GÜHRING
The Tool Company

Solid Carbide Thread Milling Cutters

Thread milling cutters by GUHRING

Features and Benefits:

Sub-micro grain carbide substrate
Longer tool life with tighter tolerances

More cost-effective than indexable thread mills

PVD TiCN coating standard on many series
Extends tool life by providing heat and wear resistance

Helical flute design reduces chatter

The same carbide thread mill can produce
- Right or left hand threads
- Single or multiple thread leads

Countersink style thread mills eliminate secondary operations

Coolant-fed style thread mills
For improved chip evacuation and better surface finish

Drill & thread mill styles combine drill and threading into one tool

Well-suited for:
- *Steels*
- *Stainless steels*
- *Titanium and alloys*
- *High-temperature alloys*
- *Non-ferrous materials*

The Guhring thread milling cutter types

TM SP – thread milling cutter w/o countersinking step
Straight shank with spiral flute with/without internal coolant delivery, standard type for the milling of one thread size
Thread type: M, MF, NPT, NPTF, UNC, UNF

TMU SP – universal thread milling cutter
Straight shank with spiral flute and internal coolant delivery, multi-range tool for the production of various thread sizes with the same pitch
Thread type: M/MF, NPT, NPTF, UNC, UNF

TMC SP – thread milling cutter with countersinking step
45° countersinking step, spiral flute and internal coolant delivery, for countersinking and thread milling one thread size
Thread type: M, MF, NPT, NPTF, UNC, UNF

DTMC SP – drill/thread milling cutter
2-fluted drill/thread milling cutter with 45° countersinking step, spiral flute and with/without internal coolant delivery, for tapping size holes, countersinking and thread milling of one thread size
Thread type: M, MF, UNC, UNF

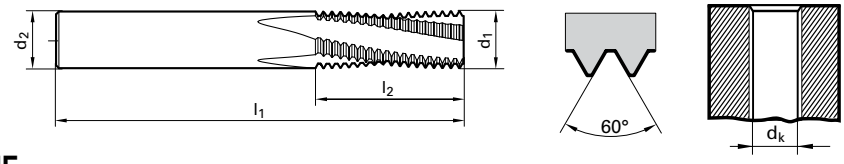
Special thread milling cutters
In addition to the four standard types described above, the following thread milling cutters can be supplied on request:
- TM SP and TMC SP thread milling cutters for thread length 3xD
- DTMC SP three-fluted drill/thread milling cutter with or without internal cooling, thread length 1.5xD, 2xD, 2.5xD, 3xD
- Solid carbide thread milling cutters to customer specific demands and drawings

CONTENTS

CONTENTS

TM SP
2xD

Thread Mills



UNC/UNF

Series 4128 - Carbide UNC, TiCN coated
Series 4129 - Carbide UNF, TiCN coated

UNC Size	d1 inch	d2 inch	dk inch	l1 inch	l2 inch	No. flutes	C 4128 EDP #
10 -24	0.136	0.250	0.154	2.500	0.437	3	9041280048260
12 -24	0.161	0.250	0.177	2.500	0.480	3	9041280054860
1/4 -20	0.185	0.250	0.201	2.500	0.575	3	9041280063500
5/16-18	0.242	0.250	0.259	2.500	0.693	3	9041280079380
3/8 -16	0.301	0.313	0.315	2.500	0.843	3	9041280095250
7/16-14	0.354	0.375	0.370	3.000	0.965	3	9041280111130
1/2 -13	0.371	0.375	0.425	3.000	1.114	3	9041280127000
9/16-12	0.449	0.500	0.480	3.752	1.209	4	9041280142880
5/8 -11	0.496	0.500	0.531	3.752	1.409	4	9041280158750
3/4 -10	0.621	0.625	0.650	4.252	1.551	4	9041280190500
7/8 - 9	0.621	0.625	0.768	4.252	1.835	4	9041280222250
1 - 8	0.621	0.625	0.876	4.252	1.937	4	9041280254000

UNF Size	d1 inch	d2 inch	dk inch	l1 inch	l2 inch	No. flutes	C 4129 EDP #
10 -32	0.150	0.250	0.161	2.500	0.453	3	9041290048260
12 -28	0.169	0.250	0.181	2.500	0.480	3	9041290054860
1/4 -28	0.203	0.250	0.217	2.500	0.555	3	9041290063500
5/16-24	0.242	0.250	0.271	2.500	0.689	3	9041290079380
3/8 -24	0.309	0.313	0.335	2.500	0.811	3	9041290095250
7/16-20	0.371	0.375	0.390	3.000	0.976	3	9041290111130
1/2 -20	0.371	0.375	0.453	3.000	1.075	3	9041290127000
9/16-18	0.449	0.500	0.508	3.752	1.193	4	9041290142880
5/8 -18	0.496	0.500	0.571	3.752	1.307	4	9041290158750
3/4 -16	0.621	0.625	0.689	4.252	1.531	4	9041290190500
7/8 -14	0.621	0.625	0.803	4.252	1.823	4	9041290222250
1 -12	0.621	0.625	0.915	4.252	1.791	4	9041290254000

Metric

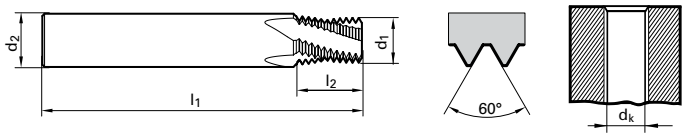
Series 4132 - Carbide, bright finish
Series 4133 - Carbide, TiCN coated

Metric Size	d1 mm	d2 mm	dk mm	l1 mm	l2 mm	No. flutes	4132 EDP #	C 4133 EDP #
M6 X 1.0	4.80	6.0	5.0	54.0	13.5	3	9041320060000	9041330060000
M8 X 1.25	6.40	8.0	6.8	62.0	18.1	3	9041320080000	9041330080000
M10 X 1.5	7.90	10.0	8.5	74.0	21.8	3	9041320100000	9041330100000
M12 X 1.75	9.95	10.0	10.2	74.0	25.4	4	9041320120000	9041330120000
M14 X 2.0	11.20	12.0	12.0	80.0	31.0	4	9041320140000	9041330140000
M16 X 2.0	12.80	14.0	14.0	90.0	35.0	4	9041320160000	9041330160000
M20 X 2.5	14.95	16.0	17.5	102.0	41.3	5	9041320200000	9041330200000

TM SP
2xD

Thread Mills

- Solid carbide cutters with straight shanks
- Spiral fluted for vibration dampening



NPT
Series 4130 - Carbide, TiCN coated

NPT Size	d1 inch	d2 inch	dk inch	l1 inch	l2 inch	No. flutes	C 4130 EDP #
1/16-27	0.213	0.312	0.246	2.250	0.390	3	9041300081900
1/8-27	0.288	0.312	0.339	2.250	0.390	3	9041300106200
1/4-18	0.391	0.500	0.453	3.250	0.583	4	9041300141400
3/8-18	0.441	0.500	0.578	3.250	0.583	4	9041300175700
1/2-14	0.571	0.625	0.719	3.500	0.748	4	9041300219000
1 - 11 1/2	0.689	0.750	1.156	3.750	0.913	5	9041300341800

NPTF
Series 4131 - Carbide, TiCN coated

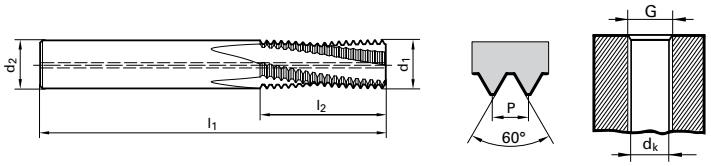
NPTF Size	d1 inch	d2 inch	dk inch	l1 inch	l2 inch	No. flutes	C 4131 EDP #
1/16-27	0.213	0.312	0.246	2.250	0.390	3	9041310081900
1/8-27	0.288	0.312	0.339	2.250	0.390	3	9041310106200
1/4-18	0.391	0.500	0.453	3.250	0.583	4	9041310141400
3/8-18	0.441	0.500	0.578	3.250	0.583	4	9041310175700
1/2-14	0.571	0.625	0.719	3.500	0.748	4	9041310219000
1 - 11 1/2	0.689	0.750	1.156	3.750	0.913	5	9041310341800

* Technical linformation can be found on page 29.

TM SP
2xD

Thread Mills

COOLANT FED



UNC

Series 4134 - Carbide, UNC, bright finish
Series 4135 - Carbide, UNC, TiCN coated

UNC Size	d1 mm	d2 mm	dk mm	l1 mm	l2 mm	No. flutes	4134 EDP #	4135 EDP #
10 -24	3.400	6.000	3.90	54.000	11.100	3	9041340048260	9041350048260
12 -24	4.100	6.000	4.50	54.000	12.200	3	9041340054860	9041350054860
1/4 -20	4.700	6.000	5.10	54.000	14.600	3	9041340063500	9041350063500
5/16-18	6.100	8.000	6.60	64.000	17.600	3	9041340079380	9041350079380
3/8 -16	7.600	8.000	8.00	64.000	21.400	3	9041340095250	9041350095250
7/16-14	9.000	10.000	9.40	74.000	24.500	3	9041340111130	9041350111130
1/2 -13	9.950	10.000	10.80	74.000	28.300	4	9041340127000	9041350127000
9/16-12	11.400	12.000	12.20	90.000	30.700	4	9041340142880	9041350142880
5/8 -11	12.700	14.000	13.50	90.000	35.800	4	9041340158750	9041350158750

UNF

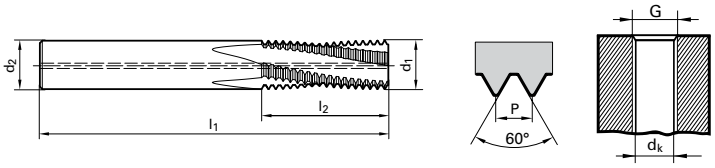
Series 4136 - Carbide, UNF, bright finish
Series 4137 - Carbide, UNF, TiCN coated

UNF Size	d1 mm	d2 mm	dk mm	l1 mm	l2 mm	No. flutes	4136 EDP #	4137 EDP #
10 -32	3.800	6.000	4.10	54.000	11.500	3	9041360048260	9041370048260
12 -28	4.300	6.000	4.60	54.000	12.200	3	9041360054860	9041370054860
1/4 -28	5.100	6.000	5.50	54.000	14.100	3	9041360063500	9041370063500
5/16-24	6.300	8.000	6.90	64.000	17.500	3	9041360079380	9041370079380
3/8 -24	7.800	8.000	8.50	64.000	20.600	3	9041360095250	9041370095250
7/16-20	9.400	10.000	9.90	74.000	24.800	3	9041360111130	9041370111130
1/2 -20	9.950	10.000	11.50	74.000	27.300	4	9041360127000	9041370127000
9/16-18	11.400	12.000	12.90	90.000	30.300	4	9041360142880	9041370142880
5/8 -18	12.700	14.000	14.50	90.000	33.200	4	9041360158750	9041370158750

TM SP
2xD

Thread Mills

COOLANT FED



Metric/Metric Fine

Series 3734 - Carbide, Metric/Metric Fine, bright finish
Series 3737 - Carbide, Metric/Metric Fine, TiCN coated

Metric Size	d1 mm	d2 mm	dk mm	l1 mm	l2 mm	No. flutes	● 3734 EDP #	© 3737 EDP #
M 6 X 1.0	4.80	6.0	5.0	54.0	13.5	3	9037340060000	9037370060000
M 8 X 1.25	6.40	8.0	6.8	62.0	18.1	3	9037340080000	9037370080000
M 8 X 1.0	6.40	8.0	7.0	62.0	17.5	3	9037340080050	9037370080050
M10 X 1.5	7.95	10.0	8.5	74.0	21.8	3	9037340100000	9037370100000
M10 X 1.0	7.95	10.0	9.0	74.0	21.5	3	9037340100050	9037370100050
M10 X1.25	7.95	10.0	8.8	74.0	21.9	3	9037340100060	9037370100060
M12 X 1.75	9.95	10.0	10.2	74.0	25.4	4	9037340120000	9037370120000
M14 X 2.0	11.20	12.0	12.0	90.0	31.0	4	9037340140000	9037370140000
M14 X1.50	11.20	12.0	12.5	90.0	30.8	4	9037340140070	9037370140070
M16 X 2.0	12.80	14.0	14.0	90.0	35.0	4	9037340160000	9037370160000
M16 X1.50	12.80	14.0	14.5	90.0	33.8	4	9037340160070	9037370160070
M20 X 2.5	15.95	16.0	17.5	102.0	41.3	5	9037340200000	9037370200000
M20 X1.50	15.95	16.0	18.5	102.0	42.8	5	9037340200070	9037370200070

Pipe Thread

Series 3754 - NPT, Carbide, DIN length, TiCN coated
Series 3757 - NPTF, Carbide, DIN length , TiCN coated

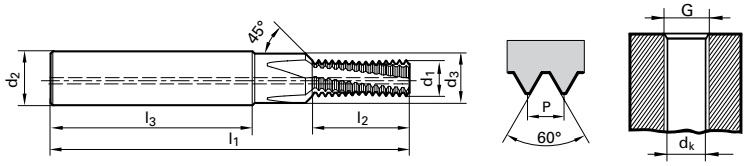
Pipe Thread Size	d1 mm	d2 mm	dk mm	l1 mm	l2 mm	No. flutes	© 3754 EDP #	© 3757 EDP #
1/16-27	5.90	8.00	6.25	54.00	9.90	3	9037540081900	9037570081900
1/8-27	7.30	8.00	8.50	64.00	9.88	4	9037540106200	9037570106200
1/4-18	9.95	12.00	11.10	72.00	19.05	4	9037540141400	9037570141400
3/8-18	12.50	14.00	14.50	80.00	14.82	4	9037540175700	9037570175700

TMC SP
1.5xD

Thread Mills (with countersink)

COOLANT FED

- 45 degree countersinking step
- Solid carbide cutters with reinforced shank
- Spiral fluted for vibration dampening
- With internal coolant delivery



UNC

Series 3534 - Carbide, TiCN coated, 1.5 x D thread length, axial coolant fed

UNC Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	No. flutes	G 3534 EDP #
1/4-20	4.800	8.000	6.600	5.100	62.00	12.10	36.00	3	9035340063500
5/16-18	5.950	10.000	9.000	6.600	74.00	14.80	40.00	3	9035340079380
3/8-16	7.100	12.000	11.000	8.000	80.00	16.70	45.00	4	9035340095250
7/16-14	7.950	14.000	11.800	9.400	90.00	19.10	45.00	4	9035340111130
1/2-13	9.950	14.000	13.500	10.800	90.00	22.50	45.00	4	9035340127000

UNF

Series 3536 - Carbide, TiCN coated, 1.5 x D thread length, axial coolant fed

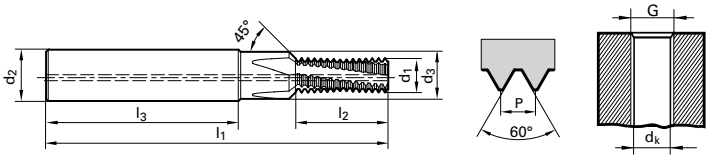
UNF Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	No. flutes	G 3536 EDP #
1/4-28	4.800	8.000	6.600	5.500	62.00	11.40	36.00	3	9035360063500
5/16-24	5.950	10.000	9.000	6.900	74.00	13.30	40.00	3	9035360079380
3/8-24	7.100	12.000	11.000	8.500	80.00	16.40	45.00	4	9035360095250
7/16-20	7.950	14.000	11.800	9.900	90.00	18.40	45.00	4	9035360111130
1/2-20	9.950	14.000	13.500	11.500	90.00	21.00	45.00	4	9035360127000

* Technical linformation can be found on page 32.

TMC SP

1.5xD Thread Mills (with countersink)

COOLANT FED



Metric

Series 3525 - Carbide, TiCN coated, 1.5 x D thread length, axial coolant fed ≥ 4mm

Metric Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	No. flutes	© 3525 EDP #
M3 X 0.50	2.30	6.0	3.4	2.50	48.0	5.2	36.0	3	9035250030000
M4 X 0.70	3.00	6.0	4.5	3.30	48.0	7.3	36.0	3	9035250040000
M5 X 0.80	4.00	6.0	5.5	4.20	54.0	9.0	36.0	3	9035250050000
M6 X 1.00	4.80	8.0	6.6	5.00	62.0	10.5	36.0	3	9035250060000
M8 X 1.25	6.40	10.0	9.0	6.80	74.0	13.1	40.0	3	9035250080000
M10 X 1.50	7.95	12.0	11.0	8.50	80.0	17.2	45.0	4	9035250100000
M12 X 1.75	9.95	14.0	13.5	10.20	90.0	20.1	45.0	4	9035250120000
M14 X 2.00	11.20	16.0	15.5	12.00	102.0	25.0	48.0	4	9035250140000
M16 X 2.00	12.80	18.0	17.5	14.00	102.0	27.0	48.0	4	9035250160000
M20 X 2.50	14.50	20.0	21.5	17.50	125.0	33.7	50.0	4	9035250200000

Metric Fine

Series 3527 - Carbide, TiCN coated, 1.5 x D thread length, axial coolant fed

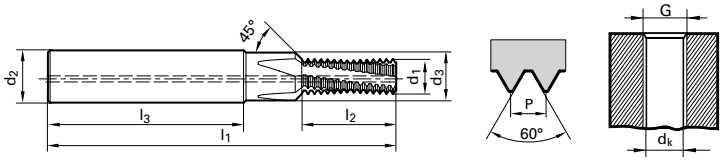
Metric Fine Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	No. flutes	© 3527 EDP #
M4 X 0.50	3.00	6.0	4.5	3.50	48.0	7.2	36.0	3	9035270040030
M5 X 0.50	4.00	6.0	5.5	4.50	54.0	8.7	36.0	3	9035270050030
M6 X 0.50	4.80	8.0	6.6	5.50	62.0	9.7	36.0	3	9035270060030
M6 X 0.75	4.80	8.0	6.6	5.20	62.0	10.1	36.0	3	9035270060040
M8 X 0.75	6.40	10.0	9.0	7.20	74.0	13.1	40.0	3	9035270080040
M8 X 1.00	6.40	10.0	9.0	7.00	74.0	13.5	40.0	3	9035270080050
M10 X 1.00	7.95	12.0	11.0	9.00	80.0	16.5	45.0	4	9035270100050
M10 X 1.25	7.95	12.0	11.0	8.80	80.0	16.9	45.0	4	9035270100060
M12 X 1.00	9.95	14.0	13.5	11.00	90.0	19.5	45.0	4	9035270120050
M12 X 1.50	9.95	14.0	13.5	10.50	90.0	20.2	45.0	4	9035270120070
M14 X 1.50	11.20	16.0	15.5	12.50	102.0	23.2	48.0	4	9035270140070
M16 X 1.50	12.80	18.0	17.5	14.50	102.0	26.2	48.0	4	9035270160070

GUHRING

TMC SP

2xD Thread Mills (with countersink)

COOLANT FED



UNC

Series 3535 - Carbide, TiCN coated, 2 x D thread length, axial coolant fed

UNC Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	No. flutes	© 3535 EDP #
1/4-20	4.800	8.000	6.600	5.100	62.00	14.60	36.00	3	9035350063500
5/16-18	5.950	10.000	9.000	6.600	74.00	17.70	40.00	3	9035350079380
3/8-16	7.100	12.000	11.000	8.000	80.00	21.40	45.00	4	9035350095250
7/16-14	7.950	12.000	11.000	9.400	80.00	24.50	45.00	4	9035350111130
1/2-13	9.950	14.000	13.500	10.800	90.00	28.30	45.00	4	9035350127000

UNF

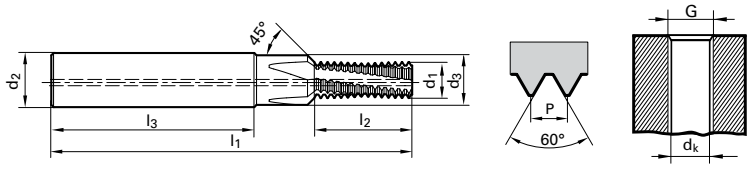
Series 3537 - Carbide, TiCN coated, 2 x D thread length, axial coolant fed

UNF Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	No. flutes	© 3537 EDP #
1/4-28	4.800	8.000	6.600	5.500	62.00	14.10	36.00	3	9035370063500
5/16-24	5.950	10.000	9.000	6.900	74.00	17.50	40.00	3	9035370079380
3/8-24	7.950	12.000	11.000	8.500	80.00	20.60	45.00	4	9035370095250
7/16-20	7.950	12.000	11.000	9.900	80.00	24.80	45.00	4	9035370111130
1/2-20	9.950	14.000	13.500	11.500	90.00	27.30	45.00	4	9035370127000

TMC SP

2xD Thread Mills (with countersink)

COOLANT FED



Metric

Series 3526 - Carbide, TiCN coated, 2 x D thread length, axial coolant fed ≥ 4mm

Metric Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	No. flutes	© 3526 EDP #
M3 X 0.50	2.30	6.0	3.4	2.50	48.0	6.7	36.0	3	9035260030000
M4 X 0.70	3.00	6.0	4.5	3.30	48.0	8.7	36.0	3	9035260040000
M5 X 0.80	4.00	6.0	5.5	4.20	54.0	10.8	36.0	3	9035260050000
M6 X 1.00	4.80	8.0	6.6	5.00	62.0	13.5	36.0	3	9035260060000
M8 X 1.25	6.40	10.0	9.0	6.80	74.0	18.1	40.0	3	9035260080000
M10 X 1.50	7.95	12.0	11.0	8.50	80.0	21.7	45.0	4	9035260100000
M12 X 1.75	9.95	14.0	13.5	10.20	90.0	25.4	45.0	4	9035260120000
M14 X 2.00	11.20	16.0	15.5	12.00	102.0	31.0	48.0	4	9035260140000
M16 X 2.00	12.80	18.0	17.5	14.00	102.0	35.0	48.0	4	9035260160000
M20 X 2.50	14.50	20.0	21.5	17.50	125.0	41.2	50.0	4	9035260200000

Metric Fine

Series 3528 - Carbide, TiCN coated, 2 x D thread length, axial coolant fed

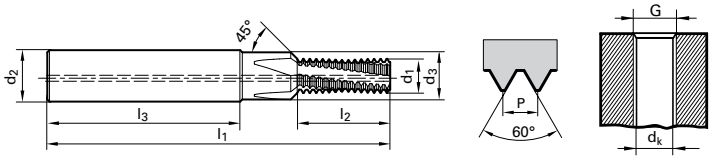
Metric Fine Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	No. flutes	© 3528 EDP #
M4 X 0.50	3.00	6.0	4.5	3.00	48.0	8.7	36.0	3	9035280040030
M5 X 0.50	4.00	6.0	5.5	4.50	54.0	10.7	36.0	3	9035280050030
M6 X 0.50	4.80	8.0	6.6	5.50	62.0	12.7	36.0	3	9035280060030
M6 X 0.75	4.80	8.0	6.6	5.20	62.0	13.1	36.0	3	9035280060040
M8 X 0.75	6.40	10.0	9.0	7.20	74.0	16.9	40.0	3	9035280080040
M8 X 1.00	6.40	10.0	9.0	7.00	74.0	17.5	40.0	3	9035280080050
M10 X 1.00	7.95	12.0	11.0	9.00	80.0	21.5	45.0	4	9035280100050
M10 X 1.25	7.95	12.0	11.0	8.80	80.0	21.9	45.0	4	9035280100060
M12 X 1.00	9.95	14.0	13.5	11.00	90.0	25.5	45.0	4	9035280120050
M12 X 1.50	9.95	14.0	13.5	10.50	90.0	26.2	45.0	4	9035280120070
M14 X 1.50	11.20	16.0	15.5	12.50	102.0	30.8	48.0	4	9035280140070
M16 X 1.50	12.80	18.0	17.5	14.50	102.0	33.8	48.0	4	9035280160070

GUHRING

TMC SP

2.5xD Thread Mills (with countersink)

COOLANT FED



Metric

Series 3760 - Carbide, TiCN coated, 2.5 x D thread length, axial coolant fed ≥ 4mm

Metric Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	No. flutes	3760 EDP #
M3 X 0.50	2.30	6.0	3.4	2.50	48.0	7.8	36.0	3	9037600030000
M4 X 0.70	3.00	6.0	4.5	3.30	48.0	10.8	36.0	3	9037600040000
M5 X 0.80	4.00	6.0	5.5	4.20	54.0	13.2	36.0	3	9037600050000
M6 X 1.00	4.80	8.0	6.6	5.00	62.0	16.5	36.0	3	9037600060000
M8 X 1.25	6.40	10.0	9.0	6.80	74.0	21.9	40.0	3	9037600080000
M10 X 1.50	7.95	12.0	11.0	8.50	80.0	26.3	45.0	4	9037600100000
M12 X 1.75	9.95	14.0	13.5	10.20	90.0	32.4	45.0	4	9037600120000
M14 X 2.00	11.20	16.0	15.5	12.00	102.0	37.0	48.0	4	9037600140000
M16 X 2.00	12.80	18.0	17.5	14.00	102.0	43.0	48.0	4	9037600160000
M20 X 2.50	14.50	20.0	21.5	17.50	125.0	48.8	50.0	4	9037600200000

Metric Fine

Series 3763 - Carbide, TiCN coated, 2.5 x D thread length, axial coolant fed

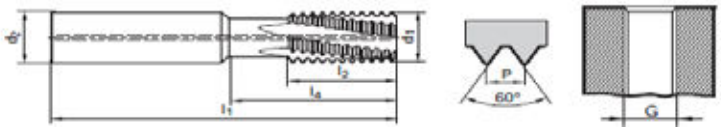
Metric Fine Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	No. flutes	3763 EDP #
M4 X 0.50	3.00	6.0	4.5	3.50	48.0	10.30	36.0	3	9037630040030
M5 X 0.50	4.00	6.0	5.5	4.50	54.0	12.80	36.0	3	9037630050030
M6 X 0.50	4.80	8.0	6.6	5.50	62.0	15.30	36.0	3	9037630060030
M6 X 0.75	4.80	8.0	6.6	5.25	62.0	15.40	36.0	3	9037630060040
M8 X 0.75	6.40	10.0	9.0	7.20	74.0	20.60	40.0	3	9037630080040
M8 X 1.00	6.40	10.0	9.0	7.00	74.0	20.50	40.0	3	9037630080050
M10 X 1.00	7.95	12.0	11.0	9.00	80.0	25.50	45.0	4	9037630100050
M10 X 1.25	7.95	12.0	11.0	8.80	80.0	25.50	45.0	4	9037630100060
M12 X 1.00	9.95	14.0	13.5	11.00	90.0	30.50	45.0	4	9037630120050
M12 X 1.50	9.95	14.0	13.5	10.50	90.0	30.80	45.0	4	9037630120070
M14 X 1 .50	11.20	16.0	15.5	12.50	102.0	38.30	48.0	4	9037630140070
M16 X 1.50	12.80	18.0	17.5	14.50	102.0	41.30	48.0	4	9037630160070

TMU SP

Multi-Range Thread Mills

COOLANT FED

- **Multi-range cutters for the production of various thread sizes with the same pitch**
- **Solid carbide cutters with straight shank**
- **Spiral flute for vibration dampening**
- **Internal coolant delivery**



UNC/UNF

Series 3596 - Carbide, TiCN coated, axial coolant fed

TPI	G min	d1	d2	l1	l2	l4	No.	© 3596
inch	inch	mm	mm	mm	mm		flutes	EDP #
24	>=1/2	9.950	10.000	70.000	16.00	25.000	4	9035960102400
16	>=3/4	11.950	12.000	80.000	20.000	31.000	4	9035960121600
18	>=3/4	11.950	12.000	80.000	20.000	31.000	4	9035960121800
20	>=3/4	11.950	12.000	80.000	20.000	31.000	4	9035960122000
24	>=3/4	11.950	12.000	80.000	20.000	31.000	5	9035960122400
14	>=1	15.950	16.000	90.000	25.000	40.000	5	9035960161400
16	>=1	15.950	16.000	90.000	25.000	40.000	5	9035960161600
18	>=1	15.950	16.000	90.000	25.000	40.000	5	9035960161800
20	>=1	15.950	16.000	90.000	25.000	40.000	5	9035960162000
8	>=1 1/4	19.950	20.000	105.00	33.000	50.000	5	9035960200800
12	>=1 1/4	19.950	20.000	105.00	33.000	50.000	5	9035960201200
14	>=1 1/4	19.950	20.000	105.00	33.000	50.000	5	9035960201400
16	>=1 1/4	19.950	20.000	105.00	33.000	50.000	5	9035960201600

Metric/Metric Fine

Series 3541 - Carbide, TiCN coated, M/MF thread, axial coolant fed

Pitch	G min	d1	d2	l1	l2	l4	No.	© 3541
mm	mm	mm	mm	mm	mm		flutes	EDP #
1.00	>=14	9.95	10.0	70.0	16.0	25.0	4	9035410101000
1.25	>=14	9.95	10.0	70.0	16.0	25.0	4	9035410101250
1.50	>=14	9.95	10.0	70.0	16.0	25.0	4	9035410101500
1.00	>=18	11.95	12.0	80.0	20.0	31.0	4	9035410121000
1.25	>=18	11.95	12.0	80.0	20.0	31.0	4	9035410121250
1.50	>=18	11.95	12.0	80.0	20.0	31.0	4	9035410121500
1.00	>=24	15.95	16.0	90.0	25.0	40.0	5	9035410161000
1.50	>=24	15.95	16.0	90.0	25.0	40.0	5	9035410161500
2.00	>=24	15.95	16.0	90.0	25.0	40.0	5	9035410162000
1.00	>=30	19.95	20.0	105.0	33.0	50.0	5	9035410201000
1.50	>=30	19.95	20.0	105.0	33.0	50.0	5	9035410201500
2.00	>=30	19.95	20.0	105.0	33.0	50.0	5	9035410202000
2.50	>=30	19.95	20.0	105.0	33.0	50.0	5	9035410202500
3.00	>=30	19.95	20.0	105.0	33.0	50.0	5	9035410203000
3.50	>=30	19.95	20.0	105.0	33.0	50.0	5	9035410203500

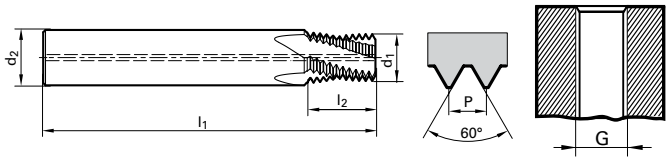
* Technical linformation can be found on page 30.

TMU SP

Multi-Range Thread Mills

COOLANT FED

- **Multi-Range Cutters for production of various pipe threads**



NPT Pipe Threads

Series 3769 - Carbide, TiCN coated, axial coolant fed

NPT TPI	G min inch	d1 mm	d2 mm	l1 mm	l2 mm	No. flutes	© 3769 EDP #
14	>=1/2	14.50	16.00	90.00	19.05	5	9037690219000
11 1/2	>=1.0	18.50	20.00	90.00	23.19	5	9037690341800

NPTF Pipe Threads

Series 3772 - Carbide, TiCN coated, axial coolant fed

NPTF TPI	G min inch	d1 mm	d2 mm	l1 mm	l2 mm	No. flutes	© 3772 EDP #
14	>=1/2	14.50	16.00	90.00	19.05	5	9037720219000
11 1/2	>=1.0	18.50	20.00	90.00	23.19	5	9037720341800

A Multi-Range thread mill is capable of creating more than one diameter of the same thread form, which makes these tools popular in a job shop environment. When selecting a Multi-Range thread mill, the user must first select the thread pitch or TPI to be machined and then determine the minimum hole major diameter “G” of the thread to be produced.

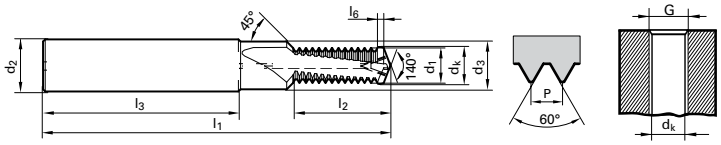
For Example:
A multi-Range tap with a 12 TPI and >1 1/4 G min is capable of creating a 1 1/4 - 12, 1 1/2 - 12 and larger thread size.
This same thread mill will not make a 1 1/8 - 12 thread size, due to the size being less than 1 1/4, which is the G dimension.

DTMC SP

1.5xD

Drill and Thread Mills

- Drill and Thread Mill in one tool
- Solid carbide cutters with reinforced shank
- Spiral fluted for vibration dampening
- 45 degree countersinking step
- With or without internal coolant delivery



Metric

Series 3774 - Carbide, bright finish, 1.5 x D thread length
Series 3776 - Carbide, TiCN coated, 1.5 x D thread length

Metric Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	3774 EDP #	3776 EDP #
M3 X 0.50	2.40	6.0	3.4	2.50	48.0	5.4	36.0	0.50	2	9037740030000	9037760030000
M4 X 0.70	3.20	6.0	4.5	3.30	48.0	6.9	36.0	0.70	2	9037740040000	9037760040000
M5 X 0.80	4.00	6.0	5.5	4.20	54.0	8.7	36.0	0.80	2	9037740050000	9037760050000
M6 X 1.00	4.75	8.0	6.6	5.00	62.0	10.9	36.0	1.00	2	9037740060000	9037760060000
M8 X 1.25	6.35	10.0	9.0	6.80	74.0	13.7	40.0	1.25	2	9037740080000	9037760080000
M10 X 1.50	7.95	12.0	11.0	8.50	80.0	18.0	45.0	1.50	2	9037740100000	9037760100000
M12 X 1.75	9.95	14.0	13.5	10.20	90.0	20.8	45.0	1.50	2	9037740120000	9037760120000
M14 X 2.00	11.20	16.0	15.5	12.00	102.0	23.6	48.0	1.50	2	9037740140000	9037760140000
M16 X 2.00	13.20	18.0	17.5	14.00	102.0	26.0	48.0	1.50	2	9037740160000	9037760160000

Metric Fine

Series 3786 - Carbide, bright finish, 1.5 x D thread length
Series 3788 - Carbide, TiCN coated, 1.5 x D thread length

Metric Fine Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	3786 EDP #	3788 EDP #
M4 X 0.50	3.20	6.0	4.5	3.50	48.0	6.7	36.0	0.50	2	9037860040030	9037880040030
M5 X 0.50	4.00	6.0	5.5	4.50	54.0	8.3	36.0	0.50	2	9037860050030	9037880050030
M6 X 0.75	4.75	8.0	6.6	5.25	62.0	9.9	36.0	0.75	2	9037860060040	9037880060040
M8 X 0.75	6.35	10.0	9.0	7.25	74.0	14.0	40.0	0.75	2	9037860080040	9037880080040
M8 X 1.00	6.35	10.0	9.0	7.00	74.0	14.3	40.0	1.00	2	9037860080050	9037880080050
M10 X 1.00	7.95	12.0	11.0	9.00	80.0	16.6	45.0	1.00	2	9037860100050	9037880100050
M10 X 1.25	7.95	12.0	11.0	8.80	80.0	16.6	45.0	1.25	2	9037860100060	9037880100060
M12 X 1.00	9.95	14.0	13.5	11.00	90.0	20.0	45.0	1.00	2	9037860120050	9037880120050
M12 X 1.50	9.95	14.0	13.5	10.50	90.0	21.4	45.0	1.50	2	9037860120070	9037880120070
M14 X 1.50	11.20	16.0	15.5	12.50	102.0	23.2	48.0	1.50	2	9037860140070	9037880140070
M16 X 1.50	13.20	18.0	17.5	14.50	102.0	26.6	48.0	1.50	2	9037860160070	9037880160070

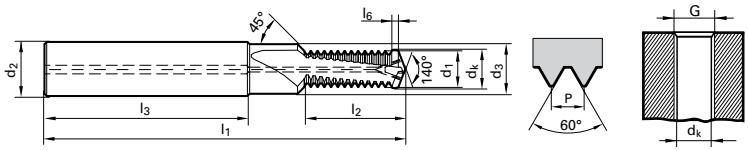
* Technical linformation can be found on page 33.

GUHRING

DTMC SP

1.5xD Drill and Thread Mills

COOLANT FED



Metric

Series 3775 - Carbide, bright finish, 1.5 x D thread length, axial coolant fed
Series 3777 - Carbide, TiCN coated, 1.5 x D thread length, axial coolant fed

Metric Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	● 3775 EDP #	© 3777 EDP #
M4 X 0.70	3.20	6.0	4.5	3.30	48.0	6.9	36.0	0.70	2	9037750040000	9037770040000
M5 X 0.80	4.00	6.0	5.5	4.20	54.0	8.7	36.0	0.80	2	9037750050000	9037770050000
M6 X 1.00	4.75	8.0	6.6	5.00	62.0	10.9	36.0	1.00	2	9037750060000	9037770060000
M8 X 1.25	6.35	10.0	9.0	6.80	74.0	13.7	40.0	1.25	2	9037750080000	9037770080000
M10 X 1.50	7.95	12.0	11.0	8.50	80.0	18.0	45.0	1.50	2	9037750100000	9037770100000
M12 X 1.75	9.95	14.0	13.5	10.20	90.0	20.8	45.0	1.50	2	9037750120000	9037770120000
M14 X 2.00	11.20	16.0	15.5	12.00	102.0	23.0	48.0	1.50	2	9037750140000	9037770140000
M16 X 2.00	13.20	18.0	17.5	14.00	102.0	26.0	48.0	1.50	2	9037750160000	9037770160000

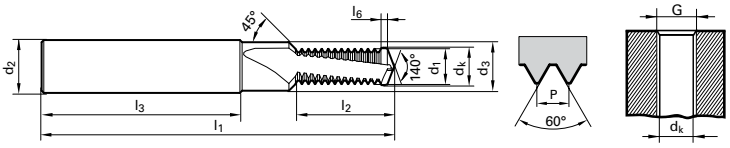
Metric Fine

Series 3787 - Carbide, bright finish, 1.5 x D thread length, axial coolant fed
Series 3789 - Carbide, TiCN coated, 1.5 x D thread length, axial coolant fed

Metric Fine Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	● 3787 EDP #	© 3789 EDP #
M6 X 0.75	4.75	8.0	6.6	5.25	62.0	9.9	36.0	0.75	2	9037870060040	9037890060040
M8 X 0.75	6.35	10.0	9.0	7.25	74.0	14.0	40.0	0.75	2	9037870080040	9037890080040
M8 X 1.00	6.35	10.0	9.0	7.00	74.0	14.3	40.0	1.00	2	9037870080050	9037890080050
M10 X 1.00	7.95	12.0	11.0	9.00	80.0	16.6	45.0	1.00	2	9037870100050	9037890100050
M10 X 1.25	7.95	12.0	11.0	8.80	80.0	16.6	45.0	1.25	2	9037870100060	9037890100060
M12 X 1.00	9.95	14.0	13.5	11.00	90.0	20.0	45.0	1.00	2	9037870120050	9037890120050
M12 X 1.50	9.95	14.0	13.5	10.50	90.0	21.4	45.0	1.50	2	9037870120070	9037890120070
M14 X 1.50	11.20	16.0	15.5	12.50	102.0	23.2	48.0	1.50	2	9037870140070	9037890140070
M16 X 1.50	13.20	18.0	17.5	14.50	102.0	26.6	48.0	1.50	2	9037870160070	9037890160070

DTMC SP

2xD Drill and Thread Mills



UNC

Series 4138 - Carbide, bright finish, 2 x D thread length

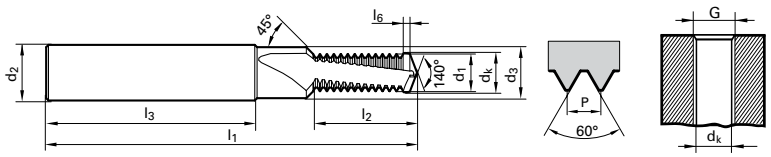
UNC Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	4138 EDP #
1/4-20	5.000	8.000	6.600	5.10	62.000	14.900	36.000	1.30	2	9041380063500
5/16-18	6.250	10.000	9.000	6.60	74.000	18.100	40.000	1.50	2	9041380079380
3/8-16	7.500	12.000	11.000	8.00	80.000	22.100	45.000	1.50	2	9041380095250
7/16-14	8.800	12.000	11.000	9.40	80.000	25.000	45.000	1.50	2	9041380111130
1/2-13	10.200	14.000	13.500	10.80	90.000	26.900	45.000	1.50	2	9041380127000
9/16-12	11.600	18.000	15.500	12.20	102.000	31.200	48.000	1.50	2	9041380142880
5/8-11	13.000	18.000	17.500	13.50	102.000	36.300	48.000	1.50	2	9041380158750

UNF

Series 4140 - Carbide, bright finish, 2 x D thread length

UNF Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	4140 EDP #
1/4-28	5.000	8.000	6.600	5.50	62.000	12.800	36.000	1.00	2	9041400063500
5/16-24	6.250	10.000	9.000	6.90	74.000	18.200	40.000	1.10	2	9041400079380
3/8-24	7.950	12.000	11.000	8.50	80.000	20.600	45.000	1.10	2	9041400095250
7/16-20	9.500	12.000	11.000	9.90	80.000	24.700	45.000	1.30	2	9041400111130
1/2-20	10.200	14.000	13.500	11.50	90.000	27.500	45.000	1.30	2	9041400127000
9/16-18	11.600	18.000	15.500	12.90	102.000	30.600	48.000	1.50	2	9041400142880
5/8-18	13.000	18.000	17.500	14.50	102.000	33.700	48.000	1.50	2	9041400158750

DTMC SP
2xD
Drill and Thread Mills



Metric
Series 3778 - Carbide, bright finish, 2 x D thread length
Series 3780 - Carbide, TiCN coated, 2 x D thread length

Metric Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	3778 EDP #	3780 EDP #
M3 X 0.50	2.40	6.0	3.4	2.50	48.0	6.9	36.0	0.50	2	9037780030000	9037800030000
M4 X 0.70	3.20	6.0	4.5	3.30	48.0	9.0	36.0	0.70	2	9037780040000	9037800040000
M5 X 0.80	4.00	6.0	5.5	4.20	54.0	11.1	36.0	0.80	2	9037780050000	9037800050000
M6 X 1.00	4.75	8.0	6.6	5.00	62.0	13.9	36.0	1.00	2	9037780060000	9037800060000
M8 X 1.25	6.35	10.0	9.0	6.80	74.0	18.7	40.0	1.25	2	9037780080000	9037800080000
M10 X 1.50	7.95	12.0	11.0	8.50	80.0	22.5	45.0	1.50	2	9037780100000	9037800100000
M12 X 1.75	9.95	14.0	13.5	10.20	90.0	26.1	45.0	1.50	2	9037780120000	9037800120000
M14 X 2.00	11.20	16.0	15.5	12.00	102.0	31.6	48.0	1.50	2	9037780140000	9037800140000
M16 X 2.00	13.20	18.0	17.5	14.00	102.0	36.0	48.0	1.50	2	9037780160000	9037800160000

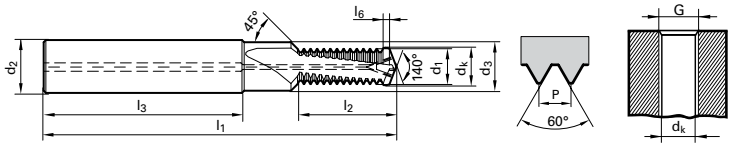
Metric Fine
Series 3790 - Carbide, bright finish, 2 x D thread length
Series 3792 - Carbide, TiCN coated, 2 x D thread length

Metric Fine Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	3790 EDP #	3792 EDP #
M4 X 0.50	3.20	6.0	4.5	3.50	48.0	8.7	36.0	0.50	2	9037900040030	9037920040030
M5 X 0.50	4.00	6.0	5.5	4.50	54.0	10.8	36.0	0.50	2	9037900050030	9037920050030
M6 X 0.75	4.75	8.0	6.6	5.25	62.0	12.9	36.0	0.75	2	9037900060040	9037920060040
M8 X 0.75	6.35	10.0	9.0	7.25	74.0	17.1	40.0	0.75	2	9037900080040	9037920080040
M8 X 1.00	6.35	10.0	9.0	7.00	74.0	17.3	40.0	1.00	2	9037900080050	9037920080050
M10 X 1.00	7.95	12.0	11.0	9.00	80.0	21.6	45.0	1.00	2	9037900100050	9037920100050
M10 X 1.25	7.95	12.0	11.0	8.80	80.0	21.6	45.0	1.25	2	9037900100060	9037920100060
M12 X 1.00	9.95	14.0	13.5	11.00	90.0	26.0	45.0	1.00	2	9037900120050	9037920120050
M12 X 1.50	9.95	14.0	13.5	10.50	90.0	27.4	45.0	1.50	2	9037900120070	9037920120070
M14 X 1.50	11.20	16.0	15.5	12.50	102.0	30.7	48.0	1.50	2	9037900140070	9037920140070
M16 X 1.50	13.20	18.0	17.5	14.50	102.0	34.1	48.0	1.50	2	9037900160070	9037920160070

DTMC SP

2xD Drill and Thread Mills

COOLANT FED



UNC

Series 4139 - Carbide, TiCN coated, 2 x D thread length, axial coolant fed

UNC Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	© 4139 EDP #
1/4-20	5.000	8.000	6.600	5.10	62.000	14.900	36.000	1.30	2	9041390063500
5/16-18	6.250	10.000	9.000	6.60	74.000	18.100	40.000	1.50	2	9041390079380
3/8-16	7.500	12.000	11.000	8.00	80.000	22.100	45.000	1.50	2	9041390095250
7/16-14	8.800	12.000	11.000	9.40	80.000	25.000	45.000	1.50	2	9041390111130
1/2-13	10.200	14.000	13.500	10.80	90.000	26.900	45.000	1.50	2	9041390127000
9/16-12	11.600	16.000	15.500	12.20	102.000	31.200	48.000	1.50	2	9041390142880
5/8-11	13.000	18.000	17.500	13.50	102.000	36.300	48.000	1.50	2	9041390158750

UNF

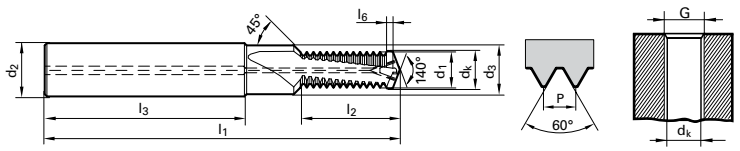
Series 4141 - Carbide, TiCN coated, 2 x D thread length, axial coolant fed

UNF Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	© 4141 EDP #
1/4-28	5.000	8.000	6.600	5.50	62.000	12.800	36.000	1.00	2	9041410063500
5/16-24	6.250	10.000	9.000	6.90	74.000	18.200	40.000	1.10	2	9041410079380
3/8-24	7.950	12.000	11.000	8.50	80.000	20.600	45.000	1.10	2	9041410095250
7/16-20	9.500	12.000	11.000	9.90	80.000	24.700	45.000	1.30	2	9041410111130
1/2-20	10.200	14.000	13.500	11.50	90.000	27.500	45.000	1.30	2	9041410127000
9/16-18	11.600	16.000	15.500	12.90	102.000	30.600	48.000	1.50	2	9041410142880
5/8-18	13.000	18.000	17.500	14.50	102.000	33.700	48.000	1.50	2	9041410158750

DTMC SP
2xD

Drill and Thread Mills

COOLANT FED



Metric

Series 3779 - Carbide, bright finish, 2 x D thread length, axial coolant fed
Series 3781 - Carbide, TiCN coated, 2 x D thread length, axial coolant fed

Metric Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	3779 EDP #	3781 EDP #
M4 X 0.70	3.20	6.0	4.5	3.30	48.0	9.0	36.0	0.70	2	9037790040000	9037810040000
M5 X 0.80	4.00	6.0	5.5	4.20	54.0	11.1	36.0	0.80	2	9037790050000	9037810050000
M6 X 1.00	4.75	8.0	6.6	5.00	62.0	13.9	36.0	1.00	2	9037790060000	9037810060000
M8 X 1.25	6.35	10.0	9.0	6.80	74.0	18.7	40.0	1.25	2	9037790080000	9037810080000
M10 X 1.50	7.95	12.0	11.0	8.50	80.0	22.5	45.0	1.50	2	9037790100000	9037810100000
M12 X 1.75	9.95	14.0	13.5	10.20	90.0	26.1	45.0	1.50	2	9037790120000	9037810120000
M14 X 2.00	11.20	16.0	15.5	12.00	102.0	31.6	48.0	1.50	2	9037790140000	9037810140000
M16 X 2.00	13.20	18.0	17.5	14.00	102.0	36.0	48.0	1.50	2	9037790160000	9037810160000

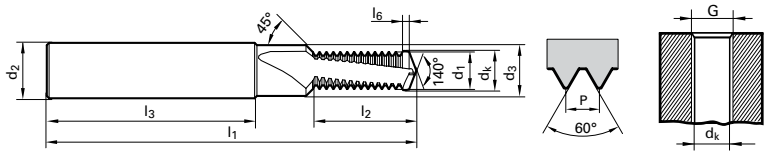
Metric Fine

Series 3791 - Carbide, bright finish, 2 x D thread length, axial coolant fed
Series 3793 - Carbide, TiCN coated, 2 x D thread length, axial coolant fed

Metric Fine Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	3791 EDP #	3793 EDP #
M6 X 0.75	4.75	8.0	6.6	5.25	62.0	12.9	36.0	0.75	2	9037910060040	9037930060040
M8 X 0.75	6.35	10.0	9.0	7.25	74.0	17.1	40.0	0.75	2	9037910080040	9037930080040
M8 X 1.00	6.35	10.0	9.0	7.00	74.0	17.3	40.0	1.00	2	9037910080050	9037930080050
M10 X 1.00	7.95	12.0	11.0	9.00	80.0	21.6	45.0	1.00	2	9037910100050	9037930100050
M10 X 1.25	7.95	12.0	11.0	8.80	80.0	21.6	45.0	1.25	2	9037910100060	9037930100060
M12 X 1.00	9.95	14.0	13.5	11.00	90.0	26.0	45.0	1.00	2	9037910120050	9037930120050
M12 X 1.50	9.95	14.0	13.5	10.50	90.0	27.4	45.0	1.50	2	9037910120070	9037930120070
M14 X 1.50	11.20	16.0	15.5	12.50	102.0	30.7	48.0	1.50	2	9037910140070	9037930140070
M16 X 1.50	13.20	18.0	17.5	14.50	102.0	34.1	48.0	1.50	2	9037910160070	9037930160070

GUHRING

DTMC SP
2.5xD Drill and Thread Mills



Metric
Series 3782 - Carbide, bright finish, 2.5 x D thread length
Series 3784 - Carbide, TiCN coated, 2.5 x D thread length

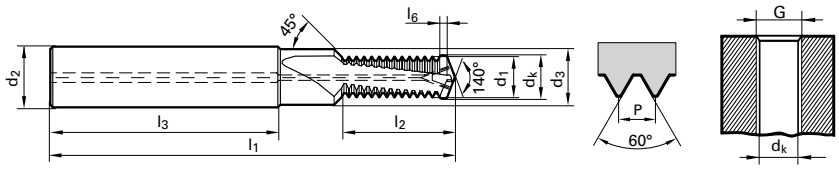
Metric Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	3782 EDP #	3784 EDP #
M3 X 0.50	2.40	6.0	3.4	2.5	48.0	8.4	36.0	0.50	2	9037820030000	9037840030000
M4 X 0.70	3.20	6.0	4.5	3.3	48.0	11.1	36.0	0.70	2	9037820040000	9037840040000
M5 X 0.80	4.00	6.0	5.5	4.2	54.0	13.5	36.0	0.80	2	9037820050000	9037840050000
M6 X 1.00	4.75	8.0	6.6	5.0	62.0	16.9	36.0	1.00	2	9037820060000	9037840060000
M8 X 1.25	6.35	10.0	9.0	6.8	74.0	22.4	40.0	1.25	2	9037820080000	9037840080000
M10 X 1.50	7.95	12.0	11.0	8.5	80.0	27.0	45.0	1.50	2	9037820100000	9037840100000
M12 X 1.75	9.95	14.0	13.5	10.2	90.0	31.4	45.0	1.50	2	9037820120000	9037840120000
M14 X 2.00	11.20	16.0	15.5	12.0	102.0	39.6	48.0	1.50	2	9037820140000	9037840140000
M16 X 2.00	13.20	18.0	17.5	14.0	102.0	46.0	48.0	1.50	2	9037820160000	9037840160000

Metric Fine
Series 3794 - Carbide, bright finish, 2.5 x D thread length
Series 3796 - Carbide, TiCN coated, 2.5 x D thread length

Metric Fine Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	3794 EDP #	3796 EDP #
M8 X 0.75	6.35	10.0	9.0	7.25	74.0	20.8	40.0	0.75	2	9037940080040	9037960080040
M8 X 1.00	6.35	10.0	9.0	7.00	74.0	21.3	40.0	1.00	2	9037940080050	9037960080050
M10 X 1.00	7.95	12.0	11.0	9.00	80.0	26.6	45.0	1.00	2	9037940100050	9037960100050
M10 X 1.25	7.95	12.0	11.0	8.80	80.0	26.6	45.0	1.25	2	9037940100060	9037960100060
M12 X 1.00	9.95	14.0	13.5	11.00	90.0	31.0	45.0	1.00	2	9037940120050	9037960120050
M12 X 1.50	9.95	14.0	13.5	10.50	90.0	31.9	45.0	1.50	2	9037940120070	9037960120070
M14 X 1.50	11.20	16.0	15.5	12.50	102.0	35.2	48.0	1.50	2	9037940140070	9037960140070
M16 X 1.50	13.20	18.0	17.5	14.50	102.0	41.6	48.0	1.50	2	9037940160070	9037960160070

DTMC SP
2.5xD
Drill and Thread Mills

COOLANT FED



Metric

Series 3783 - Carbide, bright finish, 2.5 x D thread length, axial coolant fed
Series 3785 - Carbide, TiCN coated, 2.5 x D thread length, axial coolant fed

Metric Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	● 3783 EDP #	© 3785 EDP #
M4 X 0.70	3.20	6.0	4.5	3.3	48.0	11.1	36.0	0.70	2	9037830040000	9037850040000
M5 X 0.80	4.00	6.0	5.5	4.2	54.0	13.5	36.0	0.80	2	9037830050000	9037850050000
M6 X 1.00	4.75	8.0	6.6	5.0	62.0	16.9	36.0	1.00	2	9037830060000	9037850060000
M8 X 1.25	6.35	10.0	9.0	6.8	74.0	22.4	40.0	1.25	2	9037830080000	9037850080000
M10 X 1.50	7.95	12.0	11.0	8.5	80.0	27.0	45.0	1.50	2	9037830100000	9037850100000
M12 X 1.75	9.95	14.0	13.5	10.2	90.0	31.4	45.0	1.50	2	9037830120000	9037850120000
M14 X 2.00	11.20	16.0	15.5	12.0	102.0	39.6	48.0	1.50	2	9037830140000	9037850140000
M16 X 2.00	13.20	18.0	17.5	14.0	102.0	46.0	48.0	1.50	2	9037830160000	9037850160000

Metric Fine

Series 3795 - Carbide, bright finish, 2.5 x D thread length, axial coolant fed
Series 3797 - Carbide, TiCN coated, 2.5 x D thread length, axial coolant fed

Metric Fine Size	d1 mm	d2 mm	d3 mm	dk mm	l1 mm	l2 mm	l3 mm	l6 mm	No. flutes	● 3795 EDP #	© 3797 EDP #
M8 X 0.75	6.35	10.0	9.0	7.25	74.0	20.8	40.0	0.75	2	9037950080040	9037970080040
M8 X 1.00	6.35	10.0	9.0	7.00	74.0	21.3	40.0	1.00	2	9037950080050	9037970080050
M10 X 1.00	7.95	12.0	11.0	9.00	80.0	26.6	45.0	1.00	2	9037950100050	9037970100050
M10 X 1.25	7.95	12.0	11.0	8.80	80.0	26.6	45.0	1.25	2	9037950100060	9037970100060
M12 X 1.00	9.95	14.0	13.5	11.00	90.0	31.0	45.0	1.00	2	9037950120050	9037970120050
M12 X 1.50	9.95	14.0	13.5	10.50	90.0	31.9	45.0	1.50	2	9037950120070	9037970120070
M14 X 1.50	11.20	16.0	15.5	12.50	102.0	35.2	48.0	1.50	2	9037950140070	9037970140070
M16 X 1.50	13.20	18.0	17.5	14.50	102.0	41.6	48.0	1.50	2	9037950160070	9037970160070

Recommendations for Thread Milling Cutters

Material Group		Hardness		SFM	Feed Rate Inch per tooth							Recommended Treatment
		Rc	Brn		#10	1/4	3/8	1/2	5/8	3/4	1	
	Structural Steels	-	<180	400	0.0008	0.0015	0.002	0.003	0.0035	0.0035	0.004	TiCN
	Free cutting steels	-	<180	400	0.0008	0.0015	0.002	0.003	0.0035	0.0035	0.004	
	Unalloyed case hardened materials	<20	<230	325	0.0008	0.0015	0.002	0.003	0.0035	0.0035	0.004	
	Unalloyed heat-treatable steels	<25	<250	260	0.0008	0.0015	0.002	0.003	0.0035	0.0035	0.004	
	Alloyed case hardened steels	<25	<250	260	0.0004	0.001	0.0015	0.002	0.0025	0.0025	0.003	TiCN
	Alloyed heat-treatable steels	<30	<280	230	0.0004	0.001	0.0015	0.002	0.0025	0.0025	0.003	
	Alloyed tool steels	<35	<320	200	0.0004	0.001	0.0015	0.002	0.0025	0.0025	0.003	
	High speed tool steels	<38	<380	180	0.0004	0.001	0.0015	0.002	0.0025	0.0025	0.003	
	Stainless		<180	250	0.0008	0.0015	0.002	0.003	0.0035	0.0035	0.004	TiCN
		<25	<250	200	0.0008	0.0015	0.002	0.003	0.0035	0.0035	0.004	
		<30	<280	230	0.0008	0.0015	0.002	0.003	0.0035	0.0035	0.004	
	Structural Steels	<20	<230	330	0.0008	0.0015	0.002	0.003	0.0035	0.0035	0.004	TiCN
	Case hardened steels	<25	<250	300	0.0008	0.0015	0.002	0.003	0.0035	0.0035	0.004	
	Heat-treatable steels	<25	<250	280	0.0008	0.0015	0.002	0.003	0.0035	0.0035	0.004	
	Nitriding steels	<30	<280	260	0.0008	0.0015	0.002	0.003	0.0035	0.0035	0.004	
	Al wrought alloys	-	30-80	750	0.002	0.004	0.005	0.006	0.007	0.007	0.008	Bright
		-	75-150	500	0.002	0.004	0.005	0.006	0.007	0.007	0.008	
	Al cast alloys	-	n/a	600	0.002	0.004	0.005	0.006	0.007	0.007	0.008	TiCN
		-	n/a	450	0.002	0.004	0.005	0.006	0.007	0.007	0.008	
	Cast iron	-	<180	400	0.002	0.003	0.0035	0.0045	0.005	0.005	0.006	TiCN
		<25	<250	320	0.002	0.003	0.0035	0.0045	0.005	0.005	0.006	
		<35	<320	300	0.002	0.003	0.0035	0.0045	0.005	0.005	0.006	
	Brass,	-	<180	600	0.002	0.004	0.005	0.007	0.008	0.008	0.01	Bright
		-	<180	600	0.002	0.004	0.005	0.006	0.007	0.007	0.008	
	Plastics, Carbon/glass reinforced	-		500	0.002	0.004	0.005	0.007	0.008	0.008	0.01	TiCN
	Magnesium-alloys	-		750	0.002	0.004	0.005	0.007	0.008	0.008	0.01	Bright
	Titanium and Ti-alloys	-	140-300	140	0.0004	0.001	0.0015	0.002	0.0025	0.0025	0.003	TiCN
		-	300-380	110	0.0004	0.001	0.0015	0.002	0.0025	0.0025	0.003	
	Ni-alloys	-	<300	125	0.0004	0.001	0.0015	0.002	0.0025	0.0025	0.003	TiCN
		-	>300	100	0.0004	0.001	0.0015	0.002	0.0025	0.0025	0.003	

Drilling Parameters for DTMC Thread Mills

Material Group		Hardness		SFM	Feed Rate Inch per tooth				
		Rc	Brn		#10	1/4	3/8	1/2	5/8
	Structural Steels	-	<180	400					
	Free cutting steels	-	<180	400					
	Unalloyed case hardened materials	<20	<230	325					
	Unalloyed heat-treatable steels	<25	<250	260					
	Alloyed case hardened steels	<25	<250	260					
	Alloyed heat-treatable steels	<30	<280	230					
	Alloyed tool steels	<35	<320	200					
	High speed tool steels	<38	<380	180					
	Stainless		<180	250					
		<25	<250	200					
		<30	<280	230					
	Structural Steels	<20	<230	330					
	Case hardened steels	<25	<250	300					
	Heat-treatable steels	<25	<250	280					
	Nitriding steels	<30	<280	260					
	Al wrought alloys	-	30-80	750	0.002	0.004	0.006	0.008	0.01
		-	75-150	500	0.002	0.004	0.006	0.008	0.01
	Al cast alloys	-	n/a	600	0.002	0.006	0.009	0.012	0.016
		-	n/a	450	0.002	0.004	0.007	0.01	0.012
	Cast iron	-	<180	400	0.002	0.004	0.006	0.008	0.01
		<25	<250	320	0.002	0.003	0.004	0.006	0.008
		<35	<320	300	0.002	0.003	0.004	0.006	0.008
	Brass,	-	<180	600	0.002	0.006	0.01	0.012	0.016
		-	<180	600	0.002	0.004	0.006	0.008	0.01
	Plastics, Carbon/glass reinforced	-		500	0.002	0.006	0.009	0.012	0.016
	Magnesium-alloys	-		750	0.002	0.006	0.009	0.012	0.016
	Titanium and Ti-alloys	-	140-300	140					
		-	300-380	110					
	Ni-alloys	-	<300	125					
		-	>300	100					

Thread production with thread milling cutters and their advantages

Thread milling is like thread cutting in that it is a chip forming production process. A major benefit of thread milling is the size of the thread to be produced, as the cost of taps in large dimensions can question the economic efficiency of the production process. Furthermore, with larger diameters thread cutting requires more power from the machine tool. The possibility of machining materials with a higher tensile strength or hardness can also be a decisive factor in choosing thread milling.

With conventional thread cutting the thread is produced from the image of the tool profile, conditional on the chamfer lead for the workpiece. In contrast, with thread milling the thread is produced via a series of cutting paths by the milling cutter, whereby the pitch is generated by the machine. The thread mill makes numerous passes through the axis section of a thread during a spiral motion in axial tool-workpiece direction and thereby interpolates the contour of the thread.

A major factor is that cutting speeds and feed rates can be chosen independently of each other. Chip formation and tool loading can be considerably influenced via these setting parameters. A feature of the process is the formation of short, comma shaped chips in contrast to thread cutting.

To detach the chips, the direction of rotation of the machine spindle does not need to be reversed. The tools applied have a thread profile without pitch. Initially, the thread milling cutter is lowered along the hole axis to the required thread depth. In the approach cycle the thread milling cutter is plunged to the nominal diameter of the thread.

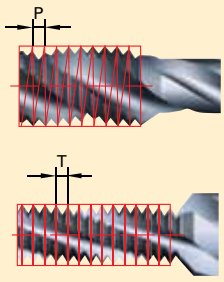
The thread is produced by a 360° circular interpolation. Finally, in the exit cycle the thread milling cutter is radially returned to the hole axis and then axially withdrawn from the thread.

A thread milling cutter can produce threads of varying diameters (or tolerances) with the same pitch. Right- or left-handed threads can be produced with the one tool. As thread milling produces only short chips, chip evacuation does not cause any problems.

With thread milling, an identical tool geometry can be applied for a multitude of materials. This considerably limits the multiplicity of tools required. In contrast to thread cutting, thread milling produces a complete thread which is virtually the total length of the applied tool.

Comparison of tool design between taps/thread milling cutters

In contrast to a tap, which basically consists of a single spiral shaped tooth, the series of teeth of a thread milling cutter do not form a spiral but are configured without pitch. This fundamental difference in tool design is attributed to the different processes which have already been described in an earlier chapter.



Tap
The pitch P is produced by the tap/fluteless tap.

Milling cutter
The pitch P is produced by CNC control circular program)

Dimensions and cutting section measurements

Apart from the thread pitch of the tool, the design of a thread milling cutter is principally very similar to that of a tap. Thread milling cutters are also characterized by dimensions and the size of the cutting section. The thread length l_2 and the total length l_1 are also part of the dimensions.

The different design forms incorporate milling cutters with or without collar as well as with or without countersinking chamfer. The cutting section sizes of a thread milling cutter consist of the flute length l_4, the flute profile, the tooth with Z_b and the relief S. As with a tap, the flute length also incorporates the run-out of the flutes. They do not have to be as large as the flutes of a tap, as this machining process produces smaller chips. The chips do not remain in the flutes during the process and do therefore not restrict further chip development. The width of the tooth is therefore larger than with taps. The relief grinding helps to create the clearance angle required for milling cutters.

Thread milling process and technology

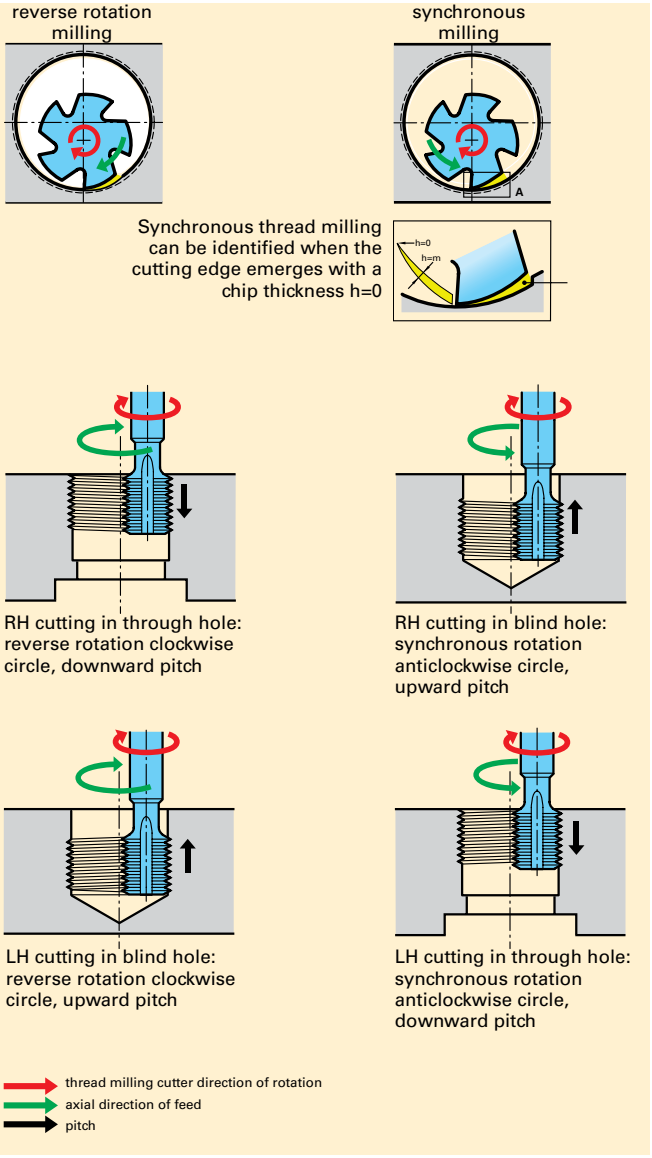
Machining combinations (reverse rotation/synchr. milling)

As the thread milling cutters are designed for right hand cutting, the direction of rotation is generally clockwise. By altering the axial direction of feed, reverse rotation or synchronous milling, all thread combinations can be produced.

The application conditions, such as blind or through hole, horizontal or vertical machining methods as well as the type of lubrication and chip removal determine the correct choice of milling procedure.

For thread milling, synchronous milling should be applied whenever possible, in order to achieve lower cutting forces, improved chip formation, a better tool life and surface quality.

Synchronous milling can be identified when the cutting edge emerges with chip thickness h = 0.



Interference and feed ratio

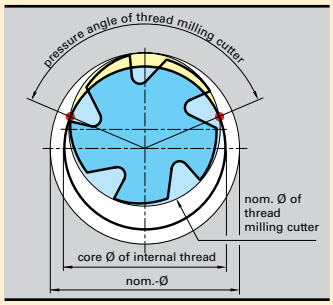
If the milling cutter diameter to the nominal thread diameter ratio of 70° is adhered to, a profile distortion, irrespective of the profile depth of the thread, should not occur. This factor is well proven.

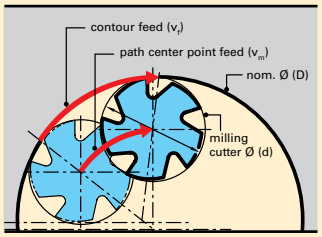
This drawing illustrates that the diameter of the thread milling cutter and the profile depth determine the pressure angle to the thread diameter.

The feed at the cutting edge of the thread milling cutter is calculated by the cutting speed revolutions) and the feed rate per tooth.

With linear movement, the feed rate at the cutting edge is identical to that at the tool center. However, the helical interpolation follows the path of a circle in the plane. As the machine tool always calculates to the tool center, a command must be programmed for converting the cutting speed (contour related program). If such a command does not exist or the central point is programmed, the feed rate must be first converted.

The interactive control at the control panel always indicates the speed at the center point of the tool. When running with no load this is simple to check. If disregarded, the milling cutter runs at a speed many times faster than the feed which generally leads to tool breakages.





Formula of calculation

$$v_c = \frac{d \cdot \pi \cdot n}{1000} \quad [m/min]$$

$$n = \frac{v_c \cdot 1000}{d \cdot \pi} \quad [min^{-1}]$$

$$v_f = n \cdot z \cdot f_z \quad [mm/min]$$

$$v_m = \frac{v_f \cdot (D - d)}{D} \quad [mm/min]$$

$$v_b = n \cdot f_b \quad [mm/min]$$

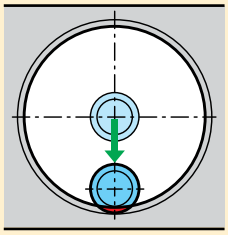
v_c = cutting speed
v_f = contour feed
v_m = center point path feed
n = revolutions
z = number of teeth
f_z = feed per tooth
f_b = feed for drill per revolution*
v_b = drill feed rate*
D = Ø nom. of thread [mm]
d = milling cutter nom. Ø [mm]
* for drill/thread milling

Thread milling process and technology

Thread milling cutter entry cycles

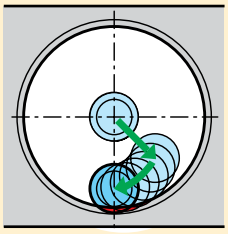
Linear plunging

With linear plunging of the thread milling cutter into the material, a very large angle of contact is created at the milling cutter which leads to long chips and a high loading on the tool. This is particularly the case when the difference in diameter between the hole size and the milling cutter is small. In addition, this method produces a small delay mark. This method is not suitable for accurate and small threads.



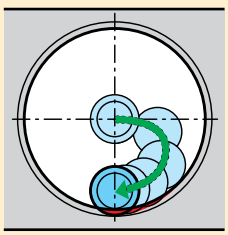
90° quarter circle entry cycle

A 90° entry cycle with a small difference in diameter between the tool and the thread removes a large part of chip volume during the linear section of the entry cycle. This method is therefore only recommended for relatively large differences in diameter between hole size and thread milling cutter (thread milling cutter TMU). The advantage using this entry method lies in the simple programming and the relatively short entry path.



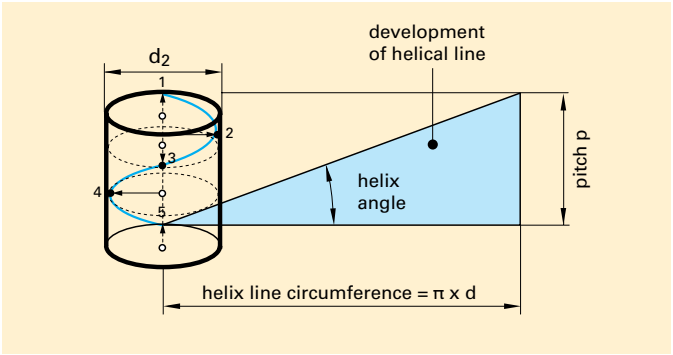
180° semicircle entry cycle

With a 180° entry cycle, the loading on the tool is the lowest when plunging, as the angle of contact is relatively small during the complete entry cycle. This method requires a little more sophistication in programming but has shown to be the most costefficient when thread milling with the TM, TMC and DTMC thread milling cutter.



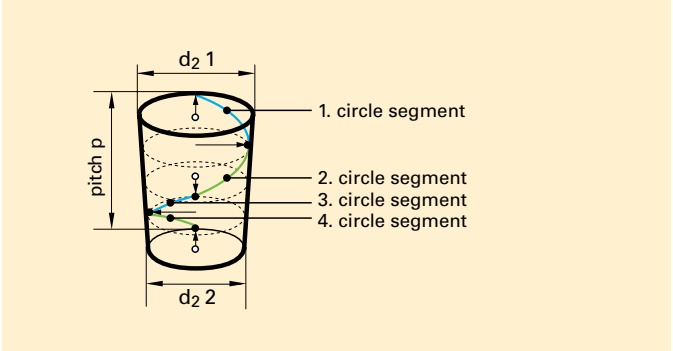
Helical interpolation (cyl. thread)

Helical interpolation is the overlaying of circular and linear movement. Different threads can be produced by the form of overlaying the direction of pitch and the direction of rotation of the circular movement.



Helical interpolation (conical thread)

In order to produce a perfectly round thread with a NPT thread milling cutter, it is necessary to take into account the pitch when NC-progamming. In contrast to cylindrical threads, the machining path is not a 360° circle but four segments of a circle. With every one of the four segments the taper is corrected inwards.



Thread milling cutters w/o countersinking step
Type TM SP

Machine example

Coating:	TiCN
Thread:	M12
Pitch:	1.75 mm
Thread depth:	24 mm / 2 x D

Tool material:	Steel
Cutting speed:	100 m/min
Feed per tooth:	0.08 mm
Cutting time:	2.7 s

Programming example:

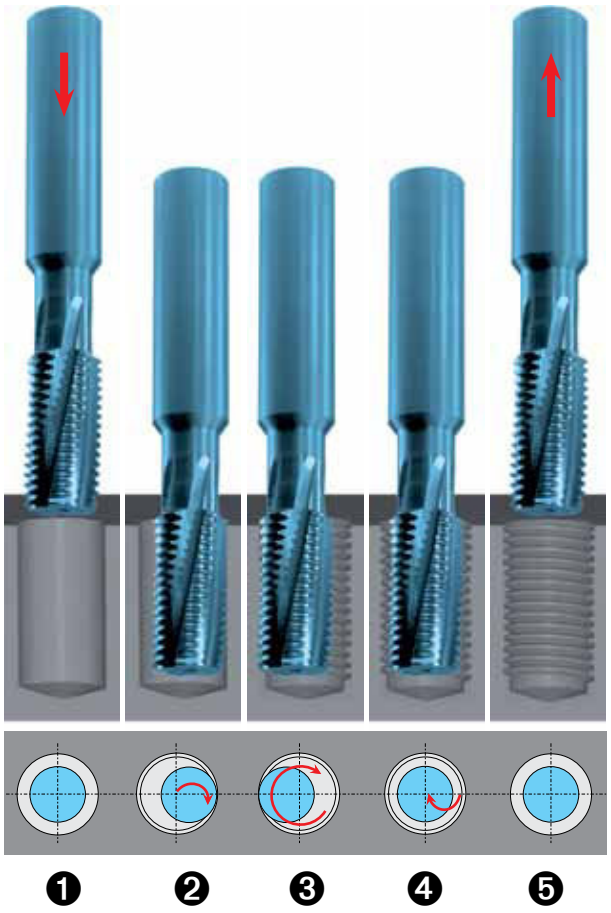
	CNC Code:	Plain text
	N10 M6T1	Tool call
	N20 G90 G54 G00 X0.000Y0.000	Work offset
❶	N30 Z2.000 S3199 M3 D1	Positioning centered on start position above tapping size hole and spindle speed call-up
	N40 G00 Z-21.725	Rapid movement to thread milling start position centered in tapping size hole
	N50 G91	Switch to incremental
	N60 G42 G01 X0.000Y4.975 F1000	Cutter radius compensation on
❷	N70 G02 X0.000Y-10.975 I0.000 J-5.488 Z-0.263 F87	180° entry cycle to profile depth, start thread milling process
❸	N80 G02 X0.000Y0.000 I0.000 J6.000 Z-1.750 F175	360° thread milling cycle with axial movement of the thread pitch in Z-direction
❹	N90 G02 X0.000Y10.975 I0.000 J5.488 Z-0.263 F350	180° withdrawal cycle to the thread center, end of thread milling
	N100 G40 G01 X0.000Y-4.975 F1000	Cutter radius compensation off
	N110 G90	Switch to absolute
❺	N120 G80 G53 G00 Z2.000	Withdrawal from hole to start position centered above tapping size hole
	N130 M30 M95	End

Universal thread milling cutter
Type TMU SP - 1 milling cycle

Machine example

Coating:	bright
Thread:	M24
Pitch:	1.5 mm
Thread depth:	24 mm / M16x1.5

Tool material:	Cast Aluminum
Cutting speed:	220 m/min
Feed per tooth:	0.15 mm
Cutting time:	1.7 s



Programming example:

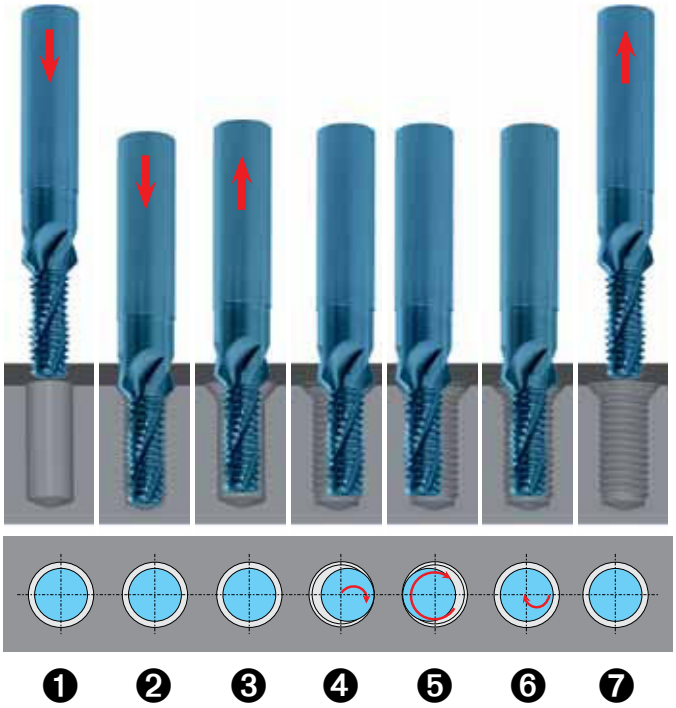
	CNC Code:	Plain text
	N10 M6T1	Tool call
	N20 G90 G54 G00 X0.000Y0.000	Work offset
❶	N30 Z2.000 S3199 M3 D1	Positioning centered on start position above tapping size hole and spindle speed call-up
	N40 G00 Z-21.725	Rapid movement to thread milling start position centered in tapping size hole
	N50 G91	Switch to incremental
	N60 G42 G01 X0.000Y4.975 F1000	Cutter radius compensation on
❷	N70 G02 X0.000Y-10.975 I0.000 J-5.488 Z-0.263 F87	180° entry cycle, start of thread milling
❸	N80 G02 X0.000Y0.000 I0.000 J6.000 Z-1.750 F175	360° thread milling cycle with axial movement of the thread pitch in Z-direction
❹	N90 G02 X0.000Y10.975 I0.000 J5.488 Z-0.263 F350	180° withdrawal cycle to the thread center, end of thread milling
	N100 G40 G01 X0.000Y-4.975 F1000	Cutter radius compensation off
	N110 G90	Switch to absolute
❺	N120 G80 G53 G00 Z2.000	Withdrawal from hole to start position centered above tapping size hole
	N130 M30 M95	End

Thread milling cutters with countersinking step
Type TMC SP

Machine example

Coating:	TiCN
Thread:	M16
Pitch:	1.5 mm
Thread depth:	40 mm / M16x1.5

Tool material:	5120 Alloyed Steel
Cutting speed:	100 m/min
Feed per tooth:	0.06 mm
Cutting time:	6.4 s



Programming example:

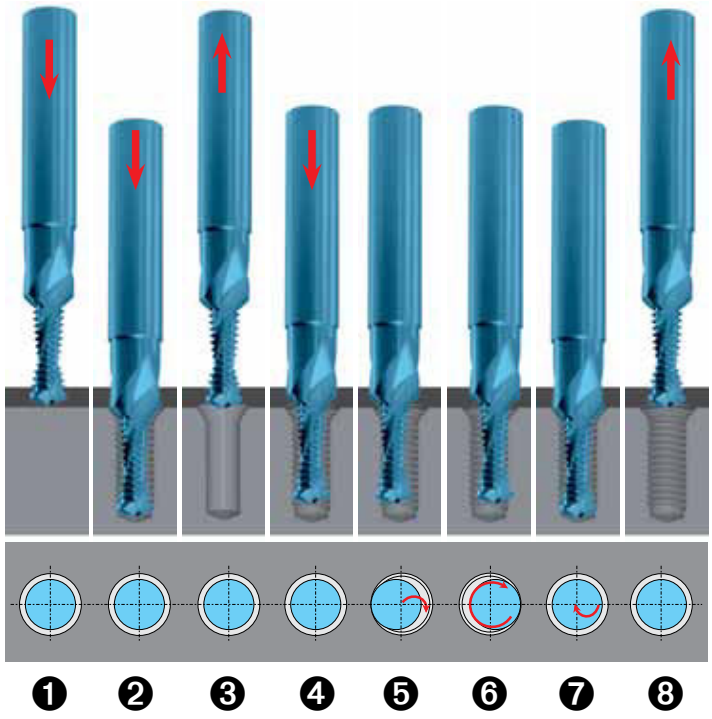
	CNC Code:	Plain text
	N10 M6T1	Tool call
	N20 G90 G54 G00 X0.000Y0.000	Work offset
❶	N30 Z2.000 S497 M3 D1	Positioning centered on start position above tapping size hole and spindle speed call-up
	N40 G00 X0.000Y0.000 Z-41.300	Rapid movement to countersinking start position
❷	N50 G01 X0.000Y0.000 Z-43.200 F119	Countersinking of 90° chamfer
❸	N60 G00 Z-38.050 S2487	Rapid movement to thread milling start position centered in tapping size hole
	N70 G91	Switch to incremental
	N80 G42 G01 X0.000Y6.400 F1000	Cutter radius compensation on
❹	N90 G02 X0.000Y-14.400 I0.000 J-7.200 Z-0.225 F60	180° entry cycle, start of thread milling
❺	N100 G02 X0.000Y0.000 I0.000 J8.000 Z-1.500 F119	360° thread milling cycle with axial movement of the thread pitch in Z-direction
❻	N110 G02 X0.000Y14.400 I0.000 J7.200 Z-0.225 F239	180° withdrawal cycle to the thread center, end of thread milling
	N120 G40 G01 X0.000Y-6.400 F1000	Cutter radius compensation off
	N130 G90	Switch to absolute
❼	N140 G80 G53 G00 Z2.000	Withdrawal from hole to start position centered above tapping size hole
	N150 M30 M95	End

Drill/thread milling cutter
Type DTMC SP

Machine example

Coating:	bright
Thread:	M8
Pitch:	1.25 mm
Thread depth:	16 mm / 2 x D

Tool material:	Cast Iron
Cutting speed:	100 m/min
Feed per tooth:	0.06 mm
Cutting time:	5.3 s



Programming example:

	CNC Code:	Plain text
	N10 M6 T1	Tool call
	N20 G90 G54 G00 X0.000 Y0.000	Work offset
❶	N30 Z2.000 S5013 M3 D1	Positioning centered on start position above tapping size hole and spindle speed call-up
	N40 G01 X0.000 Y0.000 Z-1.000 F251	Centering at half the feed rate
❷	N50 X0.000 Y0.000 Z-19.825 F501	Drilling the tapping size hole and countersinking 90° chamfer
❸	N60 G00 X0.000 Y0.000 Z0.000 S5013	Withdrawal of tool from the hole for pecking
❹	N70 Z-14.375	Rapid movement to thread milling start position centered in tapping size hole
	N80 G91	Switch to incremental
	N90 G42 G01 X0.000 Y3.175 F1000	Cutter radius compensation on
❺	N100 G02 X0.000 Y-7.175 I0.000 J-3.588 Z-0.188 F62	180° entry cycle, start of thread milling
❻	N110 G02 X0.000 Y0.000 I0.000 J4.000 Z-1.250 F124	360° thread milling cycle with axial movement of the thread pitch in Z-direction
❼	N120 G02 X0.000 Y7.175 I0.000 J3.588 Z-0.188 F248	180° withdrawal cycle to the thread center, end of thread milling
	N130 G40 G01 X0.000 Y-3.175 F1000	Cutter radius compensation off
	N140 G90	Switch to absolute
❽	N150 G80 G53 G00 Z2.000	Withdrawal from hole to start position centered above tapping size hole
	N160 M30 M95	End

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