THREAD MILLS

Higher cutting speeds and feeds than tapping.
One tool for blind holes and through holes.

YG-1 CO., LTD.

HEAD OFFICE
211, Sewolcheon-ro, Bupyeong-gu, Incheon, Korea
PHONE : +82-32-526-0909, FAX : +82-32-526-4373
http://www.yg1.kr
E-mail:yg1@yg1.kr

Tool specifications are subject to change without notice.

YG1YETM140519004

YE-TM14

Registered
ISO 9001:2008 / ISO 14001:2004

THREAD MILLS

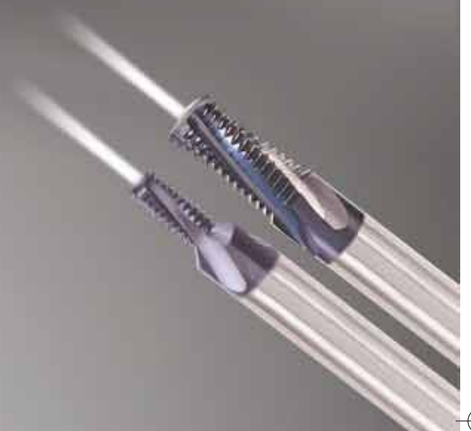
- **Higher cutting speeds and feeds than tapping.**
- **One tool for blind holes and through holes.**

YG-1 CO., LTD.

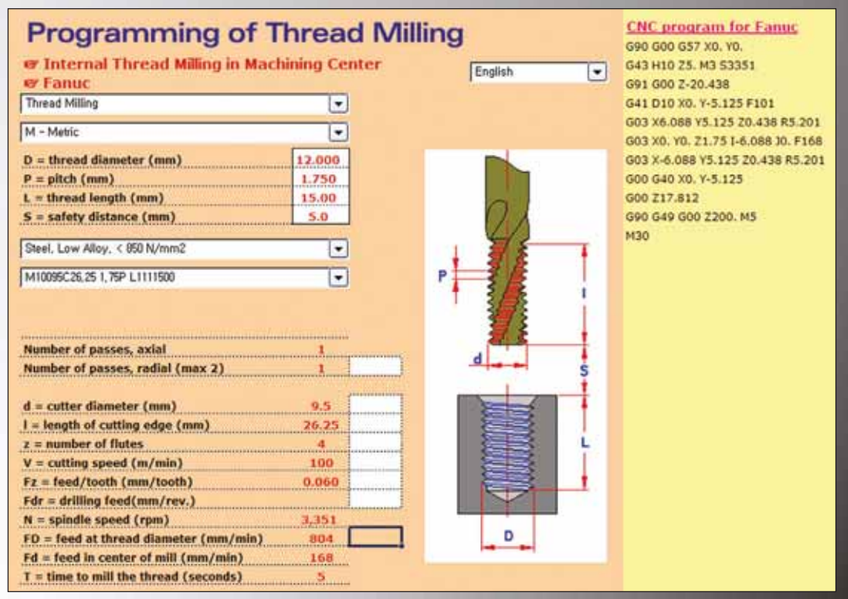
THREAD MILLS

Solid Carbide Thread Mill without Coolant Hole
Solid Carbide Thread Mill with Coolant Hole
Solid Carbide Thread Mill with Coolant Hole & Chamfer
Solid Carbide Miniature Thread Mill
Solid Carbide Drill and Thread Mill

Much higher productivity, much more improved thread surface finish than tapping.
Advantages of Thread Milling includes "higher cutting speeds and feeds than tapping",
"making smaller and easier to remove chips than taps", and "multiple function
with one tool - both right/left hand threads and blind/through holes".
Also applicable to hardened materials and exotic materials with predictable production.
Expansion of thread mill operation range to "drill and thread mill with chamfer" and
"thread mill with chamfer/internal coolant" series.

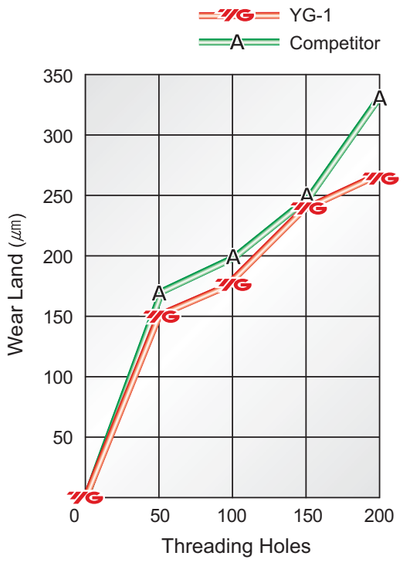


Application Program Available



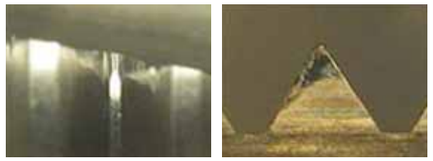
Thread Mill - Test Report

Thread Mill with Chamfer



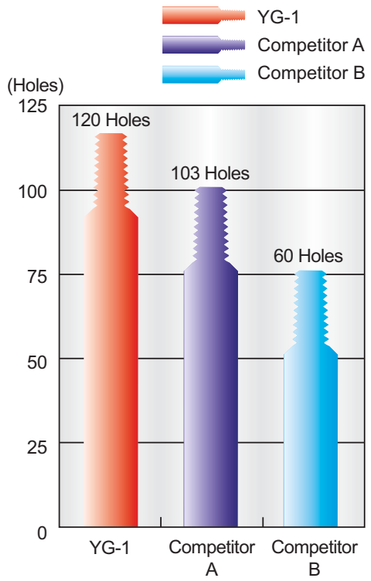
CUTTING CONDITION
SIZE : M8 × 1.25, ∅6.5 × 16.8 × 90° × 74
Work Material : C45 (HRc 20)
Cutting Speed : 100m/min
R.P.M : 4897 rev/min
Threading Feed : 0.030 mm/tooth
Cutting Depth : 16.0mm(2 × D)
Coolant : Wet Cut

YG-1



Competitor

Miniature Thread Mills

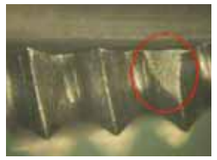


CUTTING CONDITION
SIZE : M2 × 0.4, ∅1.52 × 1.2(4.2) × 57
Work Material : X40CrMoV51 (HRc 40)
Cutting Speed : 65m/min
R.P.M : 13348 rev/min
Threading Feed : 0.016 mm/tooth
Cutting Depth : 4.0mm(2 × D)
Coolant : Wet Cut

YG-1

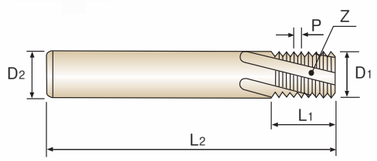
Competitor A (Broken)

Competitor B (Chipping)



THREAD MILLS
SELECTION GUIDE

M Solid Carbide Thread Mill for ISO Metric Internal Thread - DIN 13



L1211 SERIES TiAlN

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

unit : mm

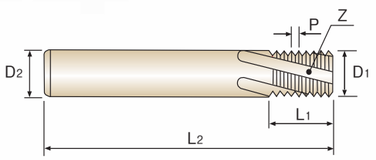
EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN		P	D_1	D_2	L_1	L_2	Z
L1211200	M3	0.5	**2.2**	6	5	57	3
L1211240	M4	0.7	**2.9**	6	7	57	3
L1211280	M5	0.8	**3.8**	6	8	57	3
L1211310	M6	1.0	**4.5**	6	13	57	3
L1211360	M8	1.25	**6.0**	6	17.5	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

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎	◎		◎	○	○	○	◎

MF Solid Carbide Thread Mill for ISO Metric Internal Thread - DIN 13



L1212 SERIES TiAlN

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

unit : mm

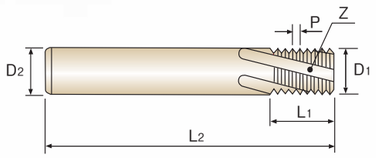
EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN		P	D_1	D_2	L_1	L_2	Z
L1212370	M8	1.0	**6.0**	6	13	57	3
L1212380	M8	0.75	**6.0**	6	12.75	57	3
L1212440	M10	1.0	**8.0**	8	16	63	4
L1212510	M12	1.5	**9.5**	10	19.5	72	4
L1212520	M12	1.25	**9.5**	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

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎	◎		◎	○	○	○	◎

UNC Solid Carbide Thread Mill for UNC Internal Thread - ANSI B 1.1



L1213 SERIES TiAlN

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

unit : mm

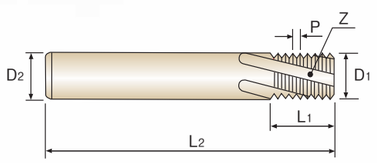
EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN			D_1	D_2	L_1	L_2	Z
L1213400	1/4"	20	**4.5**	6	14	57	3
L1213440	5/16"	18	**5.8**	6	16.9	65	3
L1213480	3/8"	16	**7.0**	8	20.6	72	4
L1213520	7/16"	14	**8.0**	8	23.6	72	4
L1213560	1/2"	13	**9.5**	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

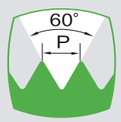
Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

UNF Solid Carbide Thread Mill for UNF Internal Thread - ANSI B 1.1



L1214 SERIES TiAlN

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



unit : mm

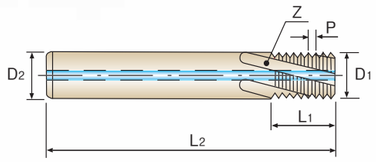
EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN			D_1	D_2	L_1	L_2	Z
L1214420	1/4"	28	**5.0**	6	13.6	57	3
L1214460	5/16"	24	**6.0**	6	16.9	65	3
L1214500	3/8"	24	**8.0**	8	20.1	72	4
L1214540	7/16"	20	**8.0**	8	24.1	72	4
L1214580	1/2"	20	**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

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

M Solid Carbide Thread Mill with Coolant Hole for ISO Metric Internal Thread - DIN 13



L4211 SERIES **TiAlN**

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

unit : mm

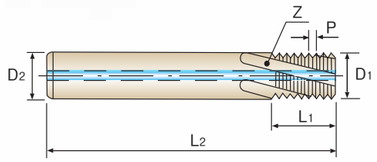
EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN		P	D_1	D_2	L_1	L_2	Z
L4211310	M6	1.0	**4.5**	6	13.0	57	3
L4211360	M8	1.25	**6.0**	6	17.5	65	3
L4211420	M10	1.5	**7.5**	8	21.0	72	4
L4211500	M12	1.75	**9.5**	10	26.25	80	4
L4211540	M14	2.0	**10.0**	10	30.0	83	4
L4211600	M16	2.0	**12.0**	12	34.0	92	4
L4211700	M20	2.5	**16.0**	16	42.5	105	5

* Other coatings are available on your request.

◎ : Excellent ○ : Good

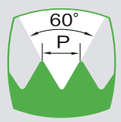
Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎	◎		◎	○	○	○	◎

MF Solid Carbide Thread Mill with Coolant Hole for ISO Metric Internal Thread - DIN 13



L4212 SERIES **TiAlN**

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



unit : mm

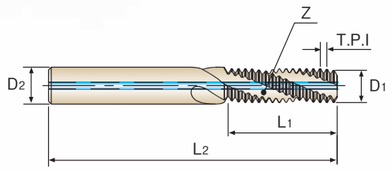
EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN		P	D_1	D_2	L_1	L_2	Z
L4212370	M8	1.0	**6.0**	6	13.0	57	3
L4212380	M8	0.75	**6.0**	6	12.75	57	3
L4212440	M10	1.0	**8.0**	8	16.0	63	4
L4212510	M12	1.5	**9.5**	10	19.5	72	4
L4212520	M12	1.25	**9.5**	10	18.75	72	4
L4212530	M12	1.0	**9.5**	10	19.0	72	4
L4212550	M14	1.5	**10.0**	10	22.5	83	4
L4212570	M14	1.0	**10.0**	10	22.0	83	4
L4212610	M16	1.5	**12.0**	12	25.5	83	4
L4212620	M16	1.0	**12.0**	12	25.0	83	4
L4212670	M18	1.5	**14.0**	14	28.5	92	5
L4212680	M18	1.0	**14.0**	14	28.0	92	5
L4212720	M20	1.5	**16.0**	16	31.5	92	5
L4212730	M20	1.0	**16.0**	16	31.0	92	5

* Other coatings are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎	◎		◎	○	○	○	◎

BSP(G) Solid Carbide Thread Mill with Internal Coolant Hole for BSP(G) Internal/External Thread



L6215 SERIES TiAlN

- **Material** : Solid Carbide
- **Shank** : DIN6535 HA
- **Spiral Angle** : 15°
- **Internal Coolant Hole**

unit : mm

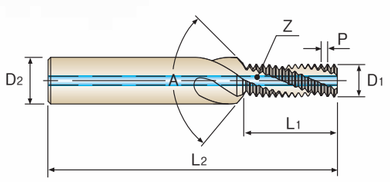
EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	No. of Flute
TiAlN			D_1	D_2	L_1	L_2	Z
L6215020	1/16"	28	**5.9**	6	16.3	65	3
L6215200	1/8"	28	**7.9**	8	20.0	70	4
L6215400	1/4"	19	**9.9**	10	26.7	80	4
L6215480	3/8"	19	**13.9**	14	33.4	92	4
L6215560	1/2"	14	**15.9**	16	43.5	104	5
L6215700	3/4"	14	**17.9**	18	34.5	100	5
L6215780	1"	11	**19.9**	20	34.6	100	5

* Other coatings are available on your request.

◎ : Excellent ○ : Good

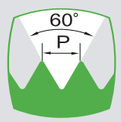
Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎	◎		◎	○	○	○	◎

M Solid Carbide Thread Mill with Coolant Hole & Chamfer for ISO Metric Internal Thread - DIN 13



L4271 SERIES TiAlN

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



unit : mm

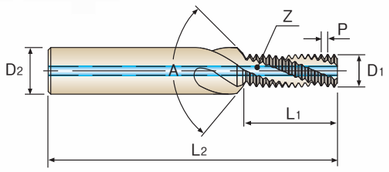
EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	Angle	No. of Flute
TiAlN		P	D_1	D_2	L_1	L_2	A	Z
L4271310	M6	1.0	**4.8**	8	12.4	62	90°	3
L4271360	M8	1.25	**6.5**	10	16.8	74	90°	3
L4271420	M10	1.5	**8.2**	12	20.15	80	90°	4
L4271500	M12	1.75	**9.9**	14	25.25	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

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

MF Solid Carbide Thread Mill with Coolant Hole & Chamfer for ISO Metric Internal Thread - DIN 13



L4272 SERIES TiAlN

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

unit : mm

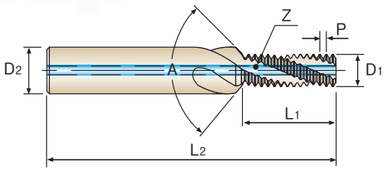
EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	Angle	No. of Flute
TiAlN		P	D_1	D_2	L_1	L_2	A	Z
L4272370	M8	1.0	**6.7**	10	12.4	74	90°	3
L4272430	M10	1.25	**8.3**	12	15.9	80	90°	4
L4272440	M10	1.0	**8.7**	12	15.4	80	90°	4
L4272510	M12	1.5	**10.0**	14	18.65	90	90°	4
L4272520	M12	1.25	**10.3**	14	18.3	80	90°	4
L4272530	M12	1.0	**10.7**	14	18.4	90	90°	4
L4272550	M14	1.5	**12.0**	16	21.65	100	90°	4
L4272610	M16	1.5	**14.0**	18	24.65	102	90°	5

* Other coatings are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

UNC Solid Carbide Thread Mill with Coolant Hole & Chamfer for UNC Internal Thread - ANSI B 1.1



L4273 SERIES TiAlN

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

unit : mm

EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	Angle	No. of Flute
TiAlN			D_1	D_2	L_1	L_2	A	Z
L4273400	1/4"	20	**4.8**	8	13.3	62	90°	3
L4273440	5/16"	18	**6.2**	10	16.18	74	90°	3
L4273480	3/8"	16	**7.6**	12	19.8	80	90°	4
L4273520	7/16"	14	**8.9**	12	22.62	80	90°	4
L4273560	1/2"	13	**10.3**	14	26.32	90	90°	4
L4273600	9/16"	12	**11.7**	16	30.63	100	90°	4
L4273640	5/8"	11	**13.1**	18	33.41	102	90°	4
L4273700	3/4"	10	**16.0**	20	39.29	110	90°	5

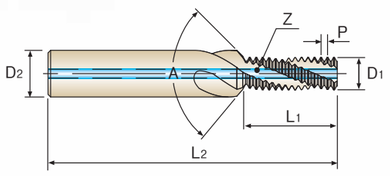
* Other coatings are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

UNF

Solid Carbide Thread Mill with Coolant Hole & Chamfer for UNF Internal Thread - ANSI B 1.1



L4274 SERIES **TiAlN**

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

unit : mm

EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	Angle	No. of Flute
TiAlN			D_1	D_2	L_1	L_2	A	Z
L4274420	1/4"	28	**5.1**	8	13.21	62	90°	3
L4274460	5/16"	24	**6.5**	10	16.37	74	90°	3
L4274500	3/8"	24	**8.1**	12	19.54	80	90°	4
L4274540	7/16"	20	**9.4**	12	22.19	80	90°	4
L4274580	1/2"	20	**11.0**	14	26	90	90°	4
L4274620	9/16"	18	**12.4**	16	28.88	100	90°	4
L4274660	5/8"	18	**14.0**	18	33.12	102	90°	5
L4274720	3/4"	16	**17.0**	20	38.86	110	90°	5

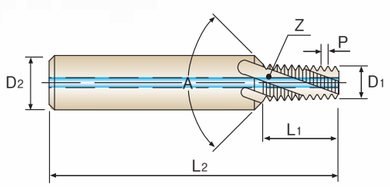
* Other coatings are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

NPT

Solid Carbide Thread Mill with Coolant Hole & Chamfer for NPT Thread - ANSI B 1.20.1



L4276 SERIES **TiAlN**

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

unit : mm

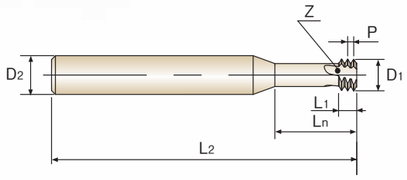
EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Over All Length	Angle	No. of Flute
TiAlN			D_1	D_2	L_1	L_2	A	Z
L4276020	NPT1/16"	27	**5.9**	10	8.9	64	90°	3
L4276200	NPT1/8"	27	**7.8**	12	8.9	70	90°	4
L4276400	NPT1/4"	18	**10.05**	16	13.4	81	90°	4
L4276480	NPT3/8"	18	**13.45**	18	13.4	81	90°	4

* Other coatings are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

M Solid Carbide Miniature Thread Mill for ISO Metric Internal Thread - DIN13



L12D1 SERIES TiAlN

- **Material** : Solid Carbide
- **Shank** : DIN6535 HA
- **Spiral Angle** : 15°
- **Thread Length** : 3 × P

unit : mm

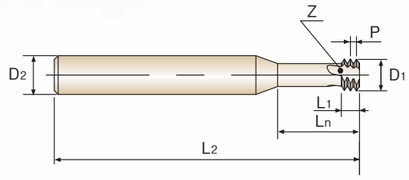
EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Neck Length	Over All Length	No. of Flute
TiAlN		P	D_1	D_2	L_1	L_n	L_2	Z
L12D1090	M1.6	0.35	**1.18**	3	1.05	3.4	30	3
L12D1130	M2	0.4	**1.52**	6	1.2	4.2	57	3
L12D1150	M2.2	0.45	**1.66**	6	1.35	4.6	57	3
L12D1170	M2.5	0.45	**1.96**	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	3.0	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

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

UNC Solid Carbide Miniature Thread Mill for UNC Internal Thread - ANSI B 1.1



L12D3 SERIES TiAlN

- **Material** : Solid Carbide
- **Shank** : DIN6535 HA
- **Spiral Angle** : 15°
- **Thread Length** : 3 × P

unit : mm

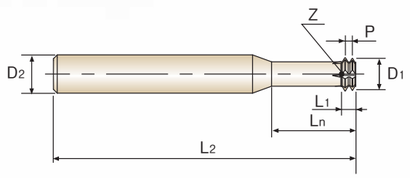
EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Neck Length	Over All Length	No. of Flute
TiAlN			D_1	D_2	L_1	L_n	L_2	Z
L12D3040	#1	64	**1.38**	6	1.19	3.9	57	3
L12D3080	#2	56	**1.64**	6	1.36	4.6	57	3
L12D3160	#4	40	**2.08**	6	1.91	6.0	57	3
L12D3240	#6	32	**2.55**	6	2.38	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

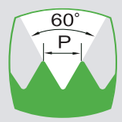
Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
◎	◎	◎		◎	○	○	○	◎

M Solid Carbide Miniature Thread Mill for Hard Materials, ISO Metric Internal Thread - DIN13



L19E1 SERIES AlTiN

- **Material** : Solid Carbide
- **Shank** : DIN6535 HA
- **Left Hand Cut, Straight Flute**
- **Thread Length :** 2×P
- **Left hand Cut (CNC code : M04)**
- **The work direction is from top to bottom (Climb Milling)**
- **For hard materials up to HRc62**



unit : mm

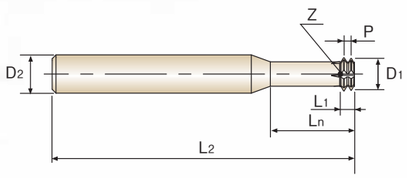
EDP No.	Nominal Diameter [D]	Pitch	Cutter Diameter	Shank Diameter	Thread Length	Neck Length	Over All Length	No. of Flute
AlTiN		P	D_1	D_2	L_1	L_n	L_2	Z
L19E1130	M2	0.4	**1.52**	6	0.8	4.2	57	4
L19E1150	M2.2	0.45	**1.66**	6	0.9	4.6	57	4
L19E1170	M2.5	0.45	**1.96**	6	0.9	5.3	57	4
L19E1200	M3	0.5	**2.4**	6	1.0	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	2.0	12.6	57	5
L19E1360	M8	1.25	**6.5**	8	2.5	16.8	63	5
L19E1420	M10	1.5	**8.2**	10	3.0	21.0	73	6
L19E1500	M12	1.75	**9.9**	10	3.5	25.2	73	6

※ Other coatings are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
	○	◎	◎	◎	○	○	◎	

UNC Solid Carbide Miniature Thread Mill for Hard Materials, UNC Internal Thread - ANSI B 1.1



L19E3 SERIES AlTiN

- **Material** : Solid Carbide
- **Shank** : DIN6535 HA
- **Left Hand Cut, Straight Flute**
- **Thread Length :** 2×P
- **Left hand Cut (CNC code : M04)**
- **The work direction is from top to bottom (Climb Milling)**
- **For hard materials up to HRc62**

unit : mm

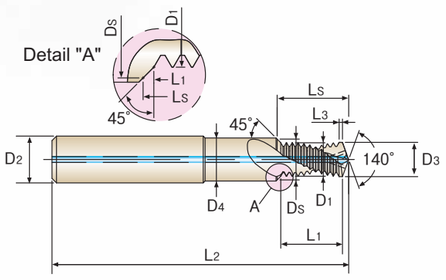
EDP No.	Nominal Diameter [D]	T.P.I	Cutter Diameter	Shank Diameter	Thread Length	Neck Length	Over All Length	No. of Flute
AlTiN			D_1	D_2	L_1	L_n	L_2	Z
L19E3080	#2	56	**1.64**	6	0.91	4.6	57	4
L19E3160	#4	40	**2.08**	6	1.27	6.0	57	4
L19E3240	#6	32	**2.55**	6	1.59	7.4	57	4
L19E3280	#8	32	**3.21**	6	1.59	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

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
	○	◎	◎	◎	○	○	◎	

M Solid Carbide Drill and Thread Mill with Chamfer for ISO Metric Internal Thread - DIN 13



L41A1 SERIES **UNCOATED**
L42A1 SERIES **TiAlN**

- **Material** : Solid Carbide
- **Shank** : DIN6535 HA
- **Thread Length** : 2×D
- **No. of Flute** : 2
- **140° Drill Point, 90° Countersink**
- **Drilling, Chamfering and Thread milling**

unit : mm

EDP No. UNCOATED	EDP No. TiAlN	Nominal Diameter [D]	Pitch P	Cutter Diameter D1	Shank Diameter D2	Effect. Diameter Ds	Drill Diameter D3	Max. C'sink D4	Thread Length L1	Effect. Length Ls	Drill Length L3	Over All Length L2
L41A1310	**L42A1310**	M6	1.0	**4.75**	8	6.3	5.00	6.6	13.00	14.68	1.00	62
L41A1360	**L42A1360**	M8	1.25	**6.35**	10	8.3	6.75	9.0	16.27	18.48	1.25	74
L41A1420	**L42A1420**	M10	1.5	**7.95**	12	10.3	8.50	11.0	21.05	23.77	1.50	79
L41A1500	**L42A1500**	M12	1.75	**9.95**	14	12.3	10.25	13.5	24.21	27.25	1.50	89
L41A1540	**L42A1540**	M14	2.0	**11.20**	16	14.3	12.00	15.5	29.58	33.32	1.50	102

* Other coatings are available on your request.

◎ : Excellent ○ : Good

Carbon Steels	Alloy Steels	Heat Treated Steels	High Hardened Steel	Cast Iron	Stainless Steels	Titanium Alloy	Chrome-Nickel Alloy	Non Ferrous Materials
				◎				◎

PROGRAMMING OF THREAD MILLING

Application Program Available

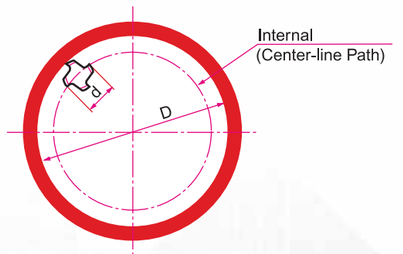
Program Data

G Codes for Thread Milling

G00	Fast Feed Linear	**G90**	Absolute Command
G01	Linear Movement	**G91**	Incremental Command
G02	Circular/Helical Interpolation C.W.	**M03**	Clockwise Rotation of Spindle
G03	Circular/Helical Interpolation A.C.W.	**M05**	Spindle Stop
G17	X, Y Plane (Vertical Machining)	**M08**	Coolant On
G18	Z, X Plane (Horizontal Machining)	**X**	Horizontal Co-ordinate
G19	Y, Z Plane (Using 90° Head)	**Y**	Horizontal Co-ordinate
G40	Cutter Radius Compensation Cancel	**Z**	Vertical Co-ordinate
G41	Cutter Radius Compensation Left	**I**	X Co-ordinate to Center of Arc Travel
G42	Cutter Radius Compensation Right	**J**	Y Co-ordinate to Center of Arc Travel
G43	Tool Length Compensation Plus	**S**	Spindle Speed R.P.M.
G49	Tool Length Compensation Cancel	**F**	Feed mm/min

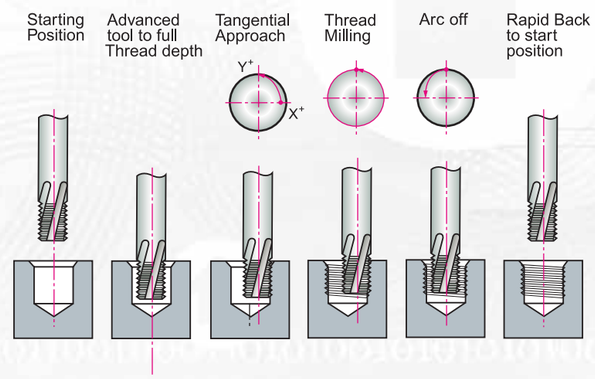
CNC Internal Thread Milling

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								



<Explanation of Parameters>

A1 : 1/2 Nominal Thread Diameter 1/2D
A2 : Thread Pitch
A3 : Thread Depth
A4 : 1/4P(for climb milling and right-hand thread)
A5 : Beginning of Contour in Y 0.5xP
A6 : Arc Off (A1 - A5)
A7 : A3+2-0.5P
T1 : Cutter radius to be programmed is nomally included in the tool memory



RECOMMENDED CUTTING SPEED

Application Program Available

RECOMMENDED CUTTING CONDITION for Thread Mills

unit : mm

Material	Hardness (HB)	Strength (N/mm²)	Cutting Speed (m/min)	Feed per Tooth (fz)	
				Cutter Diameter ≤ ∅8.0	Cutter Diameter 〉∅8.0
Low Carbon Steel Medium Carbon Steel	≤ 200	≤ 700	80 - 120	0.02 - 0.04	0.04 - 0.10
High Carbon Steel	≤ 250	≤ 850	80 - 120	0.02 - 0.04	0.04 - 0.10
Alloy Steel	≤ 250	≤ 850	80 - 120	0.02 - 0.04	0.04 - 0.10
Heat Treated Steel	≤ 400	≤ 1400	60 - 100	0.02 - 0.04	0.04 - 0.10
Stainless Steel	≤ 300	≤ 1000	40 - 80	0.01 - 0.02	0.02 - 0.06
Cast Iron	≤ 300	≤ 1000	50 - 100	0.02 - 0.04	0.04 - 0.10
Chrome-Nickel Alloys Titanium Alloys	≤ 350	≤ 1200	20 - 60	0.01 - 0.02	0.02 - 0.06
Non Ferrous Material	≤ 200	≤ 700	100 - 300	0.03 - 0.07	0.05 - 0.10

RECOMMENDED CUTTING CONDITION for Drill and Thread Mills

unit : mm

Material	Hardness (HB)	Strength (N/mm²)	Cutting Speed (m/min)	Fz(Thread Milling) - Feed per tooth		Fdr(Drilling) - Feed per revolution	
				Cutter Diameter ≤ ∅8.0	Cutter Diameter 〉∅8.0	Cutter Diameter ≤ ∅8.0	Cutter Diameter 〉∅8.0
Cast Iron	≤ 200	≤ 700	80-150	0.03-0.08	0.08-0.12	0.10-0.20	0.20-0.25
Aluminium Aluminium-alloy Magnesium	≤ 180	≤ 600	100-300	0.05-0.10	0.10-0.15	0.10-0.20	0.20-0.30
Plastics	-	-	80-150	0.05-0.10	0.10-0.15	0.10-0.20	0.20-0.30

RECOMMENDED CUTTING CONDITION for Hard Material Miniature Thread Mills

unit : mm

Material	Hardness (HB)	Strength (N/mm²)	Cutting Speed (m/min)	Feed per Tooth (fz)	
				Cutter Diameter ∅ ≤3.0	Cutter Diameter 〉∅8.0
Alloy Steel	295 ~ 415HB	1000 ~ 1400	80-120	0.02-0.04	0.04-0.06
Stainless Steel	280 ~ 415HB	950 ~ 1250	40-80	0.02-0.04	0.04-0.06
Cast Iron	≤ HB300	≤ 1000	50-100	0.03-0.05	0.05-0.07
Chrome-Nickel Alloys Titanium Alloys	≤ HB445	≤ 1500	20-60	0.02-0.03	0.03-0.05
Hardened Material	45~50HRc		25-70	0.03-0.05	0.05-0.07
	51~55HRc		25-60	0.02-0.04	0.04-0.06
	56~62HRc		25-50	0.01-0.03	0.03-0.05

TO CALCULATE SPEED & FEED RATES

Calculate R.P.M of cutter

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

Calculate Feed per Revolution

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

Finally Calculate Feed at Tool Center Line

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

N : R.P.M
V : Recommended Cutting Speed
d : Diameter of Cutter
fz : Recommended Feed per Tooth
Z : Number of Teeth
F_2 : Feed at Center Line of Cutting
F_1 : Feed at Cutting Edge
D : Major Diameter of Component

THREAD MILLS

Solid Carbide Thread Mill without Coolant Hole
Solid Carbide Thread Mill with Coolant Hole
Solid Carbide Thread Mill with Coolant Hole & Chamfer
Solid Carbide Miniature Thread Mill
Solid Carbide Drill and Thread Mill