kennametal.com

KENNAMETAL®

MASTER CATALOG 2018

VOLUME TWO | **ROTATING** TOOLS

HOLEMAKING | TAPPING | SOLID END MILLING | INDEXABLE MILLING

Indexable Milling • Indexable Thread Milling

TM Series

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

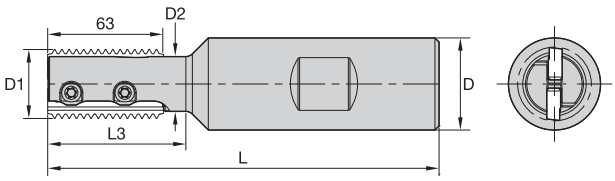
Cutter Body Offering

- 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: 32–10 TPI (0,50–2,50mm)
  - TM25: 20–8 TPI (1,00–3,00mm)
  - TM40: 32–10 TPI (1,00–3,00mm)
  - TM41: 8–4 TPI (3,00–6,00mm)
- Grades for most workpiece materials.
- Easy clamping systems.
- Fast indexing of inserts.

- .530–.630" 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.
- Utilizes inserts with various profiles and pitches.

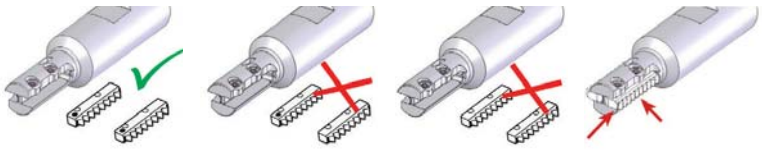


Thread Mill • Weldon Shank • Parallel Threads

order number	catalog number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver
5593154	TM24D053L102Z1	.530	.750	.420	3.270	1.020	1	TM25INSERTSCREW	DT8IP
5593155	TM24D059L118Z1	.590	.750	.470	3.390	1.180	1	TM25INSERTSCREW	DT8IP
5593156	TM24D063L110Z2	.630	.750	.490	3.310	1.100	2	TM25INSERTSCREW	DT8IP
5593157	TM24D063L142Z1	.630	.750	.460	3.630	1.420	1	TM25INSERTSCREW	DT8IP

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).
Through coolant is recommended, especially when D2 > 0.7 x nominal thread diameter.

		Thread Application per Toolholder min thread Ø					
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	BSP(G)
TM24D053L102Z1	.530	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; 5/8–32YB	11/16–14; 3/4–12	3/8–19
TM24D059L118Z1	.590	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	–
TM24D063L110Z2	.630	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–UNS; 3/4–16UN; 3/4–18UNS; 3/4–20UNEF; 11/16–24UNEF; 1 1/16–28UN; 1 1/16–32UN	3/4–12	–
TM24D063L142Z1	.630	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; 11/16–32UN	3/4–12	–



Side with identification marks

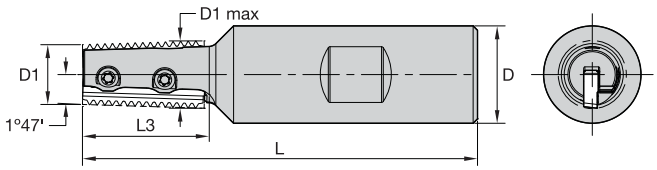
Always mount all inserts on the same side

Always mount all inserts on the same side

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 TM24 blank insert.

- .550" cutting diameter.
- 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.
- Utilizes inserts with various profiles and pitches.

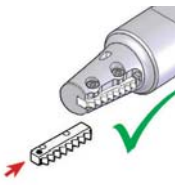


Thread Mill • Weldon Shank • Conical Threads

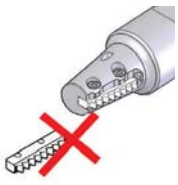
order number	catalog number	D1	D1 max	D	L	L3	Z	insert screw	Torx Plus driver
5593158	TMT24D055L102Z1	.450	.550	.750	3.230	1.020	1	TM25INSERTSCREW	DT8IP

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).

Thread Application per Toolholder min thread Ø				
toolholder	D1 max	NPT	NPTF	BSPT
TMT24D055L102Z1	.550	3/8–18	3/8–18	3/8–19



On Conical inserts, the identification mark must face up



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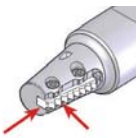
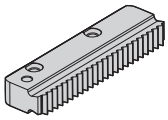
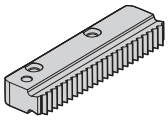
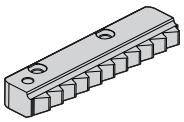
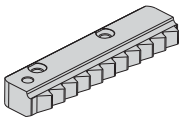


To mount insert correctly, push the insert toward the pocket walls


ISO Profiles

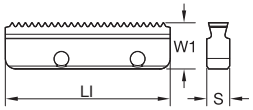

UN Profiles

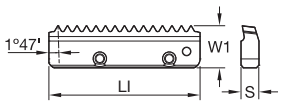

BSF and BSP Profiles


NPT Profiles

● first choice
○ alternate choice

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





Conical Insert

ISO Profiles • Internal

catalog number	thread pitch mm	LI	W1	S	number of teeth	KC610M	KC635M
TM24N050ISO	0,5	.945	.276	.118	49	●	●
TM24N075ISO	0,75	.945	.276	.118	33	●	●
TM24N100ISO	1,0	.945	.276	.118	24	●	●
TM24N150ISO	1,5	.945	.276	.118	16	●	●
TM24N125ISO	1,25	.945	.276	.118	20	●	●
TM24N175ISO	1,75	.945	.276	.118	14	●	●
TM24N200ISO	2,0	.945	.276	.118	12	●	●
TM24N250ISO	2,5	.945	.276	.118	10	●	●

UN Profiles • Internal

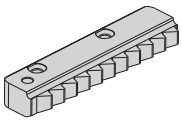
catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24N10UN	10	.945	.276	.118	9	●	●
TM24N12UN	12	.945	.276	.118	11	●	●
TM24N14UN	14	.945	.276	.118	13	●	●
TM24N16UN	16	.945	.276	.118	15	●	●
TM24N18UN	18	.945	.276	.118	17	●	●
TM24N20UN	20	.945	.276	.118	19	●	●
TM24N24UN	24	.945	.276	.118	23	●	●
TM24N28UN	28	.945	.276	.118	27	●	●
TM24N32UN	32	.945	.276	.118	31	●	●

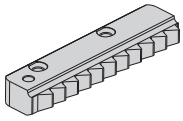
BSF and BSP Profiles • Internal and External

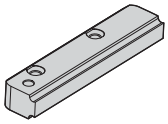
catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24EN14BSF	14	.945	.276	.118	13	●	●
TM24EN19BSF	19	.984	.276	.118	18	●	●

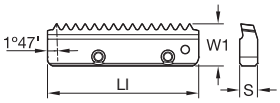
NPT Profiles • Internal and External

catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24EN18NPT	18	.945	.276	.118	17	●	●

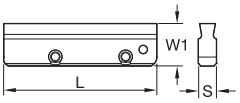

NPTF Profiles


BSPT Profiles


Blank Insert



Conical Insert



Blank Insert

● first choice
○ alternate choice

P	○	●
M		●
K	●	
N	●	
S	○	●
H	●	○

NPTF Profiles • Internal and External

catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24EN18NPTF	18	.945	.276	.118	17	●	●

BSPT Profiles • Internal and External

catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM24EN19BSPT	19	.945	.276	.118	18	●	●

Blank/Plug-In Insert • Internal and External

catalog number	L	W1	S
TM24ENBLANK	.945	.276	.118

TM24 Inserts

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

NOVO KNOWS CAD/CAM

With the addition of NOVO™ applications to your team, your CAD/CAM capabilities become much more accurate, streamlined, and productive.

Before NOVO: The programmer would be in their CAD/CAM software, programming a part. Using the outdated method of finding a tool in a catalog, and then manually inputting the tooling information from the catalog into the CAD/CAM software.

The concern is that assumptions are made, and only partial tooling information is entered.

With NOVO: The powerful digital intelligence of NOVO applications not only help the programmer find the right tool for the metalcutting job, but also automatically integrates all the tooling data into a complete CAD/CAM solution. The integration of all the tooling data increases the viability of the part being programmed, and is delivered quickly — saving you time.

NOVO applications can ensure you have the right tools on your machines, in the right sequence. Resulting in flawless execution that accelerates every job, and maximizes every shift. **kennametal.com/novo**

- .670–2.047" 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.
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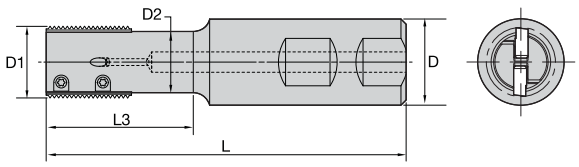
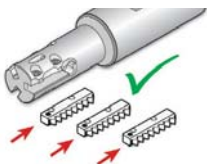


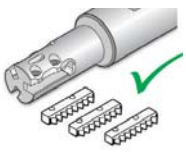
Thread Mill • Weldon Shank • Parallel Threads

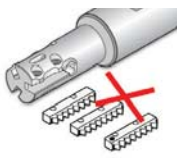
order number	catalog number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver
3030845	TM25D17L26Z2	.669	.984	.551	3.347	1.024	2	TM25INSERTSCREW	DT8IP
3030846	TM25D17L36Z2	.669	.984	.551	3.740	1.417	2	TM25INSERTSCREW	DT8IP
3030848	TM25D20L37Z3	.807	.984	.649	3.780	1.457	3	TM25INSERTSCREW	DT8IP
3030849	TM25D20L44Z3	.807	.984	.649	4.055	1.732	3	TM25INSERTSCREW	DT8IP
3030850	TM25D22L43Z3	.866	.984	.709	4.016	1.693	3	TM25INSERTSCREW	DT8IP
3030852	TM25D22L55Z3	.866	.984	.709	4.488	2.165	3	TM25INSERTSCREW	DT8IP
3031703	TM25D30L55Z5	1.181	.984	1.024	4.528	2.165	5	TM25INSERTSCREW	DT8IP
3031705	TMC25D30L80Z4	1.181	.984	1.024	5.512	3.150	4	TM25INSERTSCREW	DT8IP
5593142	TMS25D36L34Z5	1.417	.630	1.498	1.319	—	5	TM25INSERTSCREW	DT8IP
5593143	TMS25D44L38Z6	1.732	.866	1.575	1.496	—	6	TM25INSERTSCREW	DT8IP
5593141	TMS25D52L40Z8	2.047	1.063	1.890	1.575	—	3	TM25INSERTSCREW	DT8IP

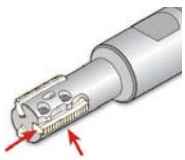
NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).
Kennametal thread mill software: TM – CNC Generator: **http://www.kennametal.com/en/resources/software.html**.

			Thread Application per Toolholder min thread Ø			
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF
TM25D17L26Z2 TM25D17L36Z2	.669	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	.807	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	.866	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	1.181	–	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


Side with identification marks


Side without identification marks


Always mount all inserts on the same side


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.

- .670–1.100" cutting diameter range.
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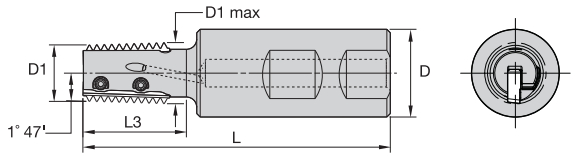
- All cutters have through-coolant capability.
- Utilizes inserts with various profiles and pitches.

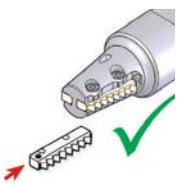


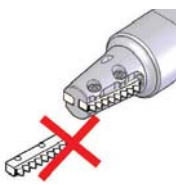
Thread Mill • Weldon Shank • Conical Threads

order number	catalog number	D1	D1 max	D	L	L3	Z	insert screw	in. lbs.	Torx Plus driver
3031708	**TMT25D067L110Z2**	.608	.670	1.000	3.500	1.100	2	**TM25INSERTSCREW**	35	**DT8IP**
3031712	**TMT25D087L170Z3**	.802	.870	1.000	4.090	1.700	3	**TM25INSERTSCREW**	35	**DT8IP**
3031715	**TMT25D110L170Z4**	1.039	1.100	1.000	4.060	1.700	4	**TM25INSERTSCREW**	35	**DT8IP**

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).
Kennametal thread mill software: TM – CNC Generator: **http://www.kennametal.com/en/resources/software.html**.

Thread Application per Toolholder min thread Ø				
toolholder	**D1 max**	**NPT**	**NPTF**	**BSPT**
TMT25D17L26Z2	.669	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	.866	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	1.102	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

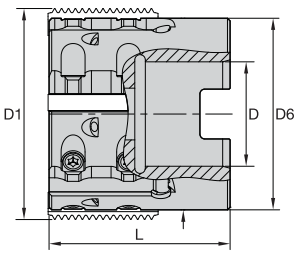

On Conical inserts, the identification mark must face up

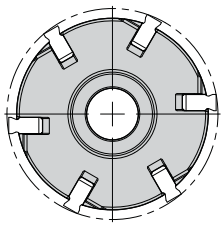

Side without identification marks


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.

- 1.540–2.320" 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.
- Utilizes inserts with various profiles and pitches.



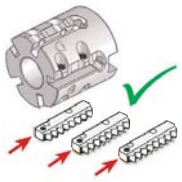


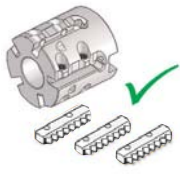
Thread Mill • Shell Mill • Parallel Threads

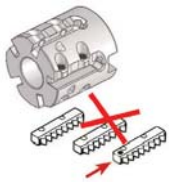
order number	catalog number	D1	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw
5593147	**TMS25D154L126Z5**	1.540	.500	1.382	1.260	5	**TM25INSERTSCREW**	**DT8IP**	**MS5007**
5593146	**TMS25D193L138Z7**	1.930	.750	1.772	1.380	7	**TM25INSERTSCREW**	**DT8IP**	**MS5008**
5593145	**TMS25D232L158Z9**	2.320	1.000	2.169	1.580	9	**TM25INSERTSCREW**	**DT8IP**	**MS5006**

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).
Kennametal thread mill software: TM – CNC Generator: **http://www.kennametal.com/en/resources/software.html**.

	Thread Application per Toolholder min thread Ø				
toolholder	D1	ISO (fine)	UN/UNF/UNEF/UNS	BSW	BSP(G)
TMS25D154L126Z5	1.540	M42 x 1; M42 x 1.5; M45 x 2; M45 x 3	1 11/16–12UNF; 1 3/4–14UNS; 1 5/8–16UN; 1 5/8–18UNEF; 1 5/8–20UN	1 3/4–16; 1 3/4–12	1 1/2–11
TMS25D193L138Z7	1.930	M52 x 1; M55 x 1.5; M55 x 2; M55 x 3	2 1/8–12UN; 2 1/16–16UN; 2 1/8–20UN; 2 1/8–8UN; 2 1/4–10UNS; 2 1/4–14UNS; 2 1/4–18UNS	2 1/4–16; 2 1/4–12	1 3/4–11
TMS25D232L158Z9	2.320	M64 x 1; M64 x 1.5; M64 x 2; M65 x 3	2 1/2–18UN; 2 1/2–20UN; 2 1/2–8UN; 2 1/2–12UN; 2 1/2–10UN; 2 1/2–14UN; 2 1/2–16UN	2 1/2–16; 2 1/2–12	2 1/4–11


Side with identification marks

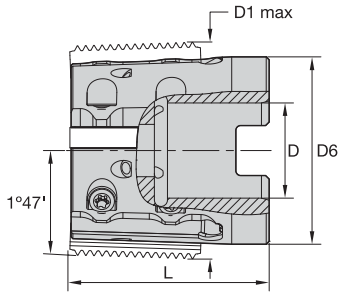

Side without identification marks

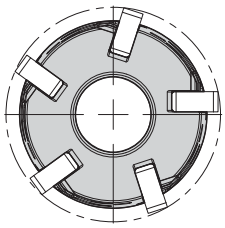

Always mount all inserts on the same side


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.

- 1.478" cutting diameter.
- 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.
- Utilizes inserts with various profiles and pitches.



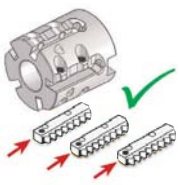


Thread Mill • Shell Mill • Conical Threads

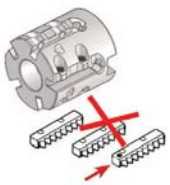
order number	catalog number	D1 max	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw
5593148	TMST25D154L126Z5	1.538	.500	1.358	1.260	5	TM25INSERTSCREW	DT8IP	MS5007

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).
Kennametal thread mill software: TM – CNC Generator: **http://www.kennametal.com/en/resources/software.html**.

Thread Application per Toolholder min thread Ø				
toolholder	D1	NPT	NPTF	BSPT
TMST25D154L126Z5	1.478	1 1/2–11.5; 2–11.5	1 1/2–11.5; 2–11.5	1 1/2–6 x 11



Side with identification marks



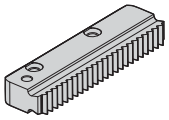
Always mount all inserts on the same side

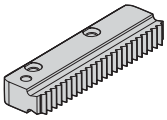
To mount insert correctly, push the insert toward the pocket walls*

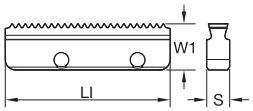
* When not using an insert in each pocket, protect the pocket by using a TM25 blank insert.

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

• ISO metric screw thread style.


ISO Profiles


UN Profiles



● first choice
○ alternate choice

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

ISO Profiles • Internal

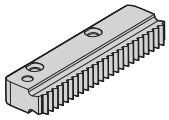
catalog number	thread pitch mm	LI	W1	S	number of teeth	KC610M	KC635M
TM25N300ISO	3	.984	.300	.140	8	●	●
TM25N250ISO	2,5	.984	.300	.140	10	●	●
TM25N200ISO	2	.984	.300	.140	12	●	●
TM25N150ISO	1,5	.984	.300	.140	16	●	●
TM25N100ISO	1	.984	.300	.140	24	●	●

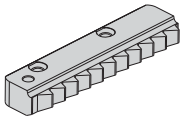
• Unified Thread Standard Style.

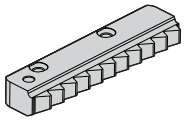
UN Profiles • Internal

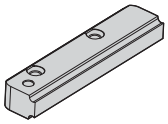
catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM25N8UN	8	.984	.300	.140	7	●	●
TM25N9UN	9	.984	.300	.140	8	●	●
TM25N10UN	10	.984	.300	.140	9	●	●
TM25N12UN	12	.984	.300	.140	11	●	●
TM25N14UN	14	.984	.300	.140	13	●	●
TM25N16UN	16	.984	.300	.140	15	●	●
TM25N18UN	18	.984	.300	.140	17	●	–
TM25N20UN	20	.984	.300	.140	19	●	●

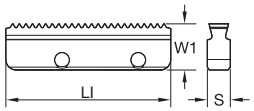
• British Standard Whitworth Thread Style.

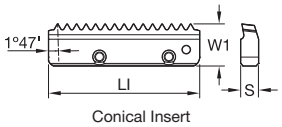

Whitworth Profiles


NPT Profiles

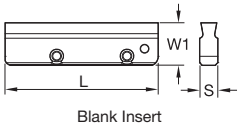

BSPT Profiles


Blank Insert





Conical Insert



Blank Insert

● first choice
○ alternate choice

P	○	●
M		●
K	●	
N	●	
S	○	●
H	●	○

Whitworth Profiles • Internal/External

catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM25EN11W	11	.984	.300	.140	10	●	●
TM25EN12W	12	.984	.300	.140	11	●	–
TM25EN14W	14	.984	.300	.140	13	●	●

• National Pipe Thread Taper Style.

NPT Profiles • Internal/External

catalog number	TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM25EN115NPT	11.5	.984	.300	.140	11	●	●
TM25EN14NPT	14	.984	.300	.140	11	●	●

• British Standard Pipe Standard Thread Style.

BSPT Profiles • Internal/External

catalog number	internal TPI	LI	W1	S	number of teeth	KC610M	KC635M
TM25EN11BSPT	11.0	.984	.300	.140	10	●	–
TM25EN14BSPT	14.0	.984	.300	.140	11	●	–

Blank Insert Form • Internal/External

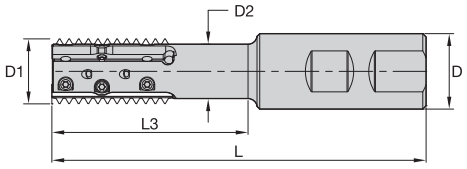
catalog number	L	W1	S
TM25BLANK	.988	.220	.140

TM25 Inserts

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

- .870–1.180" 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.
- Utilizes inserts with various profiles and pitches.



Thread Mill • Weldon Shank • Parallel Threads

order number	catalog number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver	screw
5593191	TM40D087L169Z3	.870	1.000	.710	4.000	1.690	3	TM25INSERTSCREW	DT8IP	MS9000
5593192	TM40D087L256Z3	.870	1.000	.710	4.870	2.560	3	TM25INSERTSCREW	DT8IP	MS9000
5593193	TM40D118L215Z4	1.180	1.250	1.020	4.550	2.150	4	TM25INSERTSCREW	DT8IP	MS9000
5593194	TM40D118L315Z3	1.180	1.250	1.020	5.350	3.150	3	TM25INSERTSCREW	DT8IP	MS9000

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).

Thread Application per Toolholder min thread Ø						
toolholder	D1	ISO (coarse)	ISO (fine)	UN/UNF/UNEF/UNS	BSF	BSP(G)
TM40D087L169Z3	.870	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
TM40D087L256Z3	.870	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
TM40D118L215Z4	1.180	–	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; 15/16UN; 15/16–18UNEF; 15/16–20UN	1 3/8–11; 1 3/8–12; 1 3/8–14; 1 3/8–16	1–11
TM40D118L315Z3	1.180	–	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; 15/16UN; 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*

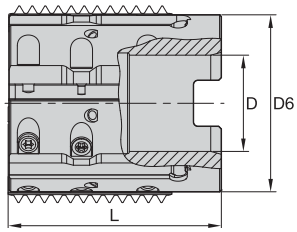
* When not using an insert in each pocket, protect the pocket by using a TM40 blank insert.

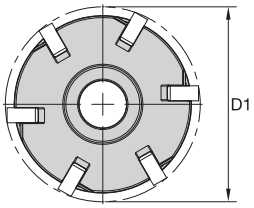
2 Step Clamping System

Step 1. Location Screw

Step 2. Clamping Screw (2)

- 1.930–2.320" 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.
- Utilizes inserts with various profiles and pitches.



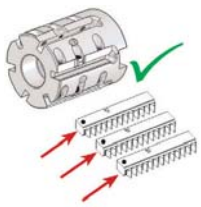


Thread Mill • Shell Mill • Parallel Threads

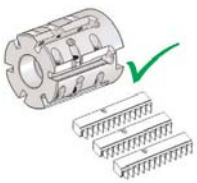
order number	catalog number	D1	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw	screw
5593195	TMS40D193L197Z7	1.930	.750	1.770	1.970	7	TM25INSERTSCREW	DT8IP	MS5008	MS9000
5593196	TMS40D232L200Z9	2.320	1.000	2.170	2.000	9	TM25INSERTSCREW	DT8IP	MS5009	MS9000

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).

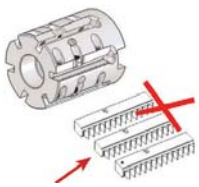
Thread Application per Toolholder min thread Ø					
toolholder	D1	ISO (fine)	UN/UNF/UNEF/UNS	BSW	BSP(G)
TMS40D193L197Z7	1.930	M52 x 1; M55 x 1.5; M55 x 2; M55 x 3	1 7/8–12UN; 1 13/16–16UN; 1 13/16–20UN; 1 15/16–8UN; 1 7/8–10UNS; 1 7/8–14UNS	2 1/4–12; 2 1/4–16	1 3/4–11
TMS40D232L200Z9	2.320	M64 x 1; M64 x 1.5; M64 x 2; M65 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 1/2–12; 2 1/2–16	2 1/4–11



Side with identification marks



Side without identification marks



Always mount all inserts on the same side*

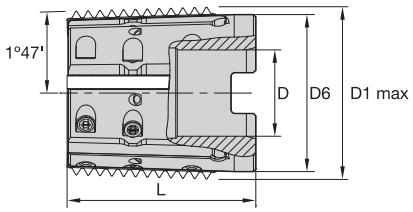
* When not using an insert in each pocket, protect the pocket by using a TM40 blank insert.

2 Step Clamping System!

Step 1. Location Screw

Step 2. Clamping Screw (2)

- 1.930" cutting diameter.
- 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.
- Utilizes inserts with various profiles and pitches.

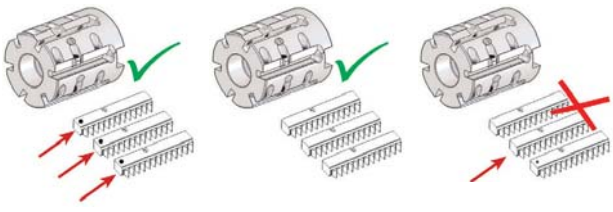


Thead Mill • Shell Mill • Conical Threads

order number	catalog number	D1 max	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw	screw
5593197	TMST40D193L197Z7	1.930	.750	1.770	1.970	7	TM25INSERTSCREW	DT8IP	MS5006	MS9000

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).

Thread Application per Toolholder min thread Ø				
toolholder	D1 max	NPT	NPTF	BSPT
TMST40D193L197Z7	1.930	2 –11.5; 2 1/2–8 (and up)	2–11.5; 2 1/2–8; 3/8	2–6 x 11



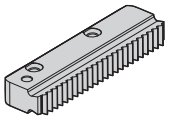
Side with identification marks | Side without identification marks | Always mount all inserts on the same side*

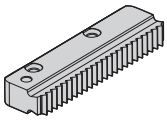
* When not using an insert in each pocket, protect the pocket by using a TM40 blank insert.

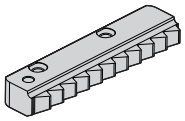
2 Step Clamping System!

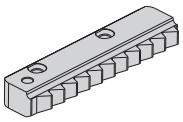
Step 1. Location Screw

Step 2. Clamping Screw (2)


ISO Profiles

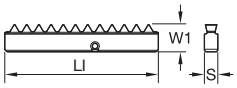

UN Profiles

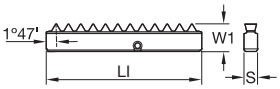

BSF and BSP Profiles


NPT Profiles

● first choice
○ alternate choice

P	○	●
M		●
K	●	
N	●	
S	○	●
H	●	○





Conical Inserts

ISO Profiles • Internal

catalog number	thread pitch mm	LI	W1	S	KC610M	KC635M
TM40N100ISO	1,0	1.575	.278	.137	●	●
TM40N150ISO	1,5	1.575	.278	.137	●	●
TM40N200ISO	2,0	1.575	.278	.137	●	●
TM40N250ISO	2,5	1.575	.278	.137	●	–
TM40N300ISO	3,0	1.575	.278	.137	●	●

UN Profiles • Internal

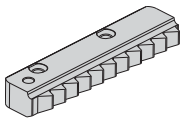
catalog number	TPI	LI	W1	S	KC610M	KC635M
TM40N8UN	8	1.575	.278	.138	●	●
TM40N9UN	9	1.575	.278	.137	●	–
TM40N10UN	10	1.575	.278	.137	●	–
TM40N12UN	12	1.575	.278	.137	●	●
TM40N14UN	14	1.575	.278	.137	●	–
TM40N16UN	16	1.575	.278	.137	●	●
TM40N18UN	18	1.575	.278	.137	●	–
TM40N20UN	20	1.575	.278	.137	●	●

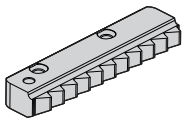
BSF and BSP Profiles • Internal and External

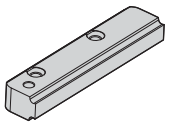
catalog number	TPI	LI	W1	S	KC610M	KC635M
TM40EN11BSF	11	1.575	.278	.138	●	●
TM40EN12BSF	12	1.575	.278	.138	●	–
TM40EN14BSF	14	1.575	.278	.138	●	–
TM40EN16BSF	16	1.575	.278	.138	●	–

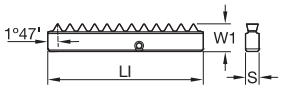
NPT Profiles • Internal and External

catalog number	TPI	LI	W1	S	KC610M	KC635M
TM40EN008NPT	8.0	1.575	.287	.138	●	●
TM40EN115NPT	11.5	1.575	.287	.138	●	–

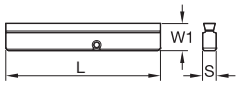

NPT Profiles


BSPT Profiles


Blank Insert



Conical Insert



Blank Insert

● first choice
○ alternate choice

P	○	●
M		●
K	●	
N	●	
S	○	●
H	●	○

NPTF Profiles • Internal and External

catalog number	TPI	LI	W1	S	KC610M	KC635M
TM40EN008NPTF	8.0	1.575	.287	.138	●	●
TM40EN115NPTF	11.5	1.575	.287	.138	●	–

BSPT Profiles • Internal and External

catalog number	TPI	LI	W1	S	KC610M	KC635M
TM40EN011BSPT	11	1.575	.287	.138	●	●

Blank/Plug-In Insert • Internal and External

catalog number	L	W1	S
TM40ENBLANK	1.575	.278	.137

TM40 Inserts

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

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:

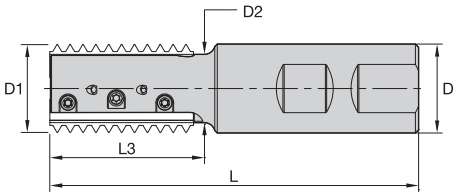
- A partner who cares about a sustainable environment.
- Easy-to-use web portal to value your used carbide.
- Access to our popular Green Box™ options for carbide collection.
- Systematic and efficient disposal of carbide materials.
- Improved profitability.

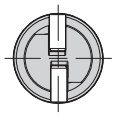
Program is not currently available in all geographical areas.
For more information, please visit **kennametal.com/carbiderecycling**.

KENNAMETAL®

kennametal.com

- 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.
- Utilizes inserts with various profiles and pitches.



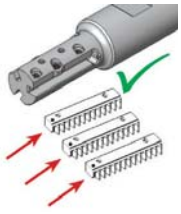


Thread Mill • Weldon Shank • Parallel Threads

order number	catalog number	D1	D	D2	L	L3	Z	insert screw	Torx Plus driver	screw
5593177	TM41D083L177Z1	.835	1.000	.630	4.130	1.770	1	TM25INSERTSCREW	DT8IP	MS9000
5593178	TM41D097L169Z2	.970	1.000	.760	4.130	1.690	2	TM25INSERTSCREW	DT8IP	MS9000
5593179	TM41D118L256Z3	1.180	1.250	.953	5.000	2.560	3	TM25INSERTSCREW	DT8IP	MS9000
5593180	TM41D142L169Z5	1.420	1.250	1.110	4.130	1.690	5	TM25INSERTSCREW	DT8IP	MS9000
5593181	TM41D142L256Z4	1.420	1.250	1.110	4.980	2.560	4	TM25INSERTSCREW	DT8IP	MS9000

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).

		Thread Application per Toolholder min thread Ø						
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSW/BSF	NPT	NPTF
TM41D083L177Z1	.835	M30 x 3.5; M36 x 4	M28 x 3; M45 x 4	1 1/8–7; 1 3/8–6	1 1/8–8UN; 1 7/16–6UN	1 3/8–8BSF; 1 1/4–7BSW	–	–
TM41D097L169Z2	.970	M30 x 3.5; M36 x 4	M28 x 3; M45 x 4	1 1/8–7; 1 3/8–6	1 1/8–8UN; 1 7/16–6UN	1 3/8–8BSF; 1 1/4–7BSW	–	–
TM41D118L256Z3	1.180	M36 x 4; M42 x 4.5	M34 x 3; M34 x 3.5; M45 x 4	1 3/8–6	1 3/8–8UN; 1 7/16–6UN	1 3/8–8BSF; 1 3/4–7BSF; 1 1/2–6BSW	–	–
TM41D142L169Z5	1.420	M42 x 4.5; M48 x 5; M56 x 5.5; M64 x 6	M40 x 3; M40 x 3.5; M42 x 4; M70 x 6	1 3/4–5; 2–4.5; 2 1/2–4	1 5/8–8UN; 1 5/8–6UN	1 5/8–8BSF; 1 3/4–7BSF; 1 7/8–6BSF	2 1/2–8	2 1/2–8
TM41D142L256Z4	1.420	M42 x 4.5; M48 x 5; M56 x 5.5; M64 x 6	M40 x 3; M40 x 3.5; M42 x 4; M70 x 6	1 3/4–5; 2–4.5; 2 1/2–4	1 5/8–8UN; 1 5/8–6UN	1 5/8–8BSF; 1 3/4–7BSF; 1 7/8–6BSF	2 1/2–8	2 1/2–8



Side with identification marks

Side without identification marks

Always mount all inserts on the same side*

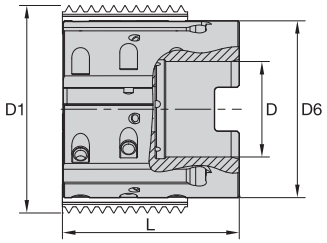
* When not using an insert in each pocket, protect the pocket by using a TM41 blank insert.

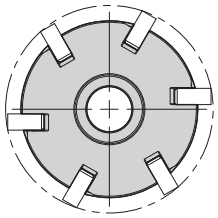
2 Step Clamping System!

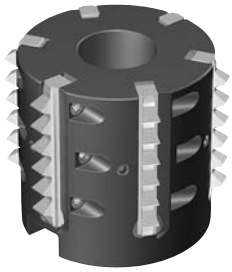
Step 1. Location Screw (2)

Step 2. Clamping Screw

- 2.090–2.480" 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.
- Utilizes inserts with various profiles and pitches.





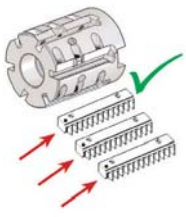


Thread Mill • Shell Mill • Parallel Threads

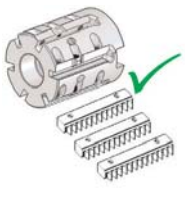
order number	catalog number	D1	D	D6	L	Z	insert screw	Torx Plus driver	socket-head cap screw	screw
5593182	**TMS41D210L200Z5**	2.090	.750	1.770	2.000	5	**TM25INSERTSCREW**	**DT8IP**	**MS5008**	**MS9000**
5593183	**TMS41D250L200Z6**	2.480	1.000	2.170	2.000	6	**TM25INSERTSCREW**	**DT8IP**	**MS5009**	**MS9000**

NOTE: Torque value for insert screw is 35 in. lbs. (4 Nm).

Thread Application per Toolholder min thread Ø								
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/UNEF/UNS	BSF	NPT	NPTF
TMS41D210L200Z5	2.090	M64 x 6	M58 x 4; M70 x 6	2 1/2–4	2 3/8–6UN; 2 3/8–8UN	2 3/8–8; 2 1/2–6	2 1/2–8	2 1/2–8
TMS41D250L200Z6	2.480	–	M68 x 4; M70 x 6	3–4	2 3/4–6UN; 2 3/4–8UN	2 3/4–8; 2 3/4–6	2 1/2–8	2 1/2–8



Side with identification marks



Side without identification marks

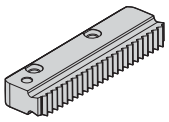
Always mount all inserts on the same side*

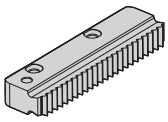
* When not using an insert in each pocket, protect the pocket by using a TM41 blank insert.

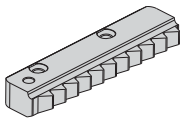
2 Step Clamping System

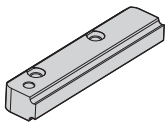
Step 1. Location Screw (2)

Step 2. Clamping Screw


ISO Profiles

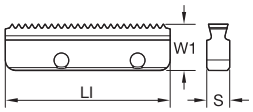

UN Profiles

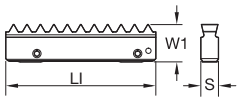

NPT Profiles


Blank Inserts

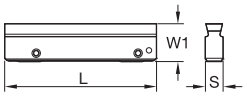
P		○	●
M			●
K		●	
N		●	
S		○	●
H		●	○

● first choice
○ alternate choice





Conical Insert



Blank Inserts

ISO Profiles • Internal

catalog number	thread pitch mm	LI	W1	S	KC610M	KC635M
TM41N300ISO	3,0	1.614	.392	.187	●	●
TM41N350ISO	3,5	1.614	.392	.187	●	●
TM41N400ISO	4,0	1.614	.392	.187	●	●
TM41N450ISO	4,5	1.614	.392	.187	●	●
TM41N500ISO	5,0	1.614	.392	.187	●	●
TM41N550ISO	5,5	1.614	.392	.187	●	●
TM41N600ISO	6,0	1.614	.392	.187	●	●

UN Profiles • Internal

catalog number	TPI	LI	W1	S	KC610M	KC635M
TM41N4UN	4	1.614	.392	.187	●	●
TM41N45UN	4.5	1.614	.392	.187	●	●
TM41N5UN	5	1.614	.392	.187	●	●
TM41N6UN	6	1.614	.392	.187	●	●
TM41N7UN	7	1.614	.392	.187	●	●
TM41N8UN	8	1.614	.392	.187	●	●

NPT Profiles • Internal and External

catalog number	TPI	LI	W1	S	KC610M	KC635M
TM41EN8NPT	8	1.614	.392	.187	●	●

Blank/Plug-In Insert • Internal and External

catalog number	L	W1	S
TM41ENBLANK	1.614	.392	.187

TM41 Inserts

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

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

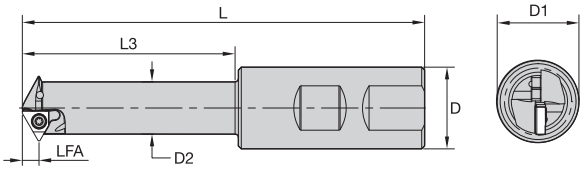
- Reduced load on the cutting edges due to single-point insert.
- Low cutting forces enable fast machining.
- Suitable for hard material applications.
- Wide range of applications, with partial profile insert (60°/55°).
- Pitch range 16–3 TPI (1,5–8mm).

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:

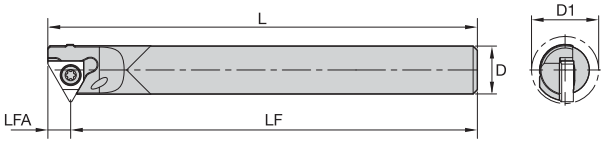
- Weldon®, steel, carbide, and shell mill cutters available.
- Long overhang capability.
- Through coolant capability.
- Diameter range 0.5–1.2" (2" with shell mills).
- Improved chip evacuation and cooling.



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

order number	catalog number	D1	D	D2	L	L3	LFA	Z	max RPM	insert screw	Torx driver
5593105	KTMDUWD058L157Z1	.580	.625	.420	3.760	1.780	.210	1	7970	KTMDUSCREW1	DT8
5593106	KTMDUWD081L236Z2	.810	1.000	.630	4.920	2.570	.210	2	6740	KTMDUSCREW1	DT8
5593107	KTMDUWD091L276Z2	.910	1.000	.700	5.380	2.960	.210	2	6380	KTMDUSCREW1	DT8
5593108	KTMDUWD102L315Z3	1.020	1.000	.800	5.790	3.360	.210	3	6000	KTMDUSCREW1	DT8
5593120	KTMDUWD122L374Z4	1.220	1.250	1.010	6.370	3.950	.210	4	5500	KTMDUSCREW1	DT8

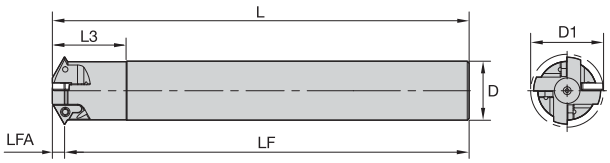
Thread Application per Toolholder min thread Ø								
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP (G)	Partial 55°	Trapez
KTMDUWD058L157Z1	.580	M18 x 2.5; M24 x 3.0	M16 x 0.5; M16 x 0.75; M16 x 1.0; M17 x 1.25; M17 x 1.5; M17 x 2.0	3/4-10	5/8-32UN; 5/8-28UN; 5/8-27UNS; 11/16-24UN; 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; 7/8-9; 1-8; 1 1/8-7	TR22 x 3; TR24 x 3
KTMDUWD081L236Z2	.810	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	1–8; 1 1/8–7; 1 3/8–6	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)
KTMDUWD091L276Z2	.910	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 1/8–10UNS; 1 1/8UN	3/4–14; 1–11	1–26; 1–20; 1–16; 1 1/16–12; 1 1/8–9; 1 1/8–7	–
KTMDUWD102L315Z3	1.020	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; 1 3/16–8UN	7/8–14; 1–11	1 1/8–26; 1 1/8–20; 1 3/8–16; 1 3/8–12; 1 3/16–8; 1 1/4–7	–
KTMDUWD122L374Z4	1.220	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	1 5/16–28UN; 1 3/8–24UNS; 1 5/16–20UN; 1 5/16–18UNEF; 1 5/16–16UN; 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	catalog number	D1	D	L	LF	LFA	Z	max RPM	insert screw	Torx driver
5593125	KTMDUCD058L236Z1	.600	.438	4.720	4.510	.210	1	7970	KTMDUSCREW1	DT8
5593126	KTMDUCD068L256Z2	.680	.563	5.350	5.140	.210	2	7380	KTMDUSCREW1	DT8
5593127	KTMDUCD081L315Z2	.810	.625	5.300	5.090	.210	2	6740	KTMDUSCREW1	DT8

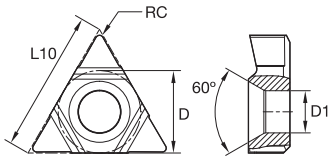
Thread Application per Toolholder min thread Ø								
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP (G)	Partial 55°	Trapez
KTMDUCD058L236Z1	.600	M18 x 2.5; M24 x 3.0	M16 x 0.5; M16 x 0.75; M16 x 1.0; M17 x 1.25; M17 x 1.5; M17 x 2.0	3/4–10; 7/8–9; 1–8	5/8–32UN; 5/8–28UN; 5/8–27UNS; 11/16–28UNEF; 11/16–20UN; 11/16–16UN; 3/4–14UNS; 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	TR22 x 3; TR24 x3
KTMDUCD068L256Z2	.680	M20 x 2.5; M22 x 2.5	M21 x 2.0	7/8–9	7/8–10UNS; 13/16/12UN	–	–	–
KTMDUCD081L315Z2	.810	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	1–8; 1 1/8–7; 1 3/8–6	7/8–32UN; 7/8–28UN; 7/8–27UNS; 7/8–24UNS; 7/8–20UNEF; 1–18UNS; 15–16UN; 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

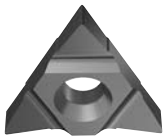


Thread Mill • U Style • Steel Cylindrical Shank • 1/4" IC

order number	catalog number	D1	D	L	L3	LF	LFA	Z	max RPM	insert screw	Torx driver
5593132	KTMDUED091L300Z2	.910	.625	5.600	3.210	5.390	.210	2	6340	KTMDUSCREW1	DT8
5593133	KTMDUED102L415Z3	1.020	.750	7.200	4.360	6.990	.210	3	6000	KTMDUSCREW1	DT8
5593135	KTMDUED122L452Z4	1.220	1.000	7.700	4.730	7.490	.210	4	5500	KTMDUSCREW1	DT8

Thread Application per Toolholder min thread Ø							
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP (G)	Partial 55°
KTMDUED091L300Z2	.910	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; 1 1/16–12UN; 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
KTMDUED102L415Z3	1.020	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 1/7–7; 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 1/8–16UN; 1 1/8–14UNS; 1 1/8–12UNF; 1 3/8–10UNS; 1 7/16–8UN	3/4–14; 1–11	1 1/8–26; 1 1/8–20; 1 3/16–16; 1 3/16–12; 1 3/16–8; 1 1/4–7
KTMDUED122L452Z4	1.220	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	1 5/16–28UN; 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





● first choice
○ alternate choice

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

KTMD • 1/4" IC • Partial Profile 60°

catalog number	Thread Pitch min	Thread Pitch max	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU11L0515N60	1	2	16	48	.128	.250	.433	.002	●	●
KTMDU11L2025N60	2	3	9	12	.103	.250	.433	.004	●	●
KTMDU11L1520N60	2	2	12	16	.128	.250	.433	.002	●	●
KTMDU11L2540N60	3	4	6	10	.128	.250	.433	.006	●	●
KTMDU11L2525N60	3	3	10	10	.082	.250	.433	.004	●	●

NOTE: KTMDU11L2525N60 can only be used with holder KTMDUCD17L065Z2.

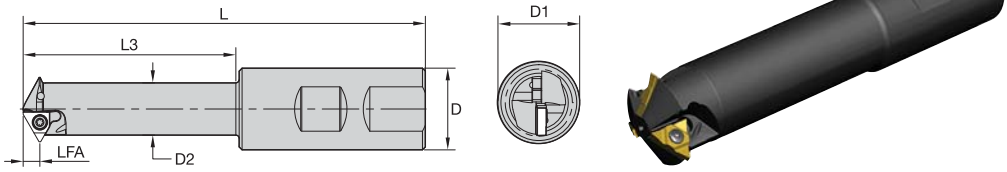
KTMD • 1/4" IC • Partial Profile 55°

catalog number	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU11L1107N55	7	11	.128	.250	.433	.009	●	●
KTMDU11L1612N55	12	16	.128	.250	.433	.003	●	●
KTMDU11L4816N55	16	48	.128	.250	.433	.004	●	●

KTMD • 1/4" IC

materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

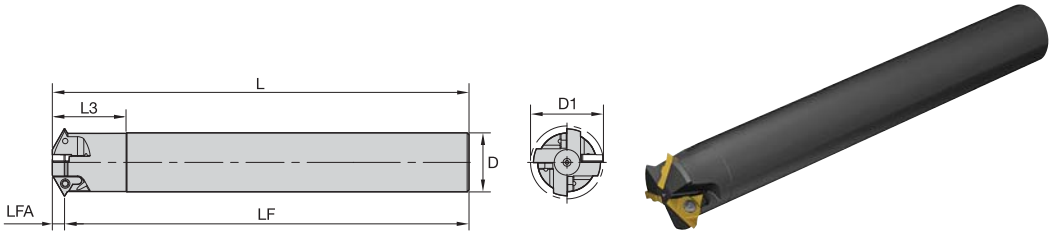
NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.



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

order number	catalog number	D1	D	D2	L	L3	LFA	Z	max RPM	insert screw	Torx Plus driver
5593109	KTMDUWD144L374Z3	1.440	1.250	1.140	6.450	4.060	.320	3	3680	KTMDUSCREW2	DT3IP
5593121	KTMDUWD165L472Z4	1.660	1.500	1.350	7.820	5.040	.320	4	3430	KTMDUSCREW2	DT3IP

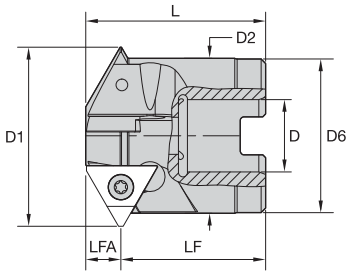
		Thread Application per Toolholder min thread Ø					
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP(G)	Partial 55°
KTMDUWD144L374Z3	1.440	M42 x 4.5; M48 x 5.0; M56 x 5.5; M64 x 6.0	M39 x 1.5; M39 x 2.0; M40 x 2.5; M41 x 3.0; M42 x 3.5; M42 x 4.0	1 3/4–5; 2–4.5; 2 1/2–4	1 9/16UN; 1 5/8UNS; 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 5/8–12; 1 5/8–8; 2 1/4–6; 1 3/4–5
KTMDUWD165L472Z4	1.660	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; M48x4.0	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

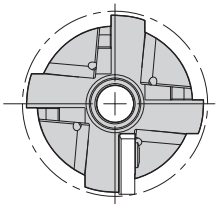


Thread Mill • U Style • Steel Cylindrical Shank • 3/8" IC

order number	catalog number	D1	D	L	L3	LF	LFA	Z	max RPM	insert screw	Torx Plus driver
5593134	KTMDUED144L512Z3	1.440	1.000	8.350	5.430	8.040	.310	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°
KTMDUED144L512Z3	1.4400	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 5/8–8UN; 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

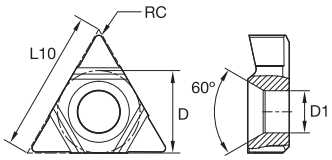


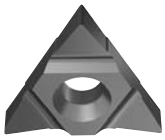


Thread Mill • U Style • Shell Mill • 3/8" IC

order number	catalog number	D1	D	D2	D6	L	LF	LFA	Z	max RPM	insert screw	Torx Plus driver
5593139	KTMDUSD169L158Z4	1.653	.500	1.350	1.339	1.580	1.268	.310	4	3430	KTMDUSCREW2	DT3IP
5593140	KTMDUSD209L158Z5	2.046	.750	1.756	1.740	1.580	1.268	.299	5	3210	KTMDUSCREW2	DT3IP

Thread Application per Toolholder min thread Ø							
toolholder	D1	ISO (coarse)	ISO (fine)	UNC	UN/UNF/ UNEF/UNS	BSP (G)	Partial 55°
KTMDUSD169L158Z4	1.6530	M56 x 5.5; M64 x 6.0	M45 x 1.5; M48 x 2.0; M48 x 3.0; M48 x 4.0	2–4.5; 2 1/2–4	1 13/16–16UN; 1 7/8–14UNS; 1 13/16–12UN; 1 7/8–10UNS; 1 7/8–8UN; 1 15/16–6UN	1 1/2–11	1 7/8–16; 1 7/8–12; 1 7/8–8; 2 1/8–6; 2–4.5; 2 1/4–4
KTMDUSD209L158Z5	2.0460	M64 x 6.0	M55 x 1.5; M56 x 2.0; M58 x 3.0; M58 x 4.0	2 1/2–4	2 1/4–16UN; 2 1/4–14UNS; 3 1/4–12UN; 2 1/4–10UNS; 2 1/4–8UN; 2 3/8–6UN	2–11	2 1/4–16; 2 1/4–12; 3/8–8; 2 3/8–6; 3–5; 3 1/2–4.5





● first choice
○ alternate choice

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

KTMD • 3/8" IC • Partial Profile 60°

catalog number	Thread Pitch min	Thread Pitch max	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU16L1520N60	2	2	12	16	.152	.375	.630	.002	●	●
KTMDU16L2535N60	3	4	7	10	.152	.375	.630	.006	●	●
KTMDU16L4060N60	4	6	4	6	.152	.375	.630	.010	●	●

KTMD • 3/8" IC • Partial Profile 55°

catalog number	TPI min	TPI max	D1	D	L10	RC	KC610M	KC635M
KTMDU16L0604N55	5	6	.152	.375	.630	.011	●	●
KTMDU16L1107N55	7	11	.152	.375	.630	.009	●	●
KTMDU16L1612N55	12	16	.152	.375	.630	.003	●	–

KTMD • 3/8" IC

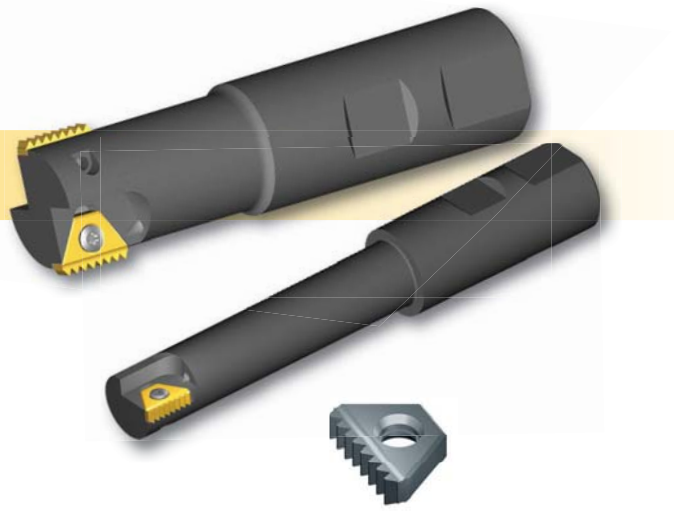
materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

TMS Series

Primary Application

The TMS series, a Kennametal Thread Milling System, 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 utilizes inserts with various profiles and pitches.



Features and Benefits

Proven solution and versatile indexable thread milling product family.

Comprehensive Offering of Cutter Bodies

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

Double-Sided Weldon Cutter Bodies

- 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 (in)	indexable insert	largest milling cutter
M11 x 0,75	.401	STN10075ISO-I	9X1R .. STN10M
M12	.398	STN10175ISO-I-C	9X1R015B20-STN10C
M12 x 1,00	.430	STN10100ISO-I	9X1R .. STN10M
M14	.466	STN11200ISO-I-C	11X1R .. STN11N
M16	.545	STN11200ISO-I-C	11X1R .. STN11N
M20	.681	STN16250ISO-I-C	15X1R020B16-STN16C
M20 x 1,50	.724	STN11150ISO-I	11X1R .. STN11N
M20 x 1,00	.745	STN11100ISO-I	11X1R .. STN11N
M24	.817	STN22300ISO-I-C	18X1R030B25-STN22C
M24 x 2,00	.860	STN16200ISO-I	17X1R022B16-STN16N
M24 x 1,50	.881	STN11150ISO-I	11X1R .. STN11N
M24 x 1,50	.881	STN16150ISO-I	17X1R022B16-STN16N
M27	.935	STN22300ISO-I-C	18X1R030B25-STN22C
M30	1.032	STN27350ISO-I-C	25X1R040B25-STN27C
M30 x 2,00	1.096	STN16200ISO-I	22X1R025B25-STN16L
M33	1.150	STN27350ISO-I-C	25X1R040B25-STN27C
M33 x 2,00	1.214	STN16200ISO-I	22X1R025B25-STN16L
M33 x 1,50	1.254	STN16150ISO-I	22X1R025B25-STN16L
M35 x 1,50	1.314	STN16150ISO-I	22X1R025B25-STN16L
M36 x 2,00	1.332	STN16200ISO-I	22X1R025B25-STN16L
M42 x 2,00	1.569	STN27200ISO-I	30X1R052B25-STN27N
M45 x 2,00	1.687	STN27200ISO-I	37X1R .. STN27N or L
M48 x 2,00	1.805	STN27200ISO-I	37X1R058B32-STN27N or L
M55 x 2,00	2.080	STN27200ISO-I	37X1R .. STN27N or L
M56 x 2,00	2.120	STN27200ISO-I	37X1R .. STN27N or L
M72 x 2,00	2.750	STN27200ISO-I	37X1R .. STN27N or L

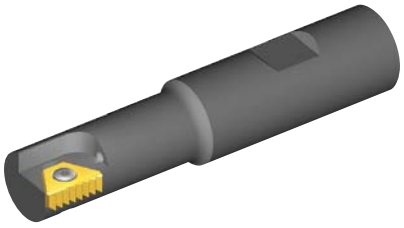
Internal Threads • Insert and Holder Recommendations

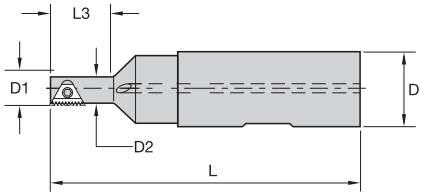
thread	tap hole fl (in)	indexable insert	largest milling cutter
9/16 - 18UNF	.502	STN1018UN-I	9X1R .. STN10M
5/8 - 24UNEF	.580	STN1124UN-I	11X1R .. STN11N
5/8 - 18UNF	.565	STN1118UN-I	11X1R .. STN11N
3/4 - 20UNEF	.696	STN1120UN-I	11X1R .. STN11N
3/4 - 16UNF	.682	STN1116UN-I	11X1R .. STN11N
7/8 - 14UNF	.798	STN1114UN-I	11X1R .. STN11N
1 - 16UN	.932	STN1616UN-I	18X1R030B25-STN22C
1 - 12UNF	.910	STN1612UN-I	17X1R .. STN16N
1 1/8 - 12UNF	1.035	STN1612UN-I	22X1R .. STN16L
1 1/4 - 12UNF	1.160	STN1612UN-I	22X1R .. STN16L
1 3/8 - 12UNF	1.285	STN1612UN-I	22X1R .. STN16L

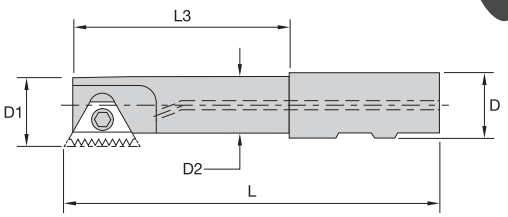
Whitworth Pipe Thread (Internal) to DIN 259

thread	tap hole fl (in)	indexable insert	largest milling cutter
R 5/8	.811	STN1614BSW	17X1R022B16-STN16N
R 3/4	.950	STN1614BSW	20X1R043B20-STN16N
R 7/8	1.098	STN1614BSW	22X1R025B25-STN16L
R 1	1.271	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.
- Utilizes inserts with various profiles and pitches.







Thread Mill • Mini

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx driver
1132616	**9X1R012B12STN10M**	.354	.472	.268	2.717	.472	1	39935	STN10	**SN7T**	**DT7**
1191395	**9X1R017B20STN10M**	.354	.787	.280	3.307	.669	1	39935	STN10	**SN7T**	**DT7**

Thread Mill • Normal Shank • STN11

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx driver
1294964	**11X1R012B12STN11N**	.453	.472	.350	2.756	.472	1	36825	STN11	**SN2TPKG**	**DT8**
1130302	**11X1R020B20STN11N**	.453	.787	.350	3.347	.787	1	36825	STN11	**SN2TPKG**	**DT8**

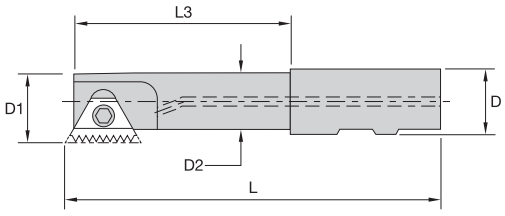
Thread Mills • Normal Shank • STN16

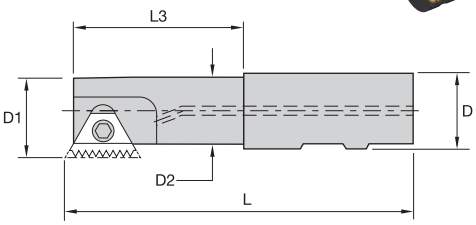
order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx driver
1130686	**17X1R022B16STN16N**	.669	.630	.535	3.543	.866	1	25750	STN16	**SN3TM**	**DT10**
1130740	**20X1R043B20STN16N**	.787	.787	.654	3.740	1.693	1	23330	STN16	**SN3TPKG**	**DT10**

Thread Mills • Normal Shank • STN27

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx wrench
1130969	**30X1R052B25STN27N**	1.181	.984	.945	4.331	2.047	1	12900	STN27	**SN5TM**	**TT25**
1131069	**37X1R058B32STN27N**	1.457	1.260	1.063	4.724	2.283	1	11600	STN27	**SN5TM**	**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.
- Utilizes inserts with various profiles and pitches.





Thread Mills • Normal Shank • STN.38

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx wrench
1178986	35X1R055B32STNB38N	1.378	1.260	1.221	4.528	2.165	1	11000	STNB38	SM7TPKG	TT30

Thread Mill • Long Shank • STN16

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx driver
1130837	22X1R025B25STN16L	.866	.984	.732	4.921	.984	1	22230	STN16	SN3TPKG	DT10

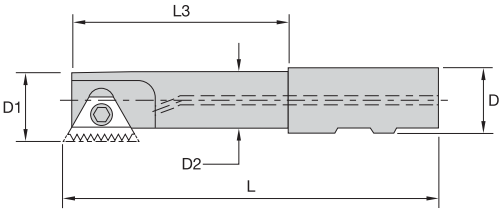
Thread Mill • Long Shank • STN27

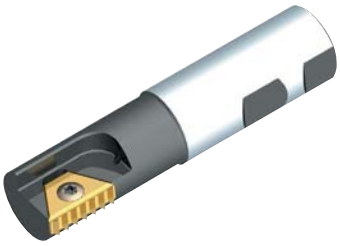
order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx wrench
1130977	30X1R092B25STN27L	1.181	.984	.945	5.906	3.622	1	12900	STN27	SN5TM	TT25
1131086	37X1R098B32STN27L	1.457	1.260	1.221	6.299	3.858	1	11600	STN27	SN5TM	TT25

Thread Mill • Long Shank • STN38

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1	insert screw	Torx wrench
1566071	46X1R100B40STNB38L	1.811	1.575	1.496	6.693	3.937	1	10000	STNB38	SM7TPKG	TT30

- Thread milling system.



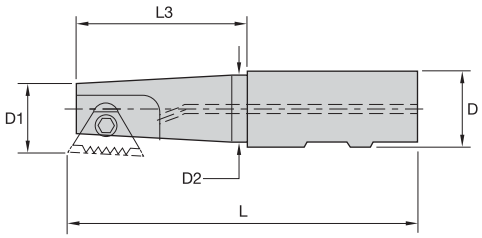


Thread Mill • Internal Coarse Pitch Thread

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1
1176964	**15X1R020B16STN16C**	.610	.630	.480	3.583	–	1	26550	STN16___C
1176967	**25X1R040B25STN27C**	.984	.984	.748	3.858	1.575	1	22000	STN27___C

Spare Parts

D1	insert screw	Nm	Torx driver	Torx wrench
.610	**SN3TPKG**	2,3	**DT10**	–
.984	**SN5TM**	5,0	–	**TT25**



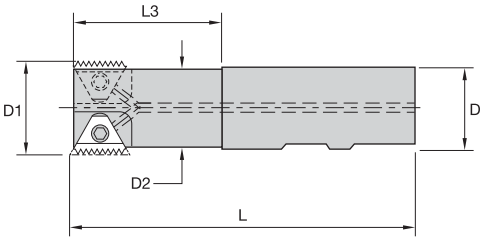
Thread Mill • Tapered Shank • Right Hand

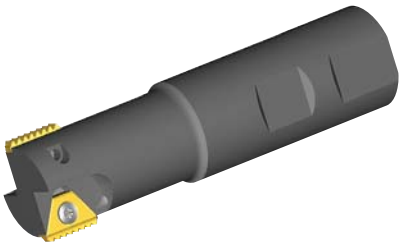
order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1
1176970	**10X1R015B20STN11T**	.390	.787	.291	3.032	.610	1	36500	STN11
1132781	**15X1R022B16STN16T**	.610	.630	.492	3.150	.866	1	26550	STN16
1135826	**19X1R023B20STN16T**	.748	.787	.591	3.347	.906	1	24350	STN16

Spare Parts

D1	insert screw	Nm	Torx driver
.390	**SN2TPKG**	1,7	**DT8**
.610	**SN3TPKG**	2,3	**DT10**
.748	**SN3TM**	2,3	**DT10**

- Cutting diameter ranges from .670–1.654".
- 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.
- Utilizes inserts with various profiles and pitches.



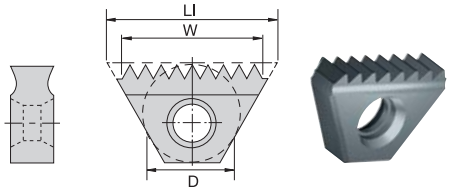


Thread Mill • Double Insert

order number	catalog number	D1	D	D2	L	L3	Z	max RPM	insert 1
1280494	**K067TM2RW075STN11D**	.670	.750	.537	3.420	1.340	2	30275	STN11
1124019	**26X2R043B25STN16D**	1.024	.984	.886	3.937	1.693	2	20530	STN16
1280517	**K102TM2RW100STN16D**	1.024	1.000	.891	4.020	1.690	2	20530	STN16
1131118	**42X2R045B32STN27D**	1.654	1.260	1.417	4.724	1.772	2	10900	STN27
1280598	**K165TM2RW125STN27D**	1.654	1.250	1.417	4.650	1.770	2	10900	STN27

Spare Parts

D1	 insert screw	 Nm	 Torx driver	 Torx wrench
.670	**SN2TPKG**	2,0	**DT8**	**–**
1.024	**SN3TPKG**	2,3	**DT10**	**–**
1.654	**SN5TM**	5,0	**–**	**TT25**



● first choice
○ alternate choice

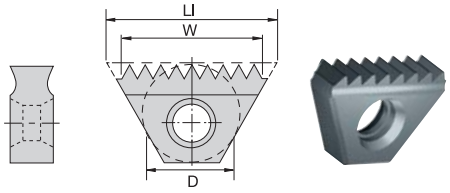
		KC610M	KC620M	KC635M
P		●	○	○
M		○	●	●
K		●		
N		●		
S			●	●
H			●	●

Internal • UN Thread • Unified Thread Standard Style

catalog number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1612UNI	12	.375	.630	.580	7	–	–	●
STN1114UNI	14	.250	.430	.360	5	–	–	●
STN1614UNI	14	.375	.630	.570	8	–	–	●
STN1116UNI	16	.250	.430	.380	6	–	–	●
STN1616UNI	16	.375	.630	.560	9	●	–	–
STN1018UNI	18	.236	.410	.330	6	–	–	●
STN1118UNI	18	.250	.430	.390	7	–	–	●
STN1120UNI	20	.250	.430	.400	8	–	–	●
STN1020UNI	20	.236	.410	.350	7	–	–	●
STN1124UNI	24	.250	.430	.380	9	–	–	●
STN1624UNI	24	.375	.630	.580	14	–	–	●
STN1627UNI	27	.375	.630	.560	15	–	–	●
STN1632UNI	32	.375	.630	.590	9	–	–	●

External • UN Thread • Unified Thread Standard Style

catalog number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1118UNE	18	1/4	.430	.390	7	–	–	●
STN1614UNE	14	3/8	.630	.570	8	–	–	●
STN1616UNE	16	3/8	.630	.560	9	–	–	●
STN1620UNE	20	3/8	.630	.550	11	–	–	●
STN1624UNE	24	3/8	.630	.580	14	–	–	●



● first choice
○ alternate choice

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

Internal • ISO Thread • ISO Metric Screw Thread Style

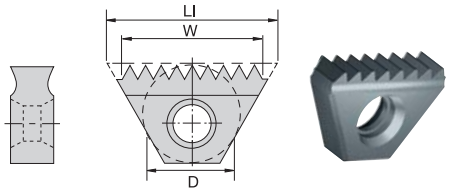
catalog number	thread pitch mm	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN10075ISOI	0,750	.236	.410	.380	13	–	–	●
STN10100ISOI	1,000	.236	.410	.350	9	–	●	●
STN10125ISOI	1,250	.236	.410	.340	7	–	–	●
STN10150ISOI	1,500	.236	.410	.350	6	–	–	●
STN11100ISOI	1,000	.250	.430	.390	10	–	–	●
STN11150ISOI	1,500	.250	.430	.410	7	–	–	●
STN16100ISOI	1,000	.375	.630	.590	15	–	–	●
STN16150ISOI	1,500	.375	.630	.590	10	–	–	●
STN16175ISOI	1,750	.375	.630	.550	8	–	–	●
STN16200ISOI	2,000	.375	.630	.550	7	–	–	●

External • ISO Thread • ISO Metric Screw Thread Style • Coarse

catalog number	thread pitch mm	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN22300ISOIC	3,000	.500	.870	.700	6	●	–	–
STN27350ISOIC	3,500	.625	1.060	.960	7	●	–	–

External • ISO Thread • ISO Metric Screw Thread Style

catalog number	thread pitch mm	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN16150ISOE	1,500	.375	.630	.590	10	●	●	–
STN27200ISOE	2,000	.625	1.060	.940	12	●	–	–



● first choice
○ alternate choice

		KC610M	KC620M	KC635M
P		●	○	○
M		○	●	●
K		●		
N		●		
S			●	●
H			●	●

BSW Thread • British Standard Whitworth Thread Style

catalog number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1119BSW	19	1/4	.430	.370	7	–	–	●
STN1614BSW	14	3/8	.630	.570	8	●	–	●
STN1612BSW	12	3/8	.630	.580	7	–	–	●
STN1611BSW	11	3/8	.630	.550	6	●	–	●
STN2711BSW	11	5/8	1.060	.910	10	–	–	●

NPS Thread • Nominal Pipe Size Style

catalog number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN16115NPS	11.5	.375	.630	.520	6	–	–	●
STN1614NPS	14	.375	.630	.570	8	–	–	●

NPT Thread • National Pipe Thread Taper Style

catalog number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1118NPT	18	.250	.430	.390	7	–	–	●
STN16115NPT	11.5	.375	.630	.520	6	–	–	●
STN1614NPT	14	.375	.630	.570	8	–	–	●

NPTF Thread • ISO Metric Screw Thread Style

catalog number	TPI	D	LI	W	number of teeth	KC610M	KC620M	KC635M
STN1118NPTF	18	.250	.430	.390	7	–	–	●
STN16115NPTF	11.5	.375	.630	.520	6	–	–	●
STN1614NPTF	14	.375	.630	.570	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 Series

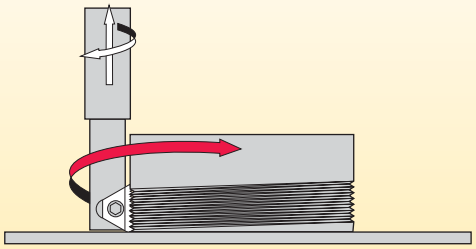
materials	Brinell	surface speeds		indexable inserts
steel	HB	KC610M	KC635M	feed fz (IPT)
P1	125	325–675	290–590	.002–.008
P2	180	290–550	290–520	.002–.008
P3	225	200–425	225–375	.002–.008
P4	250	250–490	250–500	.002–.008
P5	275	250–425	250–500	.002–.006
P6	325	225–350	200–325	.002–.004
stainless steel				
M1	180	325–550	375–590	.002–.004
M2	250	225–450	325–450	.002–.004
M3	330	225–375	325–375	.002–.004
cast iron				
K1	180	200–425	325–450	.001–.003
K2	220	200–390	250–325	.002–.006
K3	260	160–290	200–275	.002–.004
non-ferrous				
N1	60–100	325–820	–	.002–.010
high-temp alloys				
S1	200	65–140	65–130	.002–.004
S2	250	65–90	65–90	.001–.002
S3	280	50–65	50–65	.001–.002
S4	350	30–50	30–50	.001–.002
hardened steel				
H1	55HRc	65–140	65–140	.0004–.001

NOTE: Use Kennametal thread mill software:
TM-CNC Generator for CNC Programming on our website under: **http://www.kennametal.com/en/resources/software.html**.

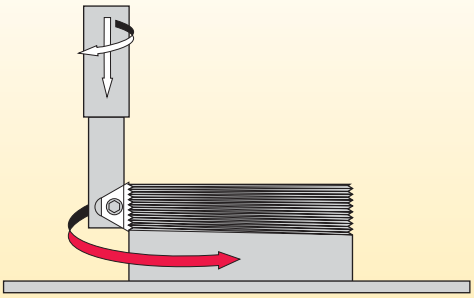
The Following Are a Few Thread Milling Methods (Work Directions)

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.

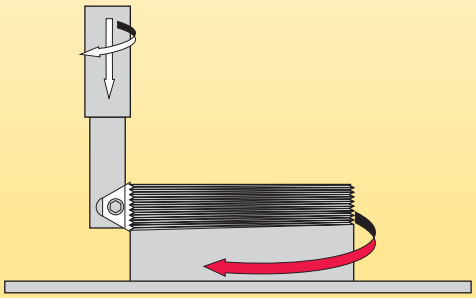
Methods of External Thread Milling



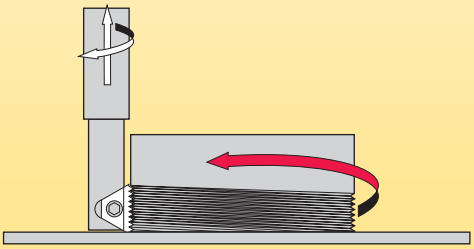
right-hand thread... conventional milling



left-hand thread... conventional milling

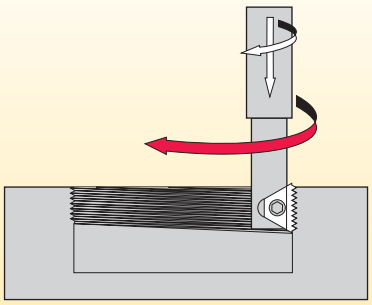


right-hand thread... climb milling

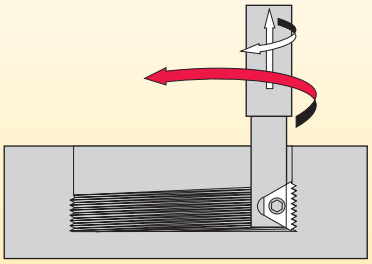


left-hand thread... climb milling

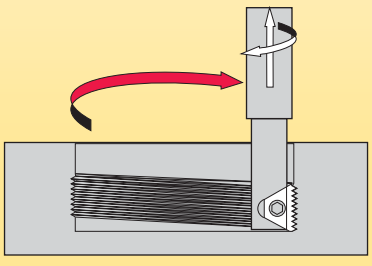
Methods of Internal Thread Milling



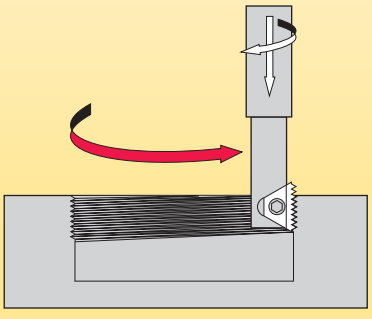
right-hand thread... conventional milling



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.

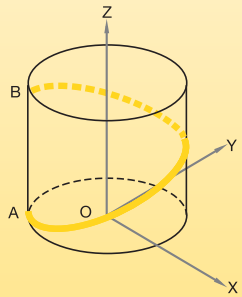
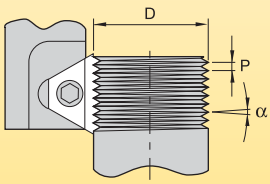


figure A



α - helix angle
D - external diameter
P - pitch

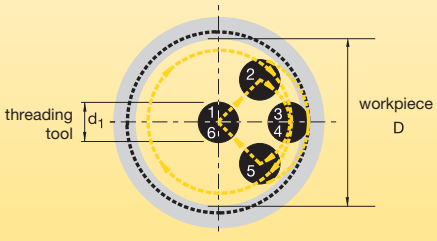
figure B

Tangential Approach (Arc)

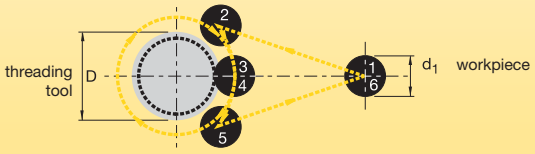
With this method, the tool enters and exits the workpiece smoothly. No marks are left on the workpiece and there is no vibration, even with harder materials.

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



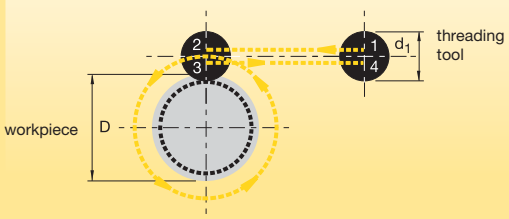
internal left-hand thread



external thread

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

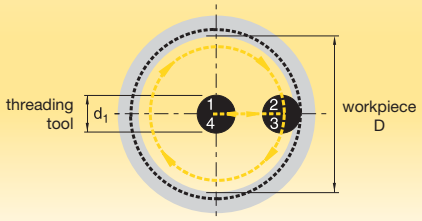
This radial approach is often considered the simplest. There are two characteristics worth noting about the radial approach:

a. A small vertical mark may be left at the entry (and exit) point. This is of no significance to the thread itself.

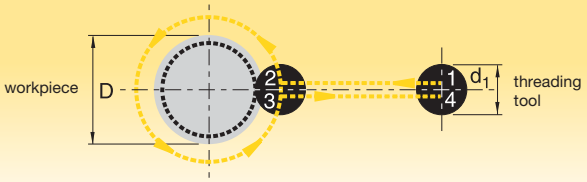
b. When using this method with very hard materials, there may be a tendency for the tool to vibrate as it approaches the full cutting depth.

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.



internal thread



external thread

Calculation of Feed Rates at the Cutting Edge

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

$$F_1 = fz \times Z \times n$$

F_1 = tool feed rate at the cutting edge (in/min)
fz = 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:

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

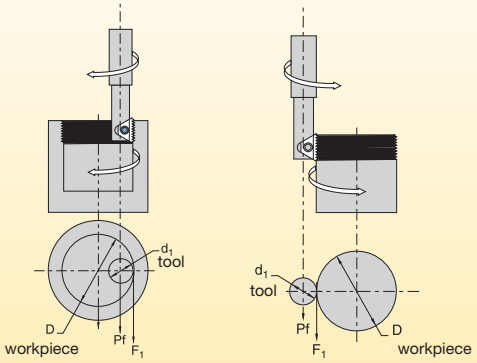
SFM = cutting speed, surface feet per minute
d_1 = cutter diameter, over insert
π = 3.1416

Calculation of Program 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 = program feed rate (in/min)
D = major diameter (external thread)
D = minor diameter (internal thread)
d_1 = cutting diameter, over insert



external thread internal thread

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 W49, 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 utilized.

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 W40–W43. 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: d_1 = .79, R_t (radius of tool) = $d_1 \div 2$ = .395"

Choosing Insert Size

The insert IC is defined by the selected cutter (STN16).
Use the appropriate insert table on pages W44–W46.

insert IC	a inch (mm)	pitch (TPI)	internal thread catalog number	b inch thread length (in)	number of teeth	grade KC610M	grade KC620M	external thread catalog number	b inch thread length (in)	number of teeth	grade KC610M	grade KC620M	cutter type
		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.

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

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

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

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

Finally, calculate the feed rate at the cutter centerline (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 W48.

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):

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

$$\beta = 90° + \arcsin \frac{.625 - .573333}{.57333}$$

$$\beta = 90° + 5.17° = 95.17° = 95° 10'$$

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

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

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 Program (Fanuc 11M)

%

N10G90G00G57X0.000Y0.000

N20G43H10Z0.M3S2417

N30G91G00X0.Y0.Z–0.5156

N40G41D60X0.000Y–0.5710Z0.

N50G03X0.6250Y0.5710Z0.0156R0.5733F3.206

N60G03X0.Y0.Z0.0625I–0.625J0.

N70G03X–0.625Y0.5710Z0.0156R0.5733

N80G00G40X0.Y–0.5710Z0.

N90G49G57G00Z8.0M5

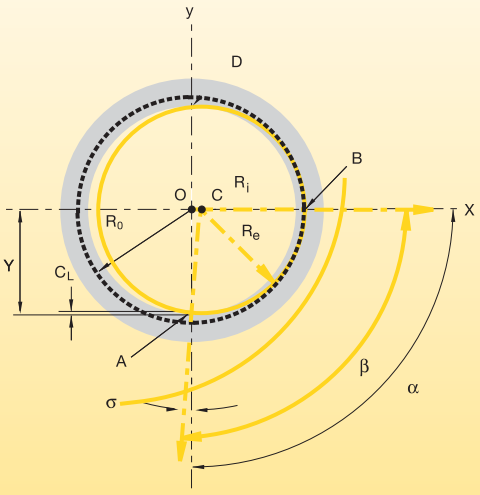
N100M30

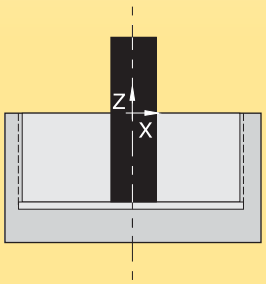
%

$$R_i = \frac{D}{2} \qquad R_O = \frac{D_O}{2}$$

D = minor diameter **D_O = nominal diameter**

α 90°





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:

$OA = R_i - C_L$
$CA = R_e$
$OC = R_o - R_e$

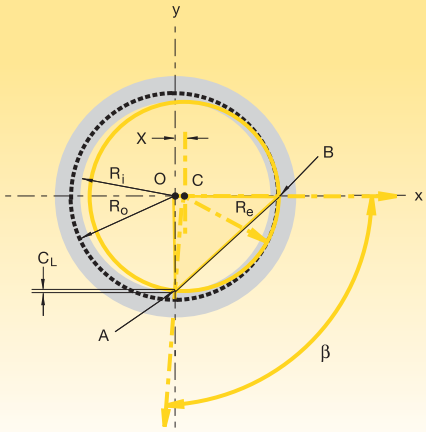
Pythagoras' law states: $OA^2 + OC^2 = AC^2$

Replacing actual values, we get:

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

Simplifying, we get:

$$R_e = \frac{(R_i - C_L)^2 + R_o^2}{2R_0}$$



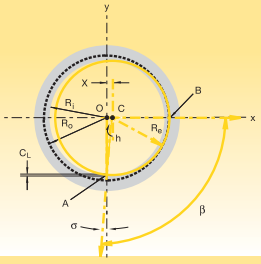
Find the angle β.

$\beta = 90° + \sigma$

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

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

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



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:

$OA = R_o - C_L$
$CA = R_e$
$OC = R_e - R_i$

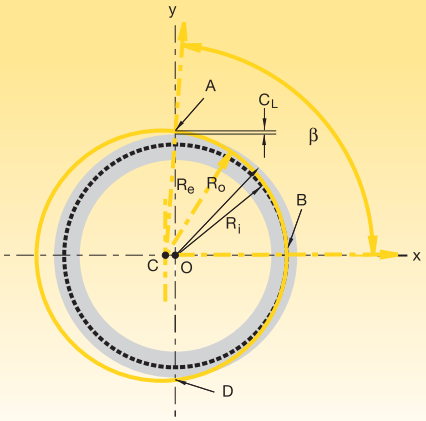
Pythagoras' law states: $OA^2 + OC^2 = AC^2$

Replacing actual values, we get:

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

Simplifying, we get:

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

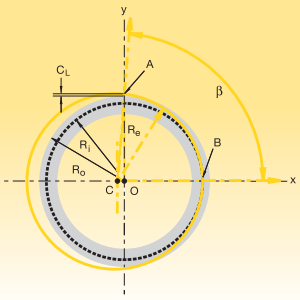


Find the angle β.

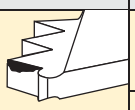
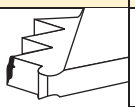
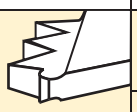
β can be easily found using the same triangle:

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

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



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