

INNOVATIONS **CATALOGUE**
Indexable Thread Milling

www.kennametal.com



NEW Indexable Thread Milling Products

The latest Kennametal Indexable Thread Milling tools deliver longer tool life and higher productivity while offering a comprehensive range of thread styles and sizes:

- TM24 Series — Small bore threading applications with one cutting edge per insert.
- TM25 Series — Standard threading applications with two cutting edges per insert.
- TM40 Series — Long-thread threading applications with two cutting edges per insert.
- TM41 Series — Large pitch threading applications with two cutting edges per insert.

Features and Benefits

Cutter Body Offering

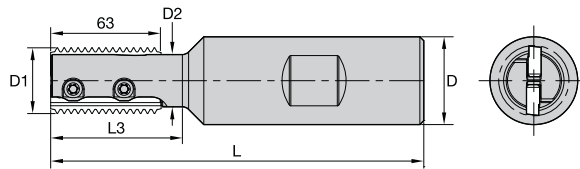
- Number of flutes:
 - TM24: 1–2 per body
 - TM25: 2–8 per body
 - TM40: 3–8 per body
 - TM41: 2–6 per body
- Short and long toolholders for multiple applications.
- Cutters available in parallel Weldon® and conical Weldon holders.
- Effective through coolant for each flute.
- Better chip evacuation.

Insert Offering

- Robust design.
- Inserts for ISO, UN, W, NPT, NPTF, and BSPT Thread Profiles.
- Pitch:
 - TM24: 0,50–2,50mm (32–10TPI)
 - TM25: 1.00–3.00mm (20–8TPI)
 - TM40: 1.00–3.00mm (32–10TPI)
 - TM41: 3.00–6.00mm (8–4TPI)
- Grades for most workpiece materials.
- Easy clamping systems.
- Fast indexing of inserts.



- 14–16mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.



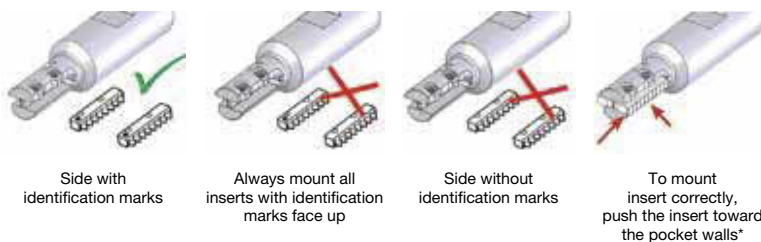
■ Thread Mill • Weldon Shank

order number	catalogue number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver
5593149	TM24D14L26Z1	13,60	20,00	10,70	82,00	26,00	1	TM25INSERTSCREW	DT8IP
5593150	TM24D15L30Z1	15,10	20,00	11,90	85,00	30,00	1	TM25INSERTSCREW	DT8IP
5593151	TM24D16L28Z2	16,00	20,00	12,60	83,00	28,00	2	TM25INSERTSCREW	DT8IP
5593152	TM24D16L36Z1	16,00	20,00	12,60	91,00	36,00	1	TM25INSERTSCREW	DT8IP

NOTE: Torque value for insert screw is 4 Nm.

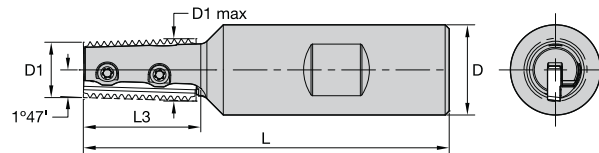
Through coolant is recommended, especially when $D2 > 0.7 \times$ nominal thread diameter.

Thread Application per Toolholder							
min thread Ø							
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	BSP(G)
TM24D14L26Z1	13,60	M16 x 2	M14,5 x 0.5; M15 x 0.75; M15 x 1; M15 x 1.25; M16 x 1.5; M16 x 1.75	–	11/16–12UN; 5/8–14UNS; 5/8–16UN; 5/8–18UNF; 5/8–20UN; 5/8–24UNEF; 5/8–28UN; 5/8–32UN	1 1/16–14; 3/4–12	3/8–19
TM24D15L30Z1	15,10	M18 x 2.5	M16 x 0.5; M17 x 0.75; M17 x 1; M17 x 1.25; M17 x 1.5; M18 x 1.75; M18 x 2	3/4–10	3/4–12UN; 3/4–14UNS; 1 1/16–16UN; 1 1/16–20UN; 1 1/16–24UNEF; 1 1/16–28UN; 1 1/16–32UN	3/4–12	–
TM24D16L28Z2	16,00	M20 x 2.5	M17 x 0.5; M17 x 0.75; M18 x 1; M18 x 1.25; M18 x 1.5; M18 x 1.75; M19 x 2	3/4–10	3/4–12UN; 3/4–14UNS; 3/4–16UN; 3/4–18UNS; 3/4–20UNEF; 1 1/16–24UNEF; 1 1/16–28UN; 1 1/16–32UN	3/4–12	–
TM24D16L36Z1	16,00	M20 x 2.5	M17 x 0.5; M17 x 0.75; M18 x 1; M18 x 1.25; M18 x 1.5; M18 x 1.75; M19 x 2	3/4–10	3/4–12UN; 3/4–14UNS; 3/4–16UN; 3/4–18UNS; 3/4–20UNEF; 1 1/16–24UNEF; 1 1/16–28UN; 1 1/16–32UN	3/4–12	–



* When not using an insert in each pocket, protect the pocket by using a TM24 blank insert.

- 12mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.



■ Thread Mill • Conical Shank

order number	catalogue number	D1	D1 max	D	L	L3	Z	insert screw	Torx Plus driver
5593153	TMT24D14L26Z1	11,50	13,90	20,00	81,00	26,00	1	TM25INSERTSCREW	DT8IP

NOTE: Torque value for insert screw is 4 Nm.

Thread Application per Toolholder				
min thread Ø				
toolholder	D1 max	NPT	NPTF	BSPT
TMT24D14L26Z1	13,90	3/8-18	3/8-18	3/8-19



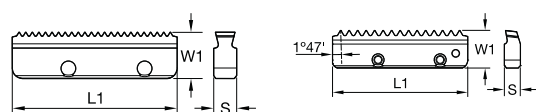
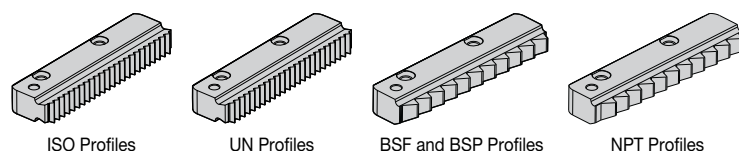
On Conical inserts, the identification mark must face up



Side without identification marks



To mount insert correctly, push the insert toward the pocket walls



● first choice
○ alternate choice

P	●	○	●
M	●	○	●
K	●	○	●
N	●	○	●
S	●	○	●
H	●	○	●

■ ISO Profiles • Internal

catalogue number	thread pitch mm	L1	W1	S	number of teeth	KC610M	KC635M
TM24N050ISO	0,50	24,00	7,02	3,00	49	●	●
TM24N075ISO	0,75	24,00	7,02	3,00	33	●	●
TM24N100ISO	1,00	24,00	7,02	3,00	24	●	●
TM24N125ISO	1,25	24,00	7,02	3,00	20	●	●
TM24N150ISO	1,50	24,00	7,02	3,00	16	●	●
TM24N175ISO	1,75	24,00	7,02	3,00	14	●	●
TM24N200ISO	2,00	24,00	7,02	3,00	12	●	●
TM24N250ISO	2,50	24,00	7,02	3,00	10	●	●

■ UN Profiles • Internal

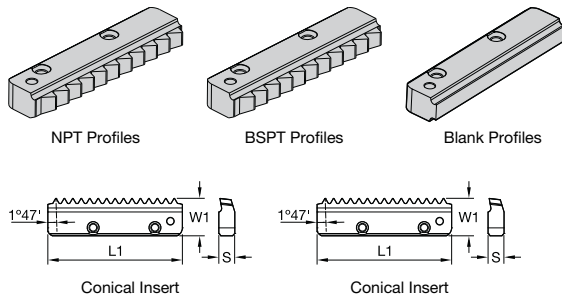
catalogue number	TPI	L1	W1	S	number of teeth	KC610M	KC635M
TM24N10UN	10	24,00	7,02	3,00	9	●	●
TM24N12UN	12	24,00	7,02	3,00	11	●	●
TM24N14UN	14	24,00	7,02	3,00	13	●	●
TM24N16UN	16	24,00	7,02	3,00	15	●	●
TM24N18UN	18	24,00	7,02	3,00	17	●	●
TM24N20UN	20	24,00	7,02	3,00	19	●	●
TM24N24UN	24	24,00	7,02	3,00	23	●	●
TM24N28UN	28	24,00	7,02	3,00	27	●	●
TM24N32UN	32	24,00	7,02	3,00	31	●	●

■ BSF and BSP Profiles • Internal and External

catalogue number	TPI	L1	W1	S	number of teeth	KC610M	KC635M
TM24EN14BSF	14	24,00	7,02	3,00	13	●	●
TM24EN19BSF	19	25,00	7,02	3,00	18	●	●

■ NPT Profiles • Internal and External

catalogue number	TPI	L1	W1	S	number of teeth	KC610M	KC635M
TM24EN18NPT	18	24,00	7,02	3,00	17	●	●



● first choice
○ alternate choice

P	●	○	●
M	●	○	●
K	●	○	●
N	●	○	●
S	○	○	●
H	○	○	○

■ NPTF Profiles • Internal and External

catalogue number	TPI	L1	W1	S	number of teeth	KC610M	KC635M
TM24EN18NPTF	18	24,00	7,02	3,00	17	●	●

■ BSPT Profiles • Internal and External

catalogue number	TPI	L1	W1	S	number of teeth	KC610M	KC635M
TM24EN19BSPT	19	24,00	7,02	3,00	18	●	●

■ Blank/Plug-In Insert • Internal and External

catalogue number	L	W1	S
TM24ENBLANK	24,00	7,02	3,00

■ **TM24 Inserts**

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (mm/tooth)
P1	125	100-210	90-180	0,05-0,20
P2	180	100-170	90-160	0,05-0,20
P3	225	60-130	70-115	0,05-0,20
P4	250	80-150	80-160	0,05-0,20
P5	275	75-130	80-160	0,05-0,15
P6	325	70-110	60-100	0,05-0,10
stainless steel				
M1	180	100-170	120-180	0,05-0,10
M2	250	70-140	100-140	0,05-0,10
M3	330	70-120	100-120	0,05-0,10
cast iron				
K1	180	60-130	100-120	0,02-0,08
K2	220	60-125	80-100	0,05-0,15
K3	260	50-90	60-90	0,05-0,10
non-ferrous				
N1	60-100	100-250	-	0,05-0,25
high-temp alloys				
S1	200	20-45	20-40	0,05-0,10
S2	250	20-30	20-30	0,02-0,05
S3	280	15-20	15-20	0,02-0,05
S4	350	10-15	10-15	0,02-0,05
hardened steel				
H1	55 HRC	20-45	20-45	0,01-0,03

NOTE: Use Kennametal Thread Mill Software: TM-CNC Generator for CNC Programming.

Knowledge and Performance in Concert

Imagine running in perfect, synchronised harmony. Any project, any challenge, optimised and refined using digital intelligence to fundamentally transform your workflow into seamless, elegant, simple production. From art to part — to profit. With NOVO™ you can now have the right tools on your machines, in the right sequence. This enterprise-wide solution ensures that you execute flawlessly to accelerate every job, maximise every shift. And that should be music to your ears.

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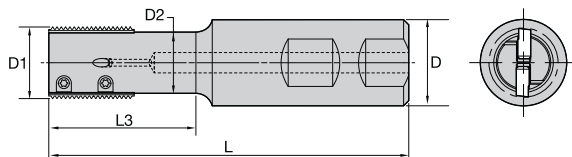
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NOVO™
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- 17–30mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.

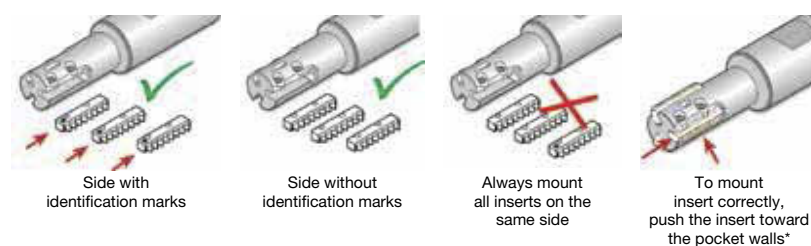


■ Thread Mill • Weldon Shank

order number	catalogue number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver
3030845	TM25D17L26Z2	17,00	25,00	14,00	85,00	26,00	2	TM25INSERTSCREW	DT8IP
3030846	TM25D17L36Z2	17,00	25,00	14,00	95,00	36,00	2	TM25INSERTSCREW	DT8IP
3030848	TM25D20L37Z3	20,50	25,00	16,50	96,00	37,00	3	TM25INSERTSCREW	DT8IP
3030849	TM25D20L44Z3	20,50	25,00	16,50	103,00	44,00	3	TM25INSERTSCREW	DT8IP
3030850	TM25D22L43Z3	22,00	25,00	18,00	102,00	43,00	3	TM25INSERTSCREW	DT8IP
3030852	TM25D22L55Z3	22,00	25,00	18,00	114,00	55,00	3	TM25INSERTSCREW	DT8IP
3031703	TM25D30L55Z5	30,00	25,00	26,00	115,00	55,00	5	TM25INSERTSCREW	DT8IP
3031705	TMC25D30L80Z4	30,00	25,00	26,00	140,00	80,00	4	TM25INSERTSCREW	DT8IP

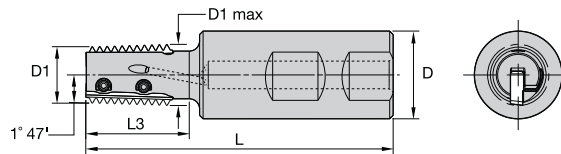
NOTE: Torque value for insert screw is 4 Nm.

Thread Application per Toolholder						
min thread Ø						
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF
TM25D17L26Z2 TM25D17L36Z2	17,00	M20 x 2.5	M19 x 1; M19 x 1.5; M20 x 2	–	7/8-10UNS; 13/16-12UN; 7/8-14UNF; 3/4-16UNF; 3/4-18UNS; 3/4-20UNEF;	7/8-11; 7/8-12; 7/8-14; 7/8-16
TM25D20L37Z3 TM25D20L44Z3	20,50	M24 x 3.0	M22 x 1; M23 x 1.5; M23 x 2; M23.5 x 2.5	1-8	15/16-9UN; 1.0-10UNS; 15/16-12UN 1.0-14UNS; 15/16-16UN; 7/8-18UNS; 7/8-20UNEF;	1-11; 1-12; 1.14; 1.16
TM25D22L43Z3 TM25D22L55Z3	22,00	M27 x 3.0	M24 x 1; M24 x 1.5; M25 x 2; M25 x 2.5	–	11/16-8UN; 1.0-9UN; 1.0-10UNS; 1.0-12UNF 1.0-14UNS; 1.0-16UN; 1.0-18UN; 15/16-20UNEF	1-11; 1-12; 1-14; 1-16
TM25D30L55Z5 TMC25D30L80Z4	30,00	–	M32 x 1; M32 x 1.5; M33 x 2; M33 x 2.5; M34 x 3	–	1 3/8-8UN; 1 3/8-9UN; 1 3/8-10UN; 1 5/16-12UN; 1 3/8-14UNS; 1 5/16-16UN; 1 5/16-18UNEF; 1 5/16-20UN	1 3/8-11; 1 3/8-12; 1 3/8-14; 1 3/8-16



* When not using an insert in each pocket, protect the pocket by using a TM25 blank insert.

- 16–29mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.



■ Thread Mill • Conical Shank

order number	catalogue number	D1	D1 max	D	L	L3	Z	insert screw	Torx Plus driver
3030847	TMT25D17L26Z2	15,45	17,00	25,00	85,00	26,00	2	TM25INSERTSCREW	DT8IP
3030851	TMT25D22L43Z3	20,30	22,00	25,00	102,00	43,00	3	TM25INSERTSCREW	DT8IP
3031704	TMT25D28L43Z4	26,40	28,00	25,00	103,00	43,00	4	TM25INSERTSCREW	DT8IP

NOTE: On conical inserts the identification mark must be face up.

Thread Application per Toolholder				
min thread Ø				
toolholder	D1 mm	NPT	NPTF	BSPT
TMT25D17L26Z2	17,00	1/2–14; 3/4–14; 1–11.5; 2–11.5	1/2–14; 3/4–14; 1–11.5; 2–11.5	1/2–14; 3/4–14; 1–11; 1 1/4–11; 1 1/2–11; 2–11
TMT25D22L43Z3	22,00	3/4–14; 1–11.5; 2–11.5	3/4–14; 1–11.5; 2–11.5	3/4–14; 1–11; 1 1/4–11; 1 1/2–11; 2–11; 2 1/2–11; 3–11; 4–11; 5–11; 6–11
TMT25D28L43Z4	28,00	1–11.5; 2–11.5	1–11.5; 2–11.5	1–11; 1 1/4–11; 1 1/2–11; 2–11; 2 1/2–11; 3–11; 4–11; 5–11; 6–11



On Conical inserts, the identification mark must face up



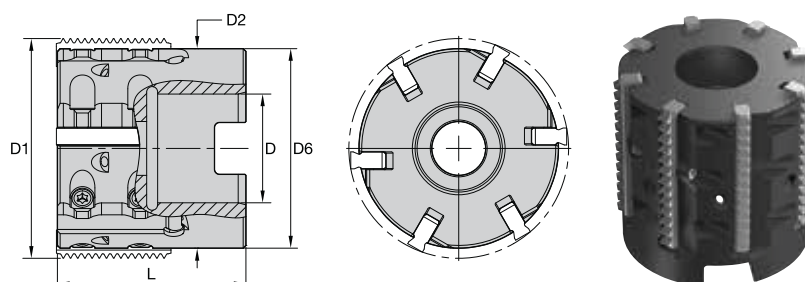
Side without identification marks



To mount insert correctly, push the insert toward the pocket walls*

* When not using an insert in each pocket, protect the pocket by using a TM25 blank insert.

- 36–52mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.

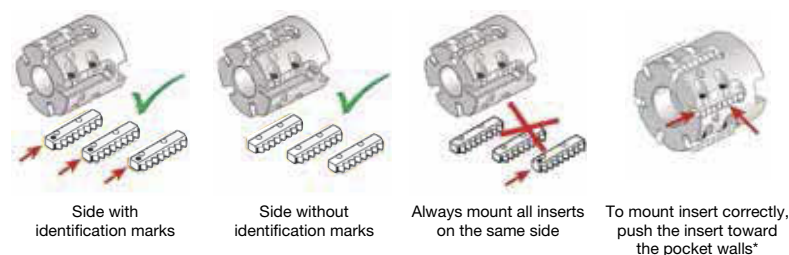


■ Thread Mill • Shell Mill

order number	catalogue number	D1	D	D2	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw
5593142	TMS25D36L34Z5	36,00	16,00	32,00	32,00	33,50	5	TM25INSERTSCREW	DT8IP	MS5001
5593143	TMS25D44L38Z6	44,00	22,00	40,00	40,00	38,00	6	TM25INSERTSCREW	DT8IP	MS5002
5593141	TMS25D52L40Z8	52,00	27,00	48,00	48,00	40,00	3	TM25INSERTSCREW	DT8IP	MS5004

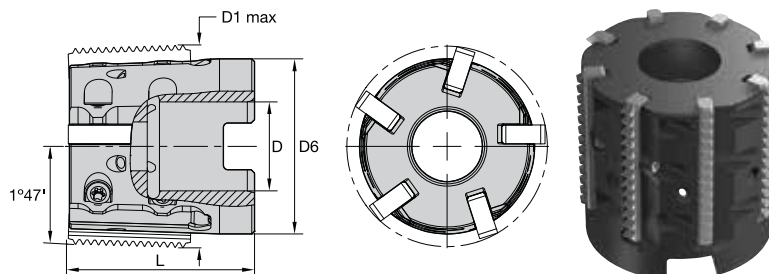
NOTE: Torque value for insert screw is 4 Nm.

Thread Application per Toolholder					
min thread Ø					
toolholder	D1 mm	ISO (fine)	UN/UNF/UNEF/UNS	BSW	BSP(G)
TMS25D36L34Z5	36,00	M38 x 1; M39 x 1.5; M39 x 2; M40 x 3	1 9/16–12UN; 1 5/8–14UNS; 1 9/16–16UN; 1 1/2–18UNEF; 1 1/2–20UN	1 3/4–16; 1 3/4–12	1 1/4–11
TMS25D44L38Z6	44,00	M48 x 1; M48 x 1.5; M48 x 2; M48 x 3	1 7/8–12UN; 1 13/16–16UN; 1 13/16–20UN; 1 15/16–8UN; 1 7/8–10UNS; 1 7/8–14UNS	2–16; 2–12	1 1/2–11
TMS25D52L40Z8	52,00	M55 x 1; M55 x 1.5; M55 x 2; M56 x 3	2 1/4–8UN; 2 1/4–10UN; 2 1/4–12UN; 2 1/4–14UN; 2 1/4–16UN; 2 1/4–18UN; 2 1/4–20UN	2 1/4–16; 2 1/4–12	2–11



* When not using an insert in each pocket, protect the pocket by using a TM25 blank insert.

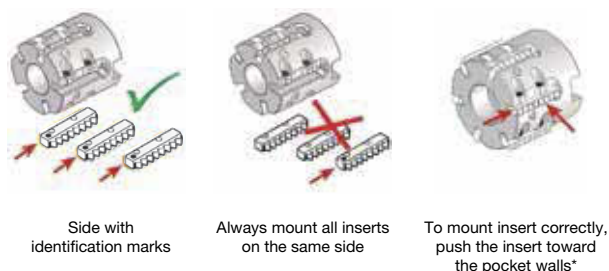
- 35mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.



■ Thread Mill • Conical Shank

order number	catalogue number	D1 max	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw
5593144	TMST25D36L34Z5	36,10	16,00	31,50	33,50	5	 TM25INSERTSCREW	 DT8IP	 MS5001

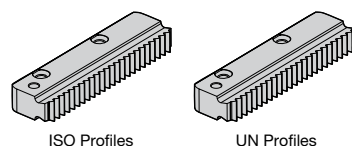
Thread Application per Toolholder				
min thread Ø				
toolholder	D1 mm	NPT	NPTF	BSPT
TMST25D36L34Z5	34,50	1 1/4-11.5; 1 1/2-11.5; 2-11.5; 2 1/2-8 (and up)	1 1/4-11.5; 1 1/2-11.5; 2-11.5; 2 1/2-8; 3-8	1 1/2-6x11



* When not using an insert in each pocket, protect the pocket by using a TM25 blank insert.

NOTE: On conical inserts the identification mark must be face up.

- ISO metric screw thread style.



- first choice
- alternate choice

P	●	○
M	○	●
K	●	○
N	●	○
S	○	●
H	○	●

■ ISO Profiles • Internal

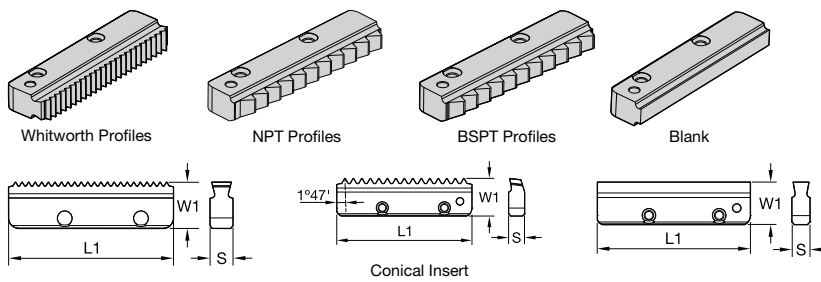
catalogue number	thread pitch mm	L1	W1	S	number of teeth	KC610M	KC635M
TM25N100ISO	1	25,00	7,62	3,56	24	●	●
TM25N150ISO	1,5	25,00	7,62	3,56	16	●	●
TM25N200ISO	2	25,00	7,62	3,56	12	●	●
TM25N250ISO	2,5	25,00	7,62	3,56	10	●	●
TM25N300ISO	3	25,00	7,62	3,56	8	●	●

- Unified Thread Standard Style.

■ UN Profiles • Internal

catalogue number	TPI	L1	W1	S	number of teeth	KC610M	KC635M
TM25N8UN	8	25,00	7,62	3,56	7	●	●
TM25N9UN	9	25,00	7,62	3,56	8	●	●
TM25N10UN	10	25,00	7,62	3,56	9	●	●
TM25N12UN	12	25,00	7,62	3,56	11	●	●
TM25N14UN	14	25,00	7,62	3,56	13	●	●
TM25N16UN	16	25,00	7,62	3,56	15	●	●
TM25N18UN	18	25,00	7,62	3,56	17	●	–
TM25N20UN	20	25,00	7,62	3,56	19	●	●

- British Standard Whitworth Thread Style.



P		●	○
M		○	●
K		●	○
N		●	○
S		○	●
H		○	●

■ Whitworth Profiles • Internal/External

catalogue number	TPI	L1	W1	S	number of teeth	KC610M	KC635M
TM25EN11W	11	25,00	7,62	3,56	10	●	●
TM25EN12W	12	25,00	7,62	3,56	11	●	—
TM25EN14W	14	25,00	7,62	3,56	13	●	●

- National Pipe Thread Taper Style.

■ NPT Profiles • Internal/External

catalogue number	TPI	L1	W1	S	number of teeth	KC610M	KC635M
TM25EN115NPT	11.5	25,00	7,62	3,56	11	●	●
TM25EN14NPT	14	25,00	7,62	3,56	11	●	●

- British Standard Pipe Standard Thread Style.

■ BSPT Profiles • Internal/External

catalogue number	internal TPI	L1	W1	S	number of teeth	KC610M	KC635M
TM25EN11BSPT	11.0	25,00	7,62	3,56	10	●	—
TM25EN14BSPT	14.0	25,00	7,62	3,56	11	●	—

■ Blank Insert Form • Internal/External

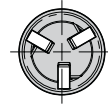
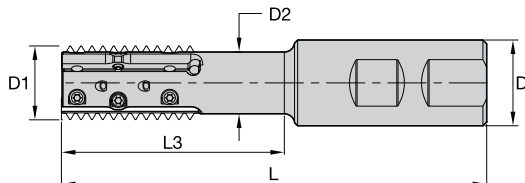
catalogue number	L	W1	S
TM25BLANK	25,00	5,59	3,56

■ TM25 Inserts

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	100–210	90–180	0,05–0,20
P2	180	100–170	90–160	0,05–0,20
P3	225	60–130	70–115	0,05–0,20
P4	250	80–150	80–160	0,05–0,20
P5	275	75–130	80–160	0,05–0,15
P6	325	70–110	60–100	0,05–0,10
stainless steel				
M1	180	100–170	120–180	0,05–0,10
M2	250	70–140	100–140	0,05–0,10
M3	330	70–120	100–120	0,05–0,10
cast iron				
K1	180	60–130	100–120	0,02–0,08
K2	220	60–125	80–100	0,05–0,15
K3	260	50–90	60–90	0,05–0,10
non-ferrous				
N1	60–100	100–250	–	0,05–0,25
high-temp alloys				
S1	200	20–45	20–40	0,05–0,10
S2	250	20–30	20–30	0,02–0,05
S3	280	15–20	15–20	0,02–0,05
S4	350	10–15	10–15	0,02–0,05
hardened steel				
H1	55 HRC	20–45	20–45	0,01–0,03

NOTE: Use Kennametal Thread Mill Software: TM-CNC Generator for CNC Programming.

- 22–30mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.



■ Thread Mill • Weldon Shank

order number	catalogue number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver	screw
5593184	TM40D22L43Z3	22,00	25,00	18,00	102,00	43,00	3	TM25INSERTSCREW	DT8IP	MS9000
5593185	TM40D22L65Z3	22,00	25,00	18,00	124,00	65,00	3	TM25INSERTSCREW	DT8IP	MS9000
5593186	TM40D30L55Z4	30,00	32,00	26,00	117,00	55,00	4	TM25INSERTSCREW	DT8IP	MS9000
5593187	TM40D30L80Z3	30,00	32,00	26,00	142,00	80,00	3	TM25INSERTSCREW	DT8IP	MS9000

NOTE: Torque value for insert screw is 4 Nm.

Thread Application per Toolholder						
min thread Ø						
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UN/UNF/UNEF/UNS	BSF	BSP(G)
TM40D22L43Z3	22,00	M27 x 3	M24 x 1; M24 x 1.5; M25 x 2; M25 x 2.5	1 11/16–8UN; 1–9UN; 1–10UNS; 1–12UNF; 1–14UNS; 1–16UN; 1–18UN; 15/16–20UNEF	1–11; 1–12; 1–14; 1–16	3/4–14
TM40D22L65Z3	22,00	M27 x 3	M24 x 1; M24 x 1.5; M25 x 2; M25 x 2.5	1 11/16–8UN; 1–9UN; 1–10UNS; 1–12UNF; 1–14UNS; 1–16UN; 1–18UN; 15/16–20UNEF	1–11; 1–12; 1–14; 1–16	3/4–14
TM40D30L55Z4	30,00	–	M32 x 1; M32 x 1.5; M33 x 2; M33 x 2.5; M34 x 3	1 3/8–8UN; 1 3/8–9UN; 1 3/8–10UN; 15/16–12UN; 1 3/8–14UNS; 15/16–16UN; 15/16–18UNEF; 15/16–20UN	1 3/8–11; 1 3/8–12; 1 3/8–14; 1 3/8–16	1–11
TM40D30L80Z3	30,00	–	M32 x 1; M32 x 1.5; M33 x 2; M33 x 2.5; M34 x 3	1 3/8–8UN; 1 3/8–9UN; 1 3/8–10UN; 15/16–12UN; 1 3/8–14UNS; 15/16–16UN; 15/16–18UNEF; 15/16–20UN	1 3/8–11; 1 3/8–12; 1 3/8–14; 1 3/8–16	1–11



Side with identification marks

Side without identification marks

Always mount all inserts on the same side*

* When not using an insert in each pocket, protect the pocket by using a TM40 blank insert.

2 Step Clamping System

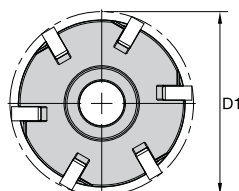
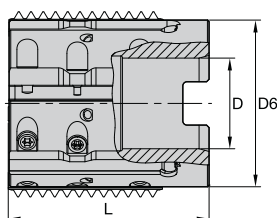
Step 1. Location Screw



Step 2. Clamping Screw (2)



- 44–52mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.

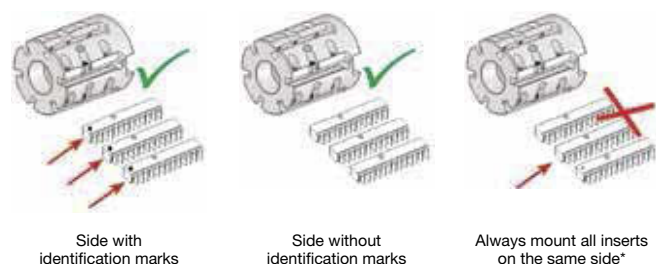


■ Thread Mill • Weldon® Shell Mill Shank

order number	catalogue number	D1	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw	screw
5593188	TMS40D44L48Z6	44,00	22,00	40,00	48,00	6	TM25INSERTSCREW	DT8IP	MS5003	MS9000
5593189	TMS40D52L50Z8	52,00	27,00	48,00	50,00	8	TM25INSERTSCREW	DT8IP	MS5005	MS9000

NOTE: Torque value for insert screw is 4 Nm.

Thread Application per Toolholder					
min thread Ø					
toolholder	D1 mm	ISO (fine)	UN/UNF/UNEF/UNS	BSW	BSP(G)
TMS40D44L48Z6	44,00	M48 x 1; M48 x 1.5; M48 x 2; M48 x 3	1 7/8–12UN; 1 13/16–16UN; 1 13/16–20UN; 1 15/16–8UN; 1 7/8–10UNS; 1 7/8–14UNS	2–16; 2–12	1 1/2–11
TMS40D52L50Z8	52,00	M55 x 1; M55 x 1.5; M55 x 2; M56 x 3	1 11/16–8UN; 1–9UN; 1–10UNS; 1–12UNF; 1–14UNS; 1–16UN; 1–18UN; 15/16–20UNEF	2 1/4–16; 2 1/4–12	2–11



* When not using an insert in each pocket, protect the pocket by using a TM40 blank insert.

2 Step Clamping System

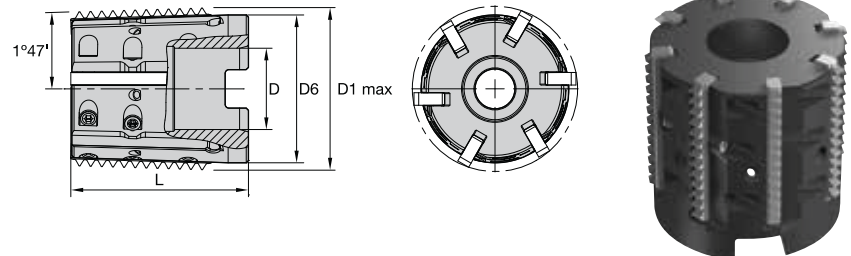
Step 1. Location Screw



Step 2. Clamping Screw (2)



- 45mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.

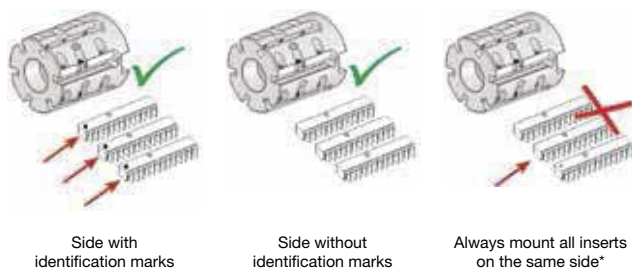


■ Thread Mill • Shell Mill Conical

order number	catalogue number	D1 max	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw	screw
5593190	TMST40D45L48Z6	45,00	22,00	40,00	48,00	6	TM25INSERTSCREW	DT8IP	MS5003	MS9000

NOTE: Torque value for insert screw is 4 Nm.

Thread Application per Toolholder min thread Ø				
toolholder	D1 max	NPT	NPTF	BSPT
TMST40D45L48Z6	45,00	2-11.5; 2 1/2-8 (and up)	2-11.5; 2 1/2-8; 3-8	2-6 x 11



* When not using an insert in each pocket, protect the pocket by using a TM40 blank insert.

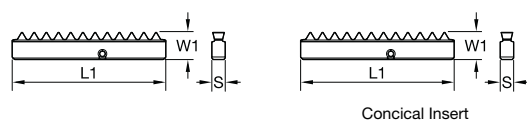
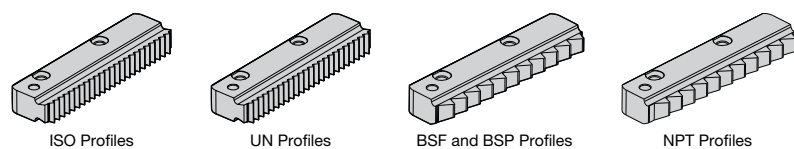
2 Step Clamping System

Step 1. Location Screw



Step 2. Clamping Screw (2)





● first choice
○ alternate choice

P	●	○	○
M	●	○	○
K	●	○	○
N	●	○	○
S	○	○	○
H	○	○	○

■ ISO Profiles • Internal

catalogue number	thread pitch mm	L1	W1	S	KC610M	KC635M
TM40N100ISO	1,00	40,00	7,05	3,49	●	●
TM40N150ISO	1,50	40,00	7,05	3,49	●	●
TM40N200ISO	2,00	40,00	7,05	3,49	●	●
TM40N250ISO	2,50	40,00	7,05	3,49	●	●
TM40N300ISO	3,00	40,00	7,05	3,49	●	●

■ UN Profiles • Internal

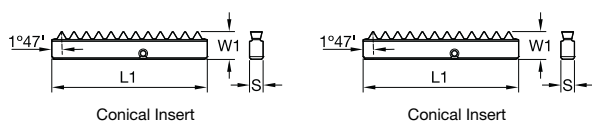
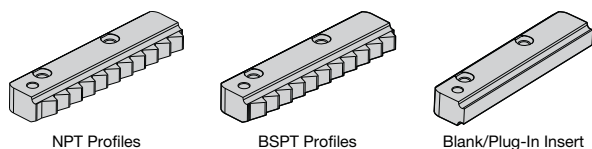
catalogue number	TPI	L1	W1	S	KC610M	KC635M
TM40N8UN	8	40,00	7,05	3,50	●	●
TM40N9UN	9	40,00	7,05	3,49	●	●
TM40N10UN	10	40,00	7,05	3,49	●	●
TM40N12UN	12	40,00	7,05	3,49	●	●
TM40N14UN	14	40,00	7,05	3,49	●	●
TM40N16UN	16	40,00	7,05	3,49	●	●
TM40N18UN	18	40,00	7,05	3,49	●	●
TM40N20UN	20	40,00	7,05	3,49	●	●

■ BSF and BSP Profiles • Internal and External

catalogue number	TPI	L1	W1	S	KC610M	KC635M
TM40EN11BSF	11	40,00	7,05	3,50	●	●
TM40EN12BSF	12	40,00	7,05	3,50	●	●
TM40EN14BSF	14	40,00	7,05	3,50	●	●
TM40EN16BSF	16	40,00	7,05	3,50	●	●

■ NPT Profiles • Internal and External

catalogue number	TPI	L1	W1	S	KC610M	KC635M
TM40EN008NPT	8.0	40,00	7,30	3,50	●	●
TM40EN115NPT	11.5	40,00	7,30	3,50	●	●



● first choice
○ alternate choice

P	●	○	●
M	●	○	●
K	●	○	●
N	●	○	●
S	○	○	●
H	○	○	○

■ NPTF Profiles • Internal and External

catalogue number	TPI	L1	W1	S	KC610M	KC635M
TM40EN008NPTF	8.0	40,00	7,30	3,50	●	●
TM40EN115NPTF	11.5	40,00	7,30	3,50	●	●

■ BSPT Profiles • Internal and External

catalogue number	TPI	L1	W1	S	KC610M	KC635M
TM40EN011BSPT	11	40,00	7,30	3,50	●	●

■ Blank/Plug-In Insert • Internal and External

catalogue number	L	W1	S
TM40ENBLANK	40,00	7,05	3,49

■ **TM40 Inserts**

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (mm/tooth)
P1	125	100-210	90-180	0,05-0,20
P2	180	100-170	90-160	0,05-0,20
P3	225	60-130	70-115	0,05-0,20
P4	250	80-150	80-160	0,05-0,20
P5	275	75-130	80-160	0,05-0,15
P6	325	70-110	60-100	0,05-0,10
stainless steel				
M1	180	100-170	120-180	0,05-0,10
M2	250	70-140	100-140	0,05-0,10
M3	330	70-120	100-120	0,05-0,10
cast iron				
K1	180	60-130	100-120	0,02-0,08
K2	220	60-125	80-100	0,05-0,15
K3	260	50-90	60-90	0,05-0,10
non-ferrous				
N1	60-100	100-250	–	0,05-0,25
high-temp alloys				
S1	200	20-45	20-40	0,05-0,10
S2	250	20-30	20-30	0,02-0,05
S3	280	15-20	15-20	0,02-0,05
S4	350	10-15	10-15	0,02-0,05
hardened steel				
H1	55 HRC	20-45	20-45	0,01-0,03

NOTE: Use Kennametal Thread Mill Software: TM-CNC Generator for CNC Programming.



Carbide Recycling

Help preserve and protect our planet!

It's easy for your company to be environmentally conscious with the Kennametal Carbide Recycling Program.

By sending us your used carbide tools, you help preserve and protect the environment and ensure that these products are recycled responsibly. Kennametal accepts any coated or non-coated carbide items, including inserts, drills, reamers, and taps.

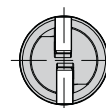
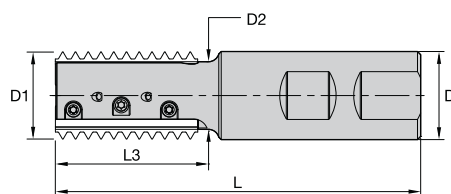
By using the Kennametal Carbide Recycling Program, you will receive:

- A partner who cares about a sustainable environment.
- Easy-to-use web portal to value your used carbide.
- Access to our popular Green Box[™] options for carbide collection.
- Systematic and efficient disposal of carbide materials.
- Improved profitability.



Program is not currently available in all geographical areas.
For more information, please visit www.kennametal.com/carbiderecycling.

- 21–58mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.



■ Thread Mill • Weldon Shank

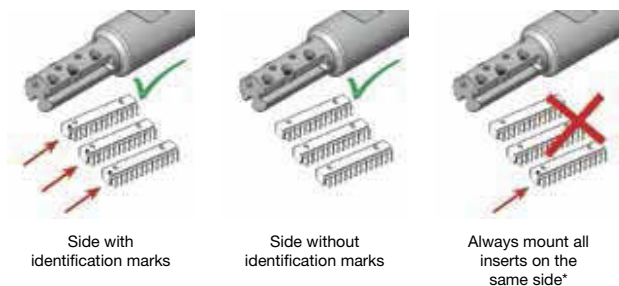
order number	catalogue number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver	screw
5593159	TM41D21L45Z1	21,20	25,00	16,00	105,00	45,00	1	TM25INSERTSCREW	DT8IP	MS9000
5593170	TM41D25L43Z2	24,50	25,00	19,20	104,00	43,00	2	TM25INSERTSCREW	DT8IP	MS9000
5593171	TM41D30L43Z3	30,00	32,00	24,20	106,50	43,00	3	TM25INSERTSCREW	DT8IP	MS9000
5593172	TM41D30L65Z3	30,00	32,00	24,20	128,50	65,00	3	TM25INSERTSCREW	DT8IP	MS9000
5593173	TM41D36L43Z5	36,00	32,00	28,30	106,00	43,00	5	TM25INSERTSCREW	DT8IP	MS9000
5593174	TM41D36L65Z4	36,00	32,00	28,30	128,00	65,00	4	TM25INSERTSCREW	DT8IP	MS9000

NOTE: Torque value for insert screw is 4 Nm.

(continued)

(Thread Mill • Weldon Shank • continued)

Thread Application per Toolholder							
min thread Ø							
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	BSP(G)
TM41D21L45Z1	21,20	M16 x 2	M14.5x0.5; M15x0.75; M15x1; M15x1.25; M16x1.5; M16x1.75	–	11/16–12UN; 5/8–14UNS; 5/8–16UN; 5/8–18UNF; 5/8–20UN; 5/8–24UNEF; 5/8–28UN; 5/8–32UN	11/16–14; 3/4–12	3/8–19
TM41D25L43Z2	24,50	M16 x 2	M14.5 x 0.5; M15 x 0.75; M15 x 1; M15 x 1.25; M16 x 1.5; M16 x 1.75	–	11/16–12UN; 5/8–14UNS; 5/8–16UN; 5/8–18UNF; 5/8–20UN; 5/8–24UNEF; 5/8–28UN; 5/8–32UN	11/16–14; 3/4–12	3/8–19
TM41D30L43Z3	30,00	M18 x 2.5	M16 x 0.5; M17 x 0.75; M17 x 1; M17 x 1.25; M17 x 1.5; M18 x 1.75; M18 x 2	3/4–10	3/4–12UN; 3/4–14UNS; 11/16–16UN; 11/16–20UN; 11/16–24UNEF; 11/16–28UN; 11/16–32UN	3/4–12	–
TM41D30L65Z3	30,00	M18 x 2.5	M16 x 0.5; M17 x 0.75; M17 x 1; M17 x 1.25; M17 x 1.5; M18 x 1.75; M18 x 2	3/4–10	3/4–12UN; 3/4–14UNS; 11/16–16UN; 11/16–20UN; 11/16–24UNEF; 11/16–28UN; 11/16–32UN	3/4–12	–
TM41D36L43Z5	36,00	M20 x 2.5	M17 x 0.5; M17 x 0.75; M18 x 1; M18 x 1.25; M18 x 1.5; M18 x 1.75; M19 x 2	3/4–10	3/4–12UN; 3/4–14UNS; 3/4–16UN; 3/4–18UNS; 3/4–20UNEF; 11/16–24UNEF; 11/16–28UN; 11/16–32UN	3/4–12	–
TM41D36L65Z4	36,00	M20 x 2.5	M17 x 0.5; M17 x 0.75; M18 x 1; M18 x 1.25; M18 x 1.5; M18 x 1.75; M19 x 2	3/4–10	3/4–12UN; 3/4–14UNS; 3/4–16UN; 3/4–18UNS; 3/4–20UNEF; 11/16–24UNEF; 11/16–28UN; 11/16–32UN	3/4–12	–



* When not using an insert in each pocket, protect the pocket by using a TM41 blank insert.

2 Step Clamping System

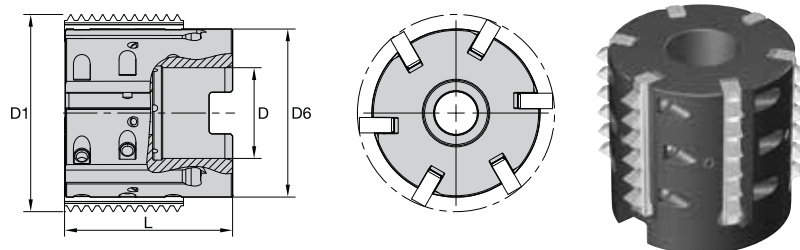
Step 1. Location Screw (2)



Step 2. Clamping Screw



- 48–58mm cutting diameter range.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.

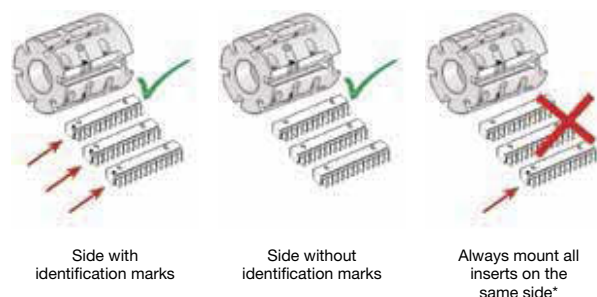


■ Thread Mill • Shell Mill

order number	catalogue number	D1	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw	screw
5593175	TMS41D48L50Z5	48,00	22,00	40,00	50,00	5	TM25INSERTSCREW	DT8IP	MS5003	MS9000
5593176	TMS41D58L50Z6	58,00	27,00	50,00	50,00	6	TM25INSERTSCREW	DT8IP	MS5005	MS9000

NOTE: Torque value for insert screw is 4 Nm.

Thread Application per Toolholder								
min thread Ø								
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	NPT	NPTF
TMS41D48L50Z5	48,00	M56 x 5.5; M64 x 6	M55 x 4; M70 x 6;	2 1/4–4.5; 2 1/2–4	2 1/8–8UN; 2 1/8–6UN	2 1/4–8; 2 1/4–6	2 1/2–8	2 1/2–8
TMS41D58L50Z6	58,00	M68 x 6	M64 x 4; M70 x 6	2 3/4–4	2 1/8–8UN; 2 1/8–6UN	2 1/4–8; 2 1/4–6	2 1/2–8	2 1/2–8



* When not using an insert in each pocket, protect the pocket by using a TM41 blank insert.

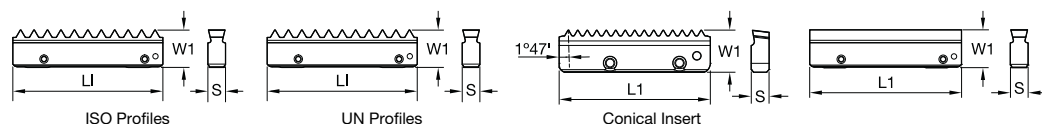
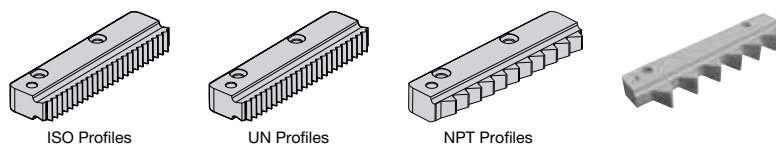
2 Step Clamping System

Step 1. Location Screw (2)



Step 2. Clamping Screw





● first choice
○ alternate choice

P	●	○	●
M	●	○	●
K	●	○	●
N	●	○	●
S	●	○	●
H	●	○	●

■ ISO Profiles w• Internal

catalogue number	thread pitch mm	L1	W1	S	KC610M	KC635M
TM41N300ISO	3,00	41,00	9,95	4,76	●	●
TM41N350ISO	3,50	41,00	9,95	4,76	●	●
TM41N400ISO	4,00	41,00	9,95	4,76	●	●
TM41N450ISO	4,50	41,00	9,95	4,76	●	●
TM41N500ISO	5,00	41,00	9,95	4,76	●	●
TM41N550ISO	5,50	41,00	9,95	4,76	●	●
TM41N600ISO	6,00	41,00	9,95	4,76	●	●

■ UN Profiles • Internal

catalogue number	TPI	L1	W1	S	KC610M	KC635M
TM41N4UN	4	41,00	9,95	4,76	●	●
TM41N45UN	4,5	41,00	9,95	4,76	●	●
TM41N5UN	5	41,00	9,95	4,76	●	●
TM41N6UN	6	41,00	9,95	4,76	●	●
TM41N7UN	7	41,00	9,95	4,76	●	●
TM41N8UN	8	41,00	9,95	4,76	●	●

■ NPT Profiles • Internal and External

catalogue number	TPI	L1	W1	S	KC610M	KC635M
TM41EN8NPT	8	41,00	9,95	4,76	●	●

■ Blank/Plug-In Insert • Internal and External

catalogue number	L	W1	S
TM41ENBLANK	41,00	9,95	4,76

■ **TM41 Inserts**

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (mm/tooth)
P1	125	100-210	90-180	0,05-0,20
P2	180	100-170	90-160	0,05-0,20
P3	225	60-130	70-115	0,05-0,20
P4	250	80-150	80-160	0,05-0,20
P5	275	75-130	80-160	0,05-0,15
P6	325	70-110	60-100	0,05-0,10
stainless steel				
M1	180	100-170	120-180	0,05-0,10
M2	250	70-140	100-140	0,05-0,10
M3	330	70-120	100-120	0,05-0,10
cast iron				
K1	180	60-130	100-120	0,02-0,08
K2	220	60-125	80-100	0,05-0,15
K3	260	50-90	60-90	0,05-0,10
non-ferrous				
N1	60-100	100-250	-	0,05-0,25
high-temp alloys				
S1	200	20-45	20-40	0,05-0,10
S2	250	20-30	20-30	0,02-0,05
S3	280	15-20	15-20	0,02-0,05
S4	350	10-15	10-15	0,02-0,05
hardened steel				
H1	55 HRC	20-45	20-45	0,01-0,03

NOTE: Use Kennametal Thread Mill Software: TM-CNC Generator for CNC Programming.

INTRODUCING

New Kennametal Thread Milling Software for Tool Selection and CNC Programming



Now Available

Kennametal offers multilingual software for tool selection and CNC programming of Indexable Thread Milling tools. Using the Kennametal Thread Milling system is easy, simple, and accessible on the web as well as standalone software. Using the software is easy. The user needs to enter the basic thread machining parameters and then follow the computer instructions, which will guide the user to the correct choice of tools for the job on hand. The final step is a recommended CNC programme of helical interpolation threading operation.

Easy to Download

Go to the links provided below. Then follow the directions on downloading. It's simple, fast, and free.

Easy to Use

The simple navigation makes it easy to search via keywords to find specific tooling solutions and product groups. The user-driven navigation map offers drop-down menus with supplemental information, including expandable, and customisable, charts and graphs.

Web version is available as a free download from <http://kthreadmilling.kennametal.com/kthreadmillingweb>

Standalone desktop version is available as a free download from <http://kthreadmilling.kennametal.com/co/kthreadmilling/>

KTMD U Series

Primary Application

With a wide range of insert thread sizes and grades for most materials, KTMD U is a multiflute, single-point, high-productivity, and economical solution for milling threads in deep-hole applications.

Features and Benefits

Smooth Cutting Action

- Reduced load on the cutting edges due to single-point insert.
- Low cutting forces enable fast machining.
- Suitable for hard material applications.
- Wide range of applications, with partial profile insert (60°/55°).
- Pitch range 1.5–8mm (16–3 TPI).

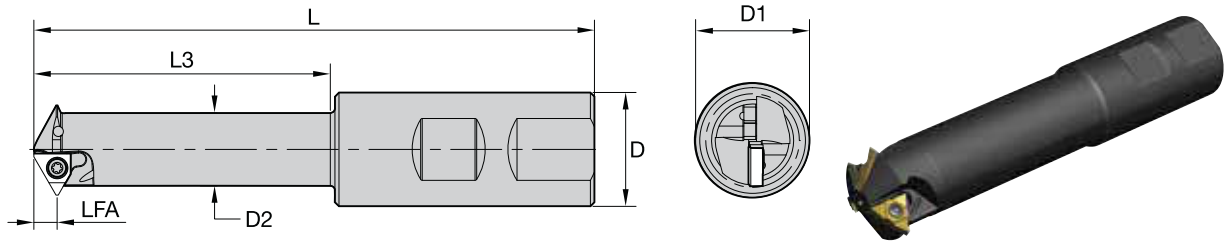
Cost-Effective Solution

- Up to three cutting edges per insert.
- Very high feed per tooth.
- Fast machining.
- Multiflute — up to 7 cutting edges (inserts).

Comprehensive cutter bodies offering:

- Weldon®, steel, carbide, and shell mill cuttings available.
- Long overhang capability.
- Through coolant capability.
- Diameter range 13–144mm (200mm with shell mills).
- For improved chip evacuation and cooling.

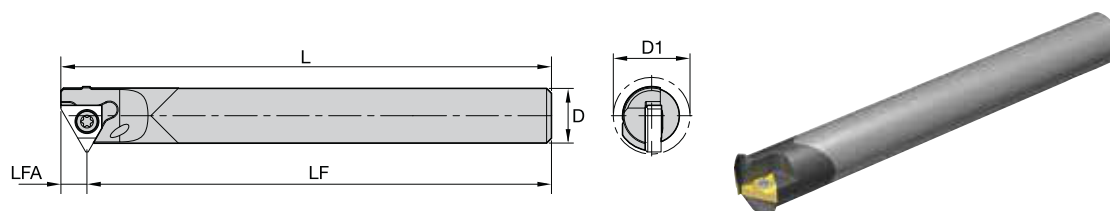




■ Thread Mill • U Style • Weldon® Shank • 1/4" iC

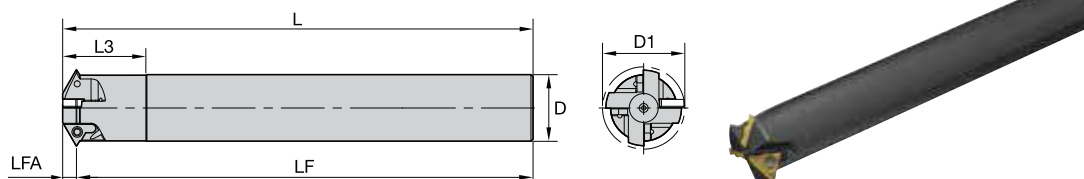
order number	catalogue number	D1	D	D2	L	L3	LFA	Z	max RPM	insert screw	Torx Plus driver
5593078	KTMDUWD15L040Z1	14,75	16,00	11,00	95,00	45,40	5,40	1	7970	KTMDUSCREW2	DT2IP
5593079	KTMDUWD20L060Z2	20,65	25,00	16,00	123,00	65,40	5,40	2	6740	KTMDUSCREW2	DT2IP
5593100	KTMDUWD23L070Z2	23,00	25,00	17,70	135,00	75,40	5,40	2	6380	KTMDUSCREW2	DT2IP
5593101	KTMDUWD26L080Z3	26,00	25,00	20,40	147,00	85,40	5,40	3	6000	KTMDUSCREW2	DT2IP
5593103	KTMDUWD31L095Z4	31,00	32,00	25,40	164,00	100,40	5,40	4	5500	KTMDUSCREW2	DT2IP

Thread Application per Toolholder								
min thread Ø								
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSP (G)	partial 55°	Trapez
KTMDUWD15L040Z1	14,75	M18 x 2.5; M24 x 3.0	M16 x 0.5; M16 x 0.75; M16 x 1.0; M17 x 1.25; M17 x 1.5; M17 x 2.0	3/4-10	5/8-32UN; 5/8-28UN; 5/8-27UNS; 11/16-24UN; 11/16-20UN; 11/16-16UN; 3/4-14UNS; 3/4-12UN	3/8-19; 1/2-14; 1-11	11/16-14; 3/4-12; 7/8-11; 3/4-10; 1-8; 1 1/8-7	TR22 x 3; TR24 x 3
KTMDUWD20L060Z2	20,65	M24 x 3.0; M30 x 3.5	M22 x 0.5; M22 x 0.75; M22 x 1.0; M23 x 1.25; M23 x 1.5; M23 x 2.0	1-8UNC; 1 1/8 7 UNC; 1 3/8 6UNC	7/8-32UN; 7/8-28UN; 7/8-27UNS; 7/8-24UNS; 7/8-20UNEF; 1-18UNS; 15/16-16UN; 1-14UNS; 15/16-12UN; 1/10UNS	3/4-14; 1-11	1-26; 1-20; 1-16; 1-12; 1-10; 1 1/8-9; 1-8; 1 1/8-7	(TR26-TR60 x 3)
KTMDUWD23L070Z2	23,00	M27 x 3.0; M30 x 3.5; M36 x 4.0	M24 x 0.5; M24 x 0.75; M25 x 1.0; M25 x 1.25; M26 x 1.5; M26 x 2.0; M27 x 2.5	1 1/8-7	1-32UN; 1-28UN; 1-27UNS; 1-24UNS; 1-20UNEF; 1-18UNS; 1-16UN; 1-14UNS; 1-12UNF; 1 1/8-10UN; 1 1/8-8UN	3/4-14; 1-11	1-26; 1-20; 1-16; 11/16-12; 1 1/8-9; 1 1/8-7	-
KTMDUWD26L080Z3	26,00	M30 x 3.5; M36 x 4.0	M27 x 0.5; M27 x 0.75; M28 x 1.0; M28 x 1.25; M28 x 1.5; M29 x 2.0; M30 x 2.5; M30 x 3.0	1 1/4-7; 1 3/8-6	1 1/8-28UN; 1 1/8-24UNS; 1 1/8-20UN; 1 1/8-18UNEF; 1 1/8-16UN; 1 1/8-14UNS; 1 1/8-12UNF; 1 1/4-10UNS; 13/16-8UN	7/8-14; 1-11	1 1/8-26; 1 1/8-20; 1 3/8-16; 1 3/8-12; 1 3/8-8; 1 1/4-7	-
KTMDUWD31L095Z4	31,00	M36 x 4.0	M32 x 0.5; M32 x 0.75; M33 x 1.0; M33 x 1.25; M33 x 1.5; M34 x 2.0; M34 x 2.5; M35 x 3.0; M36 x 3.5	1 1/2-6	15/16-28UN; 1 3/8-24UNS; 15/16-20UN; 15/16-18UNEF; 15/16-16UN; 1 3/8-14UNS; 1 3/8-12UNF; 1 3/8-10UNS; 1 3/8-8UN	1 1/8-11	1 3/8-26; 1 3/8-20; 1 3/8-16; 1 3/8-12; 1 7/16-8	-


Thread Mill • U Style • Carbide Cylindrical Shank • 1/4" iC

order number	catalogue number	D1	D	L	LF	LFA	Z	max RPM
5593122	KTMDUCD15L060Z1	14,75	10,70	120,00	114,60	5,40	1	7970
5593123	KTMDUCD17L065Z2	17,20	14,00	132,00	128,60	3,40	2	7380
5593124	KTMDUCD20L080Z2	20,65	16,00	135,00	129,60	5,40	2	6740

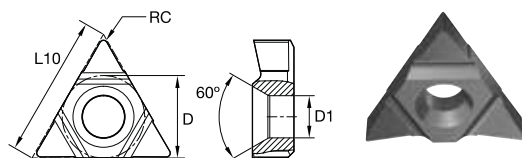
Thread Application per Toolholder								
min thread Ø								
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSP(G)	partial 55°	Trapez
KTMDUCD15L060Z1	14,75	M18 x 2.5; M24 x 3.0; M30 x 3.5; M36 x 4.0	M16 x 0.5; M16 x 0.75; M16 x 1.0; M17 x 1.25; M17 x 1.5; M17 x 2.0	3/4-10; 7/8-9; 1 1/8-7; 1 3/8-6	5/8-32UN; 5/8-28UN; 5/8-28UNS; 11/16-24UNEF; 11/16-20 UN; 11/16-16UN; 3/4-UNS; 11/16-12UN	1/2-14; 1-11	11/16-26; 11-16-20; 11/16-16; 11/16-14; 3/4-12; 7/8-11; 3/4-10; 7/8-9; 1-8; 1 1/8-7	TR22 x 3; TR24 x 3; TR20 x 4; TR22 x 5; TR24 x 5; TR26 x 5; TR28 x 5
KTMDUCD17L065Z2	17,20	M20 x 2.5; M22 x 2.5	M21 x 2.0	7/8-9	7/8-10UNS; 13/16-12UN	-	-	-
KTMDUCD20L080Z2	20,65	M24 x 3.0; M30 x 3.5; M36 x 4.0	M22 x 0.5; M22 x 0.75; M22 x 1.0; M23 x 1.25; M23 x 1.5; M23 x 2.0	1-8; 1 1/8-7; 1 3/8-6	7/8-32UN; 7/8-28UN; 7/8-27 UNSL; 7/8-24UNS; 7/8-20UNEF; 1-18-UNS; 15/16-16UN; 1-14UNS; 12UN; 15/16-12UN; 1-10UNS	3/4-14; 1-11	1-26; 1-20; 1-16; 1-12; 1-10; 1 1/8-9; 1-8; 1 1/8-7	(TR26-TR60) x 3; TR28 x 4; (TR65-TR110) x 4; TR28 x 5



■ Thread Mill • U Style • Steel Cylindrical Shank • 1/4" iC

order number	catalogue number	D1	D	L	L3	LF	LFA	Z	max RPM	insert screw	Torx Plus driver
5593128	KTMDUED23L086Z2	23,30	18,00	166,00	91,40	160,60	5,40	2	6340	KTMDUSCREW2	DT2IP
5593129	KTMDUED26L105Z3	26,00	20,00	186,00	110,40	180,60	5,40	3	6000	KTMDUSCREW2	DT2IP
5593131	KTMDUED31L115Z4	31,00	25,00	196,00	120,40	190,60	5,40	4	5500	KTMDUSCREW2	DT2IP

Thread Application per Toolholder							
min thread Ø							
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP(G)	partial 55°
KTMDUED23L086Z2	23,30	M27 x 3.0; M30 x 3.5; M36 x 4.0	M24 x 0.5; M25 x 0.75; M25 x 1.0; M25 x 1.25; M26 x 1.5; M26 x 2.0; M27 x 2.5	1 1/8-7	1-32UN; 1-28UN; 1-27UN; 1-24UNS; 1-20UNEF; 1-18UNS; 1-16UN; 1-14UNS; 11/16-12UN; 1 1/8-10UNS; 1 1/8-8UN	3/4-14; 1-11	1-26; 1-20; 1 1/8-16; 1 1/8-12; 1 1/8-9; 1 1/8-7
KTMDUED26L105Z3	26,00	M30 x 3.5; M36 x 4.0	M27 x 0.5; M27 x 0.75; M28 x 1.0; M28 x 1.25; M28 x 1.5; M29 x 2.0; M30 x 2.5; M30 x 3.0	1 1/4-7; 1 3/8-6	1 1/8-28UN; 1 1/8-24UNS; 1 1/8-20UN; 1 1/8-18UNEF; 1 1/8-16UN; 1 1/8-14UNS; 1 1/8-12UNF; 1 3/8-10UNS; 1 7/16-8UN	7/8-14; 1-11	1 1/8-26; 1 1/8-20; 13/16-16; 13/16-12; 13/16-8; 1 1/4-7
KTMDUED31L115Z4	31,00	M36 x 4.0	M32 x 0.5; M32 x 0.75; M33 x 1.0; M33 x 1.25; M33 x 1.5; M34 x 2.0; M34 x 2.5; M35 x 3.0; M36 x 3.5	1 1/2-6	15/16-28UN; 1 1/2-24UNS; 1 1/2-20UN; 1 1/2-18UNEF; 1 3/8-16UN; 1 3/8-14UNS; 1 3/8-12UNF; 1 3/8-10UNS; 1 7/16-8UN	1 1/8-11	15/16-26; 15/16-20; 1 3/8-16; 1 3/8-12; 1 7/16-8



P		•	○
M		○	•
K		•	•
N		•	•
S		•	•
H		○	•

KTMD • 1/4" iC • Partial Profile 60°

catalogue number	TP min	TP max	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU11L0515N60	0.5	1.5	48	16	3,25	6,35	11,00	0,05	•	•
KTMDU11L1520N60	1.5	2.0	16	12	3,25	6,35	11,00	0,06	•	•
KTMDU11L2025N60	2.0	2.5	9	12	2,61	6,35	11,00	0,11	•	•
KTMDU11L2525N60	2.5	2.5	10	10	2,09	6,35	11,00	0,11	•	•
KTMDU11L2540N60	2.5	4.0	10	6	3,25	6,35	11,00	0,14	•	•

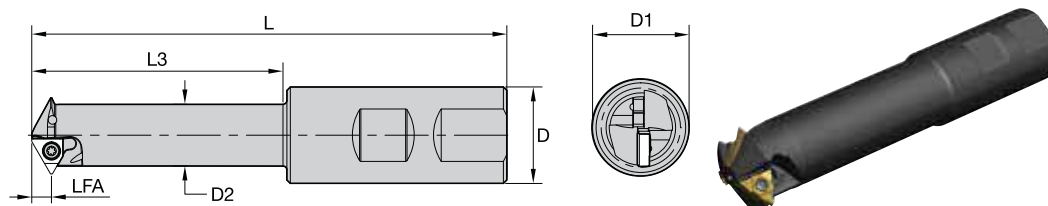
KTMD • 1/4" iC • Partial Profile 55°

catalogue number	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU11L1107N55	11	7	3,25	6,35	11,00	0,24	•	•
KTMDU11L1612N55	16	12	3,25	6,35	11,00	0,08	•	•
KTMDU11L4816N55	48	16	3,25	6,35	11,00	0,11	•	•

■ KTMD • 1/4" iC

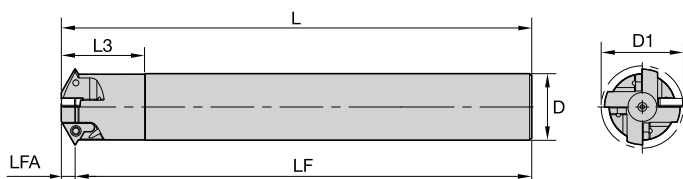
materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (mm/tooth)
P1	125	100–210	90–180	0,05–0,20
P2	180	100–170	90–160	0,05–0,20
P3	225	60–130	70–115	0,05–0,20
P4	250	80–150	80–160	0,05–0,20
P5	275	75–130	80–160	0,05–0,15
P6	325	70–110	60–100	0,05–0,10
stainless steel				
M1	180	100–170	120–180	0,05–0,10
M2	250	70–140	100–140	0,05–0,10
M3	330	70–120	100–120	0,05–0,10
cast iron				
K1	180	60–130	100–120	0,02–0,08
K2	220	60–125	80–100	0,05–0,15
K3	260	50–90	60–90	0,05–0,10
non-ferrous				
N1	60–100	100–250	–	0,05–0,25
high-temp alloys				
S1	200	20–45	20–40	0,05–0,10
S2	250	20–30	20–30	0,02–0,05
S3	280	15–20	15–20	0,02–0,05
S4	350	10–15	10–15	0,02–0,05
hardened steel				
H1	55 HRC	20–45	20–45	0,01–0,03

NOTE: Use Kennametal Thread Mill Software: TM-CNC Generator for CNC Programming.


Thread Mill • U Style • Weldon® Shank • 3/8" iC

order number	catalogue number	D1	D	D2	L	L3	LFA	Z	max RPM	insert screw	Torx Plus driver
5593102	KTMDUWD36L095Z3	36,50	32,00	29,00	166,00	103,00	8,00	3	3900	KTMDUSCREW2	DT2IP
5593104	KTMDUWD42L120Z4	42,00	40,00	34,20	201,00	128,00	8,00	4	3430	KTMDUSCREW2	DT2IP

Thread Application per Toolholder							
min thread Ø							
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSP(G)	partial 55°
KTMDUWD36L095Z3	36,50	M42 x 4.5; M48 x 5.0; M56 x 5.5; M64 x 6.0	M39 x 1.5; M39 x 2.0; M40 x 2.5; M41 x 3.0; M42 x 3.5; M42 x 4.0	1 3/4-5; 2-4.5; 2 1/2-4	1 9/16-16UN; 1 5/8-14UNS; 1 9/16-12UN; 1 5/8-10UNS; 1 5/8-8UN; 1 5/8-6UN	1 1/4-11	1 5/8-16; 1 5/8-2 1 5/8-8; 2 1/4-6; 1 3/4-5
KTMDUWD42L120Z4	42,00	M48 x 5.0; M56 x 5.5; M64 x 6.0	M45 x 1.5; M45 x 2.0; M46 x 2.5; M48 x 3.0; M48 x 3.5; M48 x 4.0	2-4.5; 2 1/4-4	1 3/4-16UN; 1 3/4-14UNS; 1 13/16-12UN; 1 13/16-8UN; 1 15/16-6UN	1 1/2-11	1 7/8-16; 1 7/8-12; 1 7/8-8; 1 7/8-6; 2-4.5

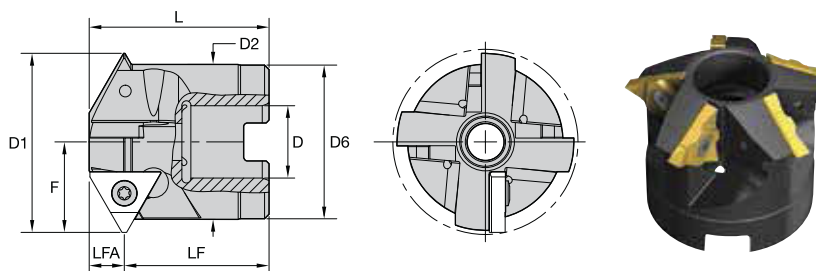


■ Thread Mill • U Style • Steel Cylindrical Shank • 3/8" iC

order number	catalogue number	D1	D	L	L3	LF	LFA	Z	max RPM	insert screw	Torx Plus driver
5593130	KTMDUED36L144Z3	36,50	28,00	222,00	152,00	214,00	8,00	3	3680	KTMDUSCREW2	DT3IP



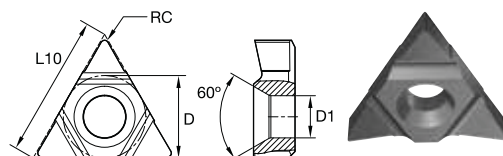
Thread Application per Toolholder							
min thread Ø							
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSP(G)	partial 55°
KTMDUED36L144Z3	36,50	M42.5 x 4.5; M48 x 5.0; M56 x 5.5; M64 x 6.0	M39 x 1.5; M40 x 2.5; M41 x 3.0; M42 x 3.5; M42 x 4.0	1 3/4-5; 2-4.5; 2 1/2-4	1 9/16-16UN; 1 5/8-14UNS; 1 9/16-12UN; 1 5/8-10UNS; 1 5/8-UN; 1 5/8-6UN	1 1/4-11	1 5/8-16; 1 5/8-12; 1 5/8-8; 2 1/4-6; 1 3/4-5



■ Thread Mill • U Style • Shell Mill • 3/8" iC

order number	catalogue number	D1	D	L	LF	LFA	Z	max RPM	insert screw	Torx Plus driver
5593136	KTMDUSD42L400Z4	42,00	16,00	40,00	32,00	8,00	4	3430	KTMDUSCREW2	DT3IP
5593137	KTMDUSD48L400Z5	48,00	22,00	40,00	32,00	8,00	5	3210	KTMDUSCREW2	DT3IP
5593138	KTMDUSD56L400Z6	56,00	22,00	40,00	32,00	8,00	6	2970	KTMDUSCREW2	DT3IP

Thread Application per Toolholder							
min thread Ø							
toolholder	D1 mm	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSP (G)	partial 55°
KTMDUSD42L400Z4	42,00	M48 x 5.0; M56 x 5.5; M64 x 6.0	M45 x 1.5; M45 x 2.0; M46 x 2.5; M48 x 3.0; M48 x 3.5; M48 x 4.0	2-4.5; 2 1/2-4	1 3/4-16UN; 1 3/4-14UNS; 1 13/16-12UN; 1 13/16-8UN; 1 15/16-6UN	1 1/2-11	1 7/8-16; 1 7/8-12; 1 7/8-8; 1 7/8-6; 2-4.5
KTMDUSD48L400Z5	48,00	M56 x 5.5; M64 x 6.0	M52 x 1.5; M52 x 2.0; M52 x 2.5; M52 x 3.0; M55 x 4.0	2 1/4-4.5; 2 1/2-4	2-16UN; 2-14UN; 2-12UN; 2 1/4-10UNS; 2 1/8-8UN; 2 1/8-6UN	1 3/4-11	2-16; 2 1/4-12; 2 1/4-8; 2 1/4-6; 3-5; 3 1/2-4.5; 2 1/4-4
KTMDUSD56L400Z6	56,00	M64 x 6.0	M60 x 1.5; M60 x 2.0; M60 x 2.5; M60 x 3.0; M64 x 4.0	2 1/2-4	2 3/8-16UN; 2 3/8-14UN; 2 3/8-12UN; 2 1/2-10UNS; 2 3/8-8UN; 2 1/2-6UN	2-11	2 1/2-16; 2 1/2-12; 2 1/2-8; 2 3/4-6; 3-5; 3 1/2-4.5; 4 1/4-4



P	●	○
M	○	●
K	●	○
N	●	○
S	○	●
H	○	●

■ KTMD • 3/8" iC • Partial Profile 60°

catalogue number	TP min	TP max	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU16L1520N60	1.5	2.0	16	12	3,85	9,53	16,00	0,06	●	●
KTMDU16L2535N60	2.5	3.5	10	7	3,85	9,53	16,00	0,14	●	●
KTMDU16L4060N60	4.0	6.0	6	4	3,85	9,53	16,00	0,25	●	●

■ KTMD • 3/8" iC • Partial Profile 55°

catalogue number	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU16L0604N55	6	5	3,85	9,53	16,00	0,27	●	●
KTMDU16L1107N55	11	7	3,85	9,53	16,00	0,24	●	●
KTMDU16L1612N55	16	12	3,85	9,53	16,00	0,08	●	●

■ KTMD • 3/8" IC

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (mm/tooth)
P1	125	100–210	90–180	0,05–0,20
P2	180	100–170	90–160	0,05–0,20
P3	225	60–130	70–115	0,05–0,20
P4	250	80–150	80–160	0,05–0,20
P5	275	75–130	80–160	0,05–0,15
P6	325	70–110	60–100	0,05–0,10
stainless steel				
M1	180	100–170	120–180	0,05–0,10
M2	250	70–140	100–140	0,05–0,10
M3	330	70–120	100–120	0,05–0,10
cast iron				
K1	180	60–130	100–120	0,02–0,08
K2	220	60–125	80–100	0,05–0,15
K3	260	50–90	60–90	0,05–0,10
non-ferrous				
N1	60–100	100–250	–	0,05–0,25
high-temp alloys				
S1	200	20–45	20–40	0,05–0,10
S2	250	20–30	20–30	0,02–0,05
S3	280	15–20	15–20	0,02–0,05
S4	350	10–15	10–15	0,02–0,05
hardened steel				
H1	55 HRC	20–45	20–45	0,01–0,03

NOTE: Use Kennametal Thread Mill Software: TM-CNC Generator for CNC Programming.

TMS Series

Primary Application

The TMS Series is a versatile thread milling product with proven solutions. This tool is specially designed for internal and external threading on most types of workpiece materials. The cutter body utilises inserts with various profiles and pitches.

Features and Benefits

Proven solution and versatile indexable thread milling product family.

Comprehensive Cutter bodies offering

- Cutters are available in standard Weldon®, Mini Weldon, long thread Weldon, conical shank, and double-sided Weldon.
- One tool is used for both right- and left-hand threads.
- All cutters have through coolant capability.

Double-Sided Weldon

- Provides faster machining capabilities.
- Good surface finish.

Inserts:

- Insert grades for most workpiece materials.
- Inserts for ISO, UN, BSPT, and NPT thread profiles.
- Indexable inserts.
- Economical and cost effective.
- Versatile application.



■ Internal Threads • Insert and Holder Recommendations

thread	tap hole fl (mm)	indexable insert	largest milling cutter
M11 x 0,75	10,19	STN10075ISO-I	9X1R .. STN10M
M12	10,11	STN10175ISO-I-C	9X1R015B20-STN10C
M12 x 1,00	10,92	STN10100ISO-I	9X1R .. STN10M
M14	11,84	STN11200ISO-I-C	11X1R .. STN11N
M16	13,84	STN11200ISO-I-C	11X1R .. STN11N
M20	17,29	STN16250ISO-I-C	15X1R020B16-STN16C
M20 x 1,50	18,38	STN11150ISO-I	11X1R .. STN11N
M20 x 1,00	18,92	STN11100ISO-I	11X1R .. STN11N
M24	20,75	STN22300ISO-I-C	18X1R030B25-STN22C
M24 x 2,00	21,84	STN16200ISO-I	17X1R022B16-STN16N
M24 x 1,50	22,38	STN11150ISO-I	11X1R .. STN11N
M24 x 1,50	22,38	STN16150ISO-I	17X1R022B16-STN16N
M27	23,75	STN22300ISO-I-C	18X1R030B25-STN22C
M30	26,21	STN27350ISO-I-C	25X1R040B25-STN27C
M30 x 2,00	27,84	STN16200ISO-I	22X1R025B25-STN16L
M33	29,21	STN27350ISO-I-C	25X1R040B25-STN27C
M33 x 2,00	30,84	STN16200ISO-I	22X1R025B25-STN16L
M33 x 1,50	31,38	STN16150ISO-I	22X1R025B25-STN16L
M35 x 1,50	33,38	STN16150ISO-I	22X1R025B25-STN16L
M36 x 2,00	33,84	STN16200ISO-I	22X1R025B25-STN16L
M42 x 2,00	39,84	STN27200ISO-I	30X1R052B25-STN27N
M45 x 2,00	42,84	STN27200ISO-I	37X1R .. STN27N or L
M48 x 2,00	45,84	STN27200ISO-I	37X1R058B32-STN27N or L
M55 x 2,00	52,84	STN27200ISO-I	37X1R .. STN27N or L
M56 x 2,00	53,84	STN27200ISO-I	37X1R .. STN27N or L
M72 x 2,00	69,84	STN27200ISO-I	37X1R .. STN27N or L

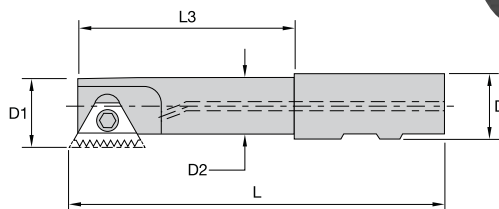
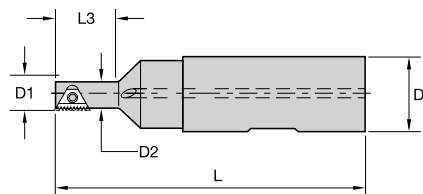
Internal Threads • Insert and Holder Recommendations

thread	tap hole fl (mm)	indexable insert	largest milling cutter
9/16 - 18UNF	12,76	STN1018UN-I	9X1R .. STN10M
5/8 - 24UNEF	14,73	STN1124UN-I	11X1R .. STN11N
5/8 - 18UNF	14,35	STN1118UN-I	11X1R .. STN11N
3/4 - 20UNEF	17,68	STN1120UN-I	11X1R .. STN11N
3/4 - 16UNF	17,33	STN1116UN-I	11X1R .. STN11N
7/8 - 14UNF	20,26	STN1114UN-I	11X1R .. STN11N
1 - 16UN	23,68	STN1616UN-I	18X1R030B25-STN22C
1 - 12UNF	23,11	STN1612UN-I	17X1R .. STN16N
1 1/8 - 12UNF	26,28	STN1612UN-I	22X1R .. STN16L
1 1/4 - 12UNF	29,46	STN1612UN-I	22X1R .. STN16L
1 3/8 - 12UNF	32,63	STN1612UN-I	22X1R .. STN16L

Whitworth Pipe Thread (Internal) to DIN 259

thread	tap hole fl (mm)	indexable insert	largest milling cutter
R 5/8	20,59	STN1614BSW	17X1R022B16-STN16N
R 3/4	24,12	STN1614BSW	20X1R043B20-STN16N
R 7/8	27,88	STN1614BSW	22X1R025B25-STN16L
R 1	30,29	STN1611BSW	22X1R025B25-STN16L

- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.



■ Thread Mill • Mini

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx driver
1132616	9X1R012B12STN10M	9,00	12,00	6,80	69,00	12,00	1	39935	STN10	SN7T	1,7	DT7
1191395	9X1R017B20STN10M	9,00	20,00	6,80	84,00	17,00	1	39935	STN10	SN7T	1,7	DT7

■ Thread Mill • Normal Shank • STN11

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx driver
1294964	11X1R012B12STN11N	11,50	12,00	8,90	70,00	12,00	1	36825	STN11	SN2TPKG	1,7	DT8
1130302	11X1R020B20STN11N	11,50	20,00	8,90	85,00	20,00	1	36825	STN11	SN2TPKG	1,7	DT8

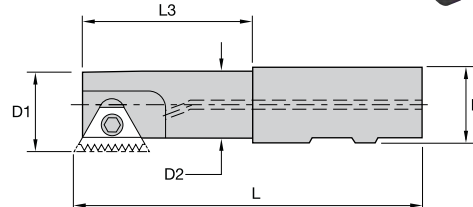
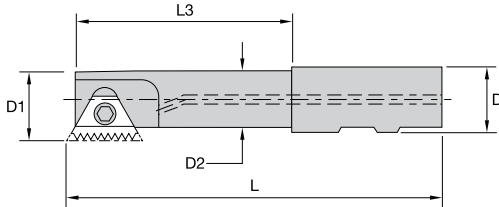
■ Thread Mill • Normal Shank • STN16

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx driver
1130686	17X1R022B16STN16N	17,00	16,00	13,60	90,00	22,00	1	25750	STN16	SN3TM	2,3	DT10
1130740	20X1R043B20STN16N	20,00	20,00	16,60	95,00	43,00	1	23330	STN16	SN3TPKG	2,3	DT10

■ Thread Mill • Normal Shank • STN27

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx wrench
1130969	30X1R052B25STN27N	30,00	25,00	24,00	110,00	52,00	1	12900	STN27	SN5TM	5,0	TT25
1131069	37X1R058B32STN27N	37,00	32,00	27,00	120,00	58,00	1	11600	STN27	SN5TM	5,0	TT25

- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.



■ Thread Mill • Normal Shank • STN.38

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx wrench
1178986	35X1R055B32STNB38N	35,00	32,00	31,00	115,00	55,00	1	11000	STNB38	SM7TPKG	6,5	TT30

■ Thread Mill • Long Shank • STN16

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx driver
1130837	22X1R025B25STN16L	22,00	25,00	18,60	125,00	25,00	1	22230	STN16	SN3TPKG	2,3	DT10

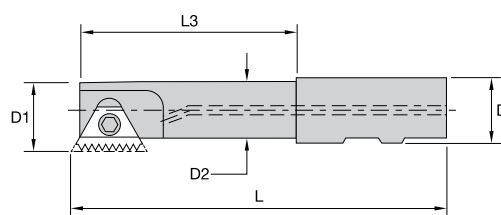
■ Thread Mill • Long Shank • STN27

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx wrench
1130977	30X1R092B25STN27L	30,00	25,00	24,00	150,00	92,00	1	12900	STN27	SN5TM	5,0	TT25
1131086	37X1R098B32STN27L	37,00	32,00	31,00	160,00	98,00	1	11600	STN27	SN5TM	5,0	TT25

■ Thread Mill • Long Shank • STN38

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Nm	Torx wrench
1566071	46X1R100B40STNB38L	46,00	40,00	38,00	170,00	100,00	1	10000	STNB38	SM7TPKG	6,5	TT30

- Thread Milling System.

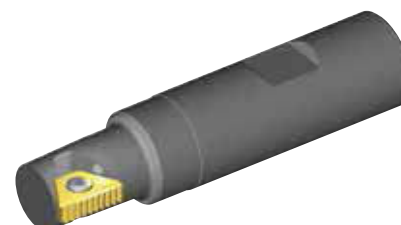
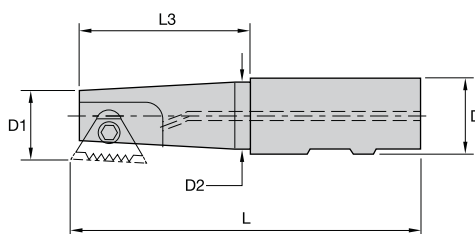


■ Thread Mill • Internal Coarse Pitch Thread

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1
1176951	9X1R015B20STN10C	9,00	20,00	9,00	85,00	15,00	1	39935	STN10__C
1176964	15X1R020B16STN16C	15,50	16,00	12,20	91,00	—	1	26550	STN16__C
1176967	25X1R040B25STN27C	25,00	25,00	19,00	98,00	40,00	1	22000	STN27__C

■ Spare Parts

D1	insert screw	Nm	Torx driver	Torx wrench
15,50	SN3TPKG	2,30	DT10	—
25,00	SN5TM	5,00	—	TT25



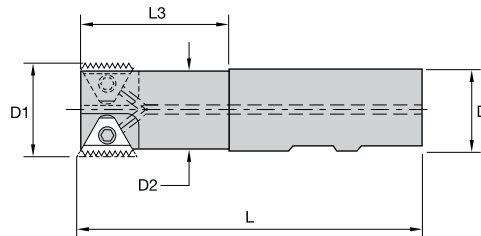
■ Thread Mill • Tapered Shank • Right Hand

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1
1176970	10X1R015B20STN11T	9,90	20,00	7,40	77,00	15,50	1	36500	STN11
1132781	15X1R022B16STN16T	15,50	16,00	12,50	80,00	22,00	1	26550	STN16
1135826	19X1R023B20STN16T	19,00	20,00	15,00	85,00	23,00	1	24350	STN16

■ Spare Parts

D1	insert screw	Nm	Torx driver
9,90	SN2TPKG	1,70	DT8
15,50	SN3TPKG	2,30	DT10
19,00	SN3TM	2,30	DT10

- Cutting diameter ranges from 26–42mm.
- For internal and external threading on most types of workpiece materials.
- One tool is used for both right- and left-hand threads.
- All cutters have through-coolant capability.
- Utilises inserts with various profiles and pitches.



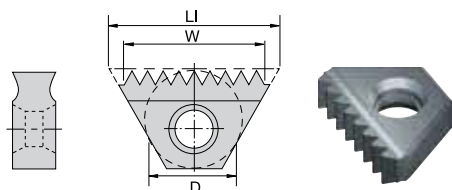
■ Thread Mill • Double Insert

order number	catalogue number	D1	D	D2	L	L3	Z	max RPM	insert 1
1124019	26X2R043B25STN16D	26,00	25,00	22,50	100,00	43,00	2	20530	STN16
1131118	42X2R045B32STN27D	42,00	32,00	36,00	120,00	45,00	2	10900	STN27

■ Spare Parts

				
D1	insert screw	Nm	Torx driver	Torx wrench
26,00	SN3TPKG	2,30	DT10	—
42,00	SN5TM	5,00	—	TT25

- Unified Thread Standard Style.



- first choice
- alternate choice

P	•	○	○
M	○	•	•
K	•	•	•
N	•	•	•
S	•	•	•
H	•	•	•

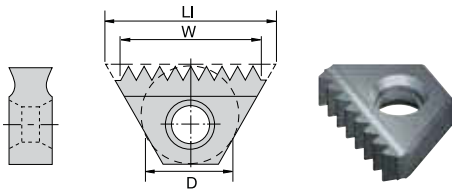
Internal • UN Thread

catalogue number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1018UNI	18	6,00	10,41	8,38	6	-	-	•
STN1020UNI	20	6,00	10,41	8,89	7	-	-	•
STN1114UNI	14	6,35	10,92	9,14	5	-	-	•
STN1116UNI	16	6,35	10,92	9,65	6	-	-	•
STN1118UNI	18	6,35	10,92	9,91	7	-	-	•
STN1120UNI	20	6,35	10,92	10,16	8	-	-	•
STN1124UNI	24	6,35	10,92	9,65	9	-	-	•
STN1612UNI	12	9,53	16,00	14,73	7	-	-	•
STN1614UNI	14	9,53	16,00	14,48	8	-	-	•
STN1616UNI	16	9,53	16,00	14,22	9	•	-	-
STN1624UNI	24	9,53	16,00	14,73	14	-	-	•
STN1627UNI	27	9,53	16,00	14,22	15	-	-	•
STN1632UNI	32	9,53	16,00	14,99	9	-	-	•

External • UN Thread

catalogue number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1118UNE	18	6,35	10,92	9,91	7	-	-	•
STN1614UNE	14	9,53	16,00	14,48	8	-	-	•
STN1616UNE	16	9,53	16,00	14,22	9	-	-	•
STN1620UNE	20	9,53	16,00	13,97	11	-	-	•
STN1624UNE	24	9,53	16,00	14,73	14	-	-	•

- ISO metric screw thread style.



- first choice
- alternate choice

P	•	○	○
M	○	•	•
K	•	•	•
N	•	•	•
S	•	•	•
H	•	•	•

Internal • ISO Thread

catalogue number	thread pitch mm	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN10075ISOI	0,75	6,00	10,41	9,65	13	—	—	•
STN10100ISOI	1,0	6,00	10,41	8,89	9	—	•	•
STN10150ISOI	1,5	6,00	10,41	8,89	6	—	—	•
STN10125ISOI	1,25	6,00	10,41	8,64	7	—	—	•
STN11050ISOI	0,50	6,35	10,92	10,41	20	—	—	•
STN11100ISOI	1,0	6,35	10,92	9,91	10	—	—	•
STN11150ISOI	1,5	6,35	10,92	10,41	7	—	—	•
STN16100ISOI	1,0	9,53	16,00	14,99	15	—	—	•
STN16150ISOI	1,5	9,53	16,00	14,99	10	—	—	•
STN16175ISOI	1,75	9,53	16,00	13,97	8	—	—	•
STN16200ISOI	2,0	9,53	16,00	13,97	7	—	—	•

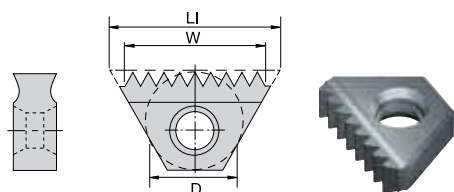
External • ISO Thread • Coarse

catalogue number	thread pitch mm	D	LI	W	KC610M	KC620M	KC635M
STN22300ISOIC	3,0	12,70	22,10	18,00	•	—	—
STN27350ISOIC	3,5	15,88	26,92	24,50	•	—	—

External • ISO Thread

catalogue number	thread pitch mm	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN16150ISOE	1,5	9,53	16,00	14,99	10	•	•	—
STN27200ISOE	2,0	15,88	26,92	23,88	12	•	—	—

- Nominal Pipe Size Style



- first choice
- alternate choice

P	•	○	○
M	○	•	•
K	•	•	•
N	•	•	•
S	•	•	•
H	•	•	•

■ BSW Thread

catalogue number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1119BSW	19	6,35	10,92	9,40	7	—	—	•
STN1611BSW	11	9,53	16,00	13,97	6	•	—	•
STN1612BSW	12	9,53	16,00	14,73	7	—	—	•
STN1614BSW	14	9,53	16,00	14,48	8	•	—	•
STN2711BSW	11	15,88	26,92	23,11	10	—	—	•

■ NPS Thread

catalogue number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN16115NPS	11.5	9,53	16,00	13,21	6	—	—	•
STN1614NPS	14.0	9,53	16,00	14,48	8	—	—	•

■ NPT Thread

catalogue number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1118NPT	18.0	6,35	10,92	9,91	7	—	—	•
STN16115NPT	11.5	9,53	16,00	13,21	6	—	—	•
STN1614NPT	14.0	9,53	16,00	14,48	8	—	—	•

■ NPTF Thread

catalogue number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1118NPTF	18.0	6,35	10,92	9,91	7	—	—	•
STN16115NPTF	11.5	9,53	16,00	13,21	6	—	—	•
STN1614NPTF	14.0	9,53	16,00	14,48	8	—	—	•

NOTE: NPTF = Dry Seal
NPT and NPTF inserts possess right- and left-hand edges.
Must order left-hand bar for left-hand inserts.

STN

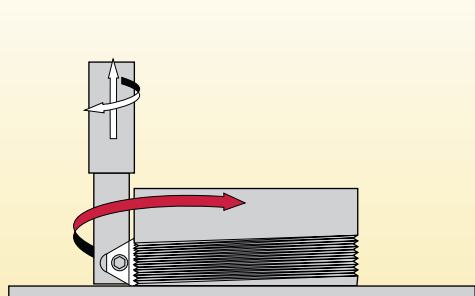
materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (mm/tooth)
P1	125	100-210	90-180	0,05-0,20
P2	180	100-170	90-160	0,05-0,20
P3	225	60-130	70-115	0,05-0,20
P4	250	80-150	80-160	0,05-0,20
P5	275	75-130	80-160	0,05-0,15
P6	325	70-110	60-100	0,05-0,10
stainless steel				
M1	180	100-170	120-180	0,05-0,10
M2	250	70-140	100-140	0,05-0,10
M3	330	70-120	100-120	0,05-0,10
cast iron				
K1	180	60-130	100-120	0,02-0,08
K2	220	60-125	80-100	0,05-0,15
K3	260	50-90	60-90	0,05-0,10
non-ferrous				
N1	60-100	100-250	–	0,05-0,25
high-temp alloys				
S1	200	20-45	20-40	0,05-0,10
S2	250	20-30	20-30	0,02-0,05
S3	280	15-20	15-20	0,02-0,05
S4	350	10-15	10-15	0,02-0,05
hardened steel				
H1	55 HRC	20-45	20-45	0,01-0,03

NOTE: Use Kennametal Thread Mill Software: TM-CNC Generator for CNC Programming.

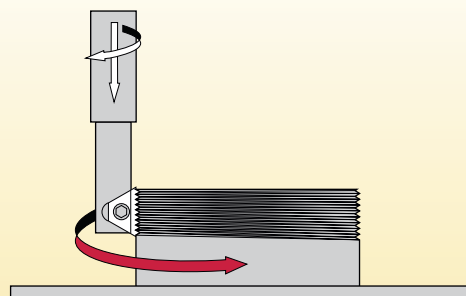
The Following Are a Few Thread Milling Methods (Work Directions)

NOTE: Climb milling results in lower cutting forces, better chip development, higher thread surface quality, and longer insert life. Therefore, it should be used whenever possible. But, in the case of some hardened materials or when milling certain difficult-to-machine exotic materials, conventional milling may be preferred.

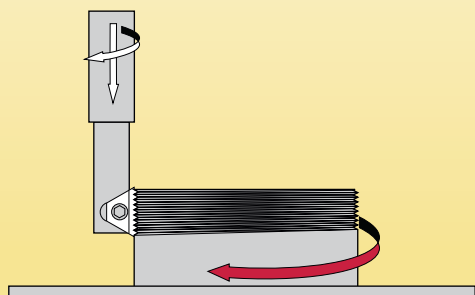
■ Methods of External Thread Milling



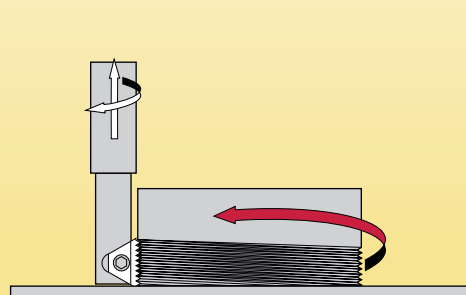
right-hand thread... conventional milling



left-hand thread... conventional milling

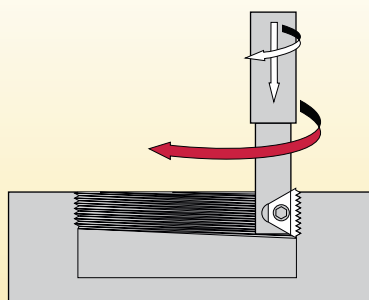


right-hand thread... climb milling

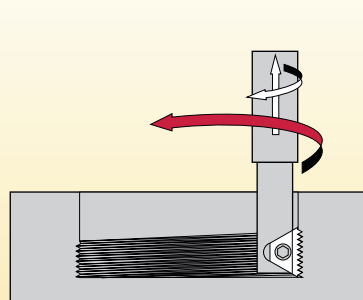


left-hand thread... climb milling

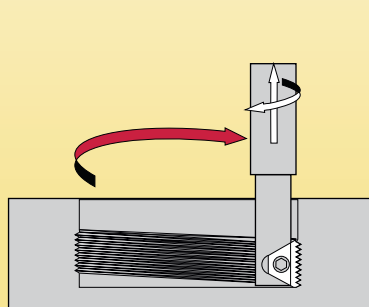
■ Methods of Internal Thread Milling



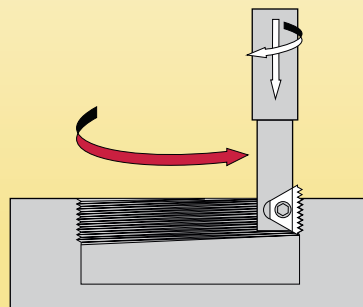
right-hand thread... conventional milling



left-hand thread... conventional milling



right-hand thread... climb milling



left-hand thread... climb milling

Application Guidelines

- All thread milling inserts are full profile or cresting type.
- Inserts are designed to mill full thread depth in one revolution or pass.
- When machining difficult materials, two passes may be desired. A 60% thread depth on the first pass and a 40% thread depth on the second pass is recommended.
- Thread relief grooves in blind holes are not necessary.
- Thread milling large parts requires considerably less horsepower compared to other threading methods.
- Thread milling produces short chips compared to stringy chips of other threading methods.
- One holder is suitable for many different thread pitches.
- PVD-coated inserts provide maximum tool life for a wide variety of materials.

Minimum Bore Diameters

UN-ISO-BSW

cutter	TPI	48	32	24	20	16	12	10	8	7	6	5.5	5	4.5	4.5	4	4
	pitch mm	0,5	0,75	1,0	1,25	1,5	2,0	2,5	3,0	3,5	4,0	4,5	5,0	5,5	-	6,0	-
	cutter diameter (D1)	minimum bore diameter (D) (inches)															
K035TM1RW050-STN10	.35	.374	.394	.421	.449												
K045TM1RW050-STN11N	.45	.472	.492	.520	.547	.571											
K049TM1RW037LT11S	.49	.512	.531	.559	.587	.610											
K061TM1RW062-STN16T	.61	.630	.650	.667	.705	.728	.768										
K067TM2RW075-STN11D	.67	.693	.717	.748	.772	.787	.827										
K075TM1RW075-STN16T	.75	.776	.803	.827	.850	.866	.906										
K079TM1RW075-STN16N	.79	.815	.843	.866	.890	.906	.945										
K087TM1RW100-STN16L	.87	.893	.921	.945	.969	.984	1.024										
K102TM2RW100-STN16D	1.02	1.051	1.079	1.102	1.130	1.154	1.193										
K118TM1RW100-STN27N	1.18	1.209	1.236	1.260	1.291	1.319	1.362	1.441	1.535	1.654	1.772	1.890					
K146TM1RW125-STN27N	1.46	1.496	1.520	1.555	1.591	1.614	1.654	1.732	1.830	1.929	2.047	2.185					
K165TM2RW125-STN27D	1.65	1.701	1.724	1.772	1.811	1.831	1.866	1.929	2.047	2.146	2.268	2.401					
-	1.38 (UN)	-	-	-	-	-	-	-	-	-	1.969	-	1.843	-	1.756	-	2.228
-	1.38 (ISO)	-	-	-	-	-	-	-	-	-	1.969	2.102	1.673	1.969	-	2.264	-
-	1.38 (BSW)	-	-	-	-	-	-	-	-	-	1.961	-	1.831	-	1.866	-	-

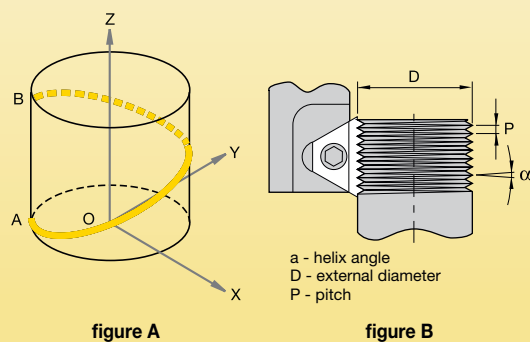
Cutting Data Recommendation

workpiece material	Cutting Speed – vc SFM	feed rate per revolution (inch)
	KC635M	
carbon steels <187 HB	300–700	.004–.008
carbon steels 187–220 HB	300–500	.004–.006
alloy steel 200–250 HB	200–425	.004–.006
alloy steel 250–325 HB	150–300	.004–.006
stainless steel, austenitic <210 HB	300–450	.004–.006
stainless steel, martensitic <321 HB	250–350	.002–.006
stainless steel, ferritic <245 HB	350–550	.002–.004
cast steel <140 HB	350–550	.002–.006
cast steel 220–302 HB	225–425	.002–.004
titanium alloys	200–400	.001–.003
high-temperature (nickel and iron base)	75–150	.001–.002
high-temperature (cobalt base)	50–100	.001–.002
cast iron	250–350	.002–.006
malleable iron	250–400	.001–.003

NOTE: Applications in this area may be machined with special inserts and cutter bodies. Quoted on request.

■ Understanding Thread Milling

In order to perform a thread milling operation, a milling machine with three-axis control, capable of helical interpolation, is required. Helical interpolation is a CNC function producing tool movement along a helical path. This helical travel combines circular movement in one plane with a simultaneous linear motion in a plane perpendicular to the first. For example, the path from point A to point B (figure A) on the envelope of the cylinder combines a circular movement in the X and Y plane with a linear movement in the Z direction.



On most CNC systems, this function can be executed in two different ways:

- G02: helical interpolation in a clockwise direction
- G03: helical interpolation in a counterclockwise direction

The thread milling operation (figure B) consists of circular rotation of the tool about its own axis together with an orbiting motion along the bore or workpiece circumference.

During one such orbit, the tool will move vertically one pitch length. These movements, combined with the insert geometry, create the required thread form.

There are two acceptable ways of approaching the workpiece with the tool to initiate production of the thread:

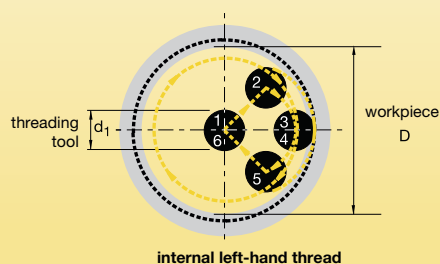
1. Along a tangential arc.
2. Along a tangential straight line.

NOTE: Climb milling is preferred.

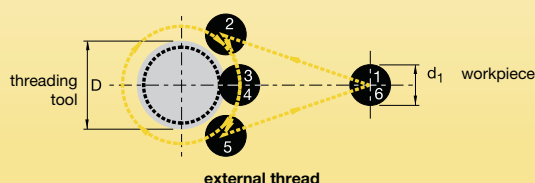
■ Tangential Approach (Arc)

With this method, the tool enters and exits the workpiece smoothly. No marks are left on the workpiece and there is no vibration, even with harder materials.

Although it requires slightly more complex programming, this is the method recommended for machining the highest quality threads.

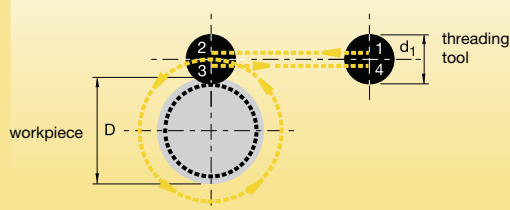


1-2:	rapid approach
2-3:	tool entry along tangential arc with simultaneous feed along Z-axis
3-4:	helical movement during one full orbit (360°)
4-5:	tool exit along tangential arc with continuing feed along the Z-axis
5-6:	rapid return



■ Tangential Approach (Line)

This method is very simple and has all of the advantages of the tangential arc method. However, it is applicable only to external threads.

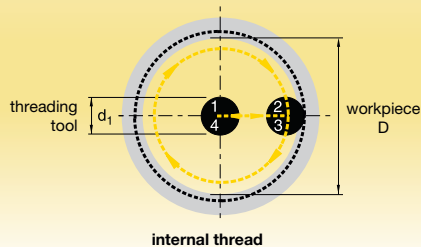


1-2:	radial entry with simultaneous feed along the Z-axis
2-3:	helical movement during one full orbit (360°)
3-4:	radial exit

Radial Approach

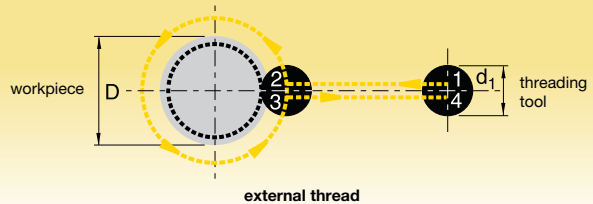
This radial approach is often considered the simplest. There are two characteristics worth noting about the radial approach:

- A small vertical mark may be left at the entry (and exit) point. This is of no significance to the thread itself.
- When using this method with very hard materials, there may be a tendency for the tool to vibrate as it approaches the full cutting depth.



1-2:	radial entry
2-3:	helical movement during one full orbit (360°)
3-4:	radial exit

NOTE: Radial feed during entry to the full profile depth should be only 1/3 of the subsequent circular feed.



Calculation of Feed Rates at the Cutting Edge

The first step is to calculate the tool feed rate at the cutting edge:

$$F_1 = f_z \times Z \times n$$

F_1 = tool feed rate at the cutting edge (in/min)
 f_z = inch per tooth (feed rate)
 Z = number of effective inserts in cutter
 n = rotational speed (spindle RPM)

The rotational speed (RPM) is calculated by the following formula:

$$RPM = \frac{12 \times SFM}{\pi \times d_1}$$

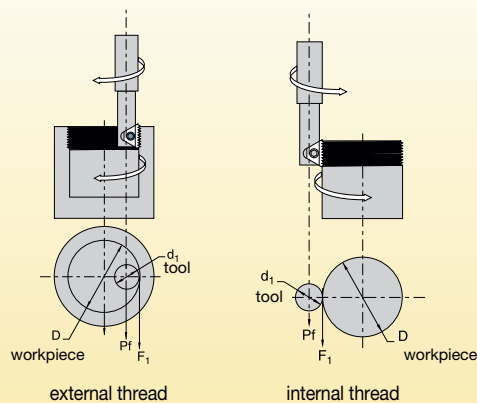
SFM = cutting speed, surface feet per minute
 d_1 = cutter diameter, over insert
 π = 3.1416

Calculation of Programme Feed Rate

On most CNC machines, the feed rate required for programming is at the centerline of the tool. When dealing with linear tool movement, the feed rate at the cutting edge and the centerline are identical. With circular tool movement this is not the case. The following equations define the relationship between feed rates at the cutting edge and at the tool centerline.

$$P_1 = F_1 + \frac{(F_1 \times d_1)}{D}$$

P_1 = programme feed rate (in/min)
 D = major diameter (external thread)
 D = minor diameter (internal thread)
 d_1 = cutting diameter, over insert



tool workpiece

■ Step-by-Step Thread Milling Example

thread: internal right hand 11/4 x 16 UN-2B-RH(21)

material: AISI 4140 (300 HB)

thread diameters: D (minimum bore dia.) = 1.182"

Do (nominal dia.) = 1.25"

thread length: .50"

For best thread quality, the cutter with the largest d₁ (cutter diameter) should be used. This cutter diameter can be found in the table on page 53, as a function of pitch and minimum bore diameter "D". The result for the above example is that any cutter diameter 1.02" or smaller can be utilised.

A cutter with a smaller d₁ will perform the thread milling operation in less time. The smaller d₁ may result in less tool rigidity, so it should be used with caution on very tough materials.

Find the appropriate normal-length shank cutter diameter on pages 44 and 47.

Use the minimum bore diameter table below for reference.

pitch (TPI)	24	20	16	12
pitch mm	1,0	1,25	1,5	2,0
cutter dia. d ₁	minimum bore diameter D			
.67	.748	.772	.787	.827
.75	.827	.850	.866	.906
.79	.866	.890	.906	.945

Figure B: cutter selected: K079TMIRW075STN16N

outer dimensions: d₁ = .79, R_t (radius of tool) = d₁ ÷ 2 = .395"

■ Choosing Insert Size

The insert iC is defined by the selected cutter (STN16).

Use the appropriate insert table on pages 48–50.

insert iC	a inch (mm)	pitch (TPI)	internal thread	b inch thread length (in)	number of teeth	grade		external thread	b inch thread length (in)	number of teeth	grade		cutter type
			catalogue number			KC610M	KC620M	catalogue number			KC610M	KC620M	
		32	STN16 32UN-I	.59	19	□	□	STN16 32UN-E	.59	19	□	□	
		28	STN16 28UN-I	.57	16	■	■	STN16 28UN-E	.57	16	□	□	
		27	STN16 27UN-I	.56	15	□	■	STN16 27UN-E	.56	15	■	□	
		24	STN16 24UN-I	.55	14	□	□	STN16 24UN-E	.58	14	■	□	
3/8	.63 (16)	20	STN16 20UN-I	.55	11	■	■	STN16 20UN-E	.55	11	■	■	STN16
		18	STN16 18UN-I	.56	10	■	■	STN16 18UN-E	.56	10	■	■	
		16	STN16 16UN-I	.56	9	■	■	STN16 16UN-E	.56	9	■	■	
		14	STN16 14UN-I	.57	8	■	■	STN16 14UN-E	.57	8	■	■	
		13	STN16 13UN-I	.54	7	□	□	STN16 13UN-E	.54	7	□	□	
		12	STN16 12UN-I	.58	7	■	■	STN16 12UN-E	.58	7	■	■	□

insert selected: STN16 16UN-I

■ stock standard

□ non-stock standard

Step-by-Step Thread Milling Example

Calculate the feed rates:

First, find the RPM.

$$\text{RPM} = \frac{12 \times \text{SFM}}{\pi \times d_1} = \frac{12 \times 500}{3.14 \times .79} = 2418 \text{ RPM}$$

Next, calculate the feed rate at the insert cutting edge (F_1):

(using the chosen feed per tooth of .004.)

$$F_1 = \text{IPT} \times n_t \times \text{RPM} = .004 \times 1 \times 2418 = 9.67 \text{ in/min}$$

Finally, calculate the feed rate at the cutter centreline (F_2):

$$F_2 = \frac{F_1 \times (D - d_1)}{D} = \frac{9.67 \times (1.182 - .79)}{1.182} = 3.207 \text{ in/min}$$

Select the thread milling method.

Climb milling (preferred) see page 52.

Calculate the radius of the tangential arc R_e :

$$R_e = \frac{(R_i - C_L)^2 + R_0^2}{2R_0} = \frac{(.591 - .02)^2 + .625^2}{2 \times .625}$$

$$R_e = .573333 \text{ in.}$$

Calculate the angle (β):

$$\beta = 90^\circ + \arcsin \frac{R_0 - R_e}{R_e}$$

$$\beta = 90^\circ + \arcsin \frac{.625 - .573333}{.573333}$$

$$\beta = 90^\circ + 5.17^\circ = 95.17^\circ = 95^\circ 10'$$

Calculate the movement along the Z-axis during the entry approach from point "A" to point "B" (Z_α).
(NOTE: P = pitch)

$$Z_\alpha = P \text{ (in)} \times \frac{\alpha^\circ}{360^\circ} = \frac{.0625}{4} = .0156 \text{ in, because } \alpha = 90^\circ$$

Calculate the "X" and "Y" values at the start of the entry approach.

$$X = 0Y = -R_i + C_L = -.591 + .02 = -.571 \text{ in.}$$

Define Z-axis location at the start of the entry approach.
(NOTE: L = length of thread)

$$Z = -(L + Z_\alpha) = -(.50 + .0156) = -.5156 \text{ in.}$$

Define the starting point.

$$X_a = 0$$

$$Y_a = 0$$

CNC Programme (Fanuc 11M)

%

N10G90G00G57X0.000Y0.000

N20G43H10Z0.M3S2417

N30G91G00X0.Y0.Z-0.5156

N40G41D60X0.000Y-0.5710Z0.

N50G03X0.625Y0.5710Z0.0156R0.5733F3.206

N60G03X0.Y0.Z0.0625I-0.625J0.

N70G03X-0.625Y0.5710Z0.0156R0.5733

N80G00G40X0.Y-0.5710Z0.

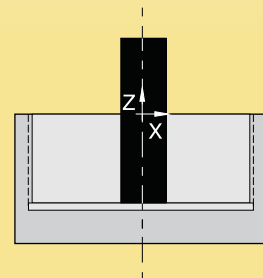
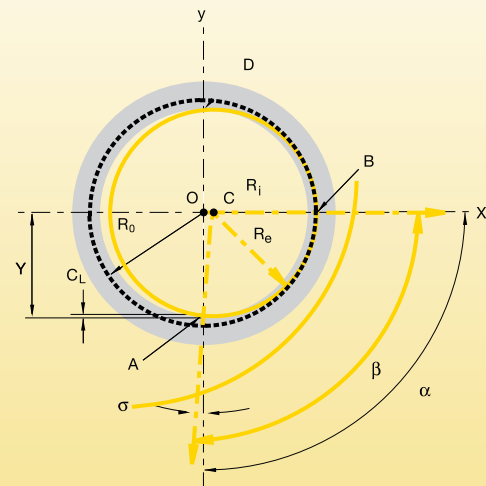
N90G49G57G00Z8.0M5

N100M30

%

$$R_i = \frac{D}{2} \quad R_0 = \frac{D_0}{2}$$

D = minor diameter D_0 = nominal diameter
 $\alpha = 90^\circ$



■ Step-by-Step Thread Milling Example

Appendix A

Derivation of Formulas for Internal Thread Milling

R_e , β , and X can be found by a geometric analysis of the entry path.

This entry path is defined by the tool traveling along a circular path, with a radius of R_e about the point C.

$$R_e = \frac{(R_i - C_L)^2 + R_o^2}{2R_o}$$

Triangle OAC enables us to simply solve for R_e .
Note that OAC is a right angle triangle, and that:

$$OA = R_i - C_L$$

$$CA = R_e$$

$$OC = R_o - R_e$$

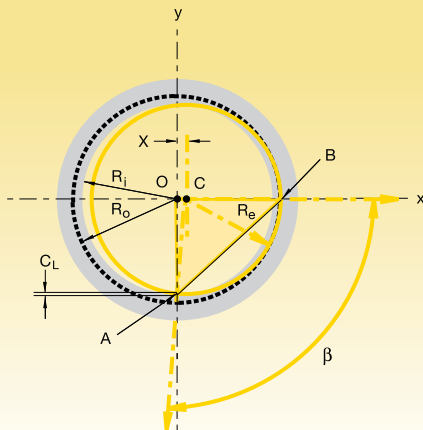
Pythagoras' law states: $OA^2 + OC^2 = AC^2$

Replacing actual values, we get:

$$(R_i - C_L)^2 + (R_o - R_e)^2 = R_e^2$$

Simplifying, we get:

$$R_e = \frac{(R_i - C_L)^2 + R_o^2}{2R_o}$$



Appendix B

Derivation of Formulas for External Thread Milling

R_e , β , and X can be found by a geometric analysis of the entry path.

This entry path is defined by the tool traveling along a circular path, with a radius of R_e about the point C.

$$R_e = \frac{(R_o - C_L)^2 + R_i^2}{2R_i}$$

Triangle OAC enables us to simply solve for R_e .
Note that OAC is a right angle triangle, and that:

$$OA = R_o - C_L$$

$$CA = R_e$$

$$OC = R_e - R_i$$

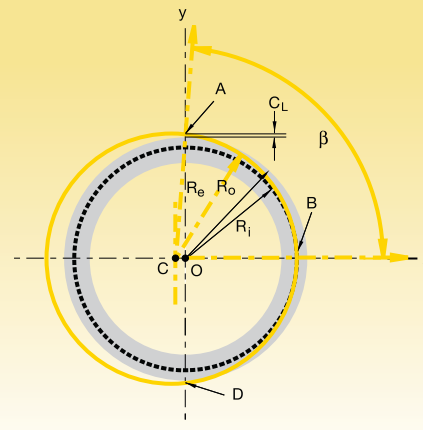
Pythagoras' law states: $OA^2 + OC^2 = AC^2$

Replacing actual values, we get:

$$(R_o - C_L)^2 + (R_e - R_i)^2 = R_e^2$$

Simplifying, we get:

$$R_e = \frac{(R_o - C_L)^2 + R_i^2}{2R_i}$$



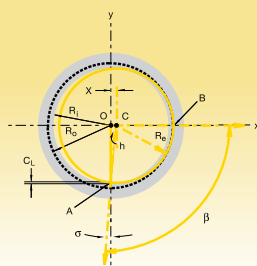
Find the angle β .

$$\beta = 90^\circ + \sigma$$

$$\sin \sigma = \frac{OC}{CA} = \frac{(R_o - R_e)}{R_e}$$

$$\sigma = \arcsin \left(\frac{R_o - R_e}{R_e} \right)$$

$$\text{Therefore, } \beta = 90^\circ + \arcsin \left(\frac{R_o - R_e}{R_e} \right)$$

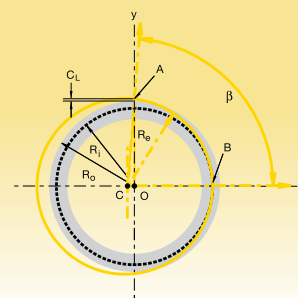


Find the angle β .

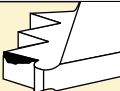
β can be easily found using the same triangle:

$$\sin \beta = \frac{AO}{AC} = \frac{(R_o + C_L)}{R_e}$$

$$\beta = \arcsin \left(\frac{R_o + C_L}{R_e} \right)$$



■ Thread Mill Troubleshooting

problem		possible cause	solution
excessive insert flank wear		• Cutting speed too high.	• Reduce cutting speed.
		• Chip is too thin.	• Increase feed rate.
		• Insufficient coolant.	• Increase coolant quantity/pressure.
chipping of cutting edge		• Chip is too thick.	• Reduce feed rate. • Use the tangential arc method of entrance. • Increase RPM.
		• Vibration.	• Check rigidity.
material build-up on the cutting edge		• Cutting speed too slow.	• Increase cutting speed.
		• Chip thickness too small.	• Increase feed rate.
chatter/vibration		• Feed rate is too high.	• Reduce the feed.
		• Profile is too deep (coarse pitch threads).	• Execute two passes, each with increased cutting depth. • Execute two passes, each cutting only half the thread length.
		• Thread length is too long.	• Execute two passes, each cutting only half of the thread length.
insufficient thread accuracy		• Tool deflection.	• Reduce feed rate. • Execute a zero cut.

■ Insert Tolerance Classes

thread designation	standard designation	tolerance class
UN	ANSI B 1.174	2A/2B
UNJ	MIL-S-8879A	3A/3B
ISO	R262 (DIN 13)	6g/6H
NPT	USAS B2.1 : 1968	standard NPT
NPTF	ANSI B 1.20.3-1976	standard
BSW	B.S. 84 : 1956, DIN 259, ISO 228/1 : 1982	medium class A
BSPT	B.S. 21 : 1985	standard BSPT
ACME	ANSI B1/5 : 1988	3G
PG	DIN 40430	standard
TR	DIN 103	7e/7H

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