	Adjust pre-hole drill
	Torque is too large when tapping	Increase length of cutting chamfer
		Increase cutting edge
	Tap touch hole bottom	Check the depth of pre-hole
		Adopt floated tapping
	Pre-hole chamfer is too small, pre-hole location or angle error	Check pre-hole
		adopt floated tapping
Cutting speed is too high	Lower cutting speed	
	Select helical flute taps	

Drilling tools

Reaming Tools

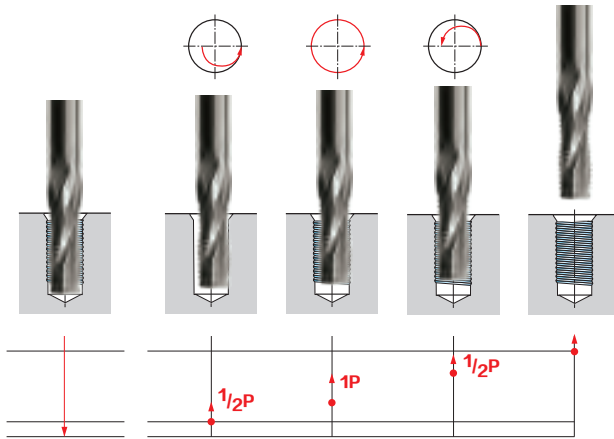
Threading Cutter

Technical Information

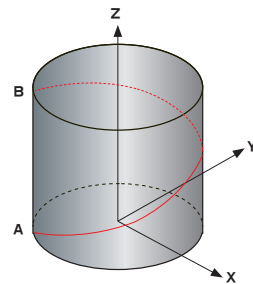


Thread mills

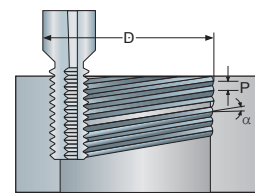
Thread mills (graphic demonstration)



Thread milling is composed of tool rotation and helical interpolate mill of machine tool. In a circle interpolation process, required threads are machined by using the geometry shape of tool and moving axially with a pitch.



Picture A



α: helical angle
D: large-diameter
p: pitch

Picture B

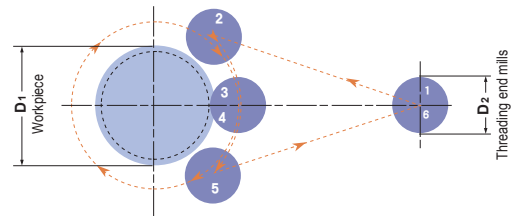
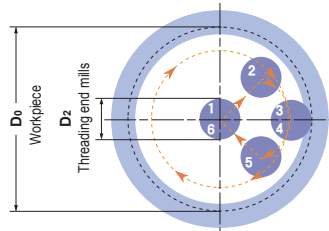
Arc entering method

Internal thread

External thread

Thread milling can use arc entering method and radial entering method.

Arc entering: placidly entering and out leads to almost no cutting traces or vibration, so that it is particularly suitable for materials difficult to be machined and precise threading.



- 1-2 rapid positioning
- 2-3 entering by arc feed and interpolating along the Z axis at the same time
- 3-4 360° full circle cutting interpolation and axial moving of one pitch

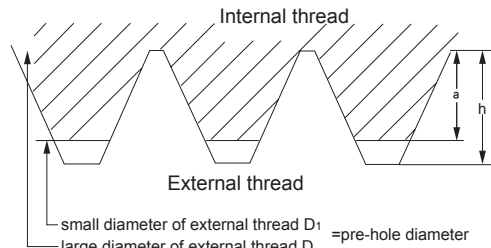
- 4-5 cutting-out by arc feed and interpolating along the Z axis at the same time
- 5-6 quick return

Thread overlap ratio

The thread overlap ratio is the ratio of effective chimeric height of external thread and internal thread and the height of standard tooth. It must be considered before machining of internal thread pre-hole.

$$\text{Thread overlap ratio} = \frac{\text{Reference dimension of large diameter of external thread} - \text{pre-hole diameter}}{2 \times (\text{height of standard tooth type})} \times 100\%$$

while external thread appears to be standardized tooth



$$a = 1/2 \times (D - D_1)$$

$$h = \text{height of standard tooth of external thread}$$

$$\text{chimerism ratio} = a/h \times 100\%$$

Drilling tools

Reaming Tools

Threading Cutter

Technical information



The solutions of common problems in thread milling

	Common problems	reasons	solutions
Thread milling cutter	Roughness on internal thread milling cutter surface	Too long overhang	Decrease the length of overhang
		Select wrong type	Select appropriate tool(e.g. tool with helix flute)
		Poor chip removal	Select helix flute tap
			Adopt inner cooling
		Too large cutting force	Decrease cutting force
	Unreasonable cutting parameter	Adjust cutting parameter	
	Severe tool wear	Unreasonable cutting parameter	Lower cutting speed
			Increase the feed rate per tooth
		Unreasonable machining mode	Adopt down milling
			Adopt Arc cut-in milling.
		Uncoated tools/inappropriate coated	Adopt Coated tool/ instead coat
	Too large overhang	Decrease length of overhang	
	Falling on cutting edge	Unreasonable cutting parameter	Decrease the feed rate per tooth
		Unreasonable machining mode	Adopt down milling
			Adopt Arc cut-in milling
		Uncoated tools/inappropriate coated	Adopt Coated tool/instead coat
Thread is taper	Too large overhang	Decrease length of overhang	
	Unreasonable cutting parameter	Decrease the feed rate per tooth	
	Unreasonable machining mode	Adopt up milling	
	Too large cutting force	Decrease cutting force	

Drilling tools

Reaming Tools

Threading Cutter

Technical information



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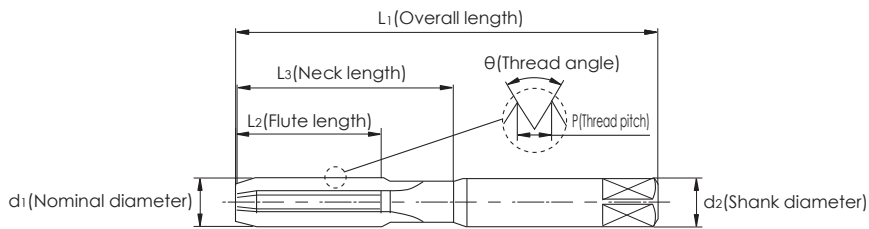
E-MAIL:

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Workpiece materials		Hole Form			
Grey cast iron		 Through hole	 Blind hole		
Ductile Iron					
Aluminum alloy					
Silicon Aluminum Alloy(Si<10%)					
Silicon Aluminum Alloy(Si>10%)		Bottom hole diameter			
Stainless Stee		Bottom hole depth			
Soft steel		Thread form			
Hardened steel (HRC48-63)		Threading precision			
Other materials	Workpiece material grade	Tapping depth			
		Threading rotation speed			
	Hardness	Tapping form			
		Rigid tapping		Flexible tapping	
Tool Information (attachment)					
Shank form			Chip pocket form		
Square shank		Straight flute			
Round shank		Right handed flute		Left handed flute	
Coolant form			Coating		
External coolant		Coated			
Internal coolant		Non-Coated			

Unit: mm ;

Check mark for copy to fill the form:



Applying tools: Cutting tap _____ Thread forming tap _____

Nominal diameter d1= _____ Shank diameter d2= _____ Thread pitch P= _____ Thread angle theta= _____

Overall length l1= _____ Flute length l2= _____ Neck length l3= _____

Note:

Order Quantity: PCS Expected delivery date:

Quotation: Confirmation:

Date:

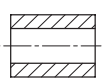
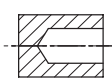
Drilling tools
 Reaming Tools
 Threading Cutter
 Non-standard customization for special application (Taps)



BORING TOOL / Threading tools

Non-standard customization for special application (Taps)

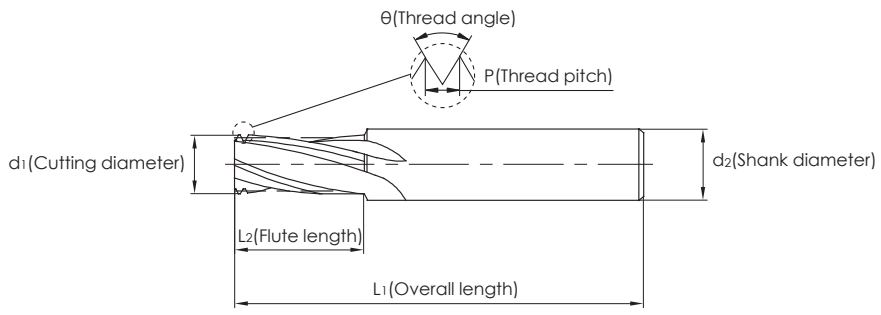
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Workpiece materials		Hole Form	
Grey cast iron		 Through hole	 Blind hole
Ductile Iron			
Aluminum alloy			
Silicon Aluminum Alloy(Si≤10%)		Bottom hole diameter	
Silicon Aluminum Alloy(Si>10%)		Bottom hole depth	
Stainless Steel		Thread form	
Soft steel		Threading precision	
Ordinary steel		Tapping depth	
Other materials	Workpiece material grade	Threading rotation speed	
	Hardness	Thread form	
		External threading	Internal threading

Tool Information (attachment)

Chip pocket	Right handed flute	Left handed flute	Straight flute
Coating	Coated	Non-Coated	
Coolant type	External coolant	Internal coolant	

Unit: mm ; Check mark for copy to fill the form:



Thread specification= _____ Cutting diameter d1= _____ Shank diameter d2= _____ Thread angle θ = _____
 Overall length l1= _____ Flute length l2= _____ Thread pitch P= _____

Note:

Order Quantity: PCS Expected delivery date:

Quotation: Confirmation:

Date:

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