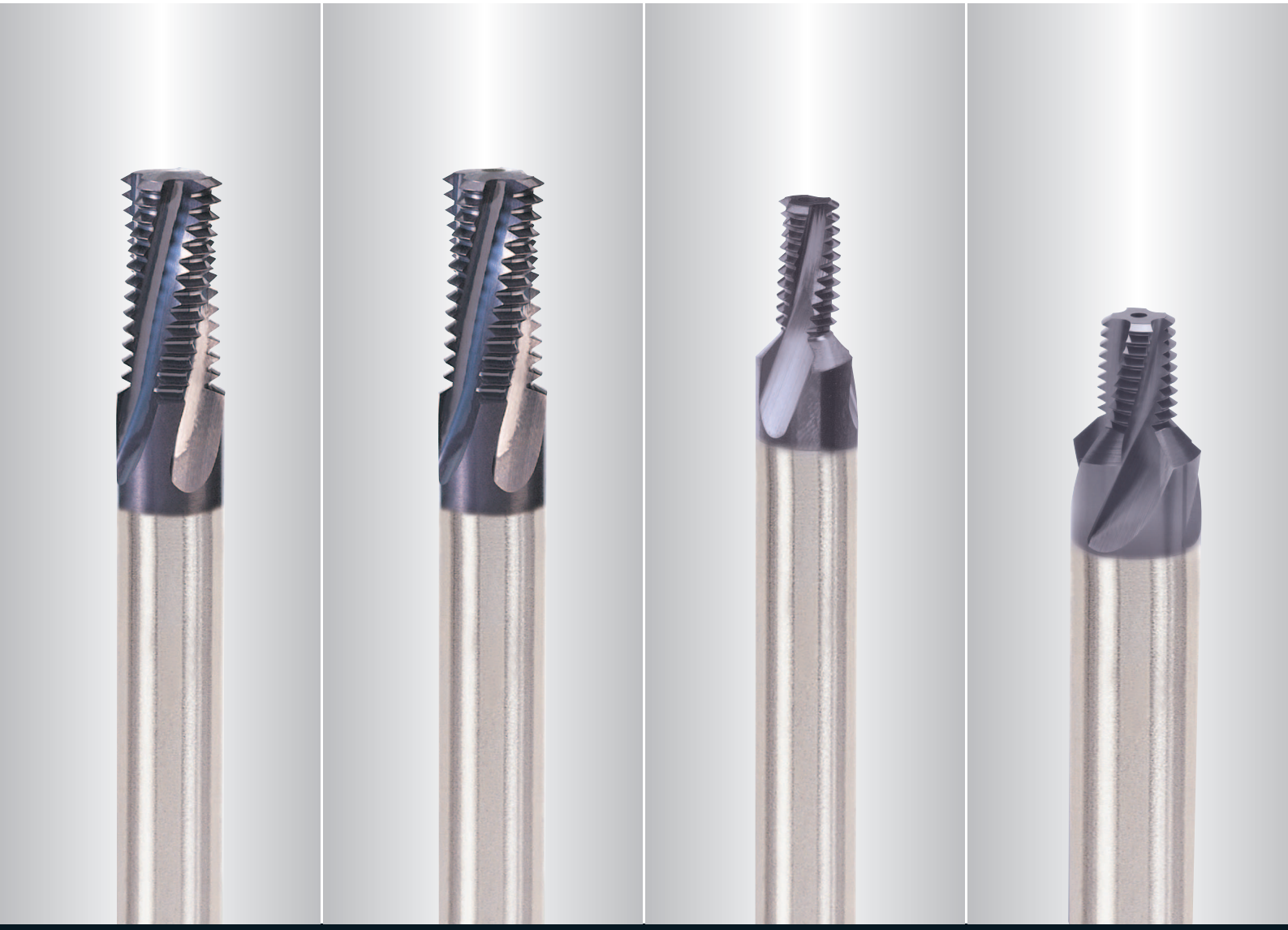
CARBIDE

Being the best through innovation



THREAD MILLS

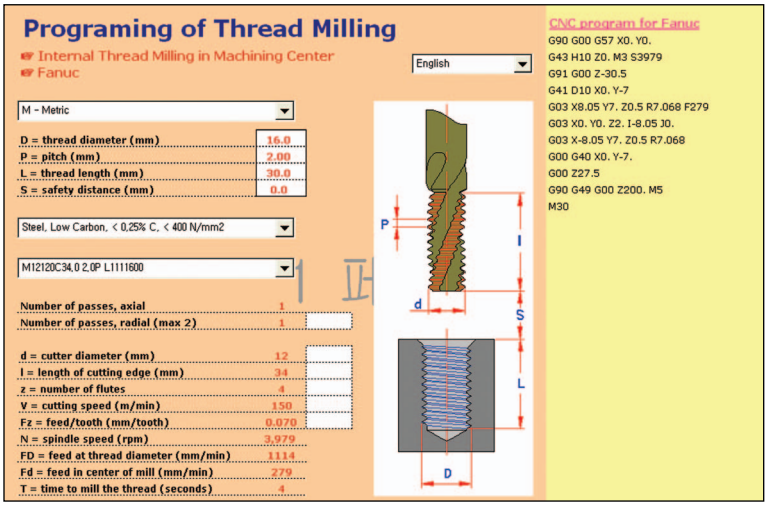
- 带油孔和不带油孔
  在大多数及大尺寸的材料上可以高品质的螺纹铣加工，可以带有倒角
  WITH & WITHOUT COOLANT HOLES
  THREADING MOST OF MATERIALS AND BIG SIZES IN HIGH QUALITY, AVAILABLE WITH CHAMFER

SELECTION GUIDE

带油孔和不带油孔 / with & without coolant Holes
在大多数及大尺寸的材料上可以高品质的螺纹铣加工，可以带有倒角
Threading Most of Materials and Big Sizes in High Quality, Available with Chamfer

SOLID CARBIDE THREAD MILL

可用的应用程序 / Application Program Available



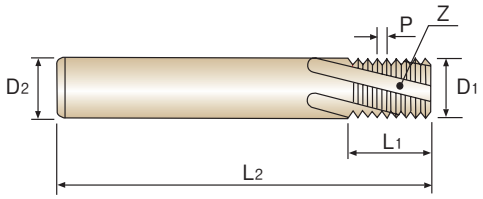
THREAD MILLS

L1111 SERIES UNCOATED
L1211 SERIES TiAlN

M 整体硬质合金内螺纹的ISO公制螺纹铣刀-DIN 13
SOLID CARBIDE THREAD MILL for ISO METRIC INTERNAL THREAD - DIN 13

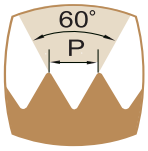
▶ 易切削螺纹用的材料如镍，钛及其合金的特殊材料

▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.



▶ 原材料:整体硬质合金
▶ 柄部:DIN6535 HA
▶ 螺旋角度:15°
▶ 螺纹长度:2× D

▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D



单位(Unit) : mm

型号 EDP No.		通称直径 Nominal Diameter [D]	牙距 Pitch	刃部直径 Cutter Diameter	柄径 Shank Diameter	螺纹长 Thread Length	全长 Over All Length	槽数 No. of Flute
UNCOATED	TiAlN		P	D_1	D_2	L_1	L_2	Z
L1111200	**L1211200**	M3	0.5	**2.2**	6	5	57	3
L1111240	**L1211240**	M4	0.7	**2.9**	6	7	57	3
L1111280	**L1211280**	M5	0.8	**3.8**	6	8	57	3
L1111310	**L1211310**	M6	1.0	**4.5**	6	13	57	3
L1111360	**L1211360**	M8	1.25	**6.0**	6	17.5	65	3
L1111420	**L1211420**	M10	1.5	**7.5**	8	21	72	4
L1111500	**L1211500**	M12	1.75	**9.5**	10	26.25	80	4
L1111540	**L1211540**	M14	2.0	**10.0**	10	30	83	4
L1111600	**L1211600**	M16	2.0	**12.0**	12	34	92	4
L1111650	**L1211650**	M18	2.5	**14.0**	14	37.5	92	5
L1111700	**L1211700**	M20	2.5	**16.0**	16	42.5	105	5

* 可以邀请其他的涂层方式.
Other coatings are available on your request.

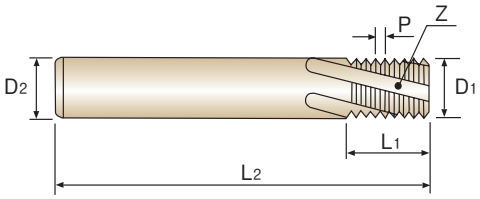
THREAD MILLS

L1112 SERIES UNCOATED
L1212 SERIES TiAlN

MF 整体硬质合金内螺纹的ISO公制细牙螺纹铣刀-DIN 13
SOLID CARBIDE THREAD MILL for ISO METRIC-FINE INTERNAL THREAD - DIN 13

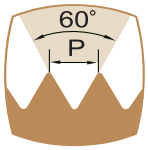
▶ 易切削螺纹用的材料如镍，钛及其合金的特殊材料

▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.



▶ 原材料:整体硬质合金
▶ 柄部:DIN6535 HA
▶ 螺旋角度:15°
▶ 螺纹长度:1.5× D

▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 1.5×D



单位(Unit) : mm

型号 EDP No.		通称直径 Nominal Diameter [D]	牙距 Pitch	刃部直径 Cutter Diameter	柄径 Shank Diameter	螺纹长 Thread Length	全长 Over All Length	槽数 No. of Flute
UNCOATED	TiAlN		P	D_1	D_2	L_1	L_2	Z
L1112370	**L1212370**	M8	1.0	**6.0**	6	13	57	3
L1112380	**L1212380**	M8	0.75	**6.0**	6	12.75	57	3
L1112440	**L1212440**	M10	1.0	**8.0**	8	16	63	4
L1112510	**L1212510**	M12	1.5	**9.5**	10	19.5	72	4
L1112520	**L1212520**	M12	1.25	**9.5**	10	18.75	72	4
L1112530	**L1212530**	M12	1.0	**9.5**	10	19	72	4
L1112550	**L1212550**	M14	1.5	**10.0**	10	22.5	83	4
L1112570	**L1212570**	M14	1.0	**10.0**	10	22	83	4
L1112610	**L1212610**	M16	1.5	**12.0**	12	25.5	83	4
L1112620	**L1212620**	M16	1.0	**12.0**	12	25	83	4
L1112670	**L1212670**	M18	1.5	**14.0**	14	28.5	92	5
L1112680	**L1212680**	M18	1.0	**14.0**	14	28	92	5
L1112720	**L1212720**	M20	1.5	**16.0**	16	31.5	92	5
L1112730	**L1212730**	M20	1.0	**16.0**	16	31	92	5

* 可以邀请其他的涂层方式.
Other coatings are available on your request.

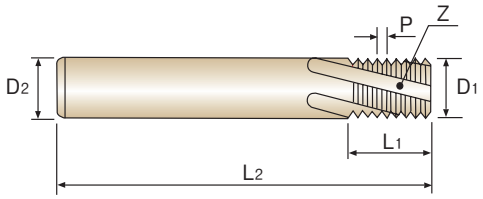
THREAD MILLS

L1113 SERIES UNCOATED
L1213 SERIES TiAIN

UNC 整体硬质合金内螺纹的英制螺纹铣刀-ANSI B 1.1
SOLID CARBIDE THREAD MILL for UNC INTERNAL THREAD - ANSI B 1.1

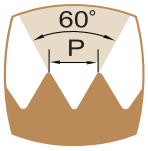
▶ 易切削螺纹用的材料如镍，钛及其合金的特殊材料

▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.



▶ 原材料:整体硬质合金
▶ 柄部:DIN6535 HA
▶ 螺旋角度:15°
▶ 螺纹长度:2× D

▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D



单位(Unit) : mm

型号 EDP No.		通称直径 Nominal Diameter [D]	牙距 T.P.I	刃部直径 Cutter Diameter	柄径 Shank Diameter	螺纹长 Thread Length	全长 Over All Length	槽数 No. of Flute
UNCOATED	TiAlN			D1	D2	L1	L2	Z
L1113400	**L1213400**	1/4”	20	**4.5**	6	14	57	3
L1113440	**L1213440**	5/16”	18	**5.8**	6	16.9	65	3
L1113480	**L1213480**	3/8”	16	**7.0**	8	20.6	72	4
L1113520	**L1213520**	7/16”	14	**8.0**	8	23.6	72	4
L1113560	**L1213560**	1/2”	13	**9.5**	10	27.4	80	4
L1113600	**L1213600**	9/16”	12	**10.0**	10	31.8	83	4
L1113640	**L1213640**	5/8”	11	**12.0**	12	34.6	92	4
L1113700	**L1213700**	3/4”	10	**14.0**	14	40.6	104	5

* 可以邀请其他的涂层方式.
Other coatings are available on your request.

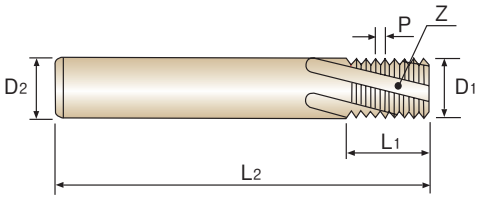
THREAD MILLS

L1114 SERIES UNCOATED
L1214 SERIES TiAlN

UNF 整体硬质合金内螺纹的英制细牙螺纹铣刀–ANSI B 1.1
SOLID CARBIDE THREAD MILL for UNF INTERNAL THREAD - ANSI B 1.1

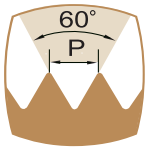
▶ 易切削螺纹用的材料如镍，钛及其合金的特殊材料

▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.



▶ 原材料:整体硬质合金
▶ 柄部:DIN6535 HA
▶ 螺旋角度:15°
▶ 螺纹长度:2× D

▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D



单位(Unit) : mm

型号 EDP No. UNCOATED	型号 EDP No. TiAlN	通称直径 Nominal Diameter [D]	牙距 T.P.I	刃部直径 Cutter Diameter D1	柄径 Shank Diameter D2	螺纹长 Thread Length L1	全长 Over All Length L2	槽数 No. of Flute Z
L1114420	L1214420	1/4”	28	5.0	6	13.6	57	3
L1114460	L1214460	5/16”	24	6.0	6	16.9	65	3
L1114500	L1214500	3/8”	24	8.0	8	20.1	72	4
L1114540	L1214540	7/16”	20	8.0	8	24.1	72	4
L1114580	L1214580	1/2”	20	10.0	10	26.7	80	4
L1114620	L1214620	9/16”	18	12.0	12	29.6	83	4
L1114660	L1214660	5/8”	18	12.0	12	33.9	92	4
L1114720	L1214720	3/4”	16	14.0	14	39.7	104	5

* 可以邀请其他的涂层方式.
Other coatings are available on your request.

THREAD MILLS

L4111 SERIES UNCOATED
L4211 SERIES TiAIN

M 带有内冷却油孔的整体硬质合金内螺纹的ISO公制螺纹铣刀-DIN 13
SOLID CARBIDE THREAD MILL WITH COOLANT HOLE for ISO METRIC INTERNAL THREAD - DIN 13

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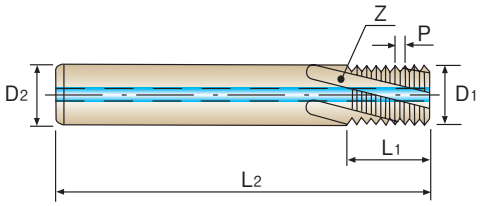
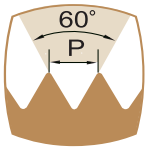


▶ 原材料:整体硬质合金
▶ 柄部:DIN6535 HA
▶ 螺旋角度:15°
▶ 螺纹长度:2× D

▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D



单位(Unit) : mm

型号 EDP No.		通称直径 Nominal Diameter [D]	牙距 Pitch	刃部直径 Cutter Diameter	柄径 Shank Diameter	螺纹长 Thread Length	全长 Over All Length	槽数 No. of Flute
UNCOATED	TiAIN		P	D_1	D_2	L_1	L_2	Z
L4111310	**L4211310**	M6	1.0	**4.5**	6	13.0	57	3
L4111360	**L4211360**	M8	1.25	**6.0**	6	17.5	65	3
L4111420	**L4211420**	M10	1.5	**7.5**	8	21.0	72	4
L4111500	**L4211500**	M12	1.75	**9.5**	10	26.25	80	4
L4111540	**L4211540**	M14	2.0	**10.0**	10	30.0	83	4
L4111600	**L4211600**	M16	2.0	**12.0**	12	34.0	92	4
L4111700	**L4211700**	M20	2.5	**16.0**	16	42.5	105	5

* 可以邀请其他的涂层方式.
Other coatings are available on your request.

THREAD MILLS

L4112 SERIES UNCOATED
L4212 SERIES TiAlN

MF 带有内冷却油孔的整体硬质合金内螺纹的ISO公制细牙螺纹铣刀-DIN13
SOLID CARBIDE THREAD MILL WITH COOLANT HOLE for ISO METRIC-FINE INTERNAL THREAD - DIN 13

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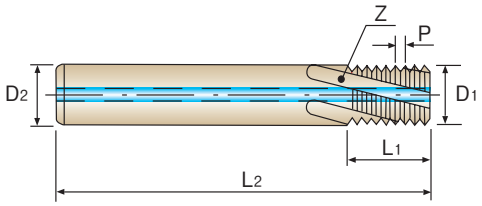
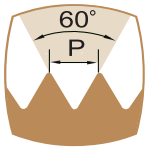


▶ 原材料:整体硬质合金
▶ 柄部:DIN6535 HA
▶ 螺旋角度:15°
▶ 螺纹长度:1.5× D

▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 1.5×D



单位(Unit) : mm

型号 EDP No.		通称直径 Nominal Diameter [D]	牙距 Pitch	刃部直径 Cutter Diameter	柄径 Shank Diameter	螺纹长 Thread Length	全长 Over All Length	槽数 No. of Flute
UNCOATED	TiAlN		P	D_1	D_2	L_1	L_2	Z
L4112370	**L4212370**	M8	1.0	**6.0**	6	13.0	57	3
L4112380	**L4212380**	M8	0.75	**6.0**	6	12.75	57	3
L4112440	**L4212440**	M10	1.0	**8.0**	8	16.0	63	4
L4112510	**L4212510**	M12	1.5	**9.5**	10	19.5	72	4
L4112520	**L4212520**	M12	1.25	**9.5**	10	18.75	72	4
L4112530	**L4212530**	M12	1.0	**9.5**	10	19.0	72	4
L4112550	**L4212550**	M14	1.5	**10.0**	10	22.5	83	4
L4112570	**L4212570**	M14	1.0	**10.0**	10	22.0	83	4
L4112610	**L4212610**	M16	1.5	**12.0**	12	25.5	83	4
L4112620	**L4212620**	M16	1.0	**12.0**	12	25.0	83	4
L4112670	**L4212670**	M18	1.5	**14.0**	14	28.5	92	5
L4112680	**L4212680**	M18	1.0	**14.0**	14	28.0	92	5
L4112720	**L4212720**	M20	1.5	**16.0**	16	31.5	92	5
L4112730	**L4212730**	M20	1.0	**16.0**	16	31.0	92	5

* 可以邀请其他的涂层方式.
Other coatings are available on your request.

THREAD MILLS

L4171 SERIES UNCOATED
L4271 SERIES TiAIN

M 带有内冷却油孔和倒角的整体硬质合金内螺纹的ISO公制螺纹铣刀-DIN 13
SOLID CARBIDE THREAD MILL WITH COOLANT HOLE & CHAMFER for ISO METRIC INTERNAL THREAD - DIN 13

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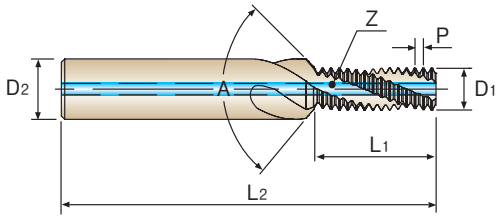
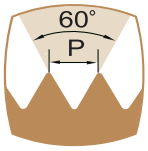


▶ 原材料:整体硬质合金
▶ 柄部:DIN6535 HA
▶ 螺旋角度:15°
▶ 螺纹长度:2× D

▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D



单位(Unit) : mm

型号 EDP No.		通称直径 Nominal Diameter [D]	牙距 Pitch	刃部直径 Cutter Diameter	柄径 Shank Diameter	螺纹长 Thread Length	全长 Over All Length	角度 Angle	槽数 No. of Flute
UNCOATED	TiAIN		P	D1	D2	L1	L2	A	Z
L4171310	**L4271310**	M6	1.0	**4.8**	8	12.4	62	90°	3
L4171360	**L4271360**	M8	1.25	**6.5**	10	16.8	74	90°	3
L4171420	**L4271420**	M10	1.5	**8.2**	12	20.15	80	90°	4
L4171500	**L4271500**	M12	1.75	**9.9**	14	25.25	90	90°	4
L4171540	**L4271540**	M14	2.0	**11.6**	16	28.85	100	90°	4
L4171600	**L4271600**	M16	2.0	**13.6**	18	32.85	102	90°	4

* 可以邀请其他的涂层方式.
Other coatings are available on your request.

THREAD MILLS

L4172 SERIES UNCOATED
L4272 SERIES TiAlN

MF 带有内冷却油孔和倒角的整体硬质合金内螺纹的ISO公制细牙螺纹铣刀-DIN 13
SOLID CARBIDE THREAD MILL WITH COOLANT HOLE & CHAMFER for ISO METRIC-FINE INTERNAL THREAD - DIN 13

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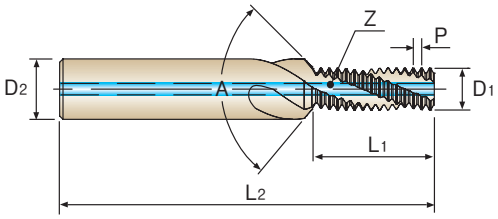
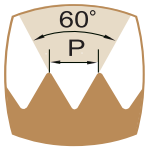


▶ 原材料:整体硬质合金
▶ 柄部:DIN6535 HA
▶ 螺旋角度:15°
▶ 螺纹长度:1.5× D

▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 1.5×D



单位(Unit) : mm

型号 EDP No. UNCOATED	型号 EDP No. TiAlN	通称直径 Nominal Diameter [D]	牙距 Pitch P	刃部直径 Cutter Diameter D1	柄径 Shank Diameter D2	螺纹长 Thread Length L1	全长 Over All Length L2	角度 Angle A	槽数 No. of Flute Z
L4172370	L4272370	M8	1.0	6.7	10	12.4	74	90°	3
L4172430	L4272430	M10	1.25	8.3	12	15.9	80	90°	4
L4172440	L4272440	M10	1.0	8.7	12	15.4	80	90°	4
L4172510	L4272510	M12	1.5	10.0	14	18.65	90	90°	4
L4172520	L4272520	M12	1.25	10.3	14	18.3	80	90°	4
L4172530	L4272530	M12	1.0	10.7	14	18.4	90	90°	4
L4172550	L4272550	M14	1.5	12.0	16	21.65	100	90°	4
L4172610	L4272610	M16	1.5	14.0	18	24.65	102	90°	5

* 可以邀请其他的涂层方式.
Other coatings are available on your request.

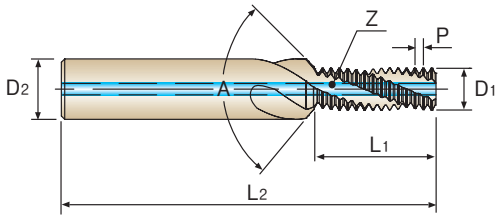
THREAD MILLS

L4173 SERIES UNCOATED
L4273 SERIES TiAIN

UNC 带有内冷却油孔和倒角的整体硬质合金内螺纹的英制螺纹铣刀-ANSI B 1.1
SOLID CARBIDE THREAD MILL WITH COOLANT HOLE & CHAMFER for UNC INTERNAL THREAD - ANSI B 1.1

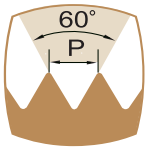
▶ 易切削螺纹用的材料如镍，钛及其合金的特殊材料

▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.



▶ 原材料:整体硬质合金
▶ 柄部:DIN6535 HA
▶ 螺旋角度:15°
▶ 螺纹长度:2× D

▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D



单位(Unit) : mm

型号 EDP No.		通称直径 Nominal Diameter [D]	牙距 T.P.I	刃部直径 Cutter Diameter	柄径 Shank Diameter	螺纹长 Thread Length	全长 Over All Length	角度 Angle	槽数 No. of Flute
UNCOATED	TiAIN			D_1	D_2	L_1	L_2	A	Z
L4173400	L4273400	1/4"	20	**4.8**	8	13.3	62	90°	3
L4173440	L4273440	5/16"	18	**6.2**	10	16.18	74	90°	3
L4173480	L4273480	3/8"	16	**7.6**	12	19.8	80	90°	4
L4173520	L4273520	7/16"	14	**8.9**	12	22.62	80	90°	4
L4173560	L4273560	1/2"	13	**10.3**	14	26.32	90	90°	4
L4173600	L4273600	9/16"	12	**11.7**	16	30.63	100	90°	4
L4173640	L4273640	5/8"	11	**13.1**	18	33.41	102	90°	4
L4173700	L4273700	3/4"	10	**16.0**	20	39.29	110	90°	5

* 可以邀请其他的涂层方式.
Other coatings are available on your request.

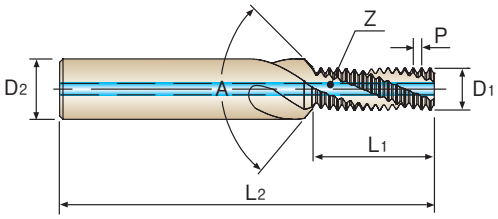
THREAD MILLS

L4174 SERIES UNCOATED
L4274 SERIES TiAlN

UNF 带有内冷却油孔和倒角的整体硬质合金内螺纹的英制细牙螺纹铣刀-ANSI B 1.1
SOLID CARBIDE THREAD MILL WITH COOLANT HOLE & CHAMFER for UNF INTERNAL THREAD - ANSI B 1.1

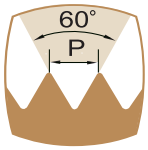
▶ 易切削螺纹用的材料如镍，钛及其合金的特殊材料

▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.



▶ 原材料:整体硬质合金
▶ 柄部:DIN6535 HA
▶ 螺旋角度:15°
▶ 螺纹长度:2× D

▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 2×D



单位(Unit) : mm

型号 EDP No.		通称直径 Nominal Diameter [D]	牙距 T.P.I	刃部直径 Cutter Diameter	柄径 Shank Diameter	螺纹长 Thread Length	全长 Over All Length	角度 Angle	槽数 No. of Flute
UNCOATED	TiAlN			D_1	D_2	L_1	L_2	A	Z
L4174420	**L4274420**	1/4"	28	**5.1**	8	13.21	62	90°	3
L4174460	**L4274460**	5/16"	24	**6.5**	10	16.37	74	90°	3
L4174500	**L4274500**	3/8"	24	**8.1**	12	19.54	80	90°	4
L4174540	**L4274540**	7/16"	20	**9.4**	12	22.19	80	90°	4
L4174580	**L4274580**	1/2"	20	**11.0**	14	26	90	90°	4
L4174620	**L4274620**	9/16"	18	**12.4**	16	28.88	100	90°	4
L4174660	**L4274660**	5/8"	18	**14.0**	18	33.12	102	90°	5
L4174720	**L4274720**	3/4"	16	**17.0**	20	38.86	110	90°	5

* 可以邀请其他的涂层方式.
Other coatings are available on your request.

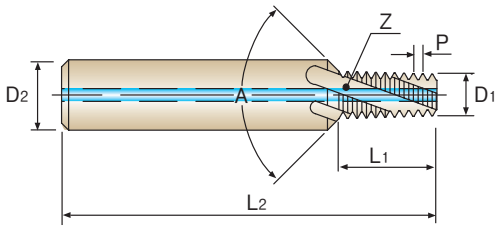
THREAD MILLS

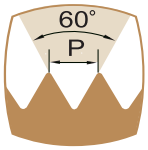
L4176 SERIES UNCOATED
L4276 SERIES TiAIN

NPT 带有内冷却油孔和倒角的整体硬质合金NPT螺纹铣刀-ANSI B 1.20.1
SOLID CARBIDE THREAD MILL WITH COOLANT HOLE & CHAMFER for NPT THREAD - ANSI B 1.20.1

▶ 易切削螺纹用的材料如镍，钛及其合金的特殊材料

▶ Easy to cut threads even if exotic materials like Nickel, Titanium or their alloys.





▶ 原材料:整体硬质合金
▶ 柄部:DIN6535 HA
▶ 螺旋角度:15°
▶ 螺纹长度:9×P

▶ Material : Solid Carbide
▶ Shank : DIN6535 HA
▶ Spiral Angle : 15°
▶ Thread Length : 9×P

单位(Unit) : mm

型号 EDP No.		通称直径 Nominal Diameter [D]	牙距 T.P.I	刃部直径 Cutter Diameter	柄径 Shank Diameter	螺纹长 Thread Length	全长 Over All Length	角度 Angle	槽数 No. of Flute
UNCOATED	TiAlN			D1	D2	L1	L2	A	Z
L4176020	L4276020	NPT1/16"	27	5.9	10	8.9	64	90°	3
L4176200	L4276200	NPT1/8"	27	7.8	12	8.9	70	90°	4
L4176400	L4276400	NPT1/4"	18	10.05	16	13.4	81	90°	4
L4176480	L4276480	NPT3/8"	18	13.45	18	13.4	81	90°	4

* 可以邀请其他的涂层方式.
Other coatings are available on your request.

THREAD MILLS 推荐的切削环境 RECOMMENDED CUTTING CONDITIONS

螺纹铣削编程 PROGRAMMING OF THREAD MILLING

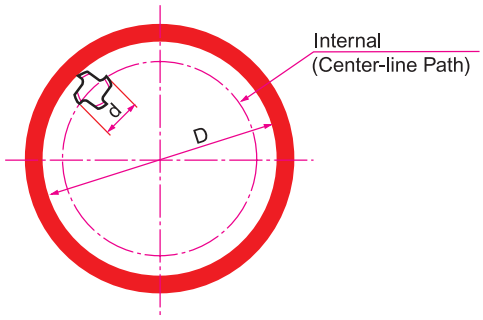
程序数据 / Program Data

螺纹铣的G代码 / G Codes for Thread Milling

G00	快速进给 Fast Feed Linear	**G90**	绝对命令 Absolute Command
G01	直线运动 Linear Movement	**G91**	增量命令 Incremental Command
G02	圆弧和螺旋插补 C.W Circular/Helical Interpolation C.W.	**M03**	顺时针旋转主轴 Clockwise Rotation of Spindle
G03	圆弧和螺旋插补 A.C.W Circular/Helical Interpolation A.C.W.	**M05**	主轴停止 Spindle Stop
G17	X,Y平面(垂直加工) X, Y Plane (Vertical Machining)	**M08**	冷却油开 Coolant On
G18	Z，X平面(水平加工) Z, X Plane (Horizontal Machining)	**X**	横向合作协调 Horizontal Co-ordinate
G19	Y,Z平面(使用90° 夹头) Y, Z Plane (Using 90° Head)	**Y**	横向合作协调 Horizontal Co-ordinate
G40	刀具半径补偿取消 Cutter Radius Compensation Cancel	**Z**	纵向合作协调 Vertical Co-ordinate
G41	刀具半径左补偿 Cutter Radius Compensation Left	**I**	沿着圆弧中心 X轴横向协调 X Co-ordinate to Center of Arc Travel
G42	刀具半径右补偿 Cutter Radius Compensation Right	**J**	沿着圆弧中心 Y轴横向协调 Y Co-ordinate to Center of Arc Travel
G43	刀具长度补偿 Tool Length Compensation Plus	**S**	主轴转速 Spindle Speed R.P.M.
G49	刀具长度补偿取消 Tool Length Compensation Cancel	**F**	进给 Feed mm/min

数控内螺纹铣削 / CNC Internal Thread Milling

G54	G90	G00	X···	Y···	Z2	T1	S···	M03
G91	G00	Z-···(A3+2)						
G41	G01	D26	X···(A6)	Y···(A5)	F···			
G03	X-···(A6)	Y···(A6)	Z···(A4)	I-···(A6)	J0			
G03	X0	Y0	Z···(A2)	I0	J-···(A1)			
G03	X-···(A6)	Y-···(A6)	Z···(A4)	I0	J-···(A6)			
G00	G40	X···(A6)	Y-···(A5)					
G00	Z···(A7)							
G90	G49	G00	Z200	M5				
M30								



参数说明 Explanation of Parameters

A1： 1/2 公称螺纹直径 1/2D
1/2 Nominal Thread Diameter 1/2D

A2： 螺纹齿距
Thread Pitch

A3： 螺纹深度
Thread Depth

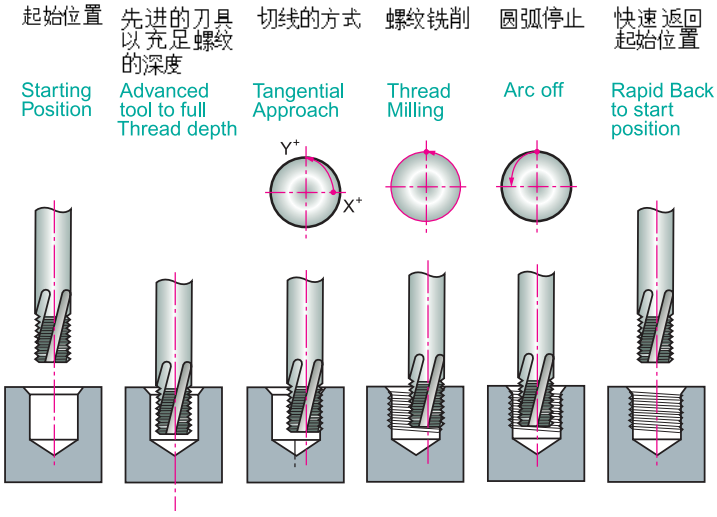
A4： 1/4P (增大铣削和右旋螺纹)
1/4P(for climb milling and right-hand thread)

A5： 从轮廓开始Y 0.5xP
Beginning of Contour in Y 0.5xP

A6： 圆弧停止 (A1-A5)
Arc Off (A1 - A5)

A7： A3+2-0.5P
A3+2-0.5P

T1： 刀具半径进行编程工具是正常的存储工具
Cutter radius to be programmed is nomally included in the tool memory



THREAD MILLS 推荐的切削条件 RECOMMENDED CUTTING CONDITIONS

推荐的切削速度 RECOMMENDED CUTTING SPEED

单位(Unit) : mm

Materials	Cutting Speed (m/min)	Feed per Tooth (fz)	
		Cutter Diameter ≤Ø8.0	Cutter Diameter >Ø8.0
低碳钢和中碳钢 Low Carbon Steels Medium Carbon Steels	80 - 120	0.02 - 0.04	0.04 - 0.10
高碳钢 High Carbon Steels	80 - 120	0.02 - 0.04	0.04 - 0.10
合金钢 Alloy Steels	80 - 120	0.02 - 0.04	0.04 - 0.10
热处理钢 Heat Treated Steels	60 - 100	0.02 - 0.04	0.04 - 0.10
不锈钢 Stainless Steels	40 - 80	0.01 - 0.02	0.02 - 0.06
铸铁 Cast Iron	50 - 100	0.02 - 0.04	0.04 - 0.10
铬镍合金钛合金 Chrome-Nickel Alloys Titanium Alloys	20 - 60	0.01 - 0.02	0.02 - 0.06
有色金属材料 Non Ferrous Materials	100 - 300	0.03 - 0.07	0.05 - 0.10

计算速度和进给速度 TO CALCULATE SPEED & FEED RATES

计算刀具转速 Calculate R.P.M of cutter

$$N = \frac{1000 \times V}{d \times \pi}$$

计算每步的运转 Calculate Feed per Revolution

$$F_1 = fz \times Z \times N$$

最后计算工具中心线进给 Finally Calculate Feed at Tool Center Line

$$F_2 = \frac{F_1 \times (D - d)}{D}$$

N : 转速 R.P.M

V : 推荐的切削条件 Recommended Cutting Speed

d : 刀具的直径 Diameter of Cutter

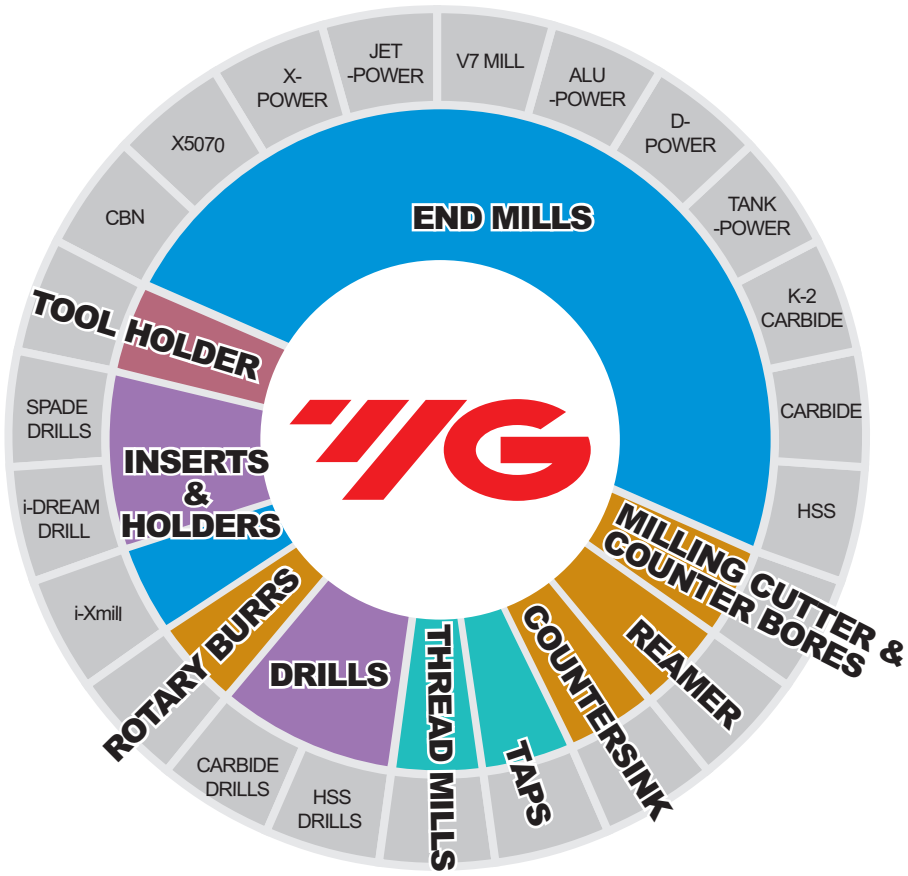
F_1 : 切削刃的进给 Feed at Cutting Edge

fz : 推荐的每步进给 Recommended Feed per Tooth

Z : 齿数 Number of Teeth

F_2 : 中心切削线的进给 Feed at Center Line of Cutting

D : 直径的主要组成部分 Major Diameter of Component



Challenge toward a Global Leader-

YG-1 Leads the World Market.

TAPS

Being the best through innovation

TECHNICAL DATA

YG-1 YH精度体系
YG-1 YH LIMIT SYSTEM

YG-1使用一套独特的丝锥中径精度 我们叫它YH精度体系 用等级方法，你可选择最合适你工件条件的丝锥中径精度.

YG-1 applies a unique system of tap pitch diameter limits. We call it the YH limits system. Using the step method, you can select the best tap pitch diameter limits to match your work condition.

YH精度，为大多数YG-1的丝锥所采用 精度计算如下.

YH limit Most of Y.G-1's taps use this limit system. The limits calculated as follows;

1. Up to 0.6P (40TPI)

upper limits : 10㎛+15㎛×n

lower limit : (upper limits) - 15㎛

n=YH No.

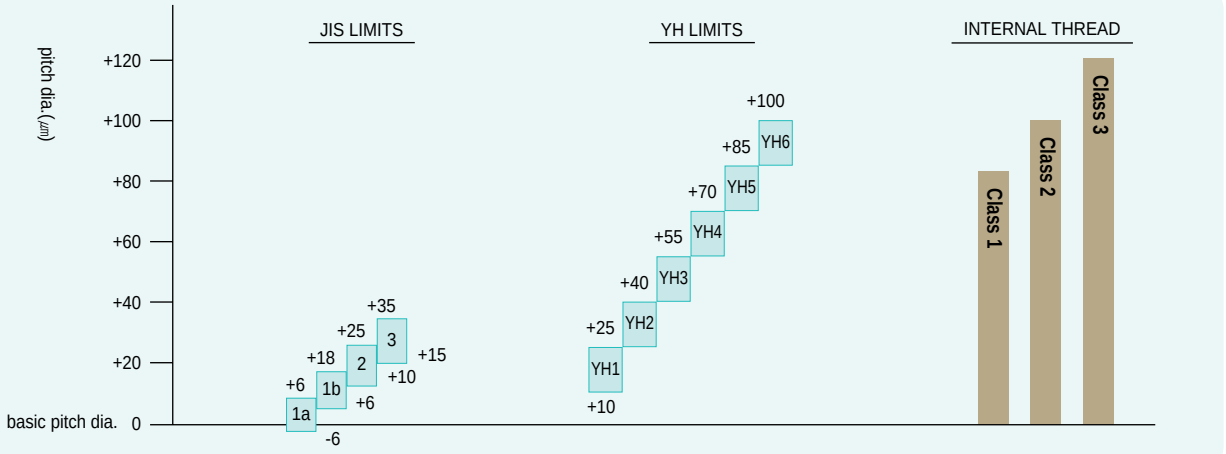
2. Above 0.7P (36TPI)

upper limits : 20㎛×n

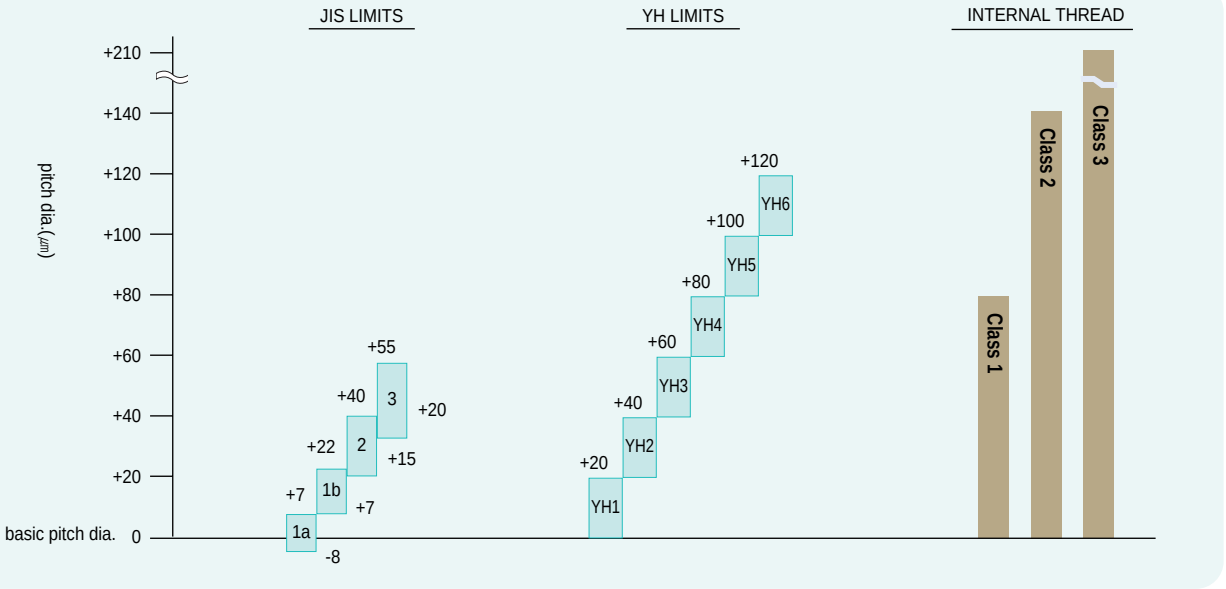
lower limit : (upper limits) - 20㎛

n=YH No.

例如M3×0.5 / Example M3×0.5



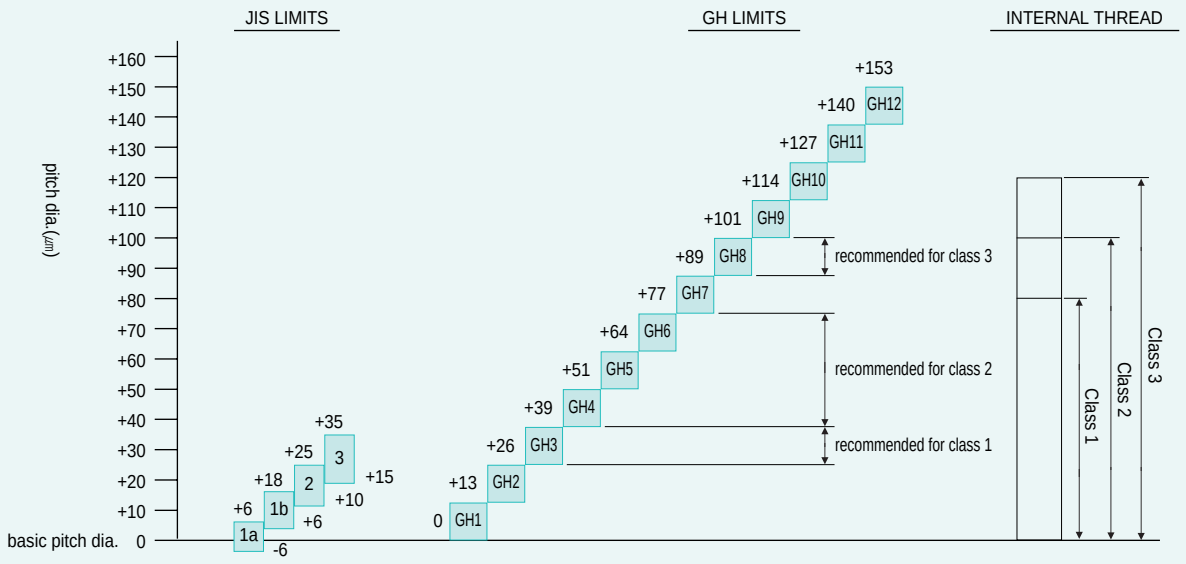
例如M10×1.5 / Example M10×1.5



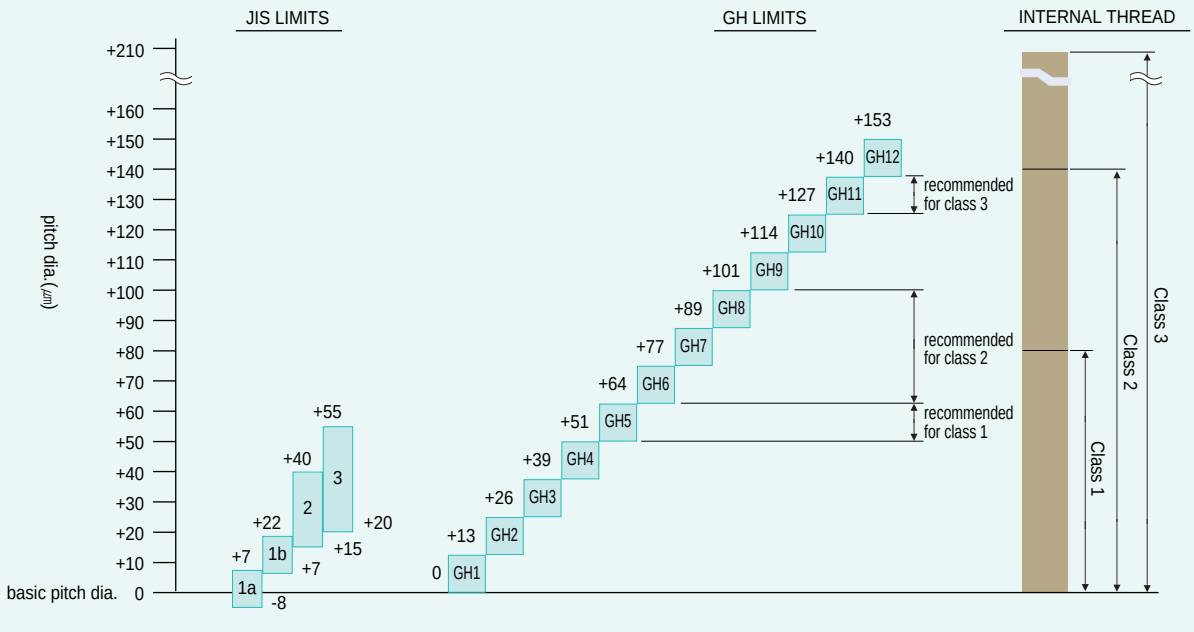
YG-1 GH精度体系
YG-1 GH LIMIT SYSTEM

YG-1的挤压丝锥采用GH精度体系 精度是按12.7um的增量确定的.
YG-1's fluteless taps are described by the GH limit system. The limits are established by increments of 12.7㎛.

例如M3×0.5 / Example M3×0.5



例如M10×1.5 / Example M10×1.5



推荐的攻丝速度
RECOMMENDED TAPPING SPEEDS

推荐攻丝速度
RECOMMENDED TAPPING SPEED AND CUTTING FLUIDS

表中列出推荐的攻丝速度和切削液 丝锥材质，丝锥倒角长度的形式底孔尺寸，工件尺寸和切削液是决定合适的攻丝速度的重要因素.
润滑，冷却能力和抗粘合性是影响切削液的3个重要因素
This chart shows the recommended tapping speeds and cutting fluids. Tap material, type of tap chamfer length, dimension of drill hole, work materials and cutting fluids are important factors for determining suitable tapping speed.
Lubrication, cooling capability and adhesion Resistance are the three important factors effecting cutting fluid.

WORK MATERIALS		TAPPING SPEED (m/min)						CUTTING FLUIDS
		SPIRAL FLUTED TAP	GUN POINTED TAP	STRAIGHT FLUTED TAP	FLUTELESS TAP	SOLID CARBIDE TAP	PIPE TAP	
LOW CARBON STEELS	≦C0.2%	8 ~ 13	15 ~ 25	8 ~ 13	8 ~ 13	—	3 ~ 6	Sulfochlorinated Oil (Active Type) Tapping Paste EP Additive Non-Water-Soluble Cutting Fluid (Emulsion Type)
MEDIUM CARBON STEELS	C0.25~0.40%	7 ~ 12	10 ~ 15	7 ~ 12	7 ~ 10	—	3 ~ 6	
HIGH CARBON STEELS	≧C0.45%	6 ~ 9	8 ~ 13	6 ~ 9	5 ~ 8	—	2 ~ 5	
ALLOY STEELS	SCM	7 ~ 12	10 ~ 15	7 ~ 12	5 ~ 8	—	2 ~ 5	
HARDENED STEELS	HRc 25~40	3 ~ 5 (4 ~ 8)	4 ~ 6 (6 ~ 10)	3 ~ 5 (4 ~ 8)	—	—	2 ~ 5	
STAINLESS STEELS	SUS	5 ~ 8	8 ~ 13	4 ~ 7	5 ~ 10	—	5 ~ 10	
TOOL STEELS	SKD	6 ~ 9	7 ~ 10	6 ~ 9	—	—	2 ~ 5	
CAST STEELS	SC	6 ~ 11	10 ~ 15	6 ~ 11	—	—	2 ~ 5	
CAST IRON	FC	—	—	10 ~ 15	—	10 ~ 20	2 ~ 5	Water-Soluble Cutting Fluid (Emulsion Type) Non-Water-Soluble Cutting Fluid
HIGH TENSION CAST IRON	FCD	7 ~ 12	10 ~ 20	7 ~ 12	—	10 ~ 20	4 ~ 8	
COPPER	Cu	6 ~ 11	7 ~ 12	6 ~ 9	7 ~ 12	10 ~ 20	2 ~ 5	Non-Water-Soluble Cutting Fluid (Inactive Type) Water-Soluble Cutting Fluid (Emulsion Type)
BRASS BRASS CASTING	Bs, BsC	10 ~ 20	15 ~ 25	10 ~ 15	7 ~ 12	15 ~ 25	5 ~ 10	
BRONZE BORNZE CASTING	PB, PBC	6 ~ 11	10 ~ 20	6 ~ 11	7 ~ 12	10 ~ 20	6 ~ 11	
ALUMINUM ROLLED STEELS	AL	10 ~ 20	15 ~ 25	10 ~ 20	10 ~ 20	—	5 ~ 10	
ALUMINUM ALLOY CASTING	AC, ADC	10 ~ 15	15 ~ 20	10 ~ 15	10 ~ 15	10 ~ 20	10 ~ 15	
MAGNESIUM ALLOY CASTING	MC	7 ~ 12	10 ~ 15	7 ~ 12	—	10 ~ 20	10 ~ 15	
ZINC ALLOY CASTING	ZDC	7 ~ 12	10 ~ 15	7 ~ 12	7 ~ 12	10 ~ 20	10 ~ 15	
THERMOSETTING PLASTIC	BAKELITE PHENOL, EPOXY	—	—	10 ~ 20	—	15 ~ 25	5 ~ 10	Water-Soluble Cutting Fluid Mist Lubrication Air Cooling, Dry
THERMOPLASTIC	VINYL CHLORIDE NYLON	10 ~ 15	10 ~ 20	10 ~ 20	—	10 ~ 20	5 ~ 10	

1.这些是一般的建议，根据实际条件，可能有变化.
2.要选择最适合的丝锥，请参考丝锥推荐表
3.( )=是关于HSS-PM丝锥的推荐
1. These are general recommendations which depending upon conditions, may be altered.
2. To select the best taps, please see Tap Recommended Table.
3. ( )=recommendation for HSS-PM taps.

推荐攻丝底孔尺寸
RECOMMENDED TAP DRILL SIZES

公制螺纹
FOR METRIC THREADS

Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.
M2 × 0.4	1.60	1.679	1.567
M2 × 0.25	1.75	(1.785)	(1.729)
M2.2 × 0.45	1.75	1.838	1.713
M2.2 × 0.25	1.95	(1.985)	(1.929)
M2.2 × 0.4	1.90	1.979	1.867
M2.3 × 0.25	2.05	2.061	2.001
M2.5 × 0.45	2.10	2.138	5.013
M2.5 × 0.35	2.20	2.221	2.121
M2.6 × 0.45	2.20	2.238	2.113
M2.6 × 0.35	2.20	2.246	2.186
M3 × 0.5	2.50	2.599	2.459
M3 × 0.35	2.70	2.721	2.621
M3.5 × 0.6	2.90	3.010	2.850
M3.5 × 0.35	3.20	3.221	3.121
M4 × 0.7	3.30	3.422	3.242
M4 × 0.5	3.50	3.599	3.459
M4.5 × 0.75	3.80	3.878	3.688
M4.5 × 0.5	4.00	4.099	3.959
M5 × 0.8	4.20	4.334	4.134
M5 × 0.5	4.50	4.599	4.459
M6 × 1	5.00	5.153	4.917
M6 × 0.75	5.30	5.378	5.188
M6 × 0.5	5.50	5.550	5.400
M7 × 1	6.00	6.153	5.917
M7 × 0.75	6.30	6.378	6.188
M7 × 0.5	6.50	6.550	6.400
M8 × 1.25	6.80	6.912	6.647
M8 × 1	7.00	7.153	6.917
M8 × 0.75	7.30	7.378	7.188
M8 × 0.5	7.50	7.520	7.400
M9 × 1.25	7.80	7.912	7.647
M9 × 1	8.00	8.153	7.917
M9 × 0.75	8.30	8.378	8.188
M10 × 1.5	8.50	8.676	8.376
M10 × 1.25	8.80	8.912	8.647
M10 × 1	9.00	9.153	8.917
M10 × 0.75	9.30	9.378	9.188
M10 × 0.5	9.50	9.520	9.400
M11 × 1.5	9.50	9.676	9.376
M11 × 1	10.00	10.153	9.917
M11 × 0.75	10.30	10.378	10.188
M12 × 1.75	10.30	10.441	10.106
M12 × 1.5	10.50	10.676	10.376
M12 × 1.25	10.80	10.912	10.647
M12 × 1	11.00	11.153	10.917

Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.
M12 × 0.5	11.50	11.520	11.400
M14 × 2	12.00	12.210	11.835
M14 × 1.5	12.50	12.676	12.376
M14 × 1	13.00	13.153	12.917
M15 × 1.5	13.50	13.673	13.376
M15 × 1	14.00	14.153	13.917
M16 × 2	14.00	14.210	13.835
M16 × 1.5	14.50	14.676	14.376
M16 × 1	15.00	15.153	14.917
M17 × 1.5	15.50	15.676	15.376
M17 × 1	16.00	16.153	15.917
M18 × 2.5	15.50	15.744	15.294
M18 × 2	16.00	16.210	15.835
M18 × 1.5	16.50	16.676	16.376
M18 × 1	17.00	17.153	16.917
M20 × 2.5	17.50	17.744	17.294
M20 × 2	18.00	18.210	17.835
M20 × 1.5	18.50	18.676	18.376
M20 × 1	19.00	19.153	18.917
M22 × 2.5	19.50	19.744	19.294
M22 × 2	20.00	20.210	19.835
M22 × 1.5	20.50	20.673	20.376
M22 × 1	21.00	21.153	20.917
M24 × 3	21.00	21.252	20.752
M24 × 2	22.00	22.210	21.835
M24 × 1.5	22.50	22.676	22.376
M24 × 1	23.00	23.153	22.917
M25 × 2	23.00	23.210	22.835
M25 × 1.5	23.50	23.676	23.376
M25 × 1	24.00	24.153	23.917
M26 × 1.5	24.50	24.676	24.376
M27 × 3	24.00	24.252	23.752
M27 × 2	25.00	25.210	24.835
M27 × 1.5	25.50	25.676	25.376
M27 × 1	26.00	26.153	25.917
M28 × 2	26.00	26.210	25.835
M28 × 1.5	26.50	26.676	26.376
M28 × 1	27.00	27.153	26.917
M30 × 3.5	26.50	26.771	26.211
M30 × 3	27.00	27.252	26.752
M30 × 2	28.00	28.210	27.835
M30 × 1.5	28.50	28.676	28.376
M30 × 1	29.00	29.153	28.917
M32 × 2	30.00	30.210	29.835
M32 × 1.5	30.50	30.676	30.376

TECHNICAL DATA

SUPER CUTTING TAPS

公制螺纹
FOR METRIC THREADS

Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.
M33 × 3.5	29.50	29.771	29.211
M33 × 3	30.00	30.252	29.752
M33 × 2	31.00	31.210	30.835
M33 × 1.5	31.50	31.676	31.376
M35 × 1.5	33.50	33.676	33.376
M36 × 4	32.00	32.270	31.670
M36 × 3	33.00	33.252	32.752
M36 × 2	34.00	34.210	33.835
M36 × 1.5	34.50	34.676	34.376
M38 × 1.5	36.50	36.676	36.376
M39 × 4	35.00	35.270	34.670
M39 × 3	36.00	36.252	35.752
M39 × 2	37.00	37.210	36.835
M39 × 1.5	37.50	37.676	37.376
M40 × 3	37.00	37.252	36.752
M40 × 2	38.00	38.210	37.835
M40 × 1.5	38.50	38.676	38.376
M42 × 4.5	37.50	37.799	37.129
M42 × 4	38.00	38.270	37.670
M42 × 3	39.00	39.252	38.752
M42 × 2	40.00	40.210	39.835
M42 × 1.5	40.50	40.676	40.376
M45 × 4.5	40.50	40.799	40.129
M45 × 4	41.00	41.270	40.670
M45 × 3	42.00	42.252	41.752
M45 × 2	43.00	43.210	72.835
M45 × 1.5	43.50	43.676	73.376
M48 × 5	43.00	43.297	42.587
M48 × 4	44.00	44.270	43.670
M48 × 3	45.00	45.252	44.752
M48 × 2	46.00	46.210	45.835
M48 × 1.5	46.50	46.676	46.376
M50 × 3	47.00	47.252	46.752
M50 × 2	48.00	48.210	47.835
M50 × 1.5	48.50	48.676	48.376

D1：JIS级内螺纹小径 但（ ）内的 D1是JIS 1级内螺纹因为它们的公称尺寸在JIS2级中未指定.
D1 : Minor diameter of JIS calss internal thread. But, the minor diameter D1 shown in ( ) are of JIS class 1 internal threads because their nominal sizes are not specified in JIS Class 2.

英制螺纹
FOR UNIFIED THREADS

Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.
#2 - 56 UNC	1.80	1.871	1.695
#2 - 64 UNF	1.85	1.912	1.756
#3 - 48 UNC	2.10	2.146	1.941
#3 - 56 UNF	2.10	2.197	2.025
#4 - 40 UNC	2.30	2.385	2.157
#4 - 48 UNF	2.40	2.458	2.271
#5 - 40 UNC	2.60	2.697	2.487
#5 - 44 UNF	2.70	2.740	2.551
#6 - 32 UNC	2.80	2.895	2.642
#6 - 40 UNF	2.90	3.022	2.820
#8 - 32 UNC	3.40	3.530	3.302
#8 - 36 UNF	3.50	3.606	3.404
#10 - 24 UNC	3.90	3.962	3.683
#10 - 32 UNF	4.10	4.165	3.963
#12 - 24 UNC	4.50	4.597	4.344
#12 - 28 UNF	4.60	4.724	4.496
#12 - 32 UNF	4.70	4.826	4.623
1/4 - 20 UNC	5.10	5.257	4.979
1/4 - 28 UNF	5.50	5.588	5.360
1/4 - 32 UNEF	5.60	5.690	5.486
5/16 - 18 UNC	6.60	6.731	6.401
5/16 - 24 UNF	6.90	7.035	6.782
5/16 - 32 UNEF	7.10	7.264	7.087
3/8 - 16 UNC	8.00	8.153	7.798
3/8 - 24 UNF	8.50	8.636	8.382
3/8 - 32 UNEF	8.70	8.865	8.661
7/16 - 14 UNC	9.40	9.550	9.144
7/16 - 20 UNF	9.90	10.033	9.729
7/16 - 28 UNEF	10.20	10.338	10.135
1/2 - 13 UNC	10.80	11.023	10.592
1/2 - 20 UNF	11.50	11.607	11.329
1/2 - 28 UNEF	11.80	11.938	11.709
9/16 - 12 UNC	12.20	12.446	11.989
9/16 - 18 UNF	12.90	13.081	12.751
9/16 - 24 UNEF	13.20	13.386	13.132
5/8 - 11 UNC	13.60	13.868	13.386

英制螺纹
FOR UNIFIED THREADS

Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.
5/8 - 18 UNF	14.50	14.681	14.351
5/8 - 24 UNEF	14.80	14.986	14.732
3/4 - 10 UNC	16.50	16.840	16.307
3/4 - 16 UNF	17.50	17.678	17.323
3/4 - 20 UNEF	17.80	17.958	17.678
7/8 - 9 UNC	19.50	19.761	19.177
7/8 - 14 UNF	20.50	20.675	20.270
7/8 - 20 UNEF	21.00	21.133	20.853
1 - 8 UNC	22.20	22.606	21.971
1 - 12 UNF	23.20	23.571	23.114
1 - 20 UNEF	24.00	24.308	24.028
1＊1/8 - 7 UNC	25.00	25.349	24.638
1＊1/8 - 12 UNF	26.50	26.746	26.289
1＊1/8 - 18 UNEF	27.20	27.381	27.051
1＊1/8 - 8 UN	25.50	25.781	25.146
1＊1/4 - 7 UNC	28.20	28.524	27.813
1＊1/4 - 12 UNF	29.50	29.921	29.464
1＊1/4 - 18 UNEF	30.20	30.556	30.226

Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.
1＊1/4 - 8 UN	28.50	28.956	28.321
1＊3/8 - 6 UNC	30.80	31.115	30.353
1＊3/8 - 12 UNF	32.80	33.096	32.639
1＊3/8 - 18 UNEF	33.50	33.731	33.401
1＊3/8 - 8 UN	31.80	32.131	31.496
1＊1/2 - 6 UNC	34.00	34.290	33.528
1＊1/2 - 12 UNF	36.00	36.271	35.814
1＊1/2 - 18 UNEF	36.50	36.881	36.576
1＊1/2 - 8 UN	35.00	35.306	34.671
1＊5/8 - 18 UNEF	39.80	40.081	39.751
1＊5/8 - 8 UN	38.20	38.481	37.846
1＊5/8 - 12 UN	39.20	39.446	38.989
1＊3/4 - 5 UNC	39.50	39.827	38.964
1＊3/4 - 8 UN	41.20	41.656	41.021
1＊3/4 - 12 UN	42.20	42.621	42.164
2 - 4＊1/2 UNC	45.20	45.593	44.679
2 - 8 UN	47.80	48.006	47.371
2 - 12 UN	48.50	48.971	48.514

D1：内螺纹小径.
对 UNC 和UNF螺纹，按照JIS 2B级
对UNEF和UN螺纹，按照 ANSI B1，1a，2B级.
D1： Minor diameter of internal thread.
For UNC and UNF threads, according to JIS Class 2B ;
For UNEF and UN threads, according to ANSI B1.1 Class 2B

惠氏螺纹
FOR WHITWORTH THREADS

Thread Size	Drill Size (mm)	
	A	B
W1/8 - 40	2.65	2.60
W5/32 - 32	3.25	3.20
W3/16 - 24	3.75	3.70
W1/4 - 20	5.10	5.00
W5/16 - 18	6.60	6.50
W3/8 - 16	8.00	7.90
W7/16 - 14	9.40	9.30
W1/2 - 12	10.70	10.50
W9/16 - 12	12.30	12.00
W5/8 - 11	13.70	13.50
W3/4 - 10	16.70	16.50

Thread Size	Drill Size (mm)	
	A	B
W7/8 - 9	19.50	19.30
W1 - 8	22.40	22.00
W1＊1/8 - 7	25.00	24.80
W1＊1/4 - 7	28.30	28.00
W1＊3/8 - 6	30.50	30.30
W1＊1/2 - 6	33.80	33.50
W1＊5/8 - 5	36.00	35.70
W1＊3/4 - 5	39.20	39.00
W1＊7/8 - 4＊1/2	41.80	41.50
W2 - 4＊1/2	45.00	44.70

通常A栏的螺纹底孔的钻头尺寸是用于加工孔的；当孔的尺寸趋向变大时应选择B栏的螺纹底孔的钻头尺寸.
Generally the tap drill sizes in column A are used for producing holes ; When holes tend to be cut oversized the tap drill sizes in column B should be Selected.

PT锥形管螺纹
PT TAPER PIPE THREADS

Thread Size	Drill Size (mm)		Internal Thread Minor Dia. on [Min] Length of Useful Thread (mm)	Internal Thread Minor Dia. on [Min] Gauge Length (mm)
	With Reaming Before Tapping	Without Reaming Before Tapoping		
PT 1/16 - 28	6.10	6.20	6.244	6.384
PT 1/8 - 28	8.10	8.20	8.249	8.388
PT 1/4 - 19	10.70	11.00	10.962	11.174
PT 3/8 - 19	14.20	14.50	14.448	14.658
PT 1/2 - 14	17.60	18.00	17.979	18.263
PT 3/4 - 14	23.00	23.50	23.378	23.663
PT 1 - 11	29.00	29.50	29.459	29.822
PT 1 * 1/4 - 11	37.50	38.00	37.976	38.339
PT 1 * 1/2 - 11	43.40	44.00	43.869	44.232
PT 2 - 11	54.90	55.50	55.412	55.844

PS 直形管螺纹
PS STRAIGHT PIPE THREADS

Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.
PS 1/16 - 28	6.50	6.632	6.490
PS 1/8 - 28	8.50	8.637	8.495
PS 1/4 - 19	11.40	11.549	11.341
PS 3/8 - 19	15.00	15.054	14.846
PS 1/2 - 14	18.50	18.773	18.489

Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.
PS 3/4 - 14	24.00	24.259	23.975
PS 1 - 11	30.20	30.471	30.111
PS 1 * 1/4 - 11	38.80	39.132	38.772
PS 1 * 1/2 - 11	44.80	45.025	44.665
PS 2 - 11	56.50	56.836	56.476

PF 直形管螺纹
PF STRAIGHT PIPE THREADS

Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.
PF 1/16 - 28	6.70	6.843	6.561
PF 1/8 - 28	8.70	8.848	8.566
PF 1/4 - 19	11.70	11.890	11.445
PF 3/8 - 19	15.20	15.395	14.950
PF 1/2 - 14	19.00	19.172	18.631

Thread Size	Drill Size (mm)	D1 (mm)	
		Max.	Min.
PF 3/4 - 14	24.50	24.658	24.117
PF 1 - 11	30.50	30.931	30.291
PF 1 * 1/4 - 11	39.20	39.592	38.952
PF 1 * 1/2 - 11	45.00	45.485	44.845
PF 2 - 11	57.00	57.296	56.656

NPT锥形管螺纹
NPT TAPER PIPE THREADS

Thread Size	Drill Size (mm)			
	With Reaming Before Tapping		Without Reaming Before Tapoping	
	mm	inch	mm	inch
NPT 1/16 - 27	5.94	0.234	6.15	0.242
NPT 1/8 - 27	8.33	0.328	8.43	0.332
NPT 1/4 - 18	10.72	0.422	11.13	0.438
NPT 3/8 - 18	14.27	0.562	14.27	0.562
NPT 1/2 - 14	17.48	0.688	17.86	0.703
NPT 3/4 - 14	22.63	0.891	23.01	0.906
NPT 1 - 11 * 1/2	28.58	1.125	28.98	1.141
NPT 1 * 1/4 - 11 * 1/2	37.31	1.469	37.69	1.484
NPT 1 * 1/2 - 11 * 1/2	43.26	1.703	43.66	1.719
NPT 2 - 11 * 1/2	55.17	2.172	55.58	2.188
NPT 2/1/2 - 8	65.48	2.578	66.27	2.609

NPTF锥形管螺纹
NPTF TAPER PIPE THREADS

Thread Size	Drill Size (mm)			
	With Reaming Before Tapping		Without Reaming Before Tapoping	
	mm	inch	mm	inch
NPTF 1/16 - 27	5.94	0.234	6.15	0.242
NPTF 1/8 - 27	8.33	0.328	8.43	0.332
NPTF 1/4 - 18	10.72	0.422	11.13	0.438
NPTF 3/8 - 18	14.27	0.562	14.27	0.562
NPTF 1/2 - 14	17.48	0.688	17.86	0.703
NPTF 3/4 - 14	22.63	0.891	23.01	0.906
NPTF 1 - 11 * 1/2	28.58	1.125	28.98	1.141
NPTF 1 * 1/4 - 11 * 1/2	37.31	1.469	37.69	1.484
NPTF 1 * 1/2 - 11 * 1/2	43.26	1.703	43.66	1.719
NPTF 2 - 11 * 1/2	55.17	2.172	55.58	2.188
NPTF 2/1/2 - 8	65.48	2.578	66.27	2.609

挤压丝锥
FOR FLUTELESS TAPS

Thread Size	Drill Size (mm) Tap Limits							
	GH4	GH5	GH6	GH7	GH8	GH9	GH10	GH11
M2 × 0.4	1.83	1.84	---	---	---	---	---	---
M2.2 × 0.45	2.00	2.01	---	---	---	---	---	---
M2.3 × 0.4	2.13	2.14	---	---	---	---	---	---
M2.5 × 0.45	2.30	2.31	---	---	---	---	---	---
M2.6 × 0.45	2.40	2.41	---	---	---	---	---	---
M3 × 0.5	2.77	2.78	2.79	2.81	---	---	---	---
M3 × 0.35	2.85	2.87	2.88	2.89	---	---	---	---
M3.5 × 0.6	---	3.23	3.24	3.25	---	---	---	---
M4 × 0.7	---	3.67	3.68	3.70	---	---	---	---
M4 × 0.5	---	3.78	3.79	3.81	---	---	---	---
M5 × 0.8	---	4.61	4.63	4.64	---	---	---	---
M5 × 0.5	---	4.78	4.79	4.81	---	---	---	---
M6 × 1	---	5.50	5.51	5.53	---	---	---	---
M6 × 0.75	---	5.64	5.65	5.67	---	---	---	---
M6 × 0.5	---	5.78	5.79	5.81	---	---	---	---
M7 × 1	---	6.50	6.51	6.53	---	---	---	---
M8 × 1.25	---	---	7.37	7.39	7.40	---	---	---
M8 × 1	---	---	7.51	7.53	7.54	---	---	---
M10 × 1.5	---	---	9.23	9.24	9.26	9.27	---	---
M10 × 1.25	---	---	9.37	9.39	9.40	9.41	---	---
M10 × 1	---	---	9.51	9.53	9.54	9.55	---	---
M12 × 1.75	---	---	---	11.10	11.12	11.13	11.14	---
M12 × 1.5	---	---	---	11.24	11.26	11.27	11.28	---
M12 × 1.25	---	---	---	11.39	11.40	11.41	11.42	---
M12 × 1	---	---	---	11.53	11.54	11.55	11.56	---
M14 × 2	---	---	---	---	12.98	12.99	13.00	13.01
M14 × 1.5	---	---	---	---	13.26	13.27	13.28	13.30
M14 × 1	---	---	---	---	13.54	13.55	13.56	13.58
M16 × 2	---	---	---	---	14.98	14.99	15.00	15.01
M16 × 1.5	---	---	---	---	14.26	15.27	15.28	15.30
M16 × 1	---	---	---	---	15.54	15.55	15.56	15.58
M18 × 2.5	---	---	---	---	---	16.71	16.72	16.73
M18 × 1.5	---	---	---	---	---	17.27	17.28	17.30
M20 × 2.5	---	---	---	---	---	---	18.72	18.73
M20 × 1.5	---	---	---	---	---	---	19.28	19.30

挤压丝锥
FOR FLUTELESS TAPS

Thread Size	Drill Size (mm) Tap Limits							
	GH4	GH5	GH6	GH7	GH8	GH9	GH10	GH11
#2 - 56 UNC	---	1.99	2.01	---	---	---	---	---
#4 - 40 UNC	---	2.55	2.56	2.58	---	---	---	---
#5 - 40 UNC	---	2.88	2.89	2.91	---	---	---	---
#6 - 32 UNC	---	3.12	3.13	3.15	3.16	---	---	---
#8 - 32 UNC	---	---	3.80	3.81	3.82	---	---	---
#10 - 24 UNC	---	---	---	4.32	4.33	4.34	---	---
#12 - 24 UNC	---	---	---	4.98	4.99	5.01	---	---
1/4 - 20 UNC	---	---	---	5.72	5.74	5.75	---	---

标准螺纹规格(部分)
SYMBOL USED FOR STANDARD THREADS (PARTIAL LISTING)

Thread Symbol	Thread		Reference Standard	Thread Angle
M	Metric screw threads	Coarse series	JIS B 0205	60°
		Fine series	JIS B 0207	
S	Metric screw threads		JIS B 0201	
UNC	Unified threads	Coarse series	JIS B 0206	
UNF		Fine series	ANSI B1.1	
UNEF		Extra-fine series	JIS B 0208	
UNS		Special diameter, pitch, & length of engagment	ANSI B1.1	
UN		Constant-pitch series		
UNJC	Unified threads (MIL Standard)	Coarse series	MIL-S-8879	
UNJF		Fine series		
UNJEF		Extra-fine series		
UNJ		Constant-pitch series		
Tr	Metric trapezoidal screw threads		JIS B 0216	30°
TM	30° Trapezoidal screw threads		JIS B 0216 Appendix	
TW	29° Trapezoidal screw threads		JIS B 0222	29°
R	Pipe threads where pressure-tight joints are made on the threads	Taper external pipe threads	JIS B 0203	55° 1/16 Taper
Rc		Taper internal pipe threads		
Rp		Parallel internal pipe threads		55°
G	Pipe threads where pressure-tight joints are not made on the threads		JIS B 0202	
PF	Parallel pipe threads (For mechanical joints)		JIS B 0202 Appendix	
PT	Taper pipe threads	(For pressure-tight joints)	JIS B 0203 Appendix	55° 1/16 Taper
PS	Parallel pipe threads			55°
NPT	American Standard taper pipe threads for general use		ANSI/ASEM B1.20.1	60° 1/16 Taper
NPSC	American Standard straight pipe threads in pipe couplings			60°
NPSM	American Standard straight pipe threads for free-fitting mechanical joints for fixtures			
NPTF	Dryseal American Standard taper pipe threads		ANSI B1.20.3	60° 1/16 Taper
NPSF	Dryseal American Standard fuel internal straight pipe threads			60°
CTG	Screw threads for rigid metal thick-walled conduits and fittings		JIS B 0204	55°
CTC	Screw threads for rigid metal thin-walled conduits and fittings			80°
BC	Cycle threads		JIS B 0225	60°
SM	Screw threads for sewing machine		JIS B 0226	
CTV	Tyre valve threads of cycle		JIS D 9422	
TV	Tyre valve threads of automobile		JIS D 4208	
E	Electric socket and lamp-base threads		JIS C 7709	- - -
BA	British association threads		BS 93	47° 30′
BSC	British Standard cycle threads		BS 811	60°
BSW	British Standard Whitworth threads		BS 84	55°
BSF	British Standard fine threads			
BSMO	Birtish Standard microscope objective threads		BS 3569	
FG	(Germany) Cycle threads		DIN 79012	80°
Pg	(Germany) Steel conduit threads		DIN 40430	80°

硬度换算表
HARDNESS CONVERSION TABLE

Rockwell ★ C. Scale Hardness	Vickers Hardness	Brinell Hardness	Rockwell A. Scale Hardness	Shore Hardness	Tensile Strength ★★ MPa (Kgf/mm2)
58	653	---	80.1	78	---
57	633	---	79.6	76	---
56	613	---	79.0	75	---
55	595	---	78.5	74	2075 (212)
54	577	---	78.0	72	2015 (205)
53	560	---	77.4	71	1950 (199)
52	544	(500)	76.8	69	1880 (192)
51	528	(487)	76.3	68	1820 (186)
50	513	(475)	75.9	67	1760 (179)
49	498	(464)	75.2	66	1695 (173)
48	484	451	74.7	64	1635 (167)
47	471	442	74.1	63	1580 (161)
46	458	432	73.6	62	1530 (156)
45	446	421	73.1	60	1480 (151)
44	434	409	72.5	58	1435 (146)
43	423	400	72.0	57	1385 (141)
42	412	390	71.5	56	1340 (136)
41	402	381	70.9	55	1295 (132)
40	392	371	70.4	54	1250 (127)
39	382	362	69.9	52	1215 (124)
38	372	353	69.4	51	1180 (120)
37	363	344	68.9	50	1160 (118)
36	354	336	68.4	49	1115 (114)
35	345	327	67.9	48	1080 (110)
34	336	319	67.4	47	1055 (108)
33	327	311	66.8	46	1025 (105)
32	318	301	66.3	44	1000 (102)
31	310	294	65.8	43	980 (100)
30	302	286	65.3	42	950 (97)
29	294	279	64.7	41	930 (95)
28	286	271	64.3	41	910 (93)
27	279	264	63.8	40	880 (90)
26	272	258	63.3	38	860 (88)
25	266	253	62.8	38	840 (86)
24	260	247	62.4	37	825 (84)
23	254	243	62.0	36	805 (82)
22	248	237	61.5	35	785 (80)
21	243	231	61.0	35	770 (79)
20	238	226	60.5	34	760 (77)
(18)	230	219	---	33	730 (75)
(16)	222	212	---	32	705 (72)
(14)	213	203	---	31	675 (69)
(12)	204	194	---	29	650 (66)
(10)	196	187	---	28	620 (63)
(8)	188	179	---	27	600 (61)
(6)	180	171	---	26	580 (59)
(4)	173	165	---	25	550 (56)
(2)	166	158	---	24	530 (54)
(0)	160	152	---	24	515 (53)

● 硬度转换只作为粗略的参考，因为不同材料会有变化.
黑体字的数字是以ASTM E 140为基准(通常由SAE-ASM-ASTM进行调整)
★ ( )中的数字只供参考
★★ 抗拉强度的单位和 ( ) 中的数字是用JIS Z 8413 & Z 8438中的转换表由psi值转换的.
此表是根据SAE J 417作成(部分)

● Hardness conversions should only be used as a rough guide due to variation for different materials.
Figures shown in bold type are based on ASTM E 140 (which being adjusted commonly by SAE-ASM-ASTM).
★ Figure shown in ( ) are provided for reference only.
★★ The unit of tensile strength and figures in ( ) are converted from psi values by using conversion tables in JIS Z 8413 & Z 8438. This table is according to SAE J 417 (partial listing).

攻丝过程中的问题及对策
APPLICATION AND USE OF THREADING TAPS

问题 / Problem	问题发生 / Causes	对策 / Solutions
攻孔过大 Tapped hole oversize	不正确的丝锥使用(切削参数不适合运用) Incorrect tap in use (cutting geometry unsuitable for application)	根据相应的材料组选择丝锥 Use tap selected from the relevant material group
	同轴性不好 Faulty alignment	确保丝锥和锥孔准确的在一条线上 Ensure that the tap is correctly aligned with the core hole axis
	冷焊 Cold welding	改变冷却油方向，调整切削速度 Improve lubrication and direction of coolant Adjust cutting speed
	重置丝锥(引入线不是同心的) Re-ground tap(lead-in is not concentric)	用合适的研磨机械再研磨丝锥的引入部分 Regrind tap lead correctly on a suitable tap grinding machine
带状螺纹 Stripped threads	错误使用丝锥(切削参数不适合运用) Incorrect tap in use (cutting geometry incorrect for application)	根据相应的材料组选择丝锥 Use a tap from the relevant material group.
	主轴速度和进给率不同步 Spindle speed and feed rate not synchronized	检查进给率程序和主轴螺距 使用带有轴向滑动的攻丝主轴 Check feed rate programming and / or pitch of leading spindle Use a tapping spindle with axial float
	不足的启动压力，促使外面的螺纹脱落 Insufficient start pressure exerted on tap with peel-cut	增大启动压力 Increase start pressure
攻丝的孔成钟型 Bell mouthed tapped hole	启动压力不合适 Incorrect start pressure applied to tap	使用带有轴向滑动的攻丝主轴 Use a tapping spindle with axial float
不理想的螺纹表面 Unsatisfactory thread surface finish	错误使用丝锥 (切削参数不适合运用) Incorrect tap in use (Cutting geometry unsuitable for application)	根据相应的材料组选择丝锥 Select tap from the relevant material group
	丝锥生硬 The tap is blunt	替换和重新研磨丝锥 Replace or re-grind tap
	再研磨效果差 Tap badly re-ground	再研磨一遍 检查切削参数是否适合被加工材料 Re-grind tap again. Check that cutting geometry is suitable for material
	冷却油太少影响润滑质量和产量 Coolant lacking in lubricating qualities and / or quantity	确保冷却油使用正确且供应充足 Ensure the use of asuitable coolant and an ample supply

问题 / Problem	问题发生 / Causes	对策 / Solutions
丝锥的铁屑部分 Partial chipping of tap	金属屑阻塞 Swarf jamming	检查切削速度 使用有选择性的丝锥类型 Check cutting speed Use alternative tap type
	丝锥碰到孔底部而阻塞 Tap has jammed against bottom of core hole	检查孔和螺纹的深度 钻孔要深一些 Check hole and thread depths Drill core hole deeper
	丝锥错误的再研磨 (导入的直径太小以至于切齿太少) Tap incorrectly re-ground (lead-in diameter too small therefore too few cutting teeth)	在再研磨时，确保它的原始值 Ensure that original values ore maintained when regrinding
	无规律的工件原材料结构 Irregular workpiece material structure	调整切削速度 提高冷却油的润滑质量 Adjust cutting speed Improve lubricating quality of coolant
过度的丝锥破损 Excessive tap wear	不当的切削速度 Incorrect cutting speed	调整切削速度以合适被加工材料 Adjust cutting speed to suit workpiece material
	冷却油太少影响润滑质量和产量 Coolant lacking in lubricating qualities and / or quantity	确保冷却油使用正确且供应充足 Ensure the use of a suitable coolant and an ample supply 检查冷却油是否到达加工区域 Check that coolant is reaching the cutting zone
	攻孔太小，孔的外表面压缩 Surface of the core hole is compacted	检查钻孔情况(仔细钻孔以减少缩孔的风险) Check core hole drilling conditions (drill carefully to reduce risk of surface compacting) 检查钻边 Check drill cutting edges
丝锥破损 Tap breakage	错误使用丝锥(切削参数不适合运用) Incorrect tap in use(cutting geometry unsuitable for application)	根据相应的材料组选择丝锥 Use tap from the relevant material group
	中心误差 Centering error	确保丝锥和被加工孔成一条直线 Ensure that axes of tap and core hole are aligned
	丝锥生硬 Blunt tap	再研磨丝锥 Re-grind tap 确保丝锥的存放安全性 Ensure that taps are stored carefully
	丝锥碰到孔的底部 Tap has reached bottom of core hole	用具有轴向滑动制动的攻丝主轴 Use tapping spindle with axial float and slipping clutch
	攻孔太小 Core hole too small	为每一步选择攻孔 手册在533-538页 Select core hole as per chart, pages 533～538 of this catalogue

铣削工具
MILLING TOOLS

YG-1 CO., LTD.

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铣削工具 MILLING TOOLS

YG-1 CO., LTD.

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						最小	最大	
	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE		PAGE
						MIN	MAX	
CBN	ESB94		2Flute	30°	Ball	R0.2	R1.5	**566**
	ESD02		2Flute	0°	Radius	D0.5	D2.0	**567**
X5070	G8A46		2Flute	30°	Ball for Rib	R0.05	R2.0	**584**
	G8A54		2Flute	30°	Ball for Rib	R0.25	R6.0	**587**
	G8A28		2Flute	30°	Ball	R0.05	R1.0	**588**
	G8A38		2Flute	30°	Stub Ball with Extended Neck	R0.5	R12.5	**589**
	G8A53		2Flute	30°	Miniature Ball	R0.2	R1.0	**590**
	G8A59		3Flute	30°	Ball	R1.5	R10.0	**591**
	G8D62		4Flute	30°	Ball - Center Match	R1.5	R10.0	**592**
	G8A60		2Flute	30°	Radius for Rib	D0.5	D12.0	**593**
	G8A36		2Flute	30°	Stub Radius with Extended Neck	D0.3	D20.0	**596**
	G8A52		2Flute	30°	Radius for Rib	D0.5	D2.0	**598**
	G8A50		2Flute	30°	Miniature Radius	D0.3	D2.0	**599**
	G8A47		4Flute	30°	Radius	D3.0	D12.0	**600**
	G8A37		4Flute	30°	Stub Radius with Extended Neck	D1.0	D20.0	**601**
	G8B08		4Flute	30°	Radius with Extended Neck	D6.0	D12.0	**602**
	G8A39		6Flute	45°	Radius	D6.0	D20.0	**603**
	G8A45		2Flute	30°	Square for Rib	D0.1	D4.0	**604**
	G8A01		2Flute	30°	Square	D0.1	D20.0	**607**
	G8A02		4Flute	30°	Square	D1.0	D20.0	**608**
	G8D63		6&8Flute	45°	Long Square	D6.0	D25.0	**609**
	G8D64		6&8Flute	45°	Extra Long Square	D6.0	D25.0	**610**
X-POWER	EM810		2Flute	30°	Miniature Square	D0.4	D1.5	**624**
	EM810 EM820		2Flute	30°	Short Square	D1.0	D25.0	**625**
	EM816 EM826		2Flute	30°	Long Square	D2.0	D25.0	**627**
	EM836 EM846		3Flute	30°	Miniature Square	D1.0	D20.0	**628**
	EM895 EM896		3Flute	38°	Short Square	D1.0	D20.0	**629**
	EM811 EM821		4Flute	30°	Short Square	D2.0	D25.0	**630**
	EM817 EM827		4Flute	30°	Long Square	D2.0	D25.0	**632**

◎ : 优(Excellent)　○ : 良(Good)

碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	铬镍铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
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MILLING TOOLS **APPLICATION TABLE**

	项目	型号	刃	螺旋角	类型	尺寸		页
						最小	最大	
	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE		PAGE
						MIN	MAX	
X-POWER	EM812 EM822		6&8Flute	45°	Long Square	D6.0	D25.0	**633**
	EM834 EM844		6Flute	45°	Extra Long Square	D6.0	D25.0	**634**
	EM876 EM877		2Flute	30°	Short Ball	R0.5	R12.5	**635**
	EM813 EM823		2Flute	30°	Long Ball	R0.5	R12.5	**636**
	EM899 EM900		2Flute	30°	Medium Ball with Neck	R1.5	R12.5	**637**
	EM838 EM848		2Flute	30°	Long Reach Ball	R1.0	R10.0	**638**
	EM902 EM904		2Flute	30°	Ball with Taper Neck	R0.5	R6.0	**639**
	EM878 EM879		2Flute	30°	Stub Ball	R0.5	R12.5	**640**
	G4953 G4954		2Flute	30°	Stub Ball	R0.5	R12.5	**641**
	EM865		2Flute	30°	Miniature Ball	R0.3	R1.5	**642**
	EM669		2Flute	30°	Long Ball	R1.5	R8.0	**644**
	EM673		4Flute	30°	Long Ball	R2.5	R8.0	**645**
	EM863		2Flute	30°	Long Ball	R1.5	R8.0	**646**
	EM864		4Flute	30°	Long Ball	R2.5	R8.0	**647**
	EM815 EM825		4Flute	30°	Long Ball	R0.5	R12.5	**648**
	EM832 EM842		3~5Flute	20°	Short Roughing	D6.0	D25.0	**649**
	EM814 EM824		3~5Flute	20°	Long Roughing	D6.0	D25.0	**650**
	EM833 EM843		3&4Flute	20°	Long Roughing Ball	R3.0	R10.0	**651**
	EM818 EM828		2Flute	30°	Long Radius	D3.0	D20.0	**652**
	EM905		4Flute	45°	Short Radius	D10.0	D22.0	**653**
	EM819 EM829		4Flute	30°	Long Radius	D3.0	D20.0	**654**
	EM897 EM898		6Flute	45°	Stub Radius	D6.0	D12.0	**655**
	EM835 EM845		6Flute	45°	Long Radius	D6.0	D20.0	**656**
	EM839 EM849		4Flute	30°	Stub Radius	D2.0	D16.0	**657**
	EM837 EM847		2Flute	30°	Taper	D2.0	D8.0	**658**
	EM883		2Flute	30°	Square for Rib	D0.4	D6.0	**659**
	EM886		2Flute	30°	Ball for Rib	R0.2	R3.0	**663**
	EM889		4Flute	25°	Taper for Rib	D1.0	D2.0	**666**
	EM890		4Flute	25°	Taper Ball for Rib	R0.5	R1.0	**668**

◎ : 优(Excellent) ○ : 良(Good)

碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	铬镍铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
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MILLING TOOLS **APPLICATION TABLE**

	项目	型号	刃	螺旋角	类型	尺寸		页
						最小	最大	
	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE		PAGE
						MIN	MAX	
JET-POWER	EH911 EH912		2Flute	35°	Short Square	D1.0	D25.0	**696**
	EH913 EH914		4Flute	35°	Short Square	D2.0	D25.0	**697**
	EH830 EH840		3&4Flute	50°	Long Square	D6.0	D25.0	**698**
	EH915 EH916		6&8Flute	45°	Long Square	D6.0	D25.0	**699**
	EE515		4&6Flute	30°	Short Square	D3.0	D25.0	**700**
	EH852 EH862		3~5Flute	30°	Short Roughing	D6.0	D25.0	**701**
	EH831 EH841		3~5Flute	30°	Long Roughing	D6.0	D25.0	**702**
	EH917 EH918		4~6Flute	45°	Short Roughing	D6.0	D20.0	**703**
	EH919 EH920		3~6Flute	45°	Long Roughing	D4.0	D25.0	**704**
	EH921 EH942		4~6Flute	45°	Long Reach Roughing	D6.0	D20.0	**705**
V7 Mill INOX	EMB41 EMB42		4Flute	Sinusoidal	Short Square	D3.0	D20.0	**714**
	EMB43 EMB44		4Flute	Sinusoidal	Short Radius	D3.0	D20.0	**715**
	EMB14 EMB39		4Flute	Sinusoidal	Long Square	D3.0	D25.0	**716**
	EMB15 EMB40		4Flute	Sinusoidal	Long Radius	D3.0	D25.0	**717**
	EMB74 EMB75		4Flute	Sinusoidal	Long Ball	R1.5	R12.5	**718**
	EMB72 EMB73		5Flute	Sinusoidal	Long Square	D6.0	D25.0	**719**
	EMB12 EMB37		4Flute	Sinusoidal	Regular Square	D1/8″	D1″	**720**
	EMB13 EMB38		4Flute	Sinusoidal	Regular Radius	D1/8″	D1″	**721**
	EMB78 EMB79		4Flute	Sinusoidal	Regular Ball	R1/16″	R1/2″	**722**
	EMB76 EMB77		5Flute	Sinusoidal	Regular Square	D1/4″	D1″	**723**
V7 Mill STEEL	EMD42 EMD43		4Flute	Multiple	Short Square	D3.0	D20.0	**730**
	EMD44 EMD45		4Flute	Multiple	Short Radius	D3.0	D20.0	**731**
	EMD38 EMD39		4Flute	Multiple	Long Square	D3.0	D25.0	**732**
	EMD40 EMD41		4Flute	Multiple	Long Radius	D3.0	D25.0	**733**
	EMD46 EMD47		4Flute	Multiple	Regular Square	D1/8″	D1″	**734**
	EMD48 EMD49		4Flute	Multiple	Regular Radius	D1/8″	D1″	**735**
ALU-POWER	E5C33		1Flute	30°	Square	D2.0	D8.0	**740**
	E5C34		1Flute	30°	Square(Down Cut Type)	D2.0	D8.0	**741**
	EG930		2Flute	25°	Radius	D2.0	D20.0	**742**

◎ : 优(Excellent)　○ : 良(Good)

碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	铬镍铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
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MILLING TOOLS **APPLICATION TABLE**

	项目	型号	刃	螺旋角	类型	尺寸		页
						最小	最大	
	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE		PAGE
						MIN	MAX	
ALU-POWER	E5522 E5521		2Flute	45°	Square	D3.0	D20.0	**743**
	EG909		2Flute	30°	Radius	D4.0	D20.0	**744**
	EG910		2Flute	50°	Radius	R3.0	R10.0	**745**
	EG908		3Flute	40°	Square	R1.0	R8.0	**746**
	E5A18		3Flute	45°	Square	D3.0	D20.0	**747**
	EP922 EP923		3Flute	42°	Short Roughing	D12.0	D32.0	**748**
	EP924 EP925		3Flute	42°	Long Roughing	D12.0	D32.0	**749**
CRX S	SGED27		2Flute	30°	Long Ball	R0.25	R6.0	**758**
	SGED28		2Flute	30°	Ball	R0.5	R6.0	**760**
	SGED29		2Flute	30°	Long Radius	D1.0	D12.0	**761**
	SGED30		2Flute	30°	Long Square	D0.5	D12.0	**763**
	SGED31		2Flute	30°	Square	D1.0	D12.0	**765**
D-POWER	EI997		2Flute	30°	Miniature Ball	R0.1	R3.0	**774**
	EIB93		2Flute	30°	Miniature Ball	R0.2	R2.0	**776**
	EI880		2Flute	30°	Short Ball	R1.0	R6.0	**777**
	EI451		2Flute	30°	Long Ball	R1.0	R6.0	**778**
	EI450		2Flute	30°	Long Reach Ball	R1.0	R6.0	**779**
	EI881		3Flute	30°	Short Ball	R1.0	R6.0	**780**
	EIB04		2Flute	30°	Long Square	D0.5	D12.0	**781**
	EIB87		2Flute	30°	Ball with Taper Neck	R0.5	R1.0	**782**
	EI996		2Flute	30°	Miniature Radius	D0.2	D6.0	**783**
	EIB86		2Flute	30°	Radius with Taper Neck	D1.0	D2.0	**785**
	EIB88		4Flute	30°	Radius	D6.0	D12.0	**786**
	EIA13		3Flute	40°	Short Radius	D2.0	D12.0	**787**
	EIA14		3Flute	40°	Long Radius	D2.0	D12.0	**788**
	GEB46		2Flute	30°	Miniature Ball	R1.0	R3.0	**789**
	GE944		2Flute	30°	Short Ball	R1.0	R6.0	**791**
	GE945		2Flute	30°	Long Ball	R1.0	R6.0	**792**
	GE946		2Flute	30°	Long Reach Ball	R1.0	R6.0	**793**

◎ : 优(Excellent) ○ : 良(Good)

碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	铬镍铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
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MILLING TOOLS **APPLICATION TABLE**

	项目	型号	刃	螺旋角	类型	尺寸		页
						最小	最大	
	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE		PAGE
						MIN	MAX	
D-POWER	GE947		3Flute	30°	Ball	D0.5	R6.0	**794**
	GE927		2Flute	30°	Long Square	R0.5	D12.0	**795**
	GEB02		2Flute	30°	Ball with Taper Neck	D0.2	R1.0	**796**
	GEB45		2Flute	30°	Miniature Radius	D1.0	D6.0	**797**
	GEB01		2Flute	30°	Radius with Taper Neck	D6.0	D2.0	**799**
	GEB03		4Flute	30°	Radius	D1.0	D12.0	**800**
	GE926		2Flute	45°	Square	D2.0	D20.0	**801**
	GE928		3Flute	40°	Short Radius	D2.0	D12.0	**802**
	GE929		3Flute	40°	Long Radius	D1.0	D12.0	**803**
K-2 CARBIDE	G9B80		2Flute	30°	Square for Rib	D0.4	D4.0	**816**
	G9B81		2Flute	30°	Ball for Rib	R0.2	R2.0	**818**
	G9B82		2Flute	30°	Short Radius	D2.0	D12.0	**820**
	G9B83		2Flute	30°	Long Reach Radius	D3.0	D12.0	**822**
	G9B84		4Flute	30°	Short Radius	D2.0	D12.0	**823**
	G9B85		4Flute	30°	Long Reach Radius	D3.0	D12.0	**825**
	G9A23		2Flute	30°	Regular Square	D1.0	D20.0	**826**
	G9B50		2Flute	30°	Long Reach Square	D1.0	D20.0	**827**
	G9A24		4Flute	30°	Regular Square	D1.0	D20.0	**828**
	G9B51		4Flute	30°	Long Square	D1.0	D20.0	**829**
	G9A25		2Flute	30°	Regular Ball	R0.5	R10.0	**830**
	G9B52		2Flute	30°	Long Ball	R0.5	R10.0	**831**
	EMC52		2Flute	35°	Short Square	D1.0	D20.0	**832**
	EMC53		2Flute	35°	Long Square	D2.0	D20.0	**833**
	EMC54		4Flute	35°	Short Square	D1.0	D20.0	**834**
	EMC55		4Flute	35°	Long Square	D2.0	D20.0	**835**
	EMC56		2Flute	30°	Short Ball	R0.1	R10.0	**836**
	EMC57		4&6Flute	45°	Short Square	D1.0	D20.0	**837**
	EMC58		6Flute	45°	Long Square	D6.0	D20.0	**838**
	EMC59		2Flute	30°	Long Neck Square	D0.4	D6.0	**839**

◎ : 优(Excellent)　○ : 良(Good)

碳钢 Carbon Steels	合金钢 Alloy Steels	预硬钢 Prehardened Steels	硬化钢 Hardened Steels		高硬钢 High Hardened Steels	铜 Copper	石墨 Graphite	铸铁 Cast Iron	铝 Aluminum	不锈钢 Stainless Steels	钛 Titanium	铬镍铁合金 Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
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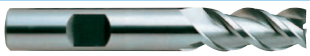
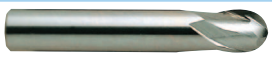
MILLING TOOLS **APPLICATION TABLE**

	项目	型号	刃	螺旋角	类型	尺寸		页
						最小	最大	
	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE		PAGE
						MIN	MAX	
K-2 CARBIDE	EMC60		2Flute	30°	Long Neck Ball	R0.2	R3.0	**844**
	EMC61		2Flute	30°	Radius	D3.0	D12.0	**848**
	EMC62		4Flute	30°	Radius	D3.0	D12.0	**849**
	GFC63		2Flute	30°	Extended Neck Square	D0.4	D20.0	**850**
	GFC64		4Flute	30°	Extended Neck Square	D1.0	D20.0	**851**
	GFC65		2Flute	30°	Short Ball	R0.1	R6.0	**852**
	GFC66		2Flute	30°	Stub Extended Neck Ball	R0.5	R10.0	**853**
	EMC67		4Flute	30°	Short Square	D6.0	D20.0	**854**
	EMC68		4Flute	30°	Long Square	D6.0	D20.0	**855**
	EMC69		4~6Flute	45°	Roughing Square	D6.0	D20.0	**856**
	E5C70		2Flute	45°	Short Square	D1.0	D20.0	**857**
	E5C71		2Flute	45°	Medium Square	D4.0	D20.0	**858**
	E5C72		3Flute	45°	Short Square	D1.0	D20.0	**859**
	E5C73		3Flute	45°	Medium Square	D4.0	D20.0	**860**
	E5C74		3Flute	45°	Extra Long Square	D3.0	D20.0	**861**
GENERAL CARBIDE	E5452		2Flute	30°	Extra Long Square	D3.0	D20.0	**884**
	E5553 E5410		3Flute	30°	Short Throw Away	D0.5	D20.0	**885**
	E5882		3Flute	35°	Radius	D3.0	D20.0	**887**
	E5423 E5415		3Flute	45°	Short Square	D3.0	D20.0	**888**
	E5453		4Flute	30°	Long Square	D3.0	D20.0	**889**
	E5455		2Flute	30°	Extra Long Ball	R1.5	R10.0	**890**
	E5634 E5524		4Flute	30°	Short Ball	R1.0	R10.0	**891**
	E5742 E5711		3Flute	30°	Long Roughing Square	D6.0	D25.0	**892**
	E5400		2Flute	30°	Drill Mill	D3.0	D20.0	**893**
	E5401		2Flute	30°	Short Square	D0.4	D20.0	**894**
	E5402		4Flute	30°	Short Square	D1.5	D20.0	**895**
	E5414		2Flute	30°	Short Ball	R0.2	R12.5	**896**
TANK-POWER	GAC25		4Flute	30°	Long Square	D3.0	D30.0	**912**
	GAA22		3~5Flute	30°	Medium Roughing	D6.0	D40.0	**913**

◎ : 优(Excellent) ○ : 良(Good)

碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	铬镍铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
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MILLING TOOLS **APPLICATION TABLE**

	项目	型号	刃	螺旋角	类型	尺寸		页
						最小	最大	
	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE		PAGE
						MIN	MAX	
TANK-POWER	GAD33		3~5Flute	30°	Roughing	D6.0	D30.0	**914**
	GAB58		3~5Flute	30°	Medium Roughing	D6.0	D25.0	**915**
	GAD52		3~5Flute	30°	Long Roughing	D6.0	D30.0	**916**
	EP931		2Flute	30°	Regular Square	D1.0	D25.0	**917**
	EP932		4Flute	30°	Regular Square	D1.0	D25.0	**918**
	EP933		2Flute	30°	Regular Ball	R0.5	R12.5	**919**
	EP941		3~5Flute	30°	Short Roughing	D6.0	D25.0	**920**
	EPA33		3~5Flute	30°	Short Roughing	D6.0	D25.0	**921**
GENERAL HSS	E2464		2Flute	42°	Short Square	D1.0	D32.0	**932**
	EL612		1Flute	≒30°	Square	D3.0	D10.0	**934**
	EL623		1Flute	≒30°	Square	D3.0	D10.0	**935**
	E2461 E2462 E2463		2~4Flute	50°	Short Square	D2.0 D6.0 D22.0	D5.0 D23.0 D30.0	**936**
	E2410		4&6Flute	30°	Short Ball	R3.0	R12.5	**937**
	E2429		4&6Flute	30°	Long Ball	R5.0	R12.5	**938**
	E2751 E2764		3Flute	30°	Short Roughing	D6.0 D10.0	D8.0 D40.0	**939**
	E2752 E2765		3Flute	30°	Long Roughing	D6.0 D10.0	D8.0 D40.0	**940**
	E2755		3Flute	37°	Short Roughing	D6.0	D30.0	**941**
	E2756		3Flute	37°	Long Roughing	D10.0	D30.0	**942**
	E2753		3~6Flute	30°	Short Roughing	D6.0	D40.0	**943**
	E2762		3~6Flute	30°	Long Roughing	D6.0	D40.0	**944**
	E2754		3~6Flute	30°	Short Roughing & Finishing	D6.0	D40.0	**945**
	E2768		3~6Flute	30°	Long Roughing & Finishing	D6.0	D45.0	**946**
	E2766		3Flute	30°	Short Roughing & Finishing	D6.0	D40.0	**947**
	E2401		2Flute	30°	Regular Square	D1.0	D50.0	**948**
	E2406		2Flute	30°	Long Square	D3.0	D50.0	**950**
	E2749		2Flute	30°	Extra Long Square	D16.0	D50.0	**952**
	E2420		2Flute	30°	Short Square	D1.0	D50.0	**953**
	E2412		4Flute	30°	Regular Square	D1.0	D50.0	**955**
	E2659		4Flute	30°	Long Square	D3.0	D50.0	**957**

◎ : 优(Excellent) ○ : 良(Good)

碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	铬镍铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
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MILLING TOOLS **APPLICATION TABLE**

	项目	型号	刃	螺旋角	类型	尺寸 最小	尺寸 最大	页
	ITEM	MODEL	FLUTES	HELIX	TYPE	SIZE RANGE MIN	SIZE RANGE MAX	PAGE
GENERAL HSS	E2750		4Flute	30°	Extra Long Square	D16.0	D50.0	**959**
	E2421		4&6Flute	30°	Short Square	D2.5	D50.0	**960**
	E2480		2Flute	30°	Regular Ball	R0.5	R25.0	**962**
	E2682		2Flute	30°	Taper	D1.0	D6.0	**964**
	E2683		4Flute	30°	Taper	D8.0	D12.0	**966**
	E2760		4~6Flute	30°	Short Roughing Center Cut	D6.0	D50.0	**967**
	E2759		4~6Flute	30°	Long Roughing	D10.0	D50.0	**969**
	E2806		4&6Flute	30°	Short Roughing Ball	R4.0	R25.0	**970**
MILLING CUTTER	ML012,ML022 ML112,ML122 ML212,ML222		6~16 Teeth	0°	Dovetail Cutters	D16.0	D50.0	**990**
	ML032,ML042 ML132,ML142 ML232,ML242		6~12 Teeth	0°	Dovetail Cutters	D16.0	D38.0	**991**
	ML062 ML162 ML262		8~14 Teeth	10°~12°	Woodruff Keyseat Cutters	D10.5	D45.5	**992**
	ML072 ML172 ML272		6~8 Teeth	10°	T-Slot Cutters	D12.5	D40.0	**994**
	ML092		18~24 Teeth	0°	Side and Face with Straight Teeth	D50.0	D125.0	**995**
	ML102		14~30 Teeth	10°	Side and Face with Staggered Teeth	D50.0	D200.0	**996**
	E2675		6~14 Teeth	30°	Shell	D30.0	D160.0	**1000**
	E2676		4~6 Teeth	42°	Shell for Aluminum	D30.0	D100.0	**1001**
	E2677		6~12 Teeth	30°	Roughing Shell	D40.0	D160.0	**1002**
	E2678		6~12 Teeth	30°	Roughing Shell	D40.0	D160.0	**1003**
	E2679		6~12 Teeth	30°	Roughing & Finishing Shell	D40.0	D160.0	**1004**
	E2498		4 Teeth	0°	Corner Rounding Cutters	D8.0	D56.0	**1005**

	项目	型号	规格	尺寸 最小	尺寸 最大	页
	ITEM	MODEL	DESCRIPTION	SIZE MIN	SIZE MAX	PAGE
i-Xmill	XMB110A		i-Xmill Ball Insert for General Purpose	Ø8	Ø32	**572**
	XMB120C		i-Xmill Ball Insert for Hardened Steels	Ø8	Ø32	**572**
	XMR110A		i-Xmill Corner Radius Insert for General Purpose	Ø8	Ø32	**575**
	XMR120C		i-Xmill Corner Radius Insert for Hardened Steels	Ø8	Ø32	**575**

◎ : 优(Excellent) ○ : 良(Good)

碳钢	合金钢	预硬钢	硬化钢		高硬钢	铜	石墨	铸铁	铝	不锈钢	钛	铬镍铁合金
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels		High Hardened Steels	Copper	Graphite	Cast Iron	Aluminum	Stainless Steels	Titanium	Inconel
~HB225	HB225~325	HRc30~40	HRc40~45	HRc45~55	HRc55~70							
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碳钢		合金钢		工具钢		铸铁	硬化钢	不锈钢	铝
Carbon Steels		Alloy Steels		Tool Steels		Cast Iron	Hardened Steels	Stainless Steels	Aluminum
~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc35~	~HRc35	HRc50~	~HRc28	~HRc8
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CUTTING TOOLS