



THREAD CUTTING TOOLS

FASCINATION  PRECISION®











Range and applications overview:



Material	Surface	DIN	Shape	Left hand cutting / right hand cutting	Thread	Tenacity classes	Nominal thread size	Article no.	Page
HSS		DIN 352			M	800 N/mm²	M 2 - M 52	230 020 - 230 520	142
HSS		DIN 352			M	800 N/mm²	M 3 - M 20	230 030 Li - 230 200 Li	142
HSSE Co 5		DIN 352			M	1000 N/mm²	M 2 - M 24	230 020 E - 230 240 E	142
HSS		DIN 2181			MF	800 N/mm²	MF 3 - MF 52	235 030 - 235 520	144
HSS		DIN 5157			G (BSP)	800 N/mm²	G 1/8 - G 2"	236 018 - 236 020	146
HSS		DIN 352			Ww (BSW)	800 N/mm²	1/16 - 2"	246 116 - 246 020	147
HSS		DIN 352			UNC	800 N/mm²	Nr. 2 - 2"	246 020 UNC - 246 200 UNC	148
HSS		DIN 352			UNF	800 N/mm²	Nr. 2 - 1 1/2"	246 020 UNF - 246 112 UNF	149
HSS		DIN 352	B		M	800 N/mm²	M 3 - M 12	231 030 - 231 120	152
HSSE Co 5		DIN 352	B		M	1000 N/mm²	M 3 - M 12	231 030 E - 231 120 E	152
HSS			C		NPT	800 N/mm²	1/16 - 2"	231 116 NPT - 231 020 NPT	153
HSS		DIN 5157	B		G (BSP)	800 N/mm²	G 1/8 - G 1"	236 210 - 236 238	154



HSS		DIN 22568	B		M	800 N/mm²	M 2 - M 52	237 020 - 237 520	143
HSS		DIN 22568	B		M	800 N/mm²	M 3 - M 12	238 030 - 238 120	143
HSS		DIN 22568	B		M	800 N/mm²	M 3 - M 20	237 030 Li - 230 200 Li	143
HSSE Co 5		DIN 22568	B		M	1000 N/mm²	M 2 - M 24	237 020 E - 237 240 E	143
HSS		DIN 22568	B		MF	800 N/mm²	MF 3 - MF 52	239 030 - 239 520	145
HSS		DIN 24231	B		G (BSP)	800 N/mm²	G 1/8 - G 2"	240 018 - 240 020	146
HSS		DIN 22568	B		Ww (BSW)	800 N/mm²	1/16 - 2"	247 116 - 247 020	147
HSS		DIN 22568	B		UNC	800 N/mm²	Nr. 2 - 2"	240 020 UNC - 240 112 UNC	148
HSS		DIN 22568	B		UNF	800 N/mm²	Nr. 2 - 1 1/2"	240 020 UNF - 240 112 UNF	149
HSS		DIN 382			M	800 N/mm²	M 3 - M 30	267 030 - 267 300	153
HSS		DIN 382	B		G (BSP)	800 N/mm²	G 1/8 - G 1"	267 610 - 267 638	154

Steel (N/mm ²) < 800 	Steel (N/mm ²) < 1000 	Steel (N/mm ²) < 1200 	Stainless steel 	Aluminium 	Brass 	Bronze 	Plastics 	Cast iron 	Titanium alloyed 
■				■	■	□	■	□	
■				■	■	□	■	□	
■	■		■	■	■	■	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	■	■	□	
■				■	■	□	■	□	

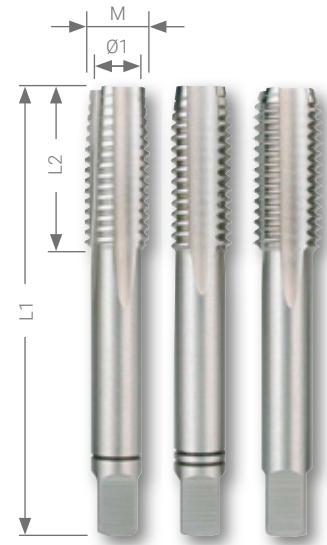
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■	■		■	■	■	■	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	
■				■	■	□	■	□	



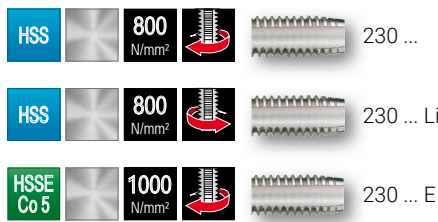
Hand taps M DIN 352 HSS, HSS-left-handed thread and HSSE-Co 5 ground

Set: 3-piece
 Taper tap: 6 - 8-thread chamfer
 Second tap: 4 - 5-thread chamfer
 Final tap: 2 - 3-thread chamfer
 Thread: metric, DIN ISO 13
 Flanks: relief-ground

Also available individually
 Taper tap: Article no. 230-1
 Second tap: Article no. 230-2
 Final tap: Article no. 230-3



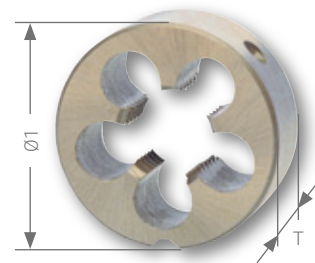
Packing unit: set in plastic pack



Steel (N/mm²) < 800	■	■	■
Steel (N/mm²) < 1000			■
Rust-resistant steel			■
Aluminium	■	■	■

Brass	■	■	■
Bronze	□	□	■
Plastics	■	■	■
Cast iron	□	□	□
Titanium alloyed			

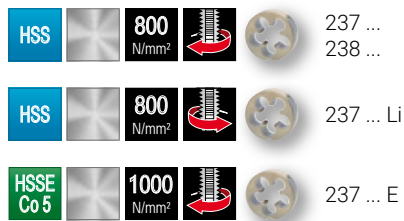
Nominal thread size M	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm				
M 2	0,40	1,60	36,0	8,0	230 020	—	230 020 E	1
M 2,5	0,45	2,10	40,0	8,0	230 025	—	—	1
M 3	0,50	2,50	40,0	10,0	230 030	230 030 Li	230 030 E	1
M 3,5	0,60	2,90	45,0	12,0	230 035	—	—	1
M 4	0,70	3,30	45,0	12,0	230 040	230 040 Li	230 040 E	1
M 4,5	0,75	3,70	50,0	16,0	230 045	—	—	1
M 5	0,80	4,20	50,0	13,0	230 050	230 050 Li	230 050 E	1
M 6	1,00	5,00	56,0	15,0	230 060	230 060 Li	230 060 E	1
M 7	1,00	6,00	56,0	16,0	230 070	—	—	1
M 8	1,25	6,80	56,0	18,0	230 080	230 080 Li	230 080 E	1
M 9	1,25	7,80	63,0	22,0	230 090	—	—	1
M 10	1,50	8,50	70,0	24,0	230 100	230 100 Li	230 100 E	1
M 11	1,50	9,50	70,0	24,0	230 110	—	—	1
M 12	1,75	10,20	75,0	29,0	230 120	230 120 Li	230 120 E	1
M 14	2,00	12,00	80,0	30,0	230 140	230 140 Li	230 140 E	1
M 15	2,00	13,00	80,0	32,0	230 150	—	—	1
M 16	2,00	14,00	80,0	32,0	230 160	230 160 Li	230 160 E	1
M 18	2,50	15,50	95,0	40,0	230 180	230 180 Li	230 180 E	1
M 20	2,50	17,50	95,0	40,0	230 200	230 200 Li	230 200 E	1
M 22	2,50	19,50	100,0	40,0	230 220	—	230 220 E	1
M 24	3,00	21,00	110,0	45,0	230 240	—	230 240 E	1
M 27	3,00	24,00	110,0	50,0	230 270	—	—	1
M 30	3,50	26,50	125,0	56,0	230 300	—	—	1
M 33	3,50	29,50	125,0	56,0	230 330	—	—	1
M 36	4,00	32,00	150,0	63,0	230 360	—	—	1
M 39	4,00	35,00	150,0	63,0	230 390	—	—	1
M 42	4,50	37,50	150,0	63,0	230 420	—	—	1
M 45	4,50	40,50	160,0	70,0	230 450	—	—	1
M 48	5,00	43,00	180,0	75,0	230 480	—	—	1
M 52	5,00	47,00	180,0	75,0	230 520	—	—	1



Round dies M DIN EN 22568 HSS, HSS-left-handed thread and HSSE-Co 5 ground

Type: Type B closed – solid die
Thread: metric, DIN ISO 13

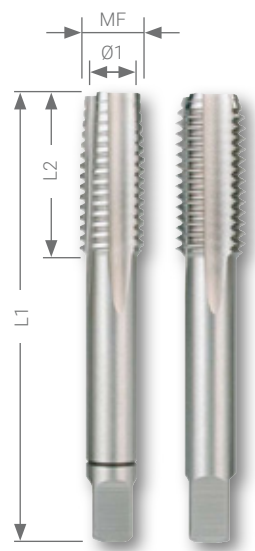
Packing unit: in plastic tubes of 1



Steel (N/mm²) < 800	■	■	■
Steel (N/mm²) < 1000			■
Rust-resistant steel			■
Aluminium	■	■	■

Brass	■	■	■
Bronze	□	□	■
Plastics	■	■	■
Cast iron	□	□	□
Titanium alloyed			

Nominal thread size M	Pitch mm	Outside Ø1 mm	Thickness T mm					
M 2	0,40	16,0	5,0	237 020	—	—	237 020 E	1
M 2,5	0,45	16,0	5,0	237 025	—	—	—	1
M 3	0,50	20,0	5,0	237 030	—	237 030 Li	237 030 E	1
M 3	0,50	25,0	9,0	—	238 030	—	—	1
M 3,5	0,60	20,0	5,0	237 035	—	—	—	1
M 4	0,70	20,0	5,0	237 040	—	237 040 Li	237 040 E	1
M 4	0,70	25,0	9,0	—	238 040	—	—	1
M 4,5	0,75	20,0	7,0	237 045	—	—	—	1
M 5	0,80	20,0	7,0	237 050	—	237 050 Li	237 050 E	1
M 5	0,80	25,0	9,0	—	238 050	—	—	1
M 6	1,00	20,0	7,0	237 060	—	237 060 Li	237 060 E	1
M 6	1,00	25,0	9,0	—	238 060	—	—	1
M 7	1,00	25,0	9,0	237 070	—	237 070 Li	—	1
M 8	1,25	25,0	9,0	237 080	238 080	237 080 Li	237 080 E	1
M 9	1,25	25,0	9,0	237 090	—	—	—	1
M 10	1,50	30,0	11,0	237 100	—	237 100 Li	237 100 E	1
M 10	1,50	25,0	9,0	—	238 100	—	—	1
M 11	1,50	30,0	11,0	237 110	—	—	—	1
M 12	1,75	38,0	14,0	237 120	—	237 120 Li	237 120 E	1
M 12	1,75	25,0	9,0	—	238 120	—	—	1
M 14	2,00	38,0	14,0	237 140	—	237 140 Li	237 140 E	1
M 16	2,00	45,0	18,0	237 160	—	237 160 Li	237 160 E	1
M 18	2,50	45,0	18,0	237 180	—	237 180 Li	237 180 E	1
M 20	2,50	45,0	18,0	237 200	—	237 200 Li	237 200 E	1
M 22	2,50	55,0	22,0	237 220	—	—	237 220 E	1
M 24	3,00	55,0	22,0	237 240	—	—	237 240 E	1
M 27	3,00	65,0	25,0	237 270	—	—	—	1
M 30	3,50	65,0	25,0	237 300	—	—	—	1
M 33	3,50	65,0	25,0	237 330	—	—	—	1
M 36	4,00	65,0	25,0	237 360	—	—	—	1
M 39	4,00	75,0	30,0	237 390	—	—	—	1
M 42	4,50	75,0	30,0	237 420	—	—	—	1
M 45	4,50	90,0	36,0	237 450	—	—	—	1
M 48	5,00	90,0	36,0	237 480	—	—	—	1
M 52	5,00	90,0	36,0	237 520	—	—	—	1



Hand taps MF DIN 2181 HSS, ground

Set: 2-piece
 Taper tap: 5 - 6-thread chamfer
 Final tap: 2 - 3-thread chamfer
 Thread: metric, fine, DIN ISO 13
 Flanks: relief-ground

After two rotations of the drill turn back 1/3 rotation to break the chip.
 Thus the strain on the screw tap decreases.
 Lubrication with RUKO cutting oil is recommended.

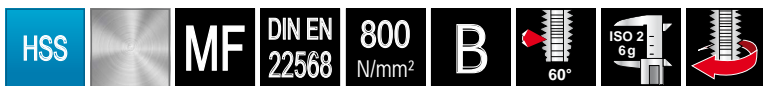
Packing unit: set in plastic pack

Steel (N/mm2) < 800	■	Brass	■
Steel (N/mm2) < 1000		Bronze	□
		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

Also available individually
 Taper tap: Article no. 235-1
 Final tap: Article no. 235-2

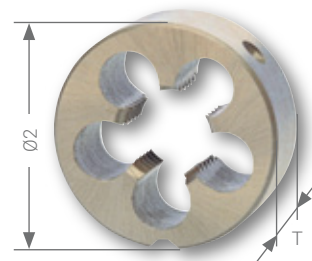
Nominal thread size MF	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
MF 3	0,35	2,60	40,0	10,0	235 030	1
MF 4	0,35	3,10	45,0	10,0	235 040	1
MF 4	0,50	3,50	45,0	12,0	235 041	1
MF 5	0,50	4,50	50,0	13,0	235 050	1
MF 5	0,75	4,25	50,0	13,0	235 051	1
MF 6	0,50	5,50	50,0	14,0	235 061	1
MF 6	0,75	5,20	50,0	15,0	235 060	1
MF 7	0,75	6,20	50,0	14,0	235 070	1
MF 8	0,50	7,50	50,0	19,0	235 082	1
MF 8	0,75	7,20	56,0	18,0	235 080	1
MF 8	1,00	7,00	56,0	18,0	235 081	1
MF 9	0,75	8,20	56,0	19,0	235 092	1
MF 9	1,00	8,00	63,0	20,0	235 090	1
MF 10	0,75	9,20	63,0	20,0	235 102	1
MF 10	1,00	9,00	63,0	18,0	235 100	1
MF 10	1,25	8,70	70,0	24,0	235 101	1
MF 11	1,00	9,20	63,0	20,0	235 110	1
MF 11	1,25	9,80	63,0	22,0	235 111	1
MF 12	1,00	11,00	70,0	20,0	235 122	1
MF 12	1,25	10,70	70,0	20,0	235 121	1
MF 12	1,50	10,50	70,0	20,0	235 120	1
MF 13	1,00	12,00	70,0	22,0	235 130	1
MF 13	1,50	11,50	70,0	22,0	235 131	1
MF 14	1,00	13,00	70,0	20,0	235 142	1
MF 14	1,25	12,70	70,0	20,0	235 140	1
MF 14	1,50	12,50	70,0	20,0	235 141	1
MF 15	1,50	13,50	70,0	22,0	235 150	1
MF 16	1,00	15,00	70,0	20,0	235 161	1
MF 16	1,25	14,75	70,0	20,0	235 162	1
MF 16	1,50	14,50	70,0	20,0	235 160	1
MF 18	1,00	17,00	80,0	22,0	235 181	1
MF 18	1,25	16,80	80,0	22,0	235 183	1

Nominal thread size MF	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
MF 18	1,50	16,50	80,0	22,0	235 180	1
MF 18	2,00	16,00	80,0	22,0	235 182	1
MF 20	1,00	19,00	80,0	22,0	235 201	1
MF 20	1,25	18,80	80,0	22,0	235 203	1
MF 20	1,50	18,50	80,0	22,0	235 200	1
MF 20	2,00	18,00	80,0	22,0	235 202	1
MF 22	1,00	21,00	80,0	22,0	235 221	1
MF 22	1,50	20,50	80,0	22,0	235 220	1
MF 22	2,00	20,00	80,0	22,0	235 222	1
MF 24	1,00	23,00	90,0	22,0	235 242	1
MF 24	1,50	22,50	90,0	22,0	235 240	1
MF 24	2,00	22,00	90,0	22,0	235 241	1
MF 25	1,50	23,50	90,0	22,0	235 250	1
MF 26	1,50	24,50	90,0	22,0	235 261	1
MF 26	2,00	24,00	90,0	22,0	235 260	1
MF 27	1,50	25,50	90,0	22,0	235 270	1
MF 27	2,00	25,00	90,0	22,0	235 271	1
MF 28	1,50	26,50	90,0	22,0	235 280	1
MF 28	2,00	26,00	90,0	22,0	235 281	1
MF 30	1,00	29,00	90,0	22,0	235 300	1
MF 30	1,50	28,50	90,0	22,0	235 301	1
MF 30	2,00	28,00	90,0	22,0	235 302	1
MF 32	1,50	30,50	90,0	22,0	235 320	1
MF 35	1,50	33,50	100,0	25,0	235 350	1
MF 38	1,50	36,50	110,0	25,0	235 380	1
MF 40	1,50	38,50	110,0	25,0	235 400	1
MF 42	1,50	40,50	110,0	25,0	235 420	1
MF 45	1,50	43,50	110,0	25,0	235 450	1
MF 48	1,50	46,50	125,0	40,0	235 480	1
MF 50	1,50	48,50	125,0	40,0	235 500	1
MF 52	1,50	50,50	125,0	40,0	235 520	1



Round dies MF DIN EN 22568 HSS, ground

Type: Type B closed – solid die
 Thread: metric fine, DIN ISO 13



It is recommended that the threading dies are turned back briefly now and then so that the chips break and do not clog the threads. Lubrication with RUKO cutting oil is recommended.

Packing unit: in plastic tubes of 1

Steel (N/mm2) < 800	■	Brass	■
Steel (N/mm2) < 1000		Bronze	□
		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

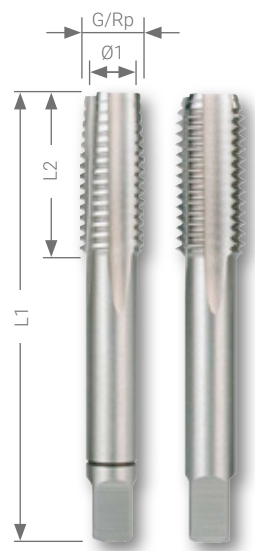
Nominal thread size MF	Pitch mm	Outside Ø2 mm	Thickness T mm	HSS	
MF 3	0,35	20,0	5,0	239 030	1
MF 4	0,35	20,0	5,0	239 040	1
MF 4	0,50	20,0	5,0	239 041	1
MF 5	0,50	20,0	5,0	239 050	1
MF 5	0,75	20,0	7,0	239 051	1
MF 6	0,50	20,0	5,0	239 061	1
MF 6	0,75	20,0	7,0	239 060	1
MF 7	0,75	25,0	9,0	239 070	1
MF 8	0,50	25,0	9,0	239 082	1
MF 8	0,75	25,0	9,0	239 080	1
MF 8	1,00	25,0	9,0	239 081	1
MF 9	0,75	25,0	9,0	239 090	1
MF 9	1,00	25,0	9,0	239 091	1
MF 10	0,75	30,0	11,0	239 102	1
MF 10	1,00	30,0	11,0	239 100	1
MF 10	1,25	30,0	11,0	239 101	1
MF 11	1,00	30,0	11,0	239 110	1
MF 11	1,25	30,0	11,0	239 111	1
MF 12	1,00	38,0	10,0	239 121	1
MF 12	1,25	38,0	10,0	239 122	1
MF 12	1,50	38,0	10,0	239 120	1
MF 13	1,00	38,0	10,0	239 131	1
MF 13	1,50	38,0	10,0	239 130	1
MF 14	1,00	38,0	10,0	239 142	1
MF 14	1,25	38,0	10,0	239 140	1
MF 14	1,50	38,0	10,0	239 141	1
MF 15	1,50	38,0	10,0	239 150	1
MF 16	1,00	45,0	14,0	239 161	1
MF 16	1,25	45,0	14,0	239 162	1
MF 16	1,50	45,0	14,0	239 160	1
MF 18	1,00	45,0	14,0	239 181	1
MF 18	1,25	45,0	14,0	239 183	1

Nominal thread size MF	Pitch mm	Outside Ø2 mm	Thickness T mm	HSS	
MF 18	1,50	45,0	14,0	239 180	1
MF 18	2,00	45,0	14,0	239 182	1
MF 20	1,00	45,0	14,0	239 201	1
MF 20	1,25	45,0	14,0	239 203	1
MF 20	1,50	45,0	14,0	239 200	1
MF 20	2,00	45,0	14,0	239 202	1
MF 22	1,00	55,0	16,0	239 221	1
MF 22	1,50	55,0	16,0	239 220	1
MF 22	2,00	55,0	16,0	239 222	1
MF 24	1,00	55,0	16,0	239 242	1
MF 24	1,50	55,0	16,0	239 240	1
MF 24	2,00	55,0	16,0	239 241	1
MF 25	1,50	55,0	16,0	239 250	1
MF 26	1,50	55,0	16,0	239 261	1
MF 26	2,00	55,0	16,0	239 262	1
MF 27	1,50	65,0	18,0	239 270	1
MF 27	2,00	65,0	18,0	239 271	1
MF 28	1,50	65,0	18,0	239 281	1
MF 28	2,00	65,0	18,0	239 282	1
MF 30	1,00	65,0	18,0	239 300	1
MF 30	1,50	65,0	18,0	239 301	1
MF 30	2,00	65,0	18,0	239 302	1
MF 32	1,50	65,0	18,0	239 320	1
MF 35	1,50	65,0	18,0	239 350	1
MF 38	1,50	75,0	20,0	239 380	1
MF 40	1,50	75,0	20,0	239 400	1
MF 42	1,50	75,0	20,0	239 420	1
MF 45	1,50	90,0	22,0	239 450	1
MF 48	1,50	90,0	22,0	239 480	1
MF 50	1,50	90,0	22,0	239 500	1
MF 52	1,50	90,0	22,0	239 520	1



Hand taps G DIN 5157 HSS, ground

Set: 2-piece
 Taper tap: 5 - 6-thread chamfer
 Final tap: 2 - 3-thread chamfer
 Thread: DIN ISO 228 "G" (cylindrical pipe thread)
 DIN 2999 "Rp" (Whitworth pipe thread)
 Flanks: relief-ground



Packing unit: set in plastic pack

Steel (N/mm²) < 800	■	Brass	■
Steel (N/mm²) < 1000		Bronze	□
		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

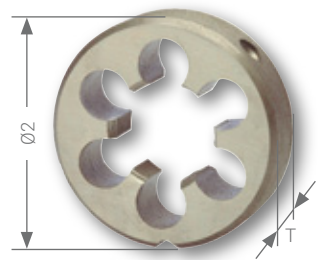
Also available individually
 Taper tap: Article no. 236-1
 Final tap: Article no. 236-2

Nominal thread size G / Rp		Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
G 1/8	Rp 1/8	28	8,80	63,0	18,0	236 018	1
G 1/4	Rp 1/4	19	11,80	70,0	20,0	236 014	1
G 3/8	Rp 3/8	19	15,25	70,0	20,0	236 038	1
G 1/2	Rp 1/2	14	19,00	80,0	22,0	236 012	1
G 5/8	Rp 5/8	14	21,00	80,0	22,0	236 058	1
G 3/4	Rp 3/4	14	24,50	90,0	22,0	236 034	1
G 7/8	Rp 7/8	14	28,25	90,0	22,0	236 078	1
G 1"	Rp 1"	11	30,75	100,0	25,0	236 010	1
G 1 1/8	Rp 1 1/8	11	35,30	125,0	40,0	236 118	1
G 1 1/4	Rp 1 1/4	11	39,25	125,0	40,0	236 114	1
G 1 3/8	Rp 1 3/8	11	41,70	140,0	40,0	236 138	1
G 1 1/2	Rp 1 1/2	11	45,25	140,0	40,0	236 112	1
G 1 3/4	Rp 1 3/4	11	51,10	140,0	40,0	236 134	1
G 2"	Rp 2"	11	57,00	160,0	40,0	236 020	1



Round dies G DIN EN 24231 HSS, ground

Type: Type B closed – solid die
 Thread: DIN ISO 228 "G" (cylindrical pipe thread)



Packing unit: individual plastic pack

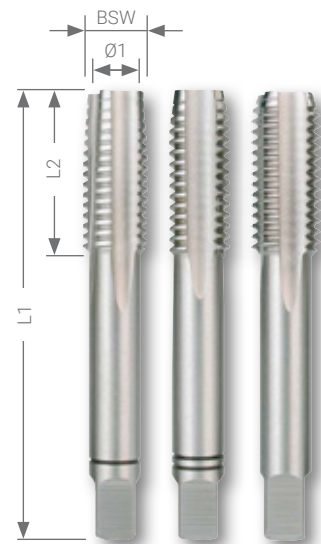
Nominal thread size G	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
G 1/8	28	30,0	11,0	240 018	1
G 1/4	19	38,0	10,0	240 014	1
G 3/8	19	45,0	14,0	240 038	1
G 1/2	14	45,0	14,0	240 012	1
G 5/8	14	55,0	16,0	240 058	1
G 3/4	14	55,0	16,0	240 034	1
G 7/8	14	65,0	18,0	240 078	1
G 1"	11	65,0	18,0	240 010	1

Nominal thread size G	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
G 1 1/8	11	75,0	20,0	240 118	1
G 1 1/4	11	75,0	20,0	240 114	1
G 1 3/8	11	90,0	22,0	240 138	1
G 1 1/2	11	90,0	22,0	240 112	1
G 1 5/8	11	90,0	22,0	240 158	1
G 1 3/4	11	105,0	22,0	240 134	1
G 2"	11	105,0	22,0	240 020	1



Hand taps BSW ≈ DIN 352 HSS, ground

Set: 3-piece
 Taper tap: 5 - 6-thread chamfer
 Second tap: 4 - 5-thread chamfer
 Final tap: 2 - 3-thread chamfer
 Thread: BSW, formerly DIN 11
 Flanks: relief-ground



Packing unit: set in plastic pack

Steel (N/mm²) < 800	■	Brass	■
Steel (N/mm²) < 1000		Bronze	□
		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

Also available individually
 Taper tap: Article no. 246-1
 Second tap: Article no. 246-2
 Final tap: Article no. 246-3

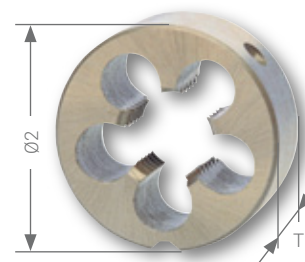
Nominal thread size BSW	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
1/16	60	1,15	32,0	7,0	246 116	1
3/32	48	1,80	40,0	8,0	246 332	1
1/8	40	2,50	40,0	10,0	246 018	1
5/32	32	3,10	45,0	12,0	246 532	1
3/16	24	3,60	50,0	13,0	246 316	1
7/32	24	4,40	50,0	15,0	246 732	1
1/4	20	5,10	50,0	16,0	246 014	1
5/16	18	6,50	56,0	18,0	246 516	1
3/8	16	7,90	70,0	24,0	246 038	1
7/16	14	9,30	70,0	24,0	246 716	1
1/2	12	10,50	80,0	30,0	246 012	1
9/16	12	12,00	80,0	30,0	246 916	1

Nominal thread size BSW	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
5/8	11	13,50	80,0	32,0	246 058	1
3/4	10	16,50	95,0	40,0	246 034	1
7/8	9	19,25	100,0	40,0	246 078	1
1"	8	22,00	110,0	50,0	246 010	1
1 1/8	7	24,75	125,0	50,0	246 118	1
1 1/4	7	27,75	125,0	50,0	246 114	1
1 3/8	6	30,20	150,0	63,0	246 138	1
1 1/2	6	33,50	150,0	63,0	246 112	1
1 5/8	5	35,50	150,0	63,0	246 158	1
1 3/4	5	38,50	160,0	70,0	246 134	1
1 7/8	4 1/2	41,50	180,0	75,0	246 178	1
2"	4 1/2	44,50	180,0	75,0	246 020	1



Round dies BSW ≈ DIN EN 22568 HSS, ground

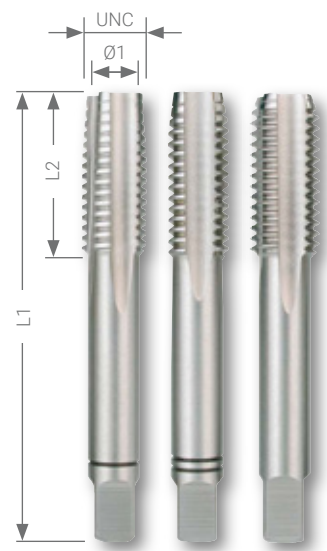
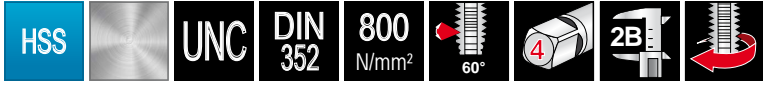
Type: Type B closed – solid die
 Thread: BSW, formerly DIN 11



Packing unit: individual plastic pack

Nominal thread size BSW	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
1/16	60	16,0	5,0	247 116	1
3/32	48	16,0	5,0	247 332	1
1/8	40	20,0	5,0	247 018	1
5/32	32	20,0	5,0	247 532	1
3/16	24	20,0	7,0	247 316	1
7/32	24	20,0	7,0	247 732	1
1/4	20	25,0	9,0	247 014	1
5/16	18	25,0	9,0	247 516	1
3/8	16	30,0	11,0	247 038	1
7/16	14	30,0	11,0	247 716	1
1/2	12	38,0	14,0	247 012	1
9/16	12	38,0	14,0	247 916	1

Nominal thread size BSW	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
5/8	11	45,0	18,0	247 058	1
3/4	10	45,0	18,0	247 034	1
7/8	9	55,0	22,0	247 078	1
1"	8	55,0	22,0	247 010	1
1 1/8	7	65,0	25,0	247 118	1
1 1/4	7	65,0	25,0	247 114	1
1 3/8	6	65,0	25,0	247 138	1
1 1/2	6	75,0	30,0	247 112	1
1 5/8	5	75,0	30,0	247 158	1
1 3/4	5	90,0	36,0	247 134	1
1 7/8	4 1/2	90,0	36,0	247 178	1
2"	4 1/2	90,0	36,0	247 020	1



Hand taps UNC ≈ DIN 352 HSS, ground

Set: 3-piece
 Taper tap: 5 - 6-thread chamfer
 Second tap: 4 - 5-thread chamfer
 Final tap: 2 - 3-thread chamfer
 Thread: American UNC coarse thread
 Flanks: relief-ground

Packing unit: set in plastic pack

Steel (N/mm2) < 800	■
Steel (N/mm2) < 1000	
Rust-resistant steel	
Aluminium	■

Brass	■
Bronze	□
Plastics	■
Cast iron	□
Titanium alloyed	

Also available individually
 Taper tap: Article no. 246 UNC1
 Second tap: Article no. 246 UNC2
 Final tap: Article no. 246 UNC3

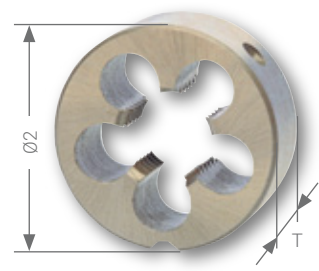
Nominal thread size UNC	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
Nr. 2	56	1,8	36,0	11,0	246 020 UNC	1
Nr. 3	48	2,1	36,0	11,0	246 030 UNC	1
Nr. 4	40	2,3	40,0	12,0	246 040 UNC	1
Nr. 5	40	2,6	40,0	12,0	246 050 UNC	1
Nr. 6	32	2,8	45,0	14,0	246 060 UNC	1
Nr. 8	32	3,5	45,0	14,0	246 080 UNC	1
Nr. 10	24	3,9	50,0	16,0	246 100 UNC	1
Nr. 12	24	4,5	50,0	18,0	246 120 UNC	1
1/4	20	5,1	50,0	19,0	246 014 UNC	1
5/16	18	6,6	56,0	22,0	246 516 UNC	1
3/8	16	8,0	70,0	24,0	246 038 UNC	1
7/16	14	9,4	70,0	24,0	246 716 UNC	1

Nominal thread size UNC	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
1/2	13	10,8	75,0	29,0	246 012 UNC	1
9/16	12	12,2	80,0	30,0	246 916 UNC	1
5/8	11	13,5	80,0	32,0	246 058 UNC	1
3/4	10	16,5	95,0	40,0	246 034 UNC	1
7/8	9	19,5	100,0	40,0	246 078 UNC	1
1"	8	22,2	110,0	50,0	246 010 UNC	1
1 1/8	7	25,0	132,0	56,0	246 118 UNC	1
1 1/4	7	28,0	132,0	56,0	246 114 UNC	1
1 3/8	6	30,7	150,0	63,0	246 138 UNC	1
1 1/2	6	34,0	150,0	63,0	246 112 UNC	1
1 3/4	5	39,5	160,0	70,0	246 134 UNC	1
2"	4 1/2	45,0	190,0	80,0	246 200 UNC	1



Round dies UNC ≈ DIN EN 22568 HSS, ground

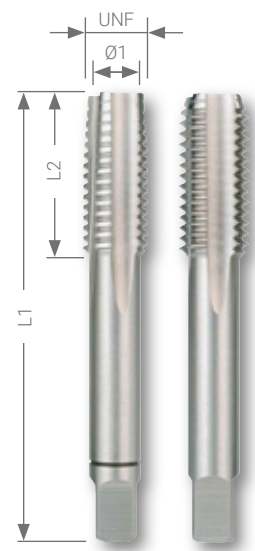
Type: Type B closed – solid die
 Thread: American UNC coarse thread



Packing unit: individual plastic pack

Nominal thread size UNC	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
Nr. 2	56	16,0	5,0	240 020 UNC	1
Nr. 3	48	16,0	5,0	240 030 UNC	1
Nr. 4	40	20,0	5,0	240 040 UNC	1
Nr. 5	40	20,0	5,0	240 050 UNC	1
Nr. 6	32	20,0	7,0	240 060 UNC	1
Nr. 8	32	20,0	7,0	240 080 UNC	1
Nr. 10	24	20,0	7,0	240 100 UNC	1
Nr. 12	24	20,0	7,0	240 120 UNC	1
1/4	20	20,0	7,0	240 014 UNC	1
5/16	18	25,0	9,0	240 516 UNC	1
3/8	16	30,0	11,0	240 038 UNC	1
7/16	14	30,0	11,0	240 716 UNC	1

Nominal thread size UNC	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
1/2	13	38,0	14,0	240 012 UNC	1
9/16	12	38,0	14,0	240 916 UNC	1
5/8	11	45,0	18,0	240 058 UNC	1
3/4	10	45,0	18,0	240 034 UNC	1
7/8	9	55,0	22,0	240 078 UNC	1
1"	8	55,0	22,0	240 010 UNC	1
1 1/8	7	65,0	25,0	240 118 UNC	1
1 1/4	7	65,0	25,0	240 114 UNC	1
1 3/8	6	65,0	25,0	240 138 UNC	1
1 1/2	6	75,0	30,0	240 112 UNC	1
1 3/4	5	90,0	36,0	240 134 UNC	1
2"	4,5	90,0	36,0	240 200 UNC	1



Hand taps UNF ≈ DIN 2181 HSS, ground

Set: 2-piece
 Taper tap: 5 - 6-thread chamfer
 Final tap: 2 - 3-thread chamfer
 Thread: American UNF fine thread
 Flanks: relief-ground

Packing unit: set in plastic pack

Steel (N/mm ²) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm ²) < 1000	<input type="checkbox"/>	Bronze	<input type="checkbox"/>
	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>

Also available individually
 Taper tap: Article no. 246 UNF1
 Final tap: Article no. 246 UNF2

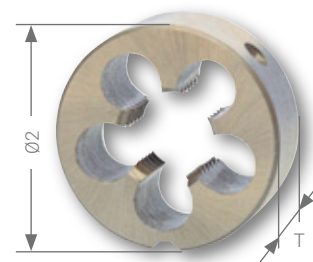
Nominal thread size UNF	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
Nr. 2	64	1,85	32,0	10,0	246 020 UNF	1
Nr. 3	56	2,15	32,0	10,0	246 030 UNF	1
Nr. 4	48	2,40	36,0	11,0	246 040 UNF	1
Nr. 5	44	2,70	36,0	11,0	246 050 UNF	1
Nr. 6	40	2,95	40,0	12,0	246 060 UNF	1
Nr. 8	36	3,50	40,0	12,0	246 080 UNF	1
Nr. 10	32	4,10	45,0	14,0	246 100 UNF	1
Nr. 12	28	4,60	50,0	14,0	246 120 UNF	1
1/4	28	5,50	50,0	18,0	246 014 UNF	1
5/16	24	6,90	56,0	22,0	246 516 UNF	1
3/8	24	8,50	63,0	22,0	246 038 UNF	1

Nominal thread size UNF	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
7/16	20	9,90	63,0	22,0	246 716 UNF	1
1/2	20	11,50	75,0	24,0	246 012 UNF	1
9/16	18	12,90	80,0	28,0	246 916 UNF	1
5/8	18	14,50	80,0	28,0	246 058 UNF	1
3/4	16	17,50	95,0	32,0	246 034 UNF	1
7/8	14	20,50	100,0	36,0	246 078 UNF	1
1"	12	23,25	110,0	40,0	246 010 UNF	1
1 1/8	12	22,00	110,0	50,0	246 118 UNF	1
1 1/4	12	22,00	132,0	56,0	246 114 UNF	1
1 3/8	12	28,00	132,0	56,0	246 138 UNF	1
1 1/2	12	32,00	150,0	63,0	246 112 UNF	1



Round dies UNF ≈ DIN EN 22568 HSS, ground

Type: Type B closed – solid die
 Thread: American UNF fine thread





Packing unit: individual plastic pack

Nominal thread size UNF	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
Nr. 2	64	16,0	5,0	240 020 UNF	1
Nr. 3	56	16,0	5,0	240 030 UNF	1
Nr. 4	48	16,0	5,0	240 040 UNF	1
Nr. 5	44	20,0	5,0	240 050 UNF	1
Nr. 6	40	20,0	5,0	240 060 UNF	1
Nr. 8	36	20,0	7,0	240 080 UNF	1
Nr. 10	32	20,0	7,0	240 100 UNF	1
Nr. 12	28	20,0	7,0	240 120 UNF	1
1/4	28	20,0	7,0	240 014 UNF	1
5/16	24	25,0	9,0	240 516 UNF	1
3/8	24	30,0	11,0	240 038 UNF	1

Nominal thread size UNF	Threads per inch	Outside Ø2 mm	Thickness T mm	HSS	
7/16	20	30,0	11,0	240 716 UNF	1
1/2	20	38,0	10,0	240 012 UNF	1
9/16	18	38,0	10,0	240 916 UNF	1
5/8	18	45,0	14,0	240 058 UNF	1
3/4	16	45,0	14,0	240 034 UNF	1
7/8	14	55,0	16,0	240 078 UNF	1
1"	12	55,0	16,0	240 010 UNF	1
1 1/8	12	65,0	18,0	240 118 UNF	1
1 1/4	12	65,0	18,0	240 114 UNF	1
1 3/8	12	65,0	18,0	240 138 UNF	1
1 1/2	12	75,0	20,0	240 112 UNF	1





Hand tap sets HSS and HSSE-Co 5 in steel case

	HSS 	HSSE Co 5 
21- piece set of hand taps M DIN 352 one three-piece set each of M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12	245 001	245 001 E
22- piece set of hand taps M DIN 352 one three-piece set each of M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 1 tap wrench DIN 1814 size 1 1/2	245 002	245 002 E
29- piece set of hand taps DIN 352 one three-piece set each of M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 Type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm + 1 tap wrench DIN 1814 size 1 1/2	245 003	245 003 E



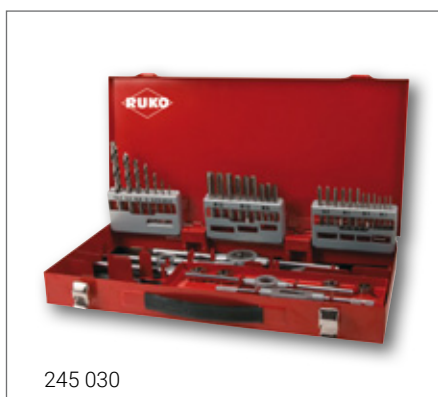
Hand tap sets HSS and HSSE-Co 5 in plastic case

	HSS 	HSSE Co 5 
21- piece set of hand taps M DIN 352 one three-piece set each of M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12	245 001 RO	245 001 ERO
28- piece set of hand taps DIN 352 one three-piece set each of M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 Type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	245 003 RO	245 003 ERO



Thread-cutting sets HSS and HSSE-Co 5 in steel case

	HSS	HSSE Co 5
31-piece set of DIY thread-cutting tools one three-piece set each of hand taps M DIN 352 M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 dies Ø 25,0 mm ≈ DIN EN 22568 in each of the sizes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 1 die stock 25,0 x 9,0 mm DIN 225 + 1 tap wrench, size 1½ DIN 1814 + 1 screwdriver	245 010	245 010 E
37-piece set of thread-cutting tools one three-piece set each of hand taps M DIN 352 M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 dies M DIN EN 22568 in each of the sizes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 5 die stocks DIN 225 in each of the sizes 20,0 x 5,0 mm - 20,0 x 7,0 mm - 25,0 x 9,0 mm - 30,0 x 11,0 mm - 38,0 x 14,0 mm + 2 tap wrenches, size 1 and size 2 DIN 1814 + 1 screwdriver + 1 screw-pitch gauge	245 020	245 020 E
44-piece set of thread-cutting tools one three-piece set each of hand taps M DIN 352 M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm + 7 dies M DIN EN 22568 in each of the sizes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 5 die stocks DIN 225 in each of the sizes 20,0 x 5,0 mm - 20,0 x 7,0 mm - 25,0 x 9,0 mm - 30,0 x 11,0 mm - 38,0 x 14,0 mm + 2 tap wrenches, size 1 and size 2 DIN 1814 + 1 screwdriver + 1 screw-pitch gauge	245 030	245 030 E
54-piece set of thread-cutting tools one three-piece set each of hand taps M DIN 352 M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 - M 14 - M 16 - M 18 - M 20 + 11 dies M DIN EN 22568 in each of the sizes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 - M 14 - M 16 - M 18 - M 20 + 6 die stocks DIN 225 in each of the sizes 20,0 x 5,0 mm - 20,0 x 7,0 mm - 25,0 x 9,0 mm - 30,0 x 11,0 mm - 38,0 x 14,0 mm - 45,0 x 18,0 mm + 2 tap wrenches, size 1 and size 3 DIN 1814 + 1 screwdriver + 1 screw-pitch gauge	245 040	245 040 E
43-piece set of thread-cutting tools MF (metric fine) one two-piece set each of hand taps MF DIN 2181 MF 3 x 0,35 - MF 4 x 0,35 - MF 5 x 0,5 - MF 6 x 0,75 - MF 8 x 0,75 - MF 10 x 1,0 - MF 12 x 1,5 - MF 14 x 1,5 - MF 16 x 1,5 - MF 18 x 1,5 - MF 20 x 1,5 mm + 11 dies MF DIN 22568 in each of the sizes MF 3 - MF 4 - MF 5 - MF 6 - MF 8 - MF 10 - MF 12 - MF 14 - MF 16 - MF 18 - MF 20 + 6 die stocks DIN 225 in each of the sizes 20,0 x 5,0 mm - 20,0 x 7,0 mm - 25,0 x 9,0 mm - 30,0 x 11,0 mm - 38,0 x 10,0 mm - 45,0 x 14,0 mm + 2 tap wrenches, size 1 and 3 DIN 1814 + 1 screwdriver + 1 screw-pitch gauge	245 041	—



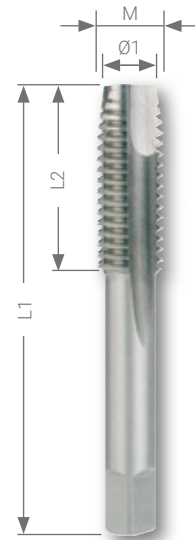


Single-cut taps M ≈ DIN 352 HSS and HSSE-Co 5 ground

Thread: metric, DIN ISO 13
Flanks: relief-ground

The single-cut tap HSS for through threads in unalloyed and low-alloyed steels up to a strength of 800 N/mm². The single-cut tap HSSE-Co 5 for through threads in unalloyed and alloyed steels up to a strength of 1000 N/mm², malleable cast iron and non-ferrous metals. The thread can be cut in one operation by hand or machine.

Packing unit: individual plastic pack



HSS		800 N/mm ²		231 ...	
HSSE Co 5		1000 N/mm ²		231 ... E	

Steel (N/mm ²) < 800		
Steel (N/mm ²) < 1000		
Rust-resistant steel		
Aluminium		

Brass		
Bronze		
Plastics		
Cast iron		
Titanium alloyed		

Nominal thread size M	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	HSSE Co 5	
M 3	0,50	2,50	40,0	10,0	231 030	231 030 E	1
M 4	0,70	3,30	45,0	12,0	231 040	231 040 E	1
M 5	0,80	4,20	50,0	13,0	231 050	231 050 E	1
M 6	1,00	5,00	50,0	15,0	231 060	231 060 E	1
M 8	1,25	6,80	56,0	18,0	231 080	231 080 E	1
M 9	1,25	7,80	67,0	22,0	231 090	-	1
M 10	1,50	8,50	70,0	24,0	231 100	231 100 E	1
M 12	1,75	10,20	75,0	29,0	231 120	231 120 E	1

Single-cut tap set HSS in steel case

	HSS
15-piece set of single-cut taps 7 single-cut taps ≈ DIN 352 HSS, ground M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 Type N HSS, ground Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm + 1 tap wrench, size 1 1/2 DIN 1814	245 004



245 004

Single-cut tap set HSS in plastic case

	HSS
15-piece set of single-cut taps 7 single-cut taps ≈ DIN 352 HSS, ground M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 Type N HSS, ground Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm + 1 tap wrench, size 1 1/2 DIN 1814	245 004 RO



245 004 RO

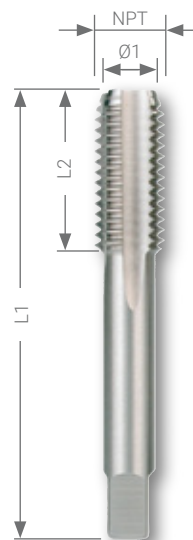


Single-cut taps NPT HSS, ground

Thread: American conical pipe thread to ANSI B.1.20.1
 Flanks: relief-ground
 Cone: 1:16

For through threads in unalloyed or low-alloyed steels up to 800 N/mm² strength, malleable cast iron and non-ferrous metals. The thread can be cut in one operation by hand or machine.

Note: pilot drill cylindrically



Packing unit: individual plastic pack

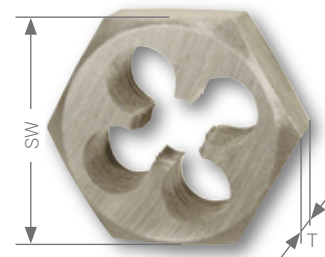
	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Steel (N/mm ²) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm ²) < 1000	<input type="checkbox"/>	Bronze	<input type="checkbox"/>
	<input type="checkbox"/>	Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>

Nominal thread size NPT	Threads per inch	Thread core hole Ø1 mm	Cutting depth mm	L1 mm	L2 mm	HSS	
1/16	27,0	6,00	12,00	65,0	19,0	231 116 NPT	1
1/8	27,0	8,25	12,00	65,0	19,0	231 018 NPT	1
1/4	18,0	10,70	17,50	70,0	25,0	231 014 NPT	1
3/8	18,0	14,10	17,50	75,0	26,0	231 038 NPT	1
1/2	14,0	17,40	22,90	80,0	31,0	231 012 NPT	1
3/4	14,0	22,60	23,00	100,0	33,0	231 034 NPT	1
1"	11,5	28,50	27,40	110,0	38,0	231 010 NPT	1
1 1/4"	11,5	37,00	28,10	125,0	41,0	231 114 NPT	1
1 1/2"	11,5	43,50	28,40	140,0	42,0	231 112 NPT	1
2"	11,5	55,00	28,40	160,0	44,0	231 020 NPT	1



Hexagonal die nut M DIN 382 HSS ground

Thread: metric, DIN ISO 13



Packing unit: individual plastic pack

Nominal thread size M	Pitch mm	Outside Ø SW mm	Thickness T mm	HSS	
M 3	0,50	18,0	5,0	267 030	1
M 4	0,70	18,0	5,0	267 040	1
M 5	0,80	18,0	7,0	267 050	1
M 6	1,00	18,0	7,0	267 060	1
M 8	1,25	21,0	9,0	267 080	1
M 10	1,50	27,0	11,0	267 100	1
M 12	1,75	36,0	14,0	267 120	1
M 14	2,00	36,0	14,0	267 140	1

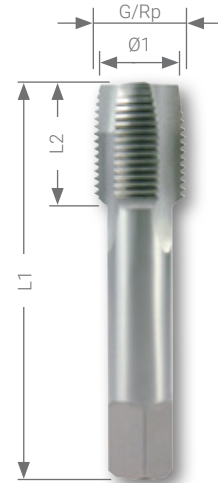
Nominal thread size M	Pitch mm	Outside Ø SW mm	Thickness T mm	HSS	
M 16	2,00	41,0	18,0	267 160	1
M 18	2,50	41,0	18,0	267 180	1
M 20	2,50	41,0	18,0	267 200	1
M 22	2,50	50,0	22,0	267 220	1
M 24	3,00	50,0	22,0	267 240	1
M 27	3,00	60,0	25,0	267 270	1
M 30	3,50	60,0	25,0	267 300	1



Single-cut taps G ≈ DIN 5157 HSS, ground

Thread: DIN ISO 228 "G" (cylindrical pipe thread)
 DIN 2999 "Rp" (Whitworth pipe thread)
 Flanks: relief-ground

Packing unit: individual plastic pack



Steel (N/mm2) < 800	■	Brass	■
Steel (N/mm2) < 1000		Bronze	□
		Plastics	■
Rust-resistant steel		Cast iron	□
Aluminium	■	Titanium alloyed	

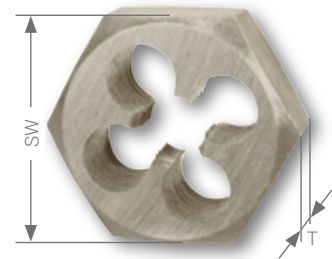
Nominal thread size G / Rp		Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	HSS	
G 1/8	Rp 1/8	28	8,6	63,0	20,0	236 218	1
G 1/4	Rp 1/4	19	11,5	70,0	22,0	236 214	1
G 3/8	Rp 3/8	19	15,0	70,0	22,0	236 238	1
G 1/2	Rp 1/2	14	19,0	80,0	22,0	236 212	1
G 3/4	Rp 3/4	14	24,5	90,0	22,0	236 234	1
G 1"	Rp 1"	11	30,5	100,0	25,0	236 210	1



Hexagonal die nut G DIN 382 HSS ground

Thread: DIN ISO 228 "G" (cylindrical pipe thread)

Packing unit: individual plastic pack



Nominal thread size G	Threads per inch	Outside Ø SW mm	Thickness T mm	HSS	
G 1/8	28	27,0	11,0	267 618	1
G 1/4	19	36,0	10,0	267 614	1
G 3/8	19	41,0	14,0	267 638	1
G 1/2	14	41,0	14,0	267 612	1
G 3/4	14	50,0	16,0	267 634	1
G 1"	11	60,0	18,0	267 610	1

Sanitary repair thread-cutting set HSS for cylindrical pipe thread in plastic case

13-piece set of sanitary repair thread-cutting tools 6 single-cut taps G/Rp ≈ DIN 5157 HSS, ground G/Rp 1/8" x 28 - G/Rp 1/4" x 19 - G/Rp 3/8" x 19 - G/Rp 1/2" x 14 - G/Rp 3/4" x 14 - G/Rp 1" x 11 + 6 hexagonal dies G DIN 382 HSS, ground G 1/8" x 28 - G 1/4" x 19 - G 3/8" x 19 - G 1/2" x 14 - G 3/4" x 14 - G 1" x 11 + 1 cutting paste, 50 g	245 059




Extension sleeves DIN 377

As extension for hand thread-cutting tools.
Inside and outside square of identical size.



Version: hardened and ground
Shank: square as per DIN 10

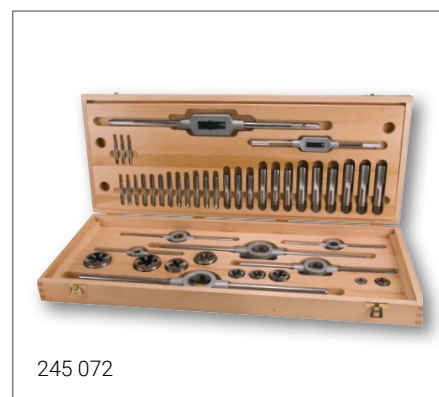
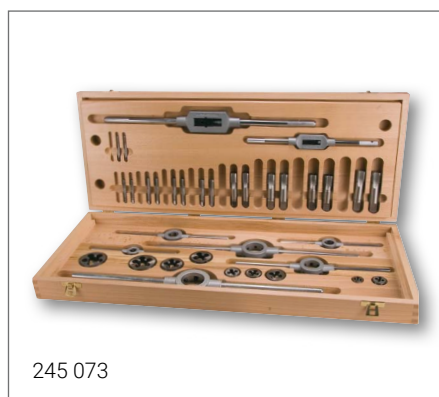
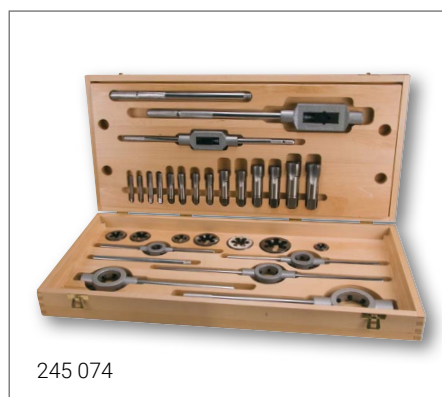
Packing unit: individual plastic pack

Square mm	Length mm	for hand tap size			G		
		M	Ww				
2,1	60,0	M 1 - M 2,6	1/16 - 3/32	—	241 021	1	
2,7	80,0	M 3	—	—	241 027	1	
3,4	95,0	M 4	5/32	—	241 034	1	
4,9	110,0	M 5 - M 8	7/32 - 5/16	—	241 049	1	
5,5	115,0	M 9 - M 10	3/8	1/8	241 055	1	
7,0	125,0	M 12	1/2	—	241 070	1	
9,0	135,0	M 13 - M 16	9/16 - 5/8	1/4	241 090	1	
11,0	150,0	M 18	11/16 - 3/4	—	241 110	1	
12,0	155,0	M 20	13/16	1/2	241 120	1	
14,5	174,0	M 22 - M 24	7/8 - 15/16	5/8	241 145	1	
16,0	185,0	M 27 - M 28	1	3/4	241 160	1	
18,0	195,0	M 30 - M 32	1 1/8	7/8	241 180	1	



Thread-cutting sets HSS in wood case

	 
28- piece set of thread-cutting tools one two-piece set each of hand taps G DIN 5157 – 1/8 - 1/4 - 3/8 - 1/2 - 5/8 - 3/4 - 1" + 7 dies G DIN EN 24231 in each of the sizes - 1/8 - 1/4 - 3/8 - 1/2 - 5/8 - 3/4 - 1" + 5 die stocks DIN 225 in each of the sizes 30,0 x 11,0 mm - 38,0 x 10,0 mm - 45,0 x 14,0 mm - 55,0 x 16,0 mm - 65,0 x 18,0 mm + 2 tap wrenches, size 3 and size 5 DIN 1814	245 074
35- piece set of thread-cutting tools one two-piece set each of hand taps UNF ≈ DIN 2181 – 1/4 - 5/16 - 3/8 - 7/16 - 1/2 - 5/8 - 3/4 - 7/8 - 1" + 9 dies UNF ≈ DIN EN 22568 in each of the sizes - 1/4 - 5/16 - 3/8 - 7/16 - 1/2 - 5/8 - 3/4 - 7/8 - 1" + 6 die stocks DIN 225 in each of the sizes 20,0 x 7,0 - 25,0 x 9,0 - 30,0 x 11,0 - 38,0 x 10,0 - 45,0 x 14,0 - 55,0 x 16,0 mm + 2 tap wrenches, size 2 and size 4 DIN 1814	245 073
44- piece set of thread-cutting tools one three-piece set each of hand taps UNC ≈ DIN 352 – 1/4 - 5/16 - 3/8 - 7/16 - 1/2 - 5/8 - 3/4 - 7/8 - 1" + 9 dies UNC ≈ DIN EN 22568 in each of the sizes - 1/4 - 5/16 - 3/8 - 7/16 - 1/2 - 5/8 - 3/4 - 7/8 - 1" + 6 die stocks DIN 225 in each of the sizes 20,0 x 7,0 mm - 25,0 x 9,0 mm - 30,0 x 11,0 mm - 38,0 x 10,0 mm - 45,0 x 14,0 mm - 55,0 x 16,0 mm + 2 tap wrenches, size 2 and size 4 DIN 1814	245 072




Die stocks as per DIN 225

For closed and slotted taps as per DIN EN 24231.
 With steel handles one of which can be unscrewed and five screws for clamping the tap.

Version: die-cast zinc housing

Packing unit: individual plastic pack

Size	Thickness mm	L1 mm	for tap size			No.	
			M + MF	Ww	G		
16	5,0	160,0	M 1 - M 2,6	1/16 - 3/32	—	242 165	1
20	5,0	175,0	M 3 - M 4	1/8 - 5/32	—	242 205	1
20	7,0	175,0	M 4,5 - M 6	3/16 - 1/4	—	242 207	1
25	9,0	210,0	M 7 - M 9	5/16	1/16	242 259	1
30	11,0	260,0	M 10 - M 11	3/8 - 7/16	1/8	242 3011	1
38	14,0	310,0	M 12 - M 14	1/2 - 9/16	—	242 3814	1
45	18,0	440,0	M 16 - M 20	5/8 - 3/4	—	242 4518	1
55	22,0	495,0	M 22 - M 24	7/8 - 1	—	242 5522	1
65	25,0	630,0	M 27 - M 36	1 1/8 - 1 3/8	—	242 6525	1
75	30,0	700,0	M 38 - M 42	1 1/2 - 1 5/8	—	242 7530	1
90	36,0	900,0	M 45 - M 52	1 3/4 - 2	—	242 9036	1
105	36,0	930,0	M 54 - M 63	2 1/4 - 2 3/4	—	242 10536	1
38	10,0	310,0	MF 12 - MF 14	—	1/4	242 3810	1
45	14,0	440,0	MF 16 - MF 20	—	3/8 - 1/2	242 4514	1
55	16,0	495,0	MF 22 - MF 24	—	5/8 - 3/4	242 5516	1
65	18,0	630,0	MF 27 - MF 36	—	7/8 - 1	242 6518	1
75	20,0	750,0	MF 38 - MF 42	—	1 1/8 - 1 1/4	242 7520	1
90	22,0	900,0	MF 45 - MF 52	—	1 3/8 - 1 5/8	242 9022	1
105	22,0	930,0	MF 54 - MF 63	—	1 3/4 - 2	242 10522	1




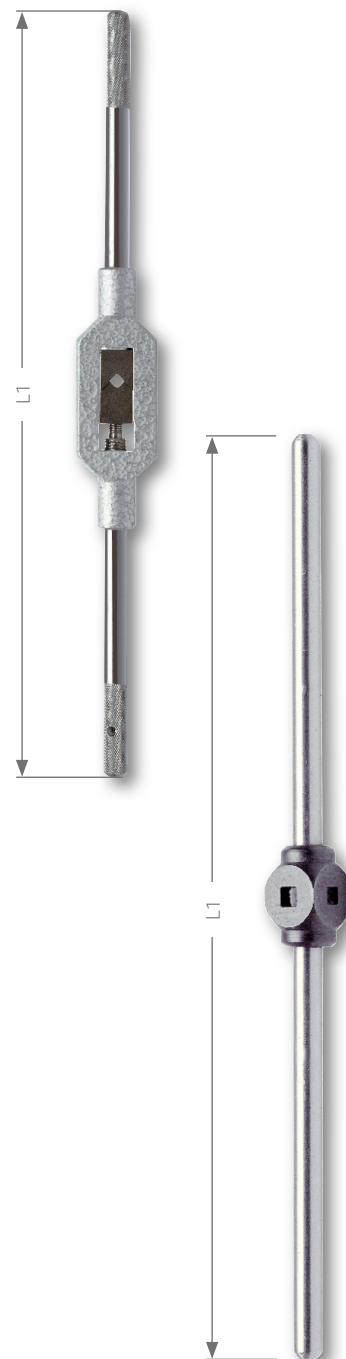
Adjustable tap wrenches as per DIN 1814

Ideal for thread-cutting in inaccessible places.
 With two-jaw chuck for tensioning square shanks.
 With steel handles one of which can be unscrewed.

Version: die-cast zinc housing
 Chuck jaws: hardened

Packing unit: individual plastic pack

Size	L1 mm	for hand tape size			No.	
		M	Ww	G		
0	125,0	M 1 - M 8	1/16 - 5/16	—	241 100	1
1	175,0	M 1 - M 10	1/8 - 3/8	—	241 101	1
1 1/2	175,0	M 1 - M 12	1/8 - 1/2	1/8	241 112	1
2	265,0	M 4 - M 12	3/16 - 5/8	1/8 - 3/8	241 102	1
3	370,0	M 5 - M 20	1/4 - 3/4	1/8 - 1/2	241 103	1
4	480,0	M 11 - M 27	1/2 - 1	1/8 - 3/4	241 104	1
5	700,0	M 13 - M 32	5/8 - 1 1/4	1/4 - 1	241 105	1
6	1000,0	M 19 - M 38	3/4 - 1 1/2	1/4 - 1 1/4	241 106	1
7	1250,0	M 25 - M 52	7/8 - 2	5/8 - 2 1/4	241 107	1




Ball tap wrenches

Ideal for rapid fitting of taps.

Version: die-cast zinc housing
 Shank: square as per DIN 10

Packing unit: individual plastic pack

Size	L1 mm	for hand tape size			No.	
		M	Ww	G		
0	200,0	M 1 - M 4	1/16 - 5/32	—	241 200	1
1	200,0	M 3,5 - M 8	5/32 - 5/16	—	241 201	1
2	240,0	M 4 - M 10	5/32 - 3/8	—	241 202	1
3	300,0	M 5 - M 12	7/32 - 1/2	—	241 203	1
4	340,0	M 9 - M 16	3/8 - 5/8	—	241 204	1
5	450,0	M 12 - M 20	1/2 - 13/16	—	241 205	1
6	650,0	M 18 - M 27	11/16 - 1	—	241 206	1

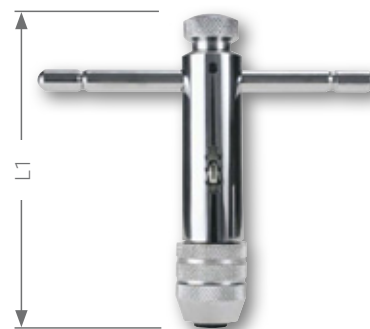
Tap wrench with ratchet

Ideal for thread-cutting in inaccessible places.
 With two-jaw chuck for tensioning square shanks.

Version: adjustable left, right, fixed
 Shank: sliding cross-handle with grooves at both ends
 Surface: chromium-plated

Packing unit: individual plastic pack

Size	L1 mm	for hand tape size			No.	
		M	Ww	G		
1	85,0	M 3 - M 10	1/8 - 3/8	—	241 001	1
2	100,0	M 5 - M 12	7/32 - 1/2	1/8	241 002	1
10	250,0	M 3 - M 10	1/8 - 3/8	—	241 010	1
20	300,0	M 5 - M 12	7/32 - 1/2	1/8	241 020	1



Range and applications overview:













Material	Surface	DIN	Shape	Left hand cutting / right hand cutting	Thread	Tenacity classes	Blind hole / Through hole	Nominal thread size	Article no.	Page
HSS		DIN 371	B		M	800 N/mm ²		M 2 - M 10	232 020 - 232 100	164
HSSE Co 5		DIN 371	B		M	1000 N/mm ²		M 2 - M 10	232 020 E - 232 100 E	164
HSSE Co 5		DIN 371	B		M	1000 N/mm ²		M 2 - M 10	232 020 VA - 232 100 VA	164
HSS	TIN	DIN 371	B		M	900 N/mm ²		M 2 - M 10	232 020 T - 232 100 T	164
HSSE Co 5	TiAIN	DIN 371	B		M	1200 N/mm ²		M 2 - M 10	232 020 EF - 232 100 EF	164
HSS		DIN 371	C		M	800 N/mm ²		M 2 - M 10	234 020 - 234 100	165
HSSE Co 5		DIN 371	C		M	1000 N/mm ²		M 2 - M 10	234 020 E - 234 100 E	165
HSSE Co 5		DIN 371	C		M	1000 N/mm ²		M 2 - M 10	234 020 VA - 234 100 VA	165
HSS	TIN	DIN 371	C		M	900 N/mm ²		M 2 - M 10	234 020 T - 234 100 T	165
HSSE Co 5	TiAIN	DIN 371	C		M	1200 N/mm ²		M 2 - M 10	234 020 EF - 234 100 EF	165
HSS		DIN 376	B		M	800 N/mm ²		M 12 - M 30	232 120 - 232 300	166
HSSE Co 5		DIN 376	B		M	1000 N/mm ²		M 3 - M 30	232 031 E - 232 300 E	166
HSSE Co 5		DIN 376	B		M	1000 N/mm ²		M 3 - M 30	232 031 VA - 232 300 VA	166
HSS	TIN	DIN 376	B		M	900 N/mm ²		M 12 - M 30	232 120 T - 232 300 T	166
HSSE Co 5	TiAIN	DIN 376	B		M	1200 N/mm ²		M 3 - M 30	232 031 EF - 232 300 EF	166
HSS		DIN 376	C		M	800 N/mm ²		M 12 - M 30	233 120 - 233 300	167
HSSE Co 5		DIN 376	C		M	1000 N/mm ²		M 3 - M 30	233 030 E - 233 300 E	167
HSSE Co 5		DIN 376	C		M	1000 N/mm ²		M 3 - M 30	233 030 VA - 233 300 VA	167
HSS	TIN	DIN 376	C		M	900 N/mm ²		M 12 - M 30	233 120 T - 233 300 T	167
HSSE Co 5	TiAIN	DIN 376	C		M	1200 N/mm ²		M 3 - M 30	233 030 EF - 233 300 EF	167
HSS		DIN 371	B _{AZ}		M	800 N/mm ²		M 3 - M 10	272 030 - 272 100	170
HSS		DIN 376	B _{AZ}		M	800 N/mm ²		M 12 - M 24	272 120 - 272 240	170

Steel (N/mm ²) < 800	Steel (N/mm ²) < 1000	Steel (N/mm ²) < 1200	Stainless steel	Aluminium	Brass	Bronze	Plastics	Cast iron	Titanium alloyed
■				□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	□		□		■	□	□	□	
■	■	■	■	□	■	■	□	□	□
■				□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	□		□		■	□	□	□	
■	■	■	■	□	■	■	□	□	□
■				□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	□		□		■	□	□	□	
■	■	■	■	□	■	■	□	□	□
■				□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	□		□		■	□	□	□	
■	■	■	■	□	■	■	□	□	□
□				■	□		■		
□				■	□		■		

Range and applications overview:



Material	Surface	DIN	Shape	Left hand cutting / right hand cutting	Thread	Tenacity classes	Blind hole / Through hole	Nominal thread size	Article no.	Page
HSSE Co 5	TiCN	DIN 371	B		M	800 N/mm²		M 3 - M 10	273 030 ETC - 273 100 ETC	171
HSSE Co 5	TiCN	DIN 376	C		M	1000 N/mm²		M 12 - M 24	273 120 ETC - 273 240 ETC	171
HSSE Co 5		DIN 5156	B		G (BSP)	1000 N/mm²		G 1/8 - G 2"	262 018 E - 262 020 E	172
HSSE Co 5		DIN 5156	C		G (BSP)	1000 N/mm²		G 1/8 - G 2"	263 018 E - 263 020 E	172
HSSE Co 5		DIN 374	B		MF	1000 N/mm²		MF 4 - MF 30	260 041 E - 260 302 E	174
HSSE Co 5		DIN 374	C		MF	1000 N/mm²		MF 4 - MF 30	261 041 E - 261 302 E	175
HSSE Co 5			B		UNC	1000 N/mm²		Nr. 4 - 3/8	265 040 UNC - 265 038 UNC	176
HSSE Co 5			B		UNC	1000 N/mm²		7/16 - 1"	265 716 UNC - 265 010 UNC	176
HSSE Co 5			C		UNC	1000 N/mm²		Nr. 4 - 3/8	266 040 UNC - 266 038 UNC	177
HSSE Co 5			C		UNC	1000 N/mm²		7/16 - 1"	266 716 UNC - 266 010 UNC	177
HSSE Co 5			B		UNF	1000 N/mm²		Nr. 4 - 3/8	265 040 UNF - 265 038 UNF	178
HSSE Co 5			B		UNF	1000 N/mm²		7/16 - 1"	265 716 UNF - 265 010 UNF	178
HSSE Co 5			C		UNF	1200 N/mm²		Nr. 4 - 3/8	266 040 UNF - 266 038 UNF	179
HSSE Co 5			C		UNF	1000 N/mm²		7/16 - 1"	266 716 UNF - 266 010 UNF	179
HSS		DIN 40430	B		PG	800 N/mm²		PG 7 - PG 48	264 007 - 264 048	180
HSS		DIN 357			M	800 N/mm²		M 3 - M 24	243 030 - 243 240	180
HSSE Co 5		DIN 2174	D		M	1000 N/mm²		M 3 - M 12	271 003 N - 271 012 N	181
HSSE Co 5	TiAIN	DIN 2174	D		M	1200 N/mm²		M 3 - M 12	271 003 F - 271 012 F	181
HSS					M	600 N/mm²		M 3 - M 10	270 014 - 270 019	182 - 183
HSS	TiN				M	900 N/mm²		M 3 - M 10	270 014 T - 270 019 T	182 - 183
HSS					M	600 N/mm²		M 3 - M 10	R 270 014 - R 270 019	182 - 183
HSS	TiN				M	900 N/mm²		M 3 - M 10	R 270 014 T - R 270 019 T	182 - 183

Steel (N/mm ²) < 800 	Steel (N/mm ²) < 1000 	Steel (N/mm ²) < 1200 	Stainless steel 	Aluminium 	Brass 	Bronze 	Plastics 	Cast iron 	Titanium alloyed 
■	■	□	■	□	■	□	□	□	
■	■	□	■	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■		□	□	■	□	□	□	
■	■	■	■	□	■	□	□	□	□
□				■	■	□	■	□	
■	□		□		■	□	□	□	
□				■	■	□	■	□	
■	□		□		■	□	□	□	

Product information for machine taps



HSS

The machine tap consists of heavy-duty high-speed steel. For through threads and bottoming threads in unalloyed steels up to a strength of 800 N/mm², malleable. The thread is cut in one operation.

High speed tool steel, best known as 'high speed steel', refers to a group of alloyed tool steels with up to 2,06% carbon content and up to 30% proportion of alloying elements such as tungsten, molybdenum, vanadium, cobalt, nickel and titanium. HSS materials are characterised by great hardness, wear resistance and heat resistance up to 600° C. The HSS tools are less sensitive to shocks and vibrations, which sometimes quickly lead to breaks in the harder cutting materials.



HSSE-Co 5

The machine tap consists of cobalt alloyed heavy-duty high-speed steel. Its high heat resistance means a longer tool life. For through threads and bottoming threads in unalloyed and alloyed steels up to a strength of 1000 N/mm², malleable cast iron and non-ferrous metals. The thread is cut in one operation.

Like high speed steel with cobalt alloy. This heat-resistant material is used for processing materials with high strength and in long cutting channels with correspondingly strong heating. The cobalt content of 5% provides a higher heat resistance and higher stressing capacity.



HSSE-Co 5 VAP for stainless steel

The machine tap consists of cobalt alloyed and vaporised heavy-duty high-speed steel. For through threads and bottoming threads in unalloyed and alloyed steels up to a strength of 1000 N/mm², stainless steel. The thread is cut in one operation.

By "vaporisation" is meant the evaporation of a non-metallic oxide film. Vaporisation acts as a separating layer and reduces the occurrence of cold welding. In cold welding there are workpiece chips that build up on the flanks of the tap and damage the finished thread. Consequences of cold welding are torn and dirty flanks. VAP improves the adhesion of lubricants to the tool surface.



Product information for machine taps



HSS-TiN

The machine tap consists of heavy-duty high-speed steel with a titanium nitride coating. For universal use on a wide range of materials due to layer of hard material! For through threads and bottoming threads in unalloyed and alloyed steels up to a strength of 900 N/mm², stainless steel. The thread is cut in one operation.

Note: cutting speeds from 10 m/min. By the TiN wear-resistant coating, the surface hardness increases to about 2500 HV. Titanium nitride is a chemical compound of the two elements, titanium and nitrogen. TiN is a metallic hard material with a typical golden yellow colour.

Advantages: Increased hardness, low friction coefficient, more service life. Cooling is not necessary, but recommended.



HSSE-Co 5 TiAlN

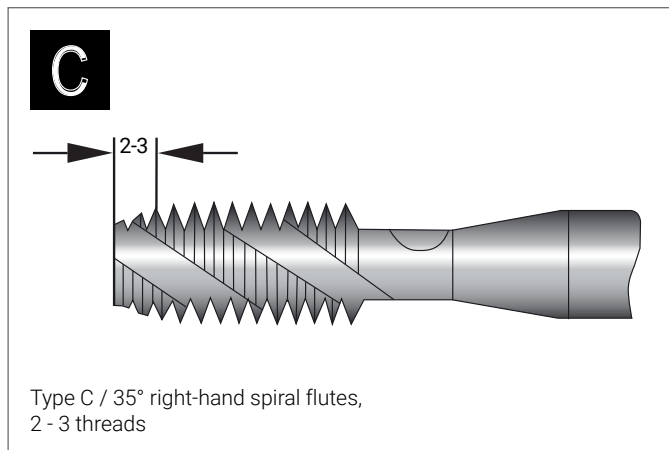
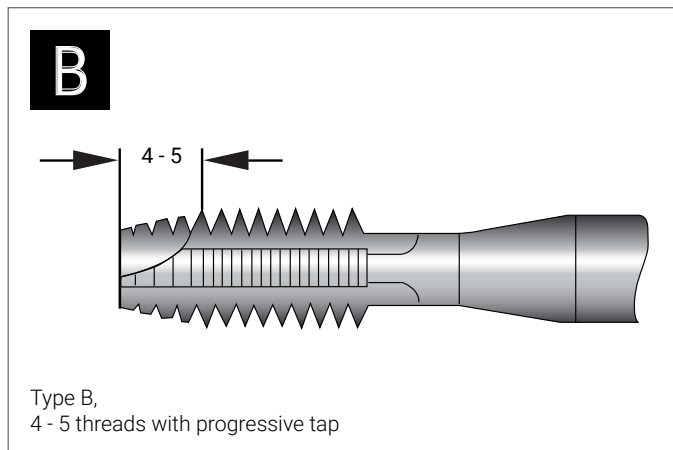
The machine tap consists of heavy-duty high-speed steel. For through-hole threads and blind-hole threads, in unalloyed, low alloy and alloyed steels up to 1200 N/mm² strength and cast. The thread is cut in one operation.

By the TiAlN wear-resistant coating, the surface hardness increases to about 3500 HV. Titanium aluminium nitride is a chemical compound of three elements titanium, aluminium and nitrogen. TiAlN is a metallic hard material with a typical black/violet colour.

Advantages: The TiAlN coating enables the dry machining tools to cut without a cooling. Increased hardness, very low friction coefficient, optimal service life.



Technical data:





Machine taps M DIN 371 HSS and HSSE-Co 5, ground

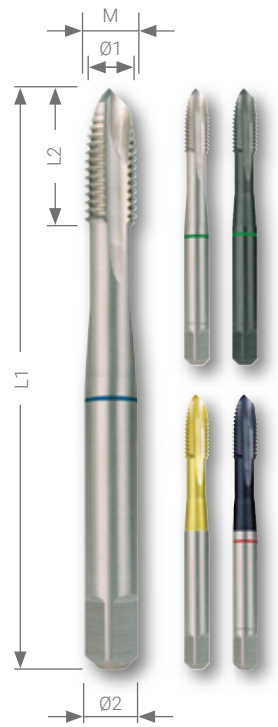
Machine taps with reinforced shank for through threads.

Chamfer: type B, 4 - 5 threads with progressive tap
Thread: metric, DIN ISO 13
Flanks: relief-ground

Packing unit: individual plastic pack



To increase the service life - reduce speed!
Cooling while countersinking!



Steel (N/mm ²) < 800	■	■	■	■	■
Steel (N/mm ²) < 1000		■	■	□	■
Steel (N/mm ²) < 1200					■
Rust-resistant steel		□	□	□	■
Aluminium	□	□	□		□

Brass	■	■	■	■	■
Bronze	□	□	□	□	■
Plastics	□	□	□	□	□
Cast iron	□	□	□	□	□
Titanium alloyed					□

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 max. mm	Ø2 mm
M 2	0,40	1,60	45,0	8,0	2,8
M 2,5	0,45	2,05	50,0	9,0	2,8
M 3	0,50	2,50	56,0	11,0	3,5
M 4	0,70	3,30	63,0	13,0	4,5
M 5	0,80	4,20	70,0	16,0	6,0
M 6	1,00	5,00	80,0	19,0	6,0
M 8	1,25	6,80	90,0	22,0	8,0
M 10	1,50	8,50	100,0	24,0	10,0

Nominal thread size	HSS	800 N/mm ²	HSSE Co 5	1000 N/mm ²	HSSE Co 5	1000 N/mm ²	HSS	TiN	900 N/mm ²	HSSE Co 5	TiAlN	1200 N/mm ²	
M 2		232 020		232 020 E		232 020 VA		232 020 T		232 020 EF		1	
M 2,5		232 025		232 025 E		232 025 VA		232 025 T		232 025 EF		1	
M 3		232 030		232 030 E		232 030 VA		232 030 T		232 030 EF		1	
M 4		232 040		232 040 E		232 040 VA		232 040 T		232 040 EF		1	
M 5		232 050		232 050 E		232 050 VA		232 050 T		232 050 EF		1	
M 6		232 060		232 060 E		232 060 VA		232 060 T		232 060 EF		1	
M 8		232 080		232 080 E		232 080 VA		232 080 T		232 080 EF		1	
M 10		232 100		232 100 E		232 100 VA		232 100 T		232 100 EF		1	

Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.



Machine taps M DIN 371 HSS and HSSE-Co 5, ground

Machine taps with reinforced shank
and 35° right-hand spiral flutes for bottoming.

Chamfer: type C / 35° right-hand spiral flutes, 2 - 3 threads
Thread: metric, DIN ISO 13
Flanks: relief-ground

Packing unit: individual plastic pack

To increase the service life - reduce speed!
Cooling while countersinking!



Steel (N/mm ²) < 800	■	■	■	■	■
Steel (N/mm ²) < 1000		■	■	□	■
Steel (N/mm ²) < 1200					■
Rust-resistant steel		■	■	□	■
Aluminium	□	□	□		□

Brass	■	■	■	■	■
Bronze	□	□	□	□	■
Plastics	□	□	□	□	□
Cast iron	□	□	□	□	□
Titanium alloyed					□

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 max. mm	Ø2 mm
M 2	0,40	1,60	45,0	8,0	2,8
M 2,5	0,45	2,05	50,0	9,0	2,8
M 3	0,50	2,50	56,0	11,0	3,5
M 4	0,70	3,30	63,0	13,0	4,5
M 5	0,80	4,20	70,0	16,0	6,0
M 6	1,00	5,00	80,0	19,0	6,0
M 8	1,25	6,80	90,0	22,0	8,0
M 10	1,50	8,50	100,0	24,0	10,0

Nominal thread size							
M 2	234 020	234 020 E	234 020 VA	234 020 T	234 020 EF	1	
M 2,5	234 025	234 025 E	234 025 VA	234 025 T	234 025 EF	1	
M 3	234 030	234 030 E	234 030 VA	234 030 T	234 030 EF	1	
M 4	234 040	234 040 E	234 040 VA	234 040 T	234 040 EF	1	
M 5	234 050	234 050 E	234 050 VA	234 050 T	234 050 EF	1	
M 6	234 060	234 060 E	234 060 VA	234 060 T	234 060 EF	1	
M 8	234 080	234 080 E	234 080 VA	234 080 T	234 080 EF	1	
M 10	234 100	234 100 E	234 100 VA	234 100 T	234 100 EF	1	

Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.



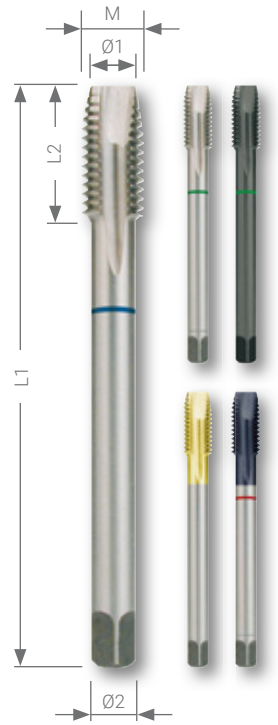
Machine taps M DIN 376 HSS and HSSE-Co 5, ground

Machine taps with overflow shank for through threads.

Chamfer: type B, 4 - 5 threads with progressive tap
Thread: metric, DIN ISO 13
Flanks: relief-ground

Packing unit: individual plastic pack

Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.



Steel (N/mm ²) < 800	■	■	■	■	■
Steel (N/mm ²) < 1000		■	■	□	■
Steel (N/mm ²) < 1200					■
Rust-resistant steel		■	■	□	■
Aluminium	□	□	□		□

Brass	■	■	■	■	■
Bronze	□	□	□	□	■
Plastics	□	□	□	□	□
Cast iron	□	□	□	□	□
Titanium alloyed					□

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 max. mm	Ø2 mm
M 3	0,50	2,50	56,0	11,0	2,2
M 4	0,70	3,30	63,0	13,0	2,8
M 5	0,80	4,20	70,0	16,0	3,5
M 6	1,00	5,00	80,0	19,0	4,5
M 8	1,25	6,80	90,0	22,0	6,0
M 10	1,50	8,50	100,0	24,0	7,0
M 12	1,75	10,20	110,0	28,0	9,0
M 14	2,00	12,00	110,0	30,0	11,0
M 16	2,00	14,00	110,0	32,0	12,0
M 18	2,50	15,50	125,0	34,0	14,0
M 20	2,50	17,50	140,0	34,0	16,0
M 22	2,50	19,50	140,0	34,0	18,0
M 24	3,00	21,00	160,0	38,0	18,0
M 27	3,00	24,00	160,0	38,0	20,0
M 30	3,50	26,50	180,0	45,0	22,0

Nominal thread size	HSS	800 N/mm ²	HSSE Co 5	1000 N/mm ²	HSSE Co 5	1000 N/mm ²	HSS	TIN	900 N/mm ²	HSSE Co 5	TiAIN	1200 N/mm ²	
M 3	—	—	232 031 E	—	232 031 VA	—	—	—	—	232 031 EF	—	—	1
M 4	—	—	232 041 E	—	232 041 VA	—	—	—	—	232 041 EF	—	—	1
M 5	—	—	232 051 E	—	232 051 VA	—	—	—	—	232 051 EF	—	—	1
M 6	—	—	232 061 E	—	232 061 VA	—	—	—	—	232 061 EF	—	—	1
M 8	—	—	232 081 E	—	232 081 VA	—	—	—	—	232 081 EF	—	—	1
M 10	—	—	232 101 E	—	232 101 VA	—	—	—	—	232 101 EF	—	—	1
M 12	232 120	—	232 120 E	—	232 120 VA	—	232 120 T	—	—	232 120 EF	—	—	1
M 14	232 140	—	232 140 E	—	232 140 VA	—	232 140 T	—	—	232 140 EF	—	—	1
M 16	232 160	—	232 160 E	—	232 160 VA	—	232 160 T	—	—	232 160 EF	—	—	1
M 18	232 180	—	232 180 E	—	232 180 VA	—	232 180 T	—	—	232 180 EF	—	—	1
M 20	232 200	—	232 200 E	—	232 200 VA	—	232 200 T	—	—	232 200 EF	—	—	1
M 22	232 220	—	232 220 E	—	232 220 VA	—	232 220 T	—	—	232 220 EF	—	—	1
M 24	232 240	—	232 240 E	—	232 240 VA	—	232 240 T	—	—	232 240 EF	—	—	1
M 27	232 270	—	232 270 E	—	232 270 VA	—	232 270 T	—	—	232 270 EF	—	—	1
M 30	232 300	—	232 300 E	—	232 300 VA	—	232 300 T	—	—	232 300 EF	—	—	1



Machine taps M DIN 376 HSS and HSSE-Co 5, ground

Machine taps with overflow shank and 35° right-hand spiral flutes for bottoming.

Chamfer: type C / 35° right-hand spiral flutes, 2 - 3 threads
Thread: metric, DIN ISO 13
Flanks: relief-ground

Packing unit: individual plastic pack

Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.









Steel (N/mm ²) < 800	■	■	■	■	■		■	■	■	■	■
Steel (N/mm ²) < 1000		■	■	□	■		□	□	□	□	■
Steel (N/mm ²) < 1200					■		□	□	□	□	□
Rust-resistant steel		■	■	□	■		□	□	□	□	□
Aluminium	□	□	□		□						□
Brass							■	■	■	■	■
Bronze		□	□	□	□		□	□	□	□	■
Plastics		□	□	□	□		□	□	□	□	□
Cast iron		□	□	□	□		□	□	□	□	□
Titanium alloyed											□

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 max. mm	Ø2 mm
M 3	0,50	2,50	56,0	11,0	2,2
M 4	0,70	3,30	63,0	13,0	2,8
M 5	0,80	4,20	70,0	16,0	3,5
M 6	1,00	5,00	80,0	19,0	4,5
M 8	1,25	6,80	90,0	22,0	6,0
M 10	1,50	8,50	100,0	24,0	7,0
M 12	1,75	10,20	110,0	28,0	9,0
M 14	2,00	12,00	110,0	30,0	11,0
M 16	2,00	14,00	110,0	32,0	12,0
M 18	2,50	15,50	125,0	34,0	14,0
M 20	2,50	17,50	140,0	34,0	16,0
M 22	2,50	19,50	140,0	34,0	18,0
M 24	3,00	21,00	160,0	38,0	18,0
M 27	3,00	24,00	160,0	38,0	20,0
M 30	3,50	26,50	180,0	45,0	22,0







Nominal thread size	HSS	800 N/mm ²	HSSE Co 5	1000 N/mm ²	HSSE Co 5	1000 N/mm ²	HSS	TIN	900 N/mm ²	HSSE Co 5	TiAlN	1200 N/mm ²	
M 3	—	—	233 030 E	233 030 VA	—	—	—	—	—	233 030 EF	—	—	1
M 4	—	—	233 040 E	233 040 VA	—	—	—	—	—	233 040 EF	—	—	1
M 5	—	—	233 050 E	233 050 VA	—	—	—	—	—	233 050 EF	—	—	1
M 6	—	—	233 060 E	233 060 VA	—	—	—	—	—	233 060 EF	—	—	1
M 8	—	—	233 080 E	233 080 VA	—	—	—	—	—	233 080 EF	—	—	1
M 10	—	—	233 100 E	233 100 VA	—	—	—	—	—	233 100 EF	—	—	1
M 12	233 120	—	233 120 E	233 120 VA	233 120 T	—	—	—	—	233 120 EF	—	—	1
M 14	233 140	—	233 140 E	233 140 VA	233 140 T	—	—	—	—	233 140 EF	—	—	1
M 16	233 160	—	233 160 E	233 160 VA	233 160 T	—	—	—	—	233 160 EF	—	—	1
M 18	233 180	—	233 180 E	233 180 VA	233 180 T	—	—	—	—	233 180 EF	—	—	1
M 20	233 200	—	233 200 E	233 200 VA	233 200 T	—	—	—	—	233 200 EF	—	—	1
M 22	233 220	—	233 220 E	233 220 VA	233 220 T	—	—	—	—	233 220 EF	—	—	1
M 24	233 240	—	233 240 E	233 240 VA	233 240 T	—	—	—	—	233 240 EF	—	—	1
M 27	233 270	—	233 270 E	233 270 VA	233 270 T	—	—	—	—	233 270 EF	—	—	1
M 30	233 300	—	233 300 E	233 300 VA	233 300 T	—	—	—	—	233 300 EF	—	—	1

Machine tap sets HSS and HSSE-Co 5, in steel case

		HSS	HSSE Co 5	HSSE Co 5	HSS TIN	HSSE Co 5 TiAlN
B 	7-piece set of machine taps M DIN 371 / 376 type B with progressive tap M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12	245 057	245 061	245 063	245 065	245 068
C 	7-piece set of machine taps M DIN 371 / 376 type C / 35° right-hand spiral flutes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12	245 058	245 062	245 064	245 066	245 069
B 	14-piece set of machine taps 7 machine taps DIN 371 / 376 type B with progressive tap M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	245 048	245 051	—	—	—
C 	14-piece set of machine taps 7 machine taps DIN 371 / 376 type C / 35° right-hand spiral flutes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	245 049	245 052	—	—	—
B  C 	21-piece set of machine taps 7 machine taps DIN 371 / 376 type B with progressive tap M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 machine taps DIN 371 / 376 type C / 35° right-hand spiral flutes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 Typ N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	—	245 054	—	—	—



Machine tap sets HSS and HSSE-Co 5, in plastic case

		HSS	HSSE Co 5	HSSE Co 5	HSS	TIN	HSSE Co 5	TITAIN
B 	7-piece set of machine taps M DIN 371 / 376 type B with progressive tap M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12	245 057 RO	245 061 RO	245 063 RO	245 065 RO			
C 	7-piece set of machine taps M DIN 371 / 376 type C / 35° right-hand spiral flutes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12	245 058 RO	245 062 RO	245 064 RO	245 066 RO			245069 RO
B 	14-piece set of machine taps 7 machine taps DIN 371 / 376 type B with progressive tap M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	245 048 RO	245 051 RO	—	—			—
C 	14-piece set of machine taps 7 machine taps DIN 371 / 376 type C / 35° right-hand spiral flutes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 type N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	245 049 RO	245 052 RO	—	—			—
B  C 	21-piece set of machine taps 7 machine taps DIN 371 / 376 type B with progressive tap M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 machine taps DIN 371 / 376 type C / 35° right-hand spiral flutes M 3 - M 4 - M 5 - M 6 - M 8 - M 10 - M 12 + 7 twist drills DIN 338 Typ N Ø 2,5 - 3,3 - 4,2 - 5,0 - 6,8 - 8,5 - 10,2 mm	—	—	—	—			—





Machine taps M DIN 371/376 HSS, ground with interrupted threads

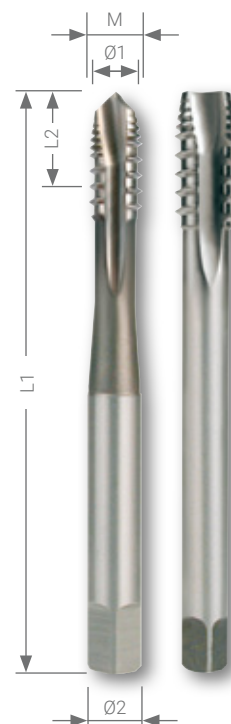
Chamfer: type B, 4 - 5 threads with progressive tap and interrupted threads

Thread: metric, DIN ISO 13

Flanks: relief-ground

Packing unit: individual plastic pack

Steel (N/mm2) < 800	<input type="checkbox"/>	Brass	<input type="checkbox"/>
Steel (N/mm2) < 1000		Bronze	
Steel (N/mm2) < 1200		Plastics	<input checked="" type="checkbox"/>
Rust-resistant steel		Cast iron	
Aluminium	<input checked="" type="checkbox"/>	Titanium alloyed	



DIN 371 Machine tap with reinforced shank, for through threads in aluminium, aluminium alloys, bronze, copper, nickel and plastics.

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 max. mm	Ø2 mm	HSS		
M 3	0,50	2,50	56,0	11,0	3,5	272 030	1	
M 4	0,70	3,30	63,0	13,0	4,5	272 040	1	
M 5	0,80	4,20	70,0	16,0	6,0	272 050	1	
M 6	1,00	5,00	80,0	19,0	6,0	272 060	1	
M 8	1,25	6,80	90,0	22,0	8,0	272 080	1	
M 10	1,50	8,50	100,0	24,0	10,0	272 100	1	

DIN 376 Machine tap with overflow shank, for through threads in aluminium, aluminium alloys, bronze, copper, nickel and plastics.

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 max. mm	Ø2 mm	HSS		
M 12	1,75	10,20	110,0	29,0	9,0	272 120	1	
M 14	2,00	12,00	110,0	30,0	11,0	272 140	1	
M 16	2,00	14,00	110,0	32,0	12,0	272 160	1	
M 18	2,50	15,50	125,0	34,0	14,0	272 180	1	
M 20	2,50	17,50	140,0	34,0	16,0	272 200	1	
M 22	2,50	19,50	140,0	34,0	18,0	272 220	1	
M 24	3,00	21,00	160,0	38,0	18,0	272 240	1	

Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.

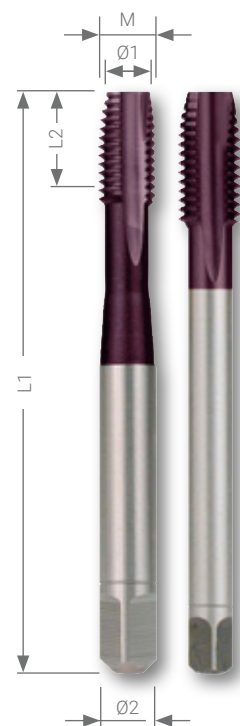


Machine taps M DIN 371/376 HSSE-Co 5 TiCN, ground

Chamfer: type C / 2 - 3 threads
Thread: metric, DIN ISO 13
Flanks: relief-ground

Packing unit: individual plastic pack

	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Steel (N/mm ²) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm ²) < 1000	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm ²) < 1200	<input type="checkbox"/>	Plastics	<input type="checkbox"/>
Rust-resistant steel	<input checked="" type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>



DIN 371 Machine taps with reinforced shank for through-hole thread in cast iron and cast alloys.

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 max. mm	Ø2 mm	HSSE Co 5 TiCN	
M 3	0,50	2,50	56,0	11,0	3,5	273 030 ETC	1
M 4	0,70	3,30	63,0	13,0	4,5	273 040 ETC	1
M 5	0,80	4,20	70,0	16,0	6,0	273 050 ETC	1
M 6	1,00	5,00	80,0	19,0	6,0	273 060 ETC	1
M 8	1,25	6,80	90,0	22,0	8,0	273 080 ETC	1
M 10	1,50	8,50	100,0	24,0	10,0	273 100 ETC	1

DIN 376 Machine taps with reduced shank for through-hole thread in cast iron and cast alloys.

Nominal thread size	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 max. mm	Ø2 mm	HSSE Co 5 TiCN	
M 12	1,75	10,20	110,0	29,0	9,0	273 120 ETC	1
M 14	2,00	12,00	110,0	30,0	11,0	273 140 ETC	1
M 16	2,00	14,00	110,0	32,0	12,0	273 160 ETC	1
M 18	2,50	15,50	125,0	34,0	14,0	273 180 ETC	1
M 20	2,50	17,50	140,0	34,0	16,0	273 200 ETC	1
M 22	2,50	19,50	140,0	34,0	18,0	273 220 ETC	1
M 24	3,00	21,00	160,0	38,0	18,0	273 240 ETC	1

Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.

■ Main application

□ Other application

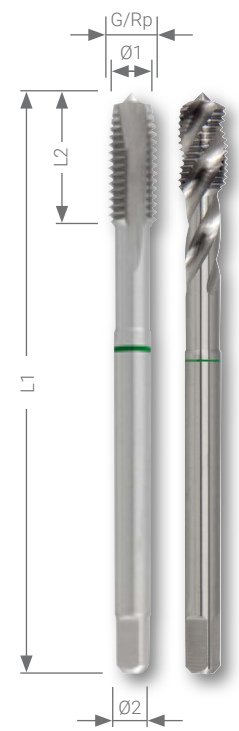


Machine taps G DIN 5156 HSSE-Co 5, ground

Thread: DIN ISO 228 "G" (cylindrical pipe thread)
 DIN 2999 "Rp" (Whitworth pipe thread)
 Flanks: relief-ground

Packing unit: individual plastic pack

	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Steel (N/mm2) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1000	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm2) < 1200	<input type="checkbox"/>	Plastics	<input type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>



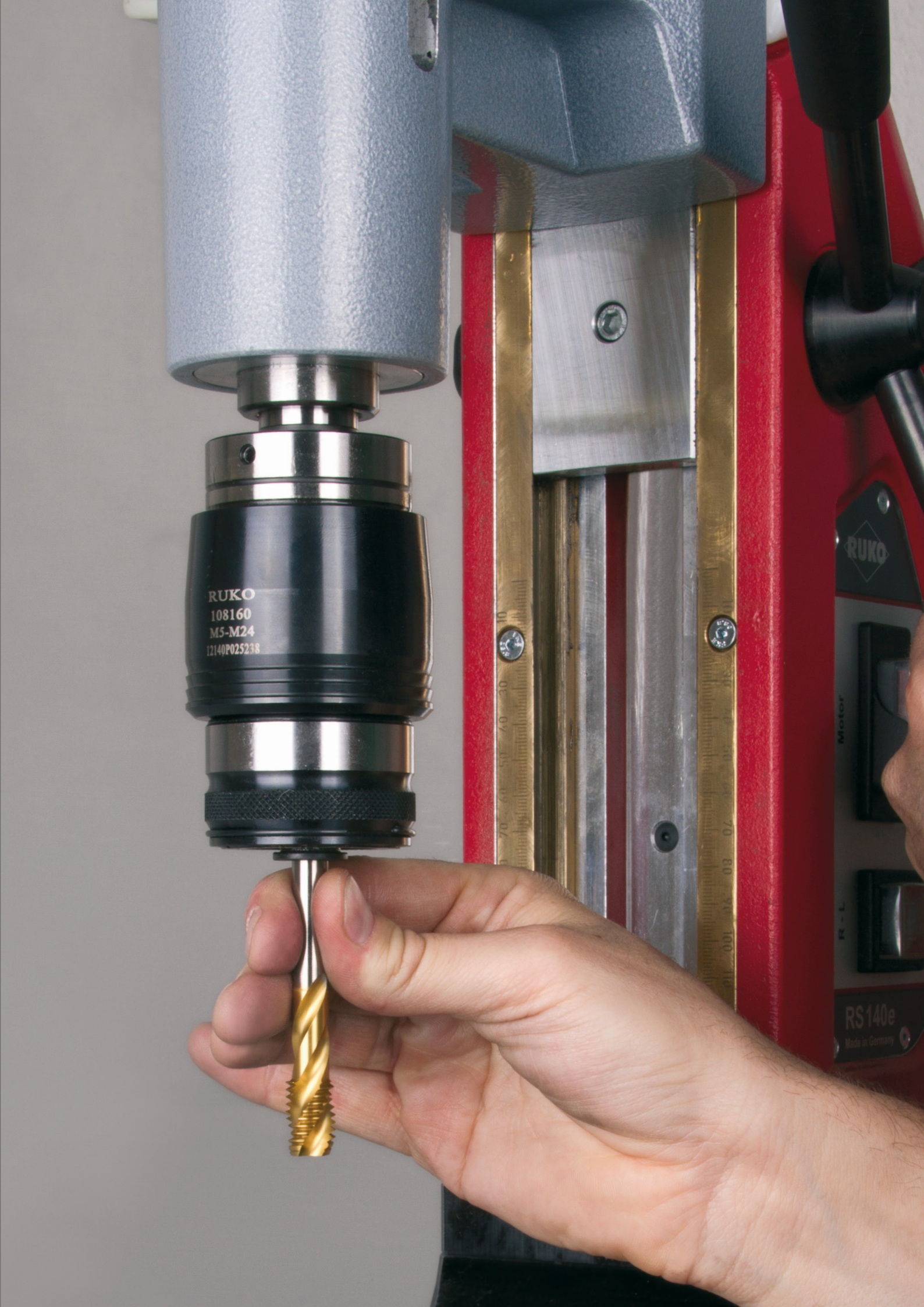
B Machine taps with overflow shank for through threads.

Nominal thread size G / Rp		Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 max. mm	Ø2 mm	HSSE Co 5		
G 1/8	Rp 1/8	28	8,80	90,0	20,0	7,0	262 018 E	1	
G 1/4	Rp 1/4	19	11,80	100,0	22,0	11,0	262 014 E	1	
G 3/8	Rp 3/8	19	15,25	100,0	22,0	12,0	262 038 E	1	
G 1/2	Rp 1/2	14	19,00	125,0	25,0	16,0	262 012 E	1	
G 5/8	Rp 5/8	14	21,00	125,0	25,0	18,0	262 058 E	1	
G 3/4	Rp 3/4	14	24,50	140,0	28,0	20,0	262 034 E	1	
G 7/8	Rp 7/8	14	28,25	150,0	28,0	22,0	262 078 E	1	
G 1"	Rp 1"	11	30,75	160,0	30,0	25,0	262 010 E	1	
G 1 1/8	Rp 1 1/8	11	35,50	170,0	30,0	28,0	262 118 E	1	
G 1 1/4	Rp 1 1/4	11	39,50	170,0	30,0	32,0	262 114 E	1	
G 1 3/8	Rp 1 3/8	11	41,80	180,0	32,0	36,0	262 138 E	1	
G 1 1/2	Rp 1 1/2	11	45,25	190,0	32,0	36,0	262 112 E	1	
G 1 3/4	Rp 1 3/4	11	51,30	190,0	32,0	40,0	262 134 E	1	
G 2"	Rp 2"	11	57,20	220,0	40,0	45,0	262 020 E	1	

C Machine taps with overflow shank and 35° right-hand spiral flutes for bottoming.

Nominal thread size G / Rp		Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 max. mm	Ø2 mm	HSSE Co 5		
G 1/8	Rp 1/8	28	8,80	90,0	20,0	7,0	263 018 E	1	
G 1/4	Rp 1/4	19	11,80	100,0	22,0	11,0	263 014 E	1	
G 3/8	Rp 3/8	19	15,25	100,0	22,0	12,0	263 038 E	1	
G 1/2	Rp 1/2	14	19,00	125,0	25,0	16,0	263 012 E	1	
G 5/8	Rp 5/8	14	21,00	125,0	25,0	18,0	263 058 E	1	
G 3/4	Rp 3/4	14	24,50	140,0	28,0	20,0	263 034 E	1	
G 7/8	Rp 7/8	14	28,25	150,0	28,0	22,0	263 078 E	1	
G 1"	Rp 1"	11	30,75	160,0	30,0	25,0	263 010 E	1	
G 1 1/8	Rp 1 1/8	11	35,50	170,0	30,0	28,0	263 118 E	1	
G 1 1/4	Rp 1 1/4	11	39,50	170,0	30,0	32,0	263 114 E	1	
G 1 3/8	Rp 1 3/8	11	41,80	180,0	32,0	36,0	263 138 E	1	
G 1 1/2	Rp 1 1/2	11	45,25	190,0	32,0	36,0	263 112 E	1	
G 1 3/4	Rp 1 3/4	11	51,30	190,0	32,0	40,0	263 134 E	1	
G 2"	Rp 2"	11	57,20	220,0	40,0	45,0	263 020 E	1	

Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.



RUKO
108160
MS-M24
12140P025238

RUKO

Motor

R - L

RS140e
Made in Germany

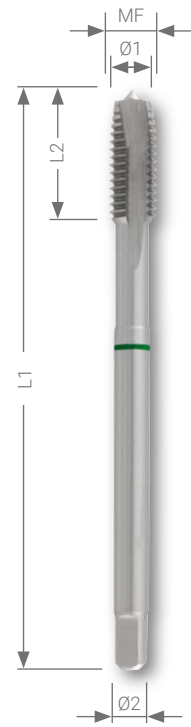


Machine taps MF DIN 374 HSSE-Co 5, ground

Thread: metric, fine, DIN ISO 13
Flanks: relief-ground

Packing unit: individual plastic pack

Steel (N/mm2) < 800	■	Brass	■
Steel (N/mm2) < 1000	■	Bronze	□
Steel (N/mm2) < 1200		Plastics	□
Rust-resistant steel	□	Cast iron	□
Aluminium	□	Titanium alloyed	



Machine tap with overflow shank for through threads.

Nominal thread size MF	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 max. mm	Ø2 mm	HSSE Co 5		
MF 4	0,50	3,50	63,0	10,0	2,8	260 041 E		1
MF 5	0,50	4,50	70,0	12,0	3,5	260 050 E		1
MF 6	0,75	5,20	80,0	14,0	4,5	260 060 E		1
MF 8	1,00	7,00	90,0	22,0	6,0	260 081 E		1
MF 10	1,00	9,00	90,0	20,0	7,0	260 100 E		1
MF 10	1,25	8,80	100,0	24,0	7,0	260 101 E		1
MF 12	1,00	11,00	100,0	20,0	9,0	260 122 E		1
MF 12	1,25	10,80	100,0	22,0	9,0	260 121 E		1
MF 12	1,50	10,50	100,0	22,0	9,0	260 120 E		1
MF 14	1,00	13,00	100,0	20,0	11,0	260 142 E		1
MF 14	1,25	12,80	100,0	22,0	11,0	260 143 E		1
MF 14	1,50	12,50	100,0	22,0	11,0	260 141 E		1
MF 16	1,00	15,00	100,0	20,0	12,0	260 161 E		1
MF 16	1,50	14,50	100,0	22,0	12,0	260 160 E		1
MF 18	1,00	17,00	110,0	25,0	14,0	260 181 E		1
MF 18	1,50	16,50	110,0	25,0	14,0	260 180 E		1
MF 18	2,00	16,00	125,0	34,0	14,0	260 182 E		1
MF 20	1,00	19,00	125,0	25,0	16,0	260 201 E		1
MF 20	1,50	18,50	125,0	25,0	16,0	260 200 E		1
MF 20	2,00	18,00	140,0	34,0	16,0	260 202 E		1
MF 22	1,50	20,50	125,0	25,0	18,0	260 220 E		1
MF 22	2,00	20,00	140,0	34,0	18,0	260 222 E		1
MF 24	1,00	23,00	140,0	28,0	18,0	260 242 E		1
MF 24	1,50	22,50	140,0	28,0	18,0	260 240 E		1
MF 24	2,00	22,00	140,0	28,0	18,0	260 241 E		1
MF 28	1,50	26,50	140,0	28,0	20,0	260 281 E		1
MF 28	2,00	26,00	140,0	28,0	20,0	260 282 E		1
MF 30	1,50	28,50	150,0	28,0	22,0	260 301 E		1
MF 30	2,00	28,00	150,0	28,0	22,0	260 302 E		1

Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.

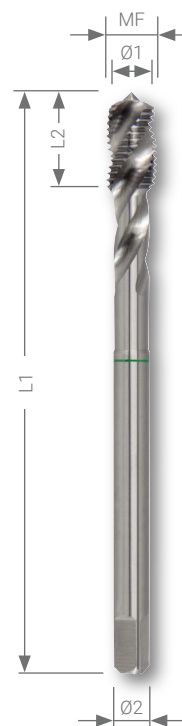


Machine taps MF DIN 374 HSSE-Co 5, ground

Thread: metric, fine, DIN ISO 13
Flanks: relief-ground

Packing unit: individual plastic pack

	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Steel (N/mm2) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1000	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm2) < 1200	<input type="checkbox"/>	Plastics	<input type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>



Machine taps with overflow shank and 35° right-hand spiral flutes for bottoming.

Nominal thread size MF	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 max. mm	Ø2 mm	HSSE Co 5	
MF 4	0,50	3,50	63,0	10,0	2,8	261 041 E	1
MF 5	0,50	4,50	70,0	12,0	3,5	261 050 E	1
MF 6	0,75	5,20	80,0	14,0	4,5	261 060 E	1
MF 8	1,00	7,00	90,0	22,0	6,0	261 081 E	1
MF 10	1,00	9,00	90,0	20,0	7,0	261 100 E	1
MF 10	1,25	8,80	100,0	24,0	7,0	261 101 E	1
MF 12	1,00	11,00	100,0	20,0	9,0	261 122 E	1
MF 12	1,25	10,80	100,0	22,0	9,0	261 121 E	1
MF 12	1,50	10,50	100,0	22,0	9,0	261 120 E	1
MF 14	1,00	13,00	100,0	20,0	11,0	261 142 E	1
MF 14	1,25	12,80	100,0	22,0	11,0	261 143 E	1
MF 14	1,50	12,50	100,0	22,0	11,0	261 141 E	1
MF 16	1,00	15,00	100,0	20,0	12,0	261 161 E	1
MF 16	1,50	14,50	100,0	22,0	12,0	261 160 E	1
MF 18	1,00	17,00	110,0	25,0	14,0	261 181 E	1
MF 18	1,50	16,50	110,0	25,0	14,0	261 180 E	1
MF 18	2,00	16,00	125,0	34,0	14,0	261 182 E	1
MF 20	1,00	19,00	125,0	25,0	16,0	261 201 E	1
MF 20	1,50	18,50	125,0	25,0	16,0	261 200 E	1
MF 20	2,00	18,00	140,0	34,0	16,0	261 202 E	1
MF 22	1,50	20,50	125,0	25,0	18,0	261 220 E	1
MF 22	2,00	20,00	140,0	34,0	18,0	261 222 E	1
MF 24	1,00	23,00	140,0	28,0	18,0	261 242 E	1
MF 24	1,50	22,50	140,0	28,0	18,0	261 240 E	1
MF 24	2,00	22,00	140,0	28,0	18,0	261 241 E	1
MF 28	1,50	26,50	140,0	28,0	20,0	261 281 E	1
MF 28	2,00	26,00	140,0	28,0	20,0	261 282 E	1
MF 30	1,50	28,50	150,0	28,0	22,0	261 301 E	1
MF 30	2,00	28,00	150,0	28,0	22,0	261 302 E	1

Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.

Main application Other application

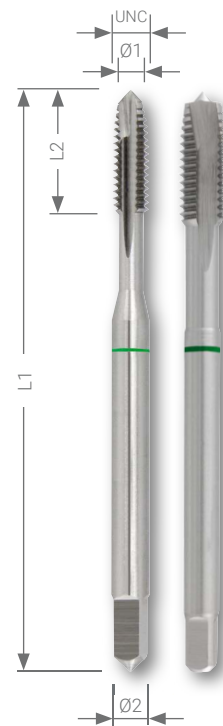


Machine taps UNC HSSE-Co 5, ground

Thread: American UNC coarse thread
 Flanks: relief-ground

Packing unit: individual plastic pack

Steel (N/mm2) < 800	■	Brass	■
Steel (N/mm2) < 1000	■	Bronze	□
Steel (N/mm2) < 1200		Plastics	□
Rust-resistant steel	□	Cast iron	□
Aluminium	□	Titanium alloyed	



Machine taps with reinforced shank for through threads.

Nominal thread size UNC	Threads per inch	Thread core hole 1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5		
Nr. 4	40	2,3	56,0	11,0	3,5	265 040 UNC		1
Nr. 5	40	2,6	56,0	11,0	3,5	265 050 UNC		1
Nr. 6	32	2,8	56,0	13,0	4,0	265 060 UNC		1
Nr. 8	32	3,5	63,0	13,0	4,5	265 080 UNC		1
Nr. 10	24	3,8	70,0	16,0	6,0	265 100 UNC		1
Nr. 12	24	4,5	70,0	16,0	6,0	265 120 UNC		1
1/4	20	5,1	80,0	17,0	7,0	265 014 UNC		1
5/16	18	6,5	90,0	20,0	8,0	265 516 UNC		1
3/8	16	8,0	100,0	22,0	9,0	265 038 UNC		1

Machine taps with overflow shank for through threads.

Nominal thread size UNC	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5		
7/16	14	9,3	100,0	22,0	8,0	265 716 UNC		1
1/2	13	10,8	110,0	25,0	9,0	265 012 UNC		1
9/16	12	12,2	110,0	26,0	11,0	265 916 UNC		1
5/8	11	13,5	110,0	27,0	12,0	265 058 UNC		1
3/4	10	16,5	125,0	30,0	14,0	265 034 UNC		1
7/8	9	19,3	140,0	32,0	18,0	265 078 UNC		1
1"	8	22,2	160,0	36,0	18,0	265 010 UNC		1

Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.

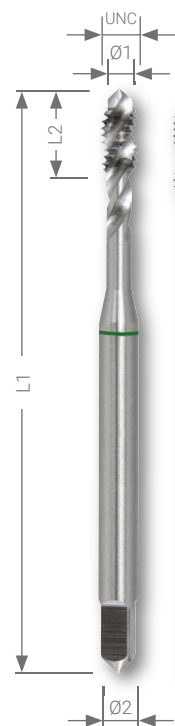


Machine taps UNC HSSE-Co 5, ground

Thread: American UNC coarse thread
 Flanks: relief-ground

Packing unit: individual plastic pack

Steel (N/mm2) < 800	■	Brass	■
Steel (N/mm2) < 1000	■	Bronze	□
Steel (N/mm2) < 1200		Plastics	□
Rust-resistant steel	□	Cast iron	□
Aluminium	□	Titanium alloyed	



Machine taps with reinforced shank and 35° right-hand spiral flutes for bottoming.

Nominal thread size UNC	Threads per inch	Thread core hole 1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5	
Nr. 4	40	2,3	56,0	7,0	3,5	266 040 UNC	1
Nr. 5	40	2,6	56,0	7,0	3,5	266 050 UNC	1
Nr. 6	32	2,8	56,0	8,0	4,0	266 060 UNC	1
Nr. 8	32	3,5	63,0	8,0	4,5	266 080 UNC	1
Nr. 10	24	3,8	70,0	10,0	6,0	266 100 UNC	1
Nr. 12	24	4,5	70,0	10,0	6,0	266 120 UNC	1
1/4	20	5,1	80,0	13,0	7,0	266 014 UNC	1
5/16	18	6,5	90,0	14,0	8,0	266 516 UNC	1
3/8	16	8,0	100,0	16,0	10,0	266 038 UNC	1

Machine taps with overflow shank and 35° right-hand spiral flutes for bottoming.

Nominal thread size UNC	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5	
7/16	14	9,3	100,0	17,0	8,0	266 716 UNC	1
1/2	13	10,8	110,0	20,0	9,0	266 012 UNC	1
9/16	12	12,2	110,0	20,0	11,0	266 916 UNC	1
5/8	11	13,5	110,0	22,0	12,0	266 058 UNC	1
3/4	10	16,5	125,0	25,0	14,0	266 034 UNC	1
7/8	9	19,3	140,0	27,0	18,0	266 078 UNC	1
1"	8	22,2	160,0	30,0	18,0	266 010 UNC	1

Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.

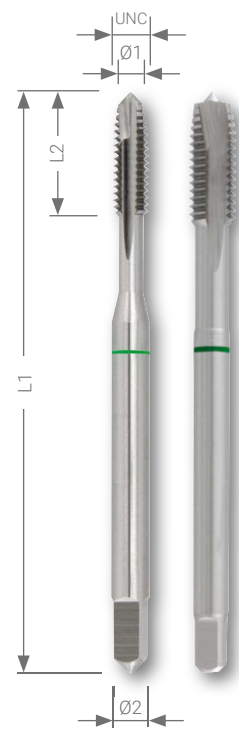


Machine taps UNF HSSE-Co 5, ground

Thread: American UNF fine thread
 Flanks: relief-ground

Packing unit: individual plastic pack

Steel (N/mm2) < 800	■	Brass	■
Steel (N/mm2) < 1000	■	Bronze	□
Steel (N/mm2) < 1200		Plastics	□
Rust-resistant steel	□	Cast iron	□
Aluminium	□	Titanium alloyed	



Machine taps with reinforced shank for through threads.

Nominal thread size UNF	Threads per inch	Thread core hole Ø ₁ mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5		
Nr. 4	48	2,40	56,0	11,0	3,5	265 040 UNF		1
Nr. 5	44	2,70	56,0	11,0	3,5	265 050 UNF		1
Nr. 6	40	2,95	56,0	13,0	4,0	265 060 UNF		1
Nr. 8	36	3,50	63,0	13,0	4,5	265 080 UNF		1
Nr. 10	32	4,10	70,0	16,0	6,0	265 100 UNF		1
Nr. 12	28	4,60	70,0	16,0	6,0	265 120 UNF		1
1/4	28	5,50	80,0	17,0	7,0	265 014 UNF		1
5/16	24	6,60	90,0	17,0	8,0	265 516 UNF		1
3/8	24	8,50	100,0	18,0	10,0	265 038 UNF		1

Machine taps with overflow shank for through threads.

Nominal thread size UNF	Threads per inch	Thread core hole Ø ₁ mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5		
7/16	20	9,90	100,0	22,0	8,0	265 716 UNF		1
1/2	20	11,50	100,0	22,0	9,0	265 012 UNF		1
9/16	18	12,90	100,0	22,0	11,0	265 916 UNF		1
5/8	18	14,50	100,0	22,0	12,0	265 058 UNF		1
3/4	16	17,50	110,0	25,0	14,0	265 034 UNF		1
7/8	14	20,50	140,0	26,0	18,0	265 078 UNF		1
1"	12	23,25	150,0	28,0	18,0	265 010 UNF		1

Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.

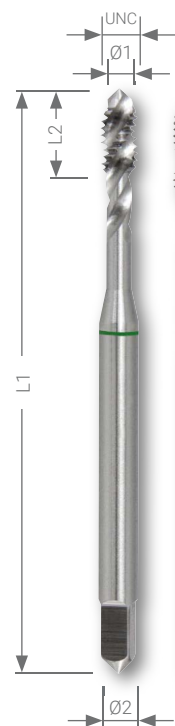


Machine taps UNF HSSE-Co 5, ground

Thread: American UNF fine thread
 Flanks: relief-ground

Packing unit: individual plastic pack

	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Steel (N/mm2) < 800	<input checked="" type="checkbox"/>	Brass	<input checked="" type="checkbox"/>
Steel (N/mm2) < 1000	<input checked="" type="checkbox"/>	Bronze	<input type="checkbox"/>
Steel (N/mm2) < 1200	<input type="checkbox"/>	Plastics	<input type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	Cast iron	<input type="checkbox"/>
Aluminium	<input type="checkbox"/>	Titanium alloyed	<input type="checkbox"/>



Machine taps with reinforced shank and 35° right-hand spiral flutes for bottoming.

Nominal thread size UNF	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5	
Nr. 4	48	2,40	56,0	5,5	3,5	266 040 UNF	1
Nr. 5	44	2,70	56,0	6,0	3,5	266 050 UNF	1
Nr. 6	40	2,95	56,0	7,0	4,0	266 060 UNF	1
Nr. 8	36	3,50	63,0	7,5	4,5	266 080 UNF	1
Nr. 10	32	4,10	70,0	8,0	6,0	266 100 UNF	1
Nr. 12	28	4,60	70,0	9,0	6,0	266 120 UNF	1
1/4	28	5,50	80,0	10,0	7,0	266 014 UNF	1
5/16	24	6,90	90,0	10,0	8,0	266 516 UNF	1
3/8	24	8,50	100,0	10,0	10,0	266 038 UNF	1

Machine taps with overflow shank and 35° right-hand spiral flutes for bottoming.

Nominal thread size UNF	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co 5	
7/16	20	9,90	100,0	13,0	8,0	266 716 UNF	1
1/2	20	11,50	100,0	13,0	9,0	266 012 UNF	1
9/16	18	12,90	100,0	15,0	11,0	266 916 UNF	1
5/8	18	14,50	100,0	15,0	12,0	266 058 UNF	1
3/4	16	17,50	110,0	17,0	14,0	266 034 UNF	1
7/8	14	20,50	140,0	17,0	18,0	266 078 UNF	1
1"	12	23,25	150,0	20,0	18,0	266 010 UNF	1

Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.



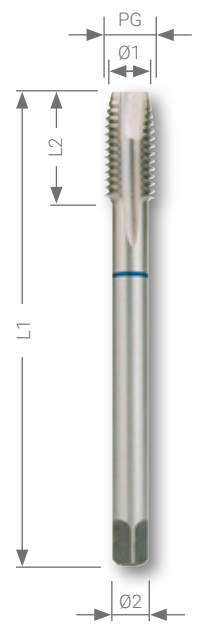
Machine taps PG HSS, ground

Machine taps with overflow shank for through threads.

Thread: DIN 40 430 steel conduit thread
 Flanks: relief-ground

Packing unit: individual plastic pack

Steel (N/mm ²) < 800	■	Brass	■
Steel (N/mm ²) < 1000		Bronze	□
Steel (N/mm ²) < 1200		Plastics	□
Rust-resistant steel		Cast iron	□
Aluminium	□	Titanium alloyed	



Nominal thread size PG	Threads per inch	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSS	
PG 7	20	11,35	70,0	22,0	9,0	264 007	1
PG 9	18	13,95	70,0	22,0	12,0	264 009	1
PG 11	18	17,35	80,0	22,0	14,0	264 011	1
PG 13,5	18	19,15	80,0	22,0	16,0	264 135	1
PG 16	18	21,25	80,0	22,0	18,0	264 016	1
PG 21	16	26,95	90,0	22,0	22,0	264 021	1
PG 29	16	35,60	100,0	25,0	28,0	264 029	1
PG 36	16	45,60	140,0	40,0	36,0	264 036	1
PG 42	16	52,60	140,0	40,0	40,0	264 042	1
PG 48	16	57,90	160,0	40,0	45,0	264 048	1



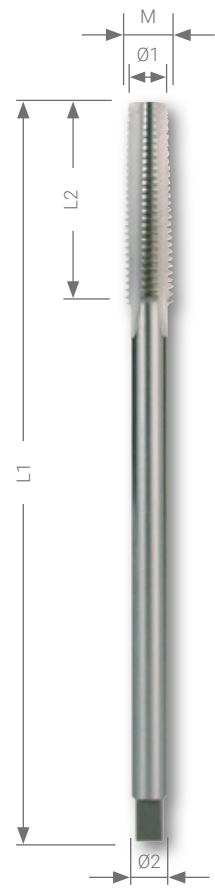
Nut taps M DIN 357 HSS, ground

Long shank to retain several cut nuts.

Chamfer: 2/3 of the thread length
 Thread: metric, DIN ISO 13
 Flanks: relief-ground

Packing unit: individual plastic pack

Nominal thread size M	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSS	
M 3	0,50	2,5	70,0	22,0	2,2	243 030	1
M 4	0,70	3,3	90,0	25,0	2,8	243 040	1
M 5	0,80	4,2	100,0	28,0	3,5	243 050	1
M 6	1,00	5,0	110,0	32,0	4,5	243 060	1
M 8	1,25	6,8	125,0	40,0	6,0	243 080	1
M 10	1,50	8,5	140,0	45,0	7,0	243 100	1
M 12	1,75	10,2	180,0	50,0	9,0	243 120	1
M 14	2,00	12,0	200,0	56,0	11,0	243 140	1
M 16	2,00	14,0	200,0	63,0	12,0	243 160	1
M 18	2,50	15,5	220,0	63,0	14,0	243 180	1
M 20	2,50	17,5	250,0	70,0	16,0	243 200	1
M 22	2,50	19,5	280,0	80,0	18,0	243 220	1
M 24	3,00	21,0	280,0	80,0	18,0	243 240	1



Schematic illustration. Smaller diameters can be supplied with a tip for production reasons.



Forming taps DIN 2174 HSSE-Co 5-nitrated-VAP and HSSE-Co 5-TiAlN, ground

Forming taps with reinforced shank for through threads and bottoming.

Thread: metric, DIN ISO 13
Flanks: relief-ground

As shaping is done without cutting, no interruption of the course of the fibre in the material. The deformation creates very rigid threads. Consistent accuracy even with high productivity.



HSSE-Co 5-nitrated-VAP HSSE-Co 5 TiAlN

The forming tap consists of cobalt alloyed, nitrated and vaporised heavy-duty high-speed steel. Applications: for non-alloyed and alloyed steels up to a strength of 1000 N/mm² and non-ferrous metals.

The forming tap consists of cobalt alloyed heavy-duty high-speed steel with titanium aluminium nitride coating. Applications: for non-alloyed and alloyed steels up to a strength of 1000 N/mm², V2A and non-ferrous metals.

Packing unit: individual plastic pack



	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm ²) < 800	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm ²) < 1000	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm ²) < 1200	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Aluminium	<input type="checkbox"/>	<input type="checkbox"/>

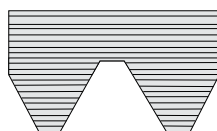
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>	<input type="checkbox"/>
Plastics	<input type="checkbox"/>	<input type="checkbox"/>
Cast iron	<input type="checkbox"/>	<input type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>

Nominal thread size M	Pitch mm	Thread core hole Ø1 mm	L1 mm	L2 mm	Ø2 mm	HSSE Co5	HSSE Co5 TiAlN	
M 3	0,50	2,80	56,0	11,0	3,5	271 003 N	271 003 F	1
M 4	0,70	3,70	63,0	13,0	4,5	271 004 N	271 004 F	1
M 5	0,80	4,65	70,0	16,0	6,0	271 005 N	271 005 F	1
M 6	1,00	5,55	80,0	19,0	6,0	271 006 N	271 006 F	1
M 8	1,25	7,45	90,0	22,0	8,0	271 008 N	271 008 F	1
M 10	1,50	9,35	100,0	24,0	10,0	271 010 N	271 010 F	1
M 12	1,75	11,20	110,0	28,0	9,0	271 012 N	271 012 F	1

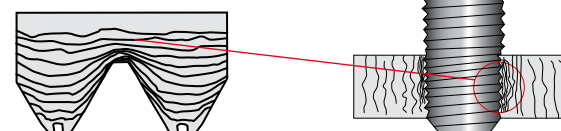


General information:

Tapping
Fibre orientation in tapping



Thread forming
Fibre orientation in thread forming



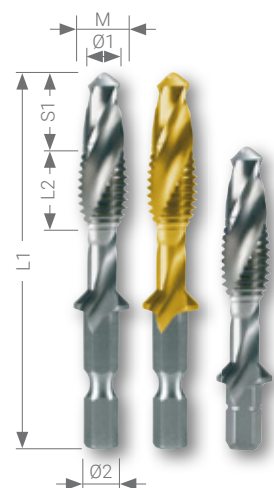


Combined machine drill taps “long series” and “short series” HSS and HSS-TiN ground

Combined machine drill tap with ¼” hexagon shank for drilling and through hole tapping in a single operation

Flanks: relief-ground
Shank: 6,35 x 27,0 mm

The combined machine tap is suitable for sheet metal working with right/left handed rotation cordless drilling machines. The thread is cut in one operation, without any tool changing. The tool incorporates a twist drill before the thread-tapping part.



Operation work process:

- ✓ hole drilling with twist drill
- ✓ thread cutting (tapping)
- ✓ thread deburring
- ✓ thread cleaning when using

HSS

Applications:
for unalloyed and low-alloyed steels up to 600 N/mm² strength, malleable cast iron and non-ferrous metals.

HSS-TiN

Applications:
for unalloyed and low-alloyed steels up to 900 N/mm² strength, malleable cast iron and non-ferrous metals.

Packing unit: individual plastic pack



Steel (N/mm ²) < 800	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Steel (N/mm ²) < 1000	<input type="checkbox"/>	<input type="checkbox"/>
Steel (N/mm ²) < 1200	<input type="checkbox"/>	<input type="checkbox"/>
Rust-resistant steel	<input type="checkbox"/>	<input type="checkbox"/>
Aluminium	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Brass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Bronze	<input type="checkbox"/>	<input type="checkbox"/>
Plastics	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cast iron	<input type="checkbox"/>	<input type="checkbox"/>
Titanium alloyed	<input type="checkbox"/>	<input type="checkbox"/>

Combined machine drill taps “long series” HSS and HSS-TiN ground

Nominal thread size M	Pitch mm	L1 mm	S1 mm	L2 mm	Ø1 mm	Ø2 mm			
M 3	0,50	51,0	5,0	7,0	2,5	7,0	270 014	270 014 T	1
M 4	0,70	54,0	6,0	8,5	3,3	7,0	270 015	270 015 T	1
M 5	0,80	57,0	7,0	10,0	4,2	7,0	270 016	270 016 T	1
M 6	1,00	60,0	8,0	12,0	5,0	7,0	270 017	270 017 T	1
M 8	1,25	68,0	11,0	15,0	6,8	9,5	270 018	270 018 T	1
M 10	1,50	75,0	15,0	17,0	8,5	11,5	270 019	270 019 T	1

Combined machine drill taps “short series” HSS and HSS-TiN ground

Nominal thread size M	Pitch mm	L1 mm	S1 mm	L2 mm	Ø1 mm	Ø2 mm			
M 3	0,50	36,0	5,0	6,0	2,5	7,2	R 270 014	R 270 014 T	1
M 4	0,70	39,0	6,0	8,0	3,3	7,2	R 270 015	R 270 015 T	1
M 5	0,80	41,0	7,0	9,0	4,2	7,2	R 270 016	R 270 016 T	1
M 6	1,00	44,0	8,0	11,0	5,0	7,2	R 270 017	R 270 017 T	1
M 8	1,25	51,0	11,0	14,0	6,8	8,8	R 270 018	R 270 018 T	1
M 10	1,50	59,0	15,0	15,0	8,5	11,0	R 270 019	R 270 019 T	1



Combined machine drill tap sets "long series" HSS and HSS-TiN ground in steel case

	HSS	HSS TiN
7-piece set of combined machine taps "long" 6 combined machine taps M 3 - M 4 - M 5 - M 6 - M 8 - M 10 + 1 hexagon magnetic holder	270 020	270 020 T



270 020 T

Combined machine drill tap sets "short series" HSS and HSS-TiN ground in steel case

	HSS	HSS TiN
7-piece set of combined machine taps "short" 6 combined machine taps M 3 - M 4 - M 5 - M 6 - M 8 - M 10 + 1 hexagon magnetic holder	R 270 020	R 270 021 T



R 270 020

Magnetic bit holder for 1/4" hexagonal shank tools

Packing unit: in plastic tubes of 1

	Article no.	
Magnetic bit holder	270 013	1



Thread-extractor sets in plastic case



Set 1: 21 pieces in plastic case for threads upto M 12 Ø 4 twist drills, 4 studs, 4 extractor nuts and 9 drilling jigs	244 150	
Set 2: 25 pieces in plastic case for threads upto M 16 Ø 5 twist drills, 5 studs, 5 extractor nuts and 10 drilling jigs	244 151	

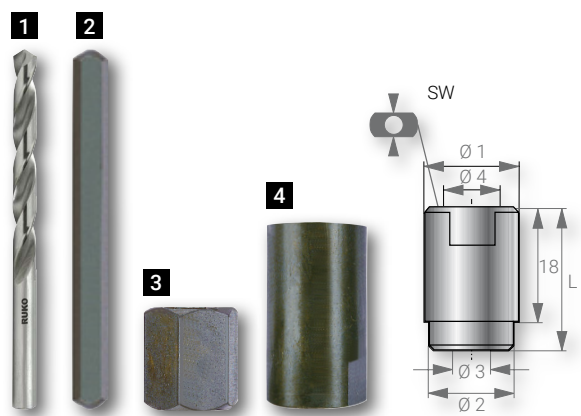


244 151

1 High-performance twist drills DIN 338 HSS ground



ground version, made to match the drilling jigs exactly

Ø mm	Ø inch	for stud size	Length mm		
3,2	1/8	1 - 4	65,0	214 032	1
4,8	3/16	5 - 7	86,0	214 048	1
6,4	1/4	8	101,0	214 064	1
8,0	5/16	9	117,0	214 080	1
8,7	11/32	10	125,0	214 087	1





2 Studs

made of special steel profile, hardened, gunmetal finish

Size	For threads	Ø mm	Ø inch	Length mm		
1	M 5 - M 6	3,2	1/8	60,0	244 001	1
2	M 7 - M 8	4,8	3/16	70,0	244 002	1
3	M 9 - M 10	6,4	1/4	78,0	244 003	1
4	M 12	8,0	5/16	83,0	244 004	1
5	M 14 - M 16	8,7	11/32	94,0	244 005	1



3 Extractor nuts

with special inside profile, hardened, gunmetal finish

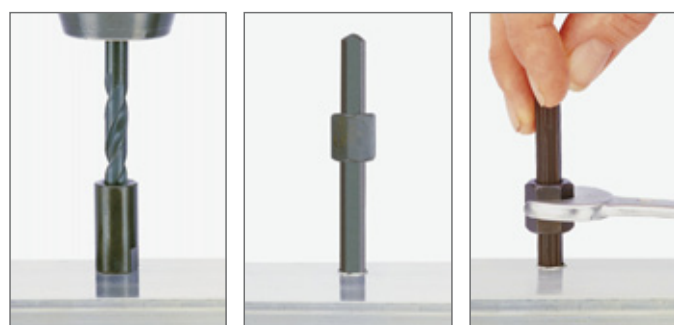
Size	For stud size	Spanner width mm	Length mm		
1	1	10,0	16,0	244 032	1
2	2	11,0	16,0	244 046	1
3	3	13,0	16,0	244 064	1
4	4	14,0	16,0	244 080	1
5	5	17,0	16,0	244 087	1

4 Drilling jigs

Reduced shank, hardened, gunmetal finish. Suitable for sunken broken screws use (Ø 1 + Ø 2). For raised or protruding broken screws use (Ø 4).

Size	Ø 1 mm	Ø 2 mm	Ø 3 mm	Ø 4 mm	Ø 3 Zoll	Ø 4 Zoll	SW mm	L mm		
1	7,0	6,0	3,2	5,0	1/8	3/16	6,0	30,0	244 101	1
2	8,0	7,0	3,2	6,0	1/8	—	7,0	30,0	244 102	1
3	9,0	—	3,2	7,0	1/8	1/4	8,0	30,0	244 103	1
4	10,0	—	3,2	8,0	1/8	5/16	9,0	30,0	244 104	1
5	11,0	—	4,8	8,0	3/16	5/16	9,0	30,0	244 105	1
6	12,0	—	4,8	9,0	3/16	—	10,0	30,0	244 106	1
7	13,0	—	4,8	10,0	3/16	1/8	11,0	30,0	244 107	1
8	14,0	—	6,4	11,0	1/4	7/16	12,0	30,0	244 108	1
9	15,0	—	8,0	12,0	5/16	—	13,0	30,0	244 109	1
10	17,0	16,0	8,7	14,0	11/32	—	14,0	30,0	244 110	1

Instructions for use



No. 1
Drill into broken thread with drilling jig

No. 2
Drive in stud and screw nut down to the base.

No. 3
Turn broken screw out steadily without tilting