



SOLID CARBIDE THREAD MILLS

*- Carbide Thread Mill for Precision Thread
- Covering Wide Range of Materials / Produce Full Threads to the Bottom*

- EXPANSION** • *Thread Form Expansion*
 - M(2.5xD) without Coolant*
 - BSP(G), Rc(BSPT), NPT without Coolant*
 - UNC, UNF with Coolant*

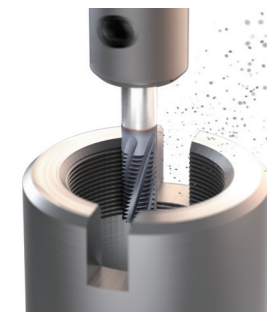
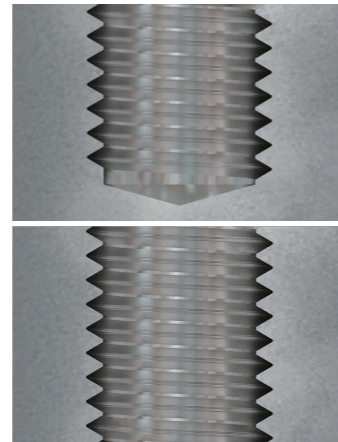
- NEW** • *Miniature Thread Mills for Dental*

PRODUCT FEATURES

THREAD MILLS VS. TAPPING

Versatility

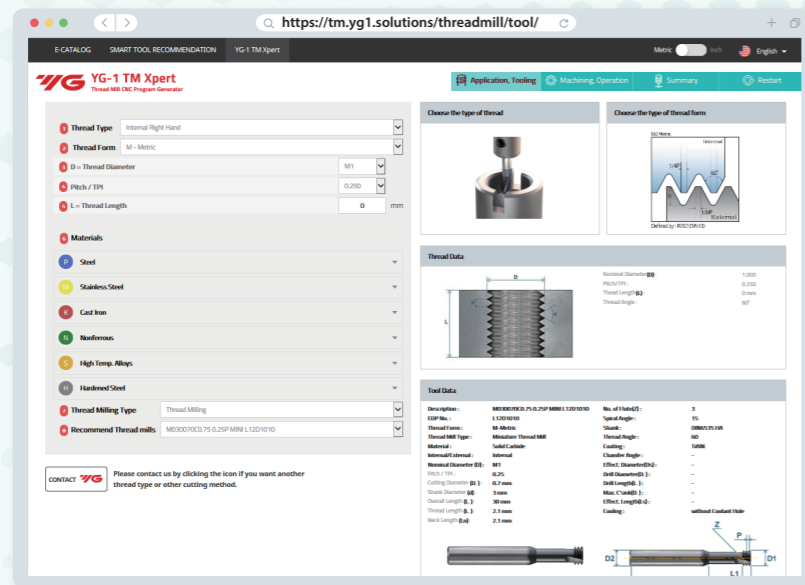
- ▶ Able to thread a range of hole sizes with the same thread mill
- ▶ The same thread mill can produce right and left hand threads with a simple program change
- ▶ The same thread mill can produce threads in a wide range of materials
- ▶ Capable of producing full threads to the bottom of the hole
- ▶ The same thread mill can produce any Class of Fit
- ▶ Low cutting forces make thread mills a perfect solution for underpowered machines



Process Improvement

- ▶ Hold tight tolerance pitch diameters with program offset changes
- ▶ Very low chance of scrap with the ease of removing broken tools from the workpiece
- ▶ No issues with chip control as the short chips eliminate bird nesting typically associated with spiral flute taps
- ▶ Excellent thread finish with greater control over cutting condition than with tapping

YG-1 TM Xpert provides user-oriented data and display with user friendly Interface



<https://tm.yg1.solutions/threadmill/tool/>

YG-1 TM Xpert is a program that generates G Code required for thread milling with CNC machine. With the left side bar menu, users can select the thread type, thread form, work materials, thread milling type and cutting condition or change the options easily according to their needs. Moreover, not only the data can be saved as text file but also can be printed out directly or transferred via email.

It can be also accessed by PC and the smartphone at present, and provides responsive web design and optimized visual interface on various individual devices.

CASE STUDY

with Coolant Hole & Chamfer

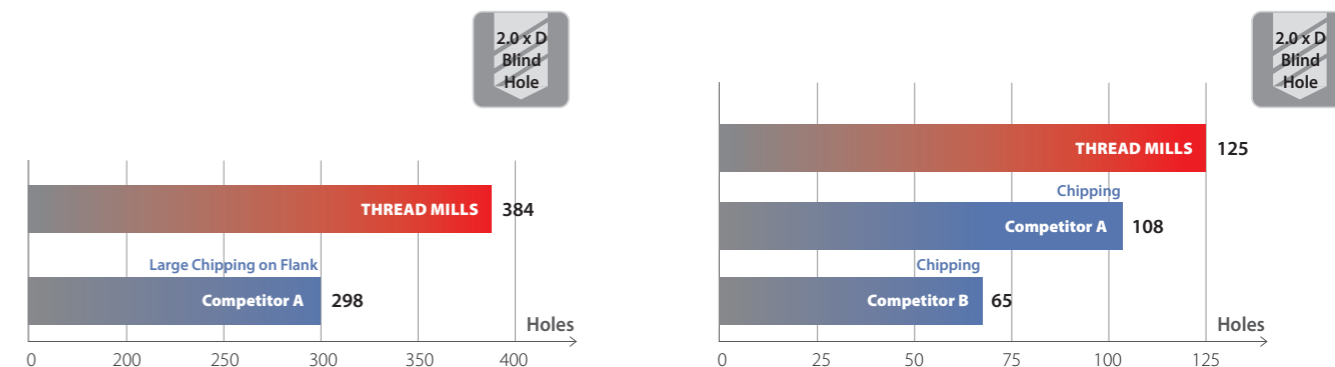
▶ M8 x 1.5 Carbon Steel

Tool	YG-1	Competitor A
Dimension	M8 x 1.25	M8 x 1.25
	Ø6.5x16.8x72	Ø6.2x16.8x72
Work Material	Carbon Steel (1045 / C45 / S45C) HB228 (HRc20)	
RPM	5,387 rev./min.	
Vc (Tapping Speed)	110 m/min.	
Feed per Tooth	0.03 mm/tooth	
Tapping Depth	16 mm (2xD)	
Holes	384	298
Cutting Fluid (Coolant)	External Cooling Water Soluble (9% Emulsion)	

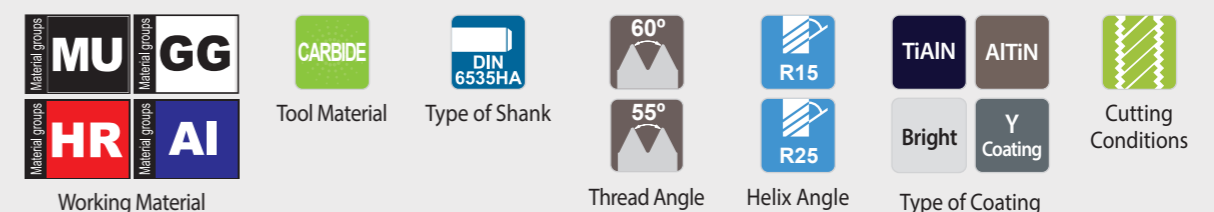
Miniature THREAD MILLS

▶ M2 x 0.4 (TiAlN Coating) Tool Steel

Tool	YG-1	Competitor A	Competitor B
Dimension	M2 x 0.4	M2 x 0.4	M2 x 0.4
	Ø1.52x1.2(4.2)x57	Ø1.55x1.2x57	Ø1.5x1.2x40
Work Material	Tool Steel (SKD61 / X40CrMoV5-1 / H13) HB371 (HRc40)		
RPM	14,659 rev./min.		
Vc (Tapping Speed)	70 m/min.		
Feed per Tooth	0.012 mm/tooth		
Tapping Depth	4 mm (2xD)		
Holes	125	108	65
Cutting Fluid (Coolant)	External Cooling Water Soluble (9% Emulsion)		



GUIDE TO ICONS

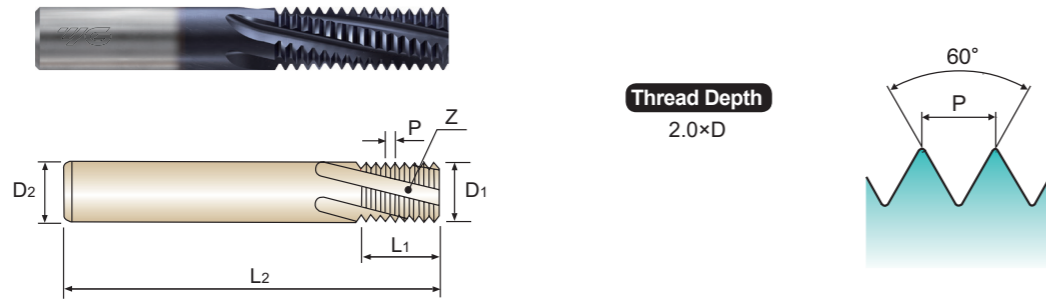


M SOLID CARBIDE THREAD MILLS
ISO Metric Internal Thread - DIN 13

SERIES

L1211

► Easy to cut threads even for exotic materials like Nickel, Titanium and their alloys.



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch P	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	No. of Flute Z
TiAlN							
L1211200	M3	0.5	2.2	6	5	57	3
L1211240	M4	0.7	2.9	6	7	57	3
L1211280	M5	0.8	3.8	6	8	57	3
L1211310	M6	1.0	4.5	6	13	57	3
L1211360	M8	1.25	6.0	6	17.5	65	3
L1211420	M10	1.5	7.5	8	21	72	4
L1211500	M12	1.75	9.5	10	26.25	80	4
L1211540	M14	2.0	10.0	10	30	83	4
L1211600	M16	2.0	12.0	12	34	92	4
L1211650	M18	2.5	14.0	14	37.5	92	5
L1211700	M20	2.5	16.0	16	42.5	105	5

► Other coatings are available on your request.

◎ : Excellent ○ : Good

ISO Material Description	P										M					K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel					Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	15	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

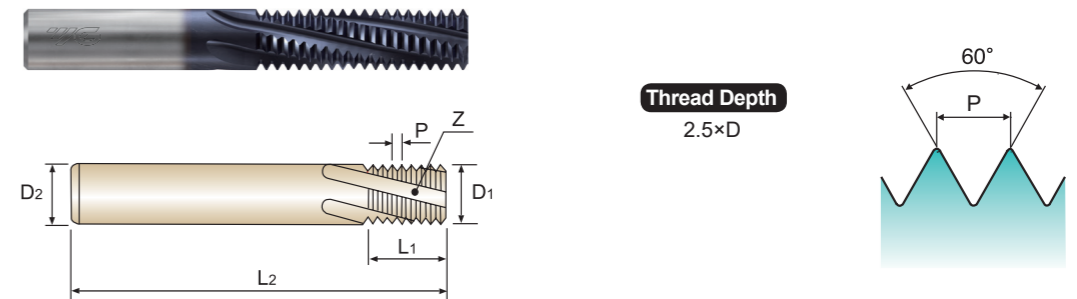
ISO Material Description	N										S					H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	15	30	25	38	34	15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	55	60	42	55	
HB	60	100	75	90	130	110	90	100	◎	◎	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

M SOLID CARBIDE THREAD MILLS
ISO Metric Internal Thread - DIN 13

NEW SERIES

L121H

► Easy to cut threads even for exotic materials like Nickel, Titanium and their alloys.



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch P	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	No. of Flute Z
TiAlN							
L121H310	M6	1.0	4.5	6	16	60	3
L121H360	M8	1.25	6	6	21.25	69	3
L121H420	M10	1.5	7.5	8	27	78	4
L121H500	M12	1.75	9.5	10	31.5	85	4
L121H540	M14	2.0	10	10	38	91	4
L121H600	M16	2.0	12	12	42	100	4
L121H650	M18	2.5	14	14	47.5	102	5
L121H700	M20	2.5	16	16	52.5	115	5

► Other coatings are available on your request.

◎ : Excellent ○ : Good

ISO Material Description	P										M					K					
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel					Stainless steel		Grey cast iron	Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	15	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N										S					H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	15	30	25	38	34	15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	55	60	42	55	
HB	60	100	75	90	130	110	90	100	◎	◎	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

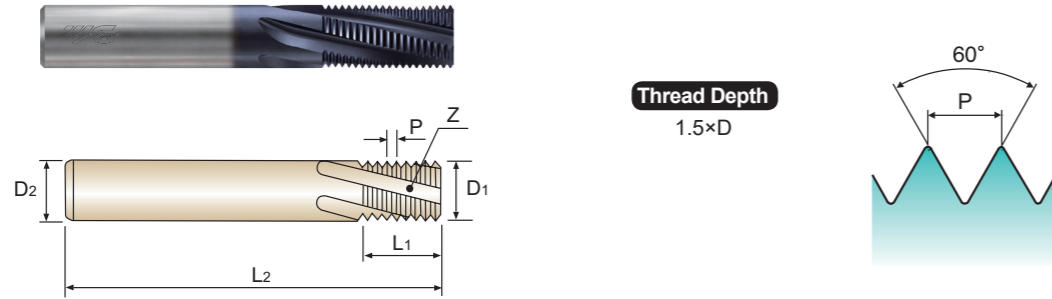
MF SOLID CARBIDE THREAD MILLS

ISO Metric Internal Thread - DIN 13

SERIES

L1212

► Easy to cut threads even for exotic materials like Nickel, Titanium and their alloys.



Material groups: **MU** CARBIDE DIN 6535HA 60° R15 TiAlN p.4

Unit : mm

EDP No.	Nominal Diameter [D]	Pitch P	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	No. of Flute Z
TiAlN							
L1212370	M8	1.0	6.0	6	13	57	3
L1212380	M8	0.75	6.0	6	12.75	57	3
L1212440	M10	1.0	8.0	8	16	63	4
L1212510	M12	1.5	9.5	10	19.5	72	4
L1212520	M12	1.25	9.5	10	18.75	72	4
L1212530	M12	1.0	9.5	10	19	72	4
L1212550	M14	1.5	10.0	10	22.5	83	4
L1212570	M14	1.0	10.0	10	22	83	4
L1212610	M16	1.5	12.0	12	25.5	83	4
L1212620	M16	1.0	12.0	12	25	83	4
L1212670	M18	1.5	14.0	14	28.5	92	5
L1212680	M18	1.0	14.0	14	28	92	5
L1212720	M20	1.5	16.0	16	31.5	92	5
L1212730	M20	1.0	16.0	16	31	92	5

► Other coatings are available on your request.

◎ : Excellent ○ : Good

ISO Material Description	P									M					K						
	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel	Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	10	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N										S					H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC						15	30	25	38	34							55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

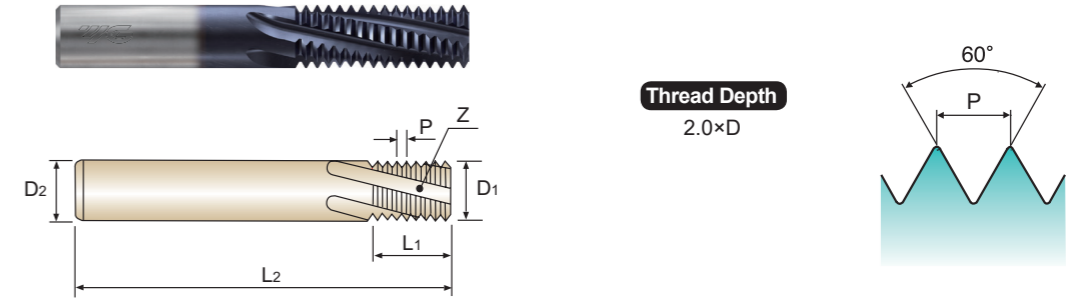
UNC SOLID CARBIDE THREAD MILLS

Unified Inch Internal Thread - ANSI B 1.1

SERIES

L1213

► Easy to cut threads even for exotic materials like Nickel, Titanium and their alloys.



Material groups: **MU** CARBIDE DIN 6535HA 60° R15 TiAlN p.4

Unit : mm

EDP No.	Nominal Diameter [D]	TPI	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	No. of Flute Z
TiAlN							
L1213400	1/4	20	4.5	6	14	57	3
L1213440	5/16	18	5.8	6	16.9	65	3
L1213480	3/8	16	7.0	8	20.6	72	4
L1213520	7/16	14	8.0	8	23.6	72	4
L1213560	1/2	13	9.5	10	27.4	80	4
L1213600	9/16	12	10.0	10	31.8	83	4
L1213640	5/8	11	12.0	12	34.6	92	4
L1213700	3/4	10	14.0	14	40.6	104	5

► Other coatings are available on your request.

◎ : Excellent ○ : Good

ISO Material Description	P									M					K						
	Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel	Stainless steel			Grey cast iron		Nodular cast iron		Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	10	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

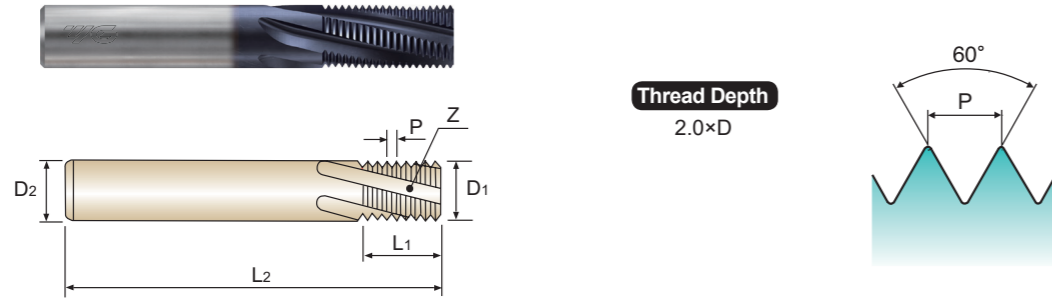
ISO Material Description	N										S					H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials			Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC						15	30	25	38	34							55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

UNF SOLID CARBIDE THREAD MILLS
Unified Inch Internal Thread - ANSI B 1.1

SERIES

L1214

► Easy to cut threads even for exotic materials like Nickel, Titanium and their alloys.



Unit : mm

EDP No.	Nominal Diameter [D]	TPI	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	No. of Flute Z
TiAIN							
L1214420	1/4	28	5.0	6	13.6	57	3
L1214460	5/16	24	6.0	6	16.9	65	3
L1214500	3/8	24	8.0	8	20.1	72	4
L1214540	7/16	20	8.0	8	24.1	72	4
L1214580	1/2	20	10.0	10	26.7	80	4
L1214620	9/16	18	12.0	12	29.6	83	4
L1214660	5/8	18	12.0	12	33.9	92	4
L1214720	3/4	16	14.0	14	39.7	104	5

► Other coatings are available on your request.

◎ : Excellent ○ : Good

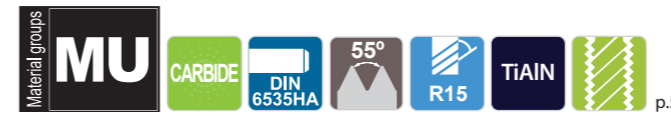
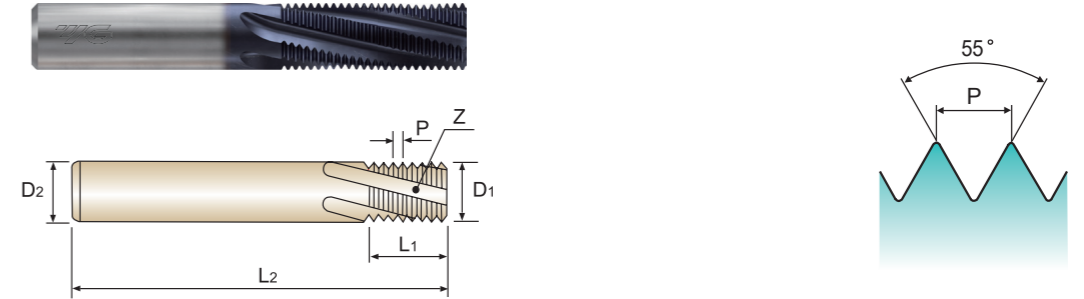
ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	15	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N										S						H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC						15	30	25	38	34	55	60	42	55								
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

BSP(G) SOLID CARBIDE THREAD MILLS
Whitworth Pipe Internal/External Thread - ISO 228

NEW SERIES

L3215



Unit : mm

EDP No.	Nominal Diameter [D]	TPI	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	No. of Flute Z
TiAIN							
L3215020	BSP(G) 1/16	28	5.9	6	16.3	65	3
L3215200	BSP(G) 1/8	28	7.9	8	20	70	4
L3215400	BSP(G) 1/4	19	9.9	10	26.7	80	4
L3215480	BSP(G) 3/8	19	13.9	14	33.4	92	4
L3215560	BSP(G) 1/2	14	15.9	16	43.5	104	5
L3215700	BSP(G) 3/4	14	17.9	18	34.5	100	5
L3215780	BSP(G) 1"	11	19.9	20	34.6	100	5

► Other coatings are available on your request.

◎ : Excellent ○ : Good

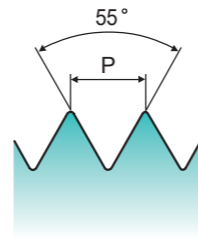
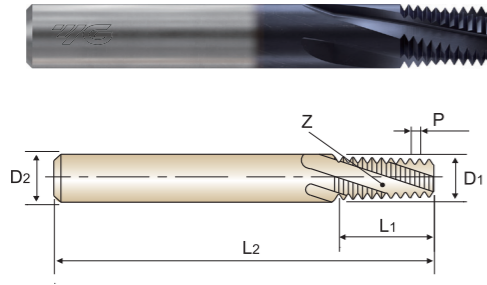
ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	15	21		
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N										S						H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC						15	30	25	38	34	55	60	42	55								
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

Rc(BSPT)

SOLID CARBIDE THREAD MILLS
Tapered Whitworth Pipe Internal Thread
- DIN EN 10226-2 and ISO 7-1

NEW SERIES
L3218



Unit : mm

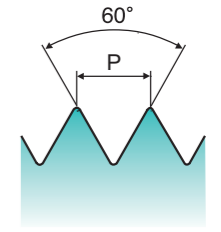
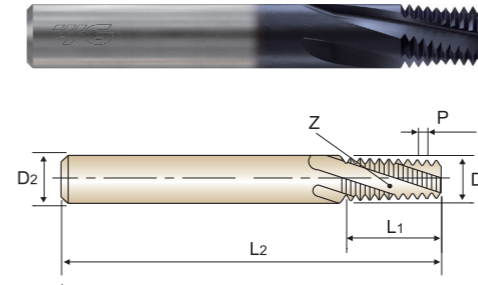
EDP No.	Nominal Diameter [D]	TPI	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	No. of Flute Z
L3218200	Rc(BSPT) 1/8	28	7.65	8	9.1	63	4
L3218400	Rc(BSPT) 1/4	19	9.9	10	14.7	73	4
L3218480	Rc(BSPT) 3/8	19	11.15	12	14.7	80	4
L3218560	Rc(BSPT) 1/2	14	13.9	14	21.8	85	5
L3218780	Rc(BSPT) 1"	11	15.9	16	27.7	95	5

► Other coatings are available on your request.

NPT

SOLID CARBIDE THREAD MILLS
American Tapered Pipe Internal Thread
- ANSI/ASME B 1.20.1

NEW SERIES
L3216



Unit : mm

EDP No.	Nominal Diameter [D]	TPI	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	No. of Flute Z
L3216020	NPT 1/16	27	5.9	6	9.4	57	3
L3216200	NPT 1/8	27	7.9	8	9.4	63	4
L3216400	NPT 1/4	18	9.9	10	14.1	73	4
L3216480	NPT 3/8	18	11.9	12	14.1	80	4
L3216560	NPT 1/2	14	13.9	14	18.1	85	5
L3216780	NPT 1"	11.5	15.9	16	22.1	95	5

► Other coatings are available on your request.

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	10	29	32	38	15	35	15	23	10	10	10	26	3	25	15	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

ISO	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	400	550	400	550	
HB	60	100	75	90	130	110	90	100	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550		
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	10	29	32	38	15	35	15	23	10	10	10	26	3	25	15	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

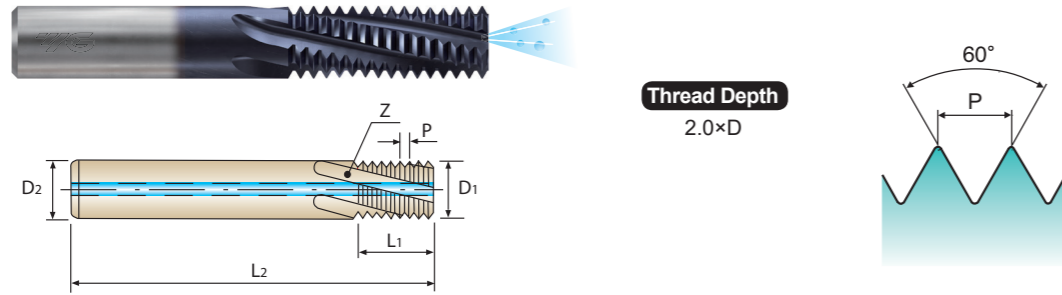
ISO	N										S						H				
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel		Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRC	15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	400	550	400	550	
HB	60	100	75	90	130	110	90	100	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550		
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	

M SOLID CARBIDE THREAD MILLS WITH COOLANT
ISO Metric Internal Thread - DIN 13

SERIES

L4211

► Easy to cut threads even for exotic materials like Nickel, Titanium and their alloys.



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch P	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	No. of Flute Z
L4211310	M6	1.0	4.5	6	13	57	3
L4211360	M8	1.25	6.0	6	17.5	65	3
L4211420	M10	1.5	7.5	8	21	72	4
L4211500	M12	1.75	9.5	10	26.25	80	4
L4211540	M14	2.0	10.0	10	30	83	4
L4211600	M16	2.0	12.0	12	34	92	4
L4211700	M20	2.5	16.0	16	42.5	105	5

► Other coatings are available on your request.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	15	23	10	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

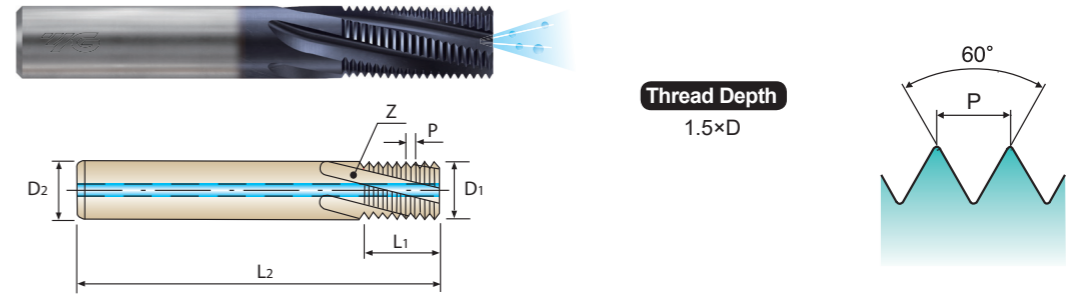
ISO Material Description	N										S						H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	15	30	25	38	34	15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	55	60	42	55	
HB	60	100	75	90	130	110	90	100	◎	◎	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

MF SOLID CARBIDE THREAD MILLS WITH COOLANT
ISO Metric Internal Thread - DIN 13

SERIES

L4212

► Easy to cut threads even for exotic materials like Nickel, Titanium and their alloys.



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch P	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	No. of Flute Z
L4212370	M8	1.0	6.0	6	13	57	3
L4212380	M8	0.75	6.0	6	12.75	57	3
L4212440	M10	1.0	8.0	8	16	63	4
L4212510	M12	1.5	9.5	10	19.5	72	4
L4212520	M12	1.25	9.5	10	18.75	72	4
L4212530	M12	1.0	9.5	10	19	72	4
L4212550	M14	1.5	10.0	10	22.5	83	4
L4212570	M14	1.0	10.0	10	22	83	4
L4212610	M16	1.5	12.0	12	25.5	83	4
L4212620	M16	1.0	12.0	12	25	83	4
L4212670	M18	1.5	14.0	14	28.5	92	5
L4212680	M18	1.0	14.0	14	28	92	5
L4212720	M20	1.5	16.0	16	31.5	92	5
L4212730	M20	1.0	16.0	16	31	92	5

► Other coatings are available on your request.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	15	23	10	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

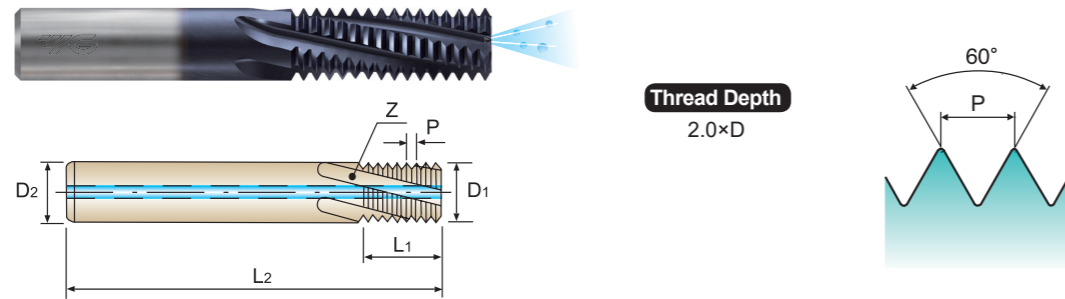
ISO Material Description	N										S						H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials		Heat Resistant Super Alloys				Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	15	30	25	38	34	15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	55	60	42	55	
HB	60	100	75	90	130	110	90	100	◎	◎	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

UNC SOLID CARBIDE THREAD MILLS WITH COOLANT

Unified Inch Internal Thread - ANSI B 1.1

NEW SERIES
L4213

► Easy to cut threads even for exotic materials like Nickel, Titanium and their alloys.



Thread Depth
2.0×D



Unit : mm

EDP No.	Nominal Diameter [D]	TPI	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	No. of Flute Z
L4213400	1/4	20	4.5	6	14	57	3
L4213440	5/16	18	5.8	6	16.9	65	3
L4213480	3/8	16	7	8	20.6	72	4
L4213520	7/16	14	8	8	23.6	72	4
L4213560	1/2	13	9.5	10	27.4	80	4
L4213600	9/16	12	10	10	31.8	83	4
L4213640	5/8	11	12	12	34.6	92	4
L4213700	3/4	10	14	14	40.6	104	5

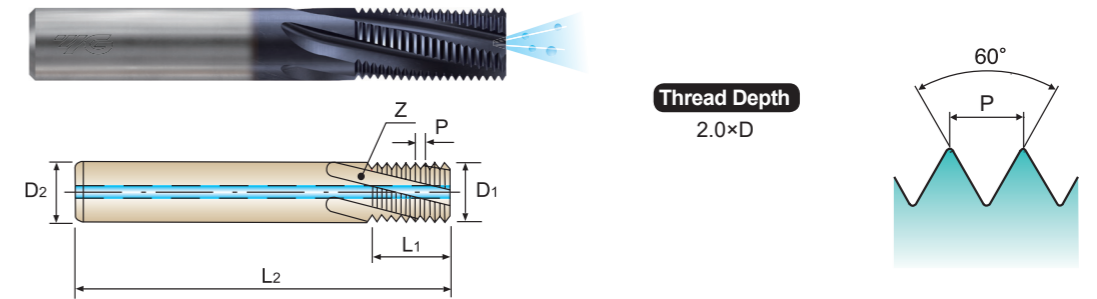
► Other coatings are available on your request.

UNF SOLID CARBIDE THREAD MILLS WITH COOLANT

Unified Inch Internal Thread - ANSI B 1.1

NEW SERIES
L4214

► Easy to cut threads even for exotic materials like Nickel, Titanium and their alloys.



Thread Depth
2.0×D



Unit : mm

EDP No.	Nominal Diameter [D]	TPI	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	No. of Flute Z
L4214420	1/4	28	5	6	13.6	57	3
L4214460	5/16	24	6	6	16.9	65	3
L4214500	3/8	24	8	8	20.1	72	4
L4214540	7/16	20	8	8	24.1	72	4
L4214580	1/2	20	10	10	26.7	80	4
L4214620	9/16	18	12	12	29.6	83	4
L4214660	5/8	18	12	12	33.9	92	4
L4214720	3/4	16	14	14	39.7	104	5

► Other coatings are available on your request.

◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	15	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N										S						H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	15	30	25	38	34	15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	55	60	42	55	
HB	60	100	75	90	130	110	90	100	◎	◎	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

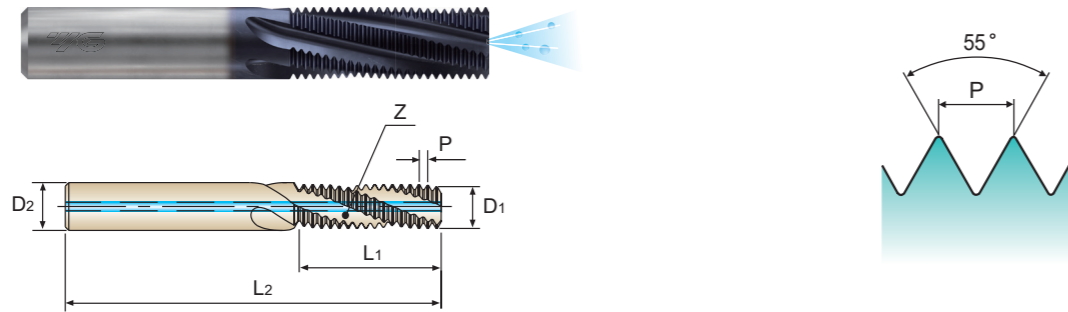
◎ : Excellent ○ : Good

ISO	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	15	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO	N										S						H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)			Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	15	30	25	38	34	15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	55	60	42	55	
HB	60	100	75	90	130	110	90	100	◎	◎	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

BSP(G) SOLID CARBIDE THREAD MILLS WITH COOLANT Whitworth Pipe Internal/External Thread - ISO 228 SERIES **L6215**

► Easy to cut threads even for exotic materials like Nickel, Titanium and their alloys.



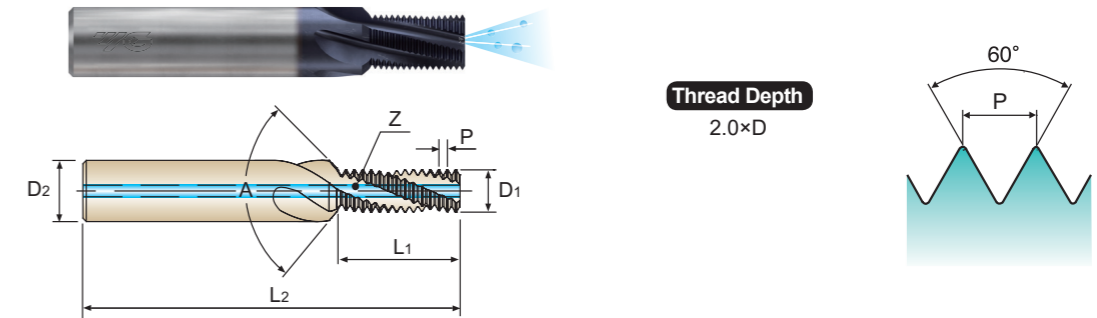
Unit : mm

EDP No.	Nominal Diameter [D]	TPI	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	No. of Flute Z
L6215020	BSP(G) 1/16	28	5.9	6	16.3	65	3
L6215200	BSP(G) 1/8	28	7.9	8	20	70	4
L6215400	BSP(G) 1/4	19	9.9	10	26.7	80	4
L6215480	BSP(G) 3/8	19	13.9	14	33.4	92	4
L6215560	BSP(G) 1/2	14	15.9	16	43.5	104	5
L6215700	BSP(G) 3/4	14	17.9	18	34.5	100	5
L6215780	BSP(G) 1"	11	19.9	20	34.6	100	5

► Other coatings are available on your request.

M SOLID CARBIDE THREAD MILLS WITH COOLANT HOLE & CHAMFER ISO Metric Internal Thread - DIN 13 SERIES **L4271**

► Easy to cut threads even for exotic materials like Nickel, Titanium and their alloys.



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch P	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Overall Length L ₂	Angle A	No. of Flute Z
L4271310	M6	1.0	4.8	8	12.4	62	90°	3
L4271360	M8	1.25	6.5	10	16.8	74	90°	3
L4271420	M10	1.5	8.2	12	20.15	80	90°	4
L4271500	M12	1.75	9.9	14	25.25	90	90°	4
L4271540	M14	2.0	11.6	16	28.85	100	90°	4
L4271600	M16	2.0	13.6	18	32.85	102	90°	4

► Other coatings are available on your request.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K									
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
HRC	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	10	10	26	3	25	10	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230				
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

ISO Material Description	N										S						H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
HRC						15	30	25	38	34								55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550		
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

◎ : Excellent ○ : Good

ISO Material Description	P										M				K									
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20				
HRC	13	25	28	32	10	29	32	38	15	35	15	23	10	10	26	3	25	10	10	26	3	25	10	21
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230				
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

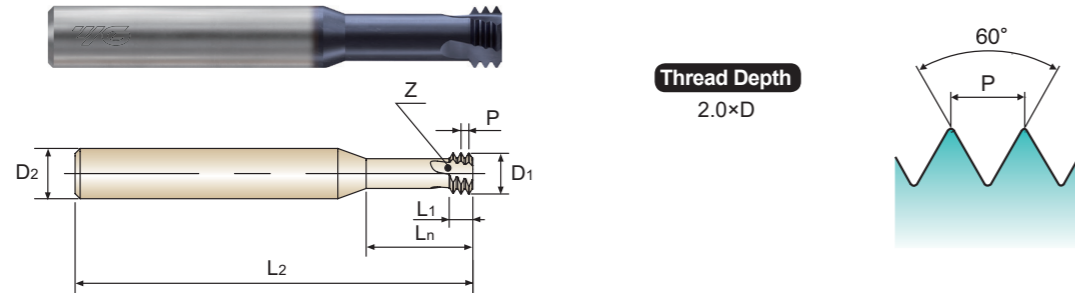
ISO Material Description	N										S						H						
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41		
HRC						15	30	25	38	34								55	60	42	55		
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550		
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

M SOLID CARBIDE MINIATURE THREAD MILLS
ISO Metric Internal Thread - DIN 13

SERIES

L12D1

► Short thread length



Unit : mm

EDP No.	Nominal Diameter [D]	Pitch P	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Neck Length L _n	Overall Length L ₂	No. of Flute Z
L12D1010	M1	0.25	0.70	3	0.75	2.1	30	3
L12D1050	M1.2	0.25	0.90	3	0.75	2.5	30	3
L12D1070	M1.4	0.3	1.04	3	0.90	2.9	30	3
L12D1090	M1.6	0.35	1.18	3	1.05	3.4	30	3
L12D1130	M2	0.4	1.52	6	1.2	4.2	57	3
L12D1150	M2.2	0.45	1.66	6	1.35	4.6	57	3
L12D1170	M2.5	0.45	1.96	6	1.35	5.3	57	3
L12D1200	M3	0.5	2.4	6	1.5	6.3	57	3
L12D1240	M4	0.7	3.16	6	2.1	8.4	57	3
L12D1280	M5	0.8	4.04	6	2.4	10.5	57	3
L12D1310	M6	1.0	4.8	6	3	12.6	57	3
L12D1360	M8	1.25	6.5	8	3.75	16.8	63	3
L12D1420	M10	1.5	8.2	10	4.5	21.0	73	3
L12D1500	M12	1.75	9.9	10	5.25	25.2	73	3

► Other coatings are available on your request.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	19	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

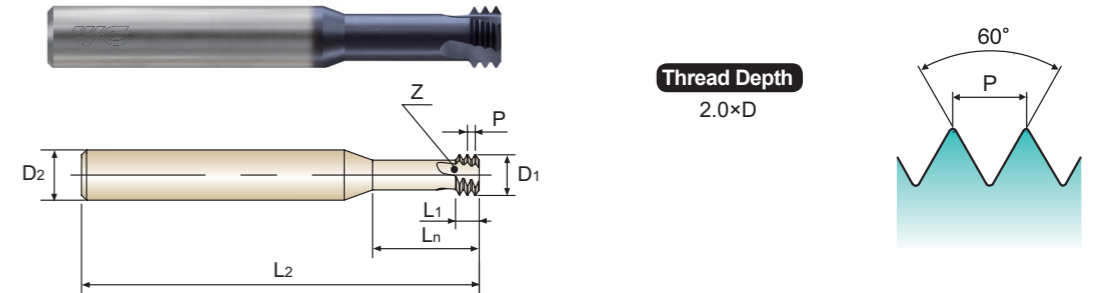
ISO Material Description	N										S						H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	15	30	25	38	34	15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	55	60	42	55	
HB	60	100	75	90	130	110	90	100	◎	◎	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

UNC SOLID CARBIDE MINIATURE THREAD MILLS
Unified Inch Internal Thread - ANSI B 1.1

SERIES

L12D3

► Short thread length



Unit : mm

EDP No.	Nominal Diameter [D]	TPI	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Neck Length L _n	Overall Length L ₂	No. of Flute Z
L12D3040	#1	64	1.38	6	1.19	3.9	57	3
L12D3080	#2	56	1.64	6	1.36	4.6	57	3
L12D3160	#4	40	2.08	6	1.91	6.0	57	3
L12D3240	#6	32	2.55	6	2.38	7.4	57	3
L12D3280	#8	32	3.21	6	2.38	8.7	57	3
L12D3320	#10	24	3.56	6	3.18	10.1	57	3
L12D3360	#12	24	4.22	6	3.18	11.5	57	3
L12D3400	1/4	20	4.83	6	3.81	13.3	57	3
L12D3440	5/16	18	6.24	8	4.23	16.7	63	3
L12D3480	3/8	16	7.62	8	4.76	20.0	63	3
L12D3520	7/16	14	8.94	10	5.44	23.3	73	3

► Other coatings are available on your request.

◎ : Excellent ○ : Good

ISO Material Description	P										M				K						
	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron		Malleable cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRC	13	25	28	32	38	10	29	32	38	15	35	15	23	10	10	26	3	25	19	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

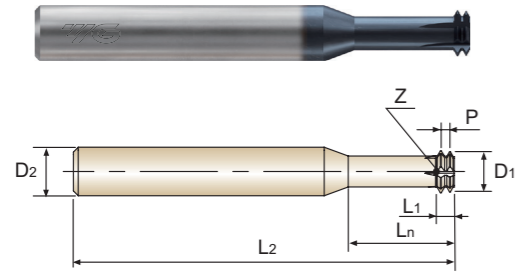
ISO Material Description	N										S						H					
	Aluminum-wrought alloy		Aluminum-cast, alloyed		Copper and Copper Alloys (Bronze / Brass)		Non Metallic Materials		Heat Resistant Super Alloys						Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRC	15	30	25	38	34	15	30	25	38	34	200	280	250	350	320	400 Rm	1050 Rm	55	60	42	55	
HB	60	100	75	90	130	110	90	100	◎	◎	200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎	◎

M SOLID CARBIDE MINIATURE THREAD MILLS FOR HARD MATERIALS
ISO Metric Internal Thread - DIN 13

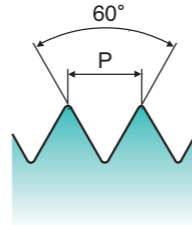
SERIES

L19E1

- ▶ Short thread length
- ▶ Straight Flute
- ▶ The work direction is from top to bottom (Climb Milling)
- ▶ For hard materials up to HRc62



Thread Depth
2.0×D



▶ Left hand Cut (CNC code : M04)

Unit : mm

EDP No.	Nominal Diameter [D]	Pitch P	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Neck Length L _n	Overall Length L ₂	No. of Flute Z
L19E1130	M2	0.4	1.52	6	0.8	4.2	57	4
L19E1150	M2.2	0.45	1.66	6	0.9	4.6	57	4
L19E1170	M2.5	0.45	1.96	6	0.9	5.3	57	4
L19E1200	M3	0.5	2.4	6	1	6.3	57	4
L19E1240	M4	0.7	3.16	6	1.4	8.4	57	4
L19E1280	M5	0.8	4.04	6	1.6	10.5	57	4
L19E1310	M6	1.0	4.8	6	2	12.6	57	5
L19E1360	M8	1.25	6.5	8	2.5	16.8	63	5
L19E1420	M10	1.5	8.2	10	3	21.0	73	6
L19E1500	M12	1.75	9.9	10	3.5	25.2	73	6

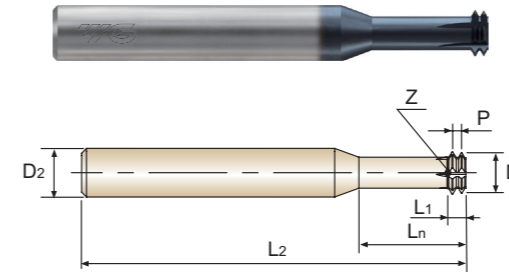
▶ Other coatings are available on your request.

UNC SOLID CARBIDE MINIATURE THREAD MILLS FOR HARD MATERIALS
Unified Inch Internal Thread - ANSI B 1.1

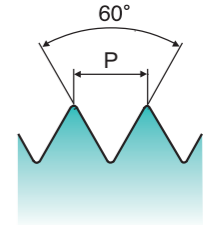
SERIES

L19E3

- ▶ Short thread length
- ▶ Straight Flute
- ▶ The work direction is from top to bottom (Climb Milling)
- ▶ For hard materials up to HRc62



Thread Depth
2.0×D



▶ Left hand Cut (CNC code : M04)

Unit : mm

EDP No.	Nominal Diameter [D]	TPI	Cutter Diameter D ₁	Shank Diameter D ₂	Thread Length L ₁	Neck Length L _n	Overall Length L ₂	No. of Flute Z
L19E3080	#2	56	1.64	6	0.91	4.6	57	4
L19E3160	#4	40	2.08	6	1.27	6.0	57	4
L19E3240	#6	32	2.55	6	1.59	7.4	57	4
L19E3280	#8	32	3.21	6	1.59	8.7	57	4
L19E3320	#10	24	3.56	6	2.12	10.1	57	4
L19E3360	#12	24	4.22	6	2.12	11.5	57	4
L19E3400	1/4	20	4.83	6	2.54	13.3	57	5
L19E3440	5/16	18	6.24	8	2.82	16.7	63	5
L19E3480	3/8	16	7.62	8	3.18	20.0	63	6
L19E3520	7/16	14	8.94	10	3.63	23.3	73	6

▶ Other coatings are available on your request.

◎ : Excellent ○ : Good

ISO	P										M				K						
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	45	15	23	10	18	10	26	3	25	15	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended						○	○	○	○	○	○	○	○	○	◎	◎	◎	◎	◎	◎	

ISO	N										S							H				
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc											15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended											◎	◎	◎	◎	◎	○	○	◎	◎	◎	◎	

◎ : Excellent ○ : Good

ISO	P										M				K						
Material Description	Non-alloy steel					Low alloy steel					High alloyed steel, and tool steel				Stainless steel		Grey cast iron		Nodular cast iron	Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
HRc	13	25	28	32	38	10	29	32	38	45	15	23	10	18	10	26	3	25	15	21	
HB	125	190	250	270	300	180	275	300	350	200	325	200	240	180	180	260	160	250	130	230	
Recommended						○	○	○	○	○	○	○	○	○	◎	◎	◎	◎	◎	◎	

ISO	N										S							H				
Material Description	Aluminum-wrought alloy		Aluminum-cast, alloyed			Copper and Copper Alloys (Bronze / Brass)					Non Metallic Materials		Heat Resistant Super Alloys					Titanium Alloys		Hardened steel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	
HRc											15	30	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended											◎	◎	◎	◎	◎	○	○	◎	◎	◎	◎	

Recommended Feeds for Thread Milling

For THREAD MILL

unit : mm

Materials	Hardness (HB)	Strength (N/mm ²)	Feed per Tooth (Fz)	
			Cutter Diameter ≤Ø8.0	Cutter Diameter >Ø8.0
Low Carbon Steels	≤ 200	≤ 700	0.02 - 0.04	0.04 - 0.10
Medium Carbon Steels High Carbon Steels	≤ 250	≤ 850	0.02 - 0.04	0.04 - 0.10
Alloy Steels	≤ 250	≤ 850	0.02 - 0.04	0.04 - 0.10
Heat Treated Steels	≤ 400	≤ 1400	0.02 - 0.04	0.04 - 0.10
Stainless Steels	≤ 300	≤ 1000	0.01 - 0.02	0.02 - 0.06
Cast Iron	≤ 300	≤ 1000	0.02 - 0.04	0.04 - 0.10
Chrome-Nickel Alloys Titanium Alloys	≤ 350	≤ 1200	0.01 - 0.02	0.02 - 0.06
Non Ferrous Materials	≤ 200	≤ 700	0.03 - 0.07	0.05 - 0.10

For Drill and THREAD MILL

unit : mm

Material	Hardness (HB)	Strength (N/mm ²)	Fz (Thread Milling) - Feed per Tooth		Fdr (Drilling) - Feed per Revolution	
			Cutter Diameter ≤Ø8.0	Cutter Diameter >Ø8.0	Cutter Diameter ≤Ø8.0	Cutter Diameter >Ø8.0
Cast Iron	≤ 200	≤ 700	0.03 - 0.08	0.08 - 0.12	0.10 - 0.20	0.20 - 0.25
Aluminium Aluminium-alloy Magnesium	≤ 180	≤ 600	0.05 - 0.10	0.10 - 0.15	0.10 - 0.20	0.20 - 0.30
Plastics	-	-	0.05 - 0.10	0.10 - 0.15	0.10 - 0.20	0.20 - 0.30

For Hard Material Miniature THREAD MILL

unit : mm

Material	Hardness (HB)	Strength (N/mm ²)	Feed (mm/tooth)	
			Cutter Diameter ≤Ø6.0	Cutter Diameter >Ø6.0
Alloy Steel	HB295 - 415	1000 - 1400	0.02 - 0.04	0.04 - 0.06
Stainless Steel	HB280 - 415	950 - 1250	0.02 - 0.04	0.04 - 0.06
Cast Iron	≤ HB300	≤ 1000	0.03 - 0.05	0.05 - 0.07
Chrome-Nickel Alloys Titanium Alloys	≤ HB445	≤ 1500	0.02 - 0.03	0.03 - 0.05
Hardened Material	HRc45 - 50	-	0.03 - 0.05	0.05 - 0.07
	HRc51 - 55	-	0.02 - 0.04	0.04 - 0.06
	HRc56 - 62	-	0.01 - 0.03	0.03 - 0.05

TO CALCULATE SPEED & FEED RATES

Calculate RPM of Cutter	Calculate Feed per Revolution	Finally Calculate Feed at Tool Center Line
$n = \frac{1000 \times V}{d \times \pi}$	$F_1 = F_z \times Z \times N$	$F_2 = \frac{F_1 \times (D - d)}{D}$

- N RPM
- V Recommended Cutting Speed
- d Diameter of Cutter
- Fz Recommended Feed per Tooth
- Z Number of Teeth
- F2 Feed at Center Line of Cutting
- F1 Feed at Cutting Edge
- D Major Diameter of Component



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For high-speed drilling of Carbon Steels, Alloy Steels, Pre-Hardened Steels (HRc30-50), Cast Iron



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P M K N

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