GÜHRING

RT 100 U step drill

90°-step drill for thread core holes

RT 100 U 90°-step drill for thread core holes

Core hole drilling & countersinking in one step

Step drill for thread core holes with 3xD

The cutting edge diameter of the solid carbide step drill is matched to the desired thread - for standard compliant threads and high process reliability.

This eliminates the need for special drill bits, which increases cost-effectiveness when producing thread core holes with a 90° countersink.

Moreover, you no longer need 90° countersinking tools, thereby reducing tool diversity and the associated costs in manufacturing. In addition, you need fewer spaces in machinery tool magazines. The tool delivers maximum process reliability thanks to tip and flute geometry that has proven successful in the RT 100 U drill.

X 14 % reduction in **machining time**
X **1 work step less**

- *X* No more expensive special step drills
- *X* Thread core hole and 90° countersink are created in a single work step
- *X* Universal coating for optimum protection in many materials, especially steel and cast iron
- *X* Very high surface quality & minimised chatter marks on the component

Proven tip & flute geometry

NanoFire coating
for best possible wear protection

90° step for chamfering
without chatter marks

Available in 3xD for thread core holes
M4, M5, M6, M8, M10, M12, M14, M16
for both fluteless tapping and machine tapping

You will find the right threading tools
starting on page 6

Application example

Component:	Threaded ring 42CrMo4	
Tool:	#6407, Ø 6.8 mm, thread core holes for M8 thread	
Customer target:	Process-reliable and economical machining with standard tools	
Difficulty:	Limited tool magazine capacity in the machine	
Cutting data:	**Gühring** v_c 105 m/min **f** 0.2 mm/rev	**Competitor** v_c 100 m/min **f** 0.18 mm/rev
Tool life:	3,000 holes	2,800 holes

Step ratio drill with coolant ducts

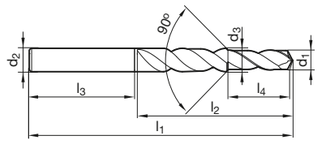
Article no. **6407**

cutting data see page 5

P	M	K	N	S	H
●	○	●	○	○	○

NEW · VHM · F · RT 100 U · 3xD · WN · 140° · m7 · R · HA

90° step drill for thread core holes 3xD • core hole diameter for thread tapping according to DIN 336 and for fluteless tapping included • facet point grind • main cutting edge form straight • optimised cutting edge geometry • nominal diameter d3 for chamfering and countersinking, not suitable for full drilling



d1 m7 mm	d2 h6 mm	d3 +0,013 mm	l1 mm	l2 mm	l3 mm	l4 mm	for thread	Article no. 6407 Order no.
3.30	6.000	6.000	66.00	28.00	36.000	11.40	M 4 Cutting	6407 3.300
3.70	6.000	6.000	66.00	28.00	36.000	11.40	M 4 Forming	6407 3.700
4.20	6.000	6.000	66.00	30.00	36.000	13.60	M 5 Cutting	6407 4.200
4.65	6.000	6.000	66.00	30.00	36.000	13.60	M 5 Forming	6407 4.650
5.00	8.000	8.000	79.00	30.00	36.000	16.50	M 6 Cutting	6407 5.000
5.55	8.000	8.000	79.00	30.00	36.000	16.50	M 6 Forming	6407 5.550
6.80	10.000	10.000	89.00	47.00	40.000	21.00	M 8 Cutting	6407 6.800
7.40	10.000	10.000	89.00	47.00	40.000	21.00	M 8 Forming	6407 7.400
8.50	12.000	12.000	102.00	55.00	45.000	25.50	M10 Cutting	6407 8.500
9.30	12.000	12.000	102.00	55.00	45.000	25.50	M10 Forming	6407 9.300
10.20	14.000	14.000	107.00	60.00	45.000	30.00	M12 Cutting	6407 10.200
11.20	14.000	14.000	107.00	60.00	45.000	30.00	M12 Forming	6407 11.200
12.00	16.000	16.000	115.00	65.00	48.000	34.50	M14 Cutting	6407 12.000
13.10	16.000	16.000	115.00	65.00	48.000	34.50	M14 Forming	6407 13.100
14.00	18.000	18.000	123.00	73.00	48.000	38.50	M16 Cutting	6407 14.000
15.10	18.000	18.000	123.00	73.00	48.000	38.50	M16 Forming	6407 15.100

Step drill for tapped core holes, RT 100 U

Machining group	F	f (mm/rev) with Ø d1							
	v_c (m/min)	3	4	6	8	10	12	14	16
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm², 125 HB	145	0.155	0.190	0.260	0.325	0.385	0.440	0.495	0.550
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm², 125 HB	130	0.140	0.170	0.235	0.290	0.345	0.395	0.445	0.495
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm², 190 HB	130	0.140	0.170	0.235	0.290	0.345	0.395	0.445	0.495
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm², 190 HB	125	0.130	0.165	0.220	0.275	0.325	0.375	0.420	0.465
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm², 250 HB	125	0.130	0.165	0.220	0.275	0.325	0.375	0.420	0.465
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm², 270 HB	115	0.125	0.155	0.210	0.260	0.305	0.355	0.395	0.440
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm², 300 HB	110	0.115	0.145	0.195	0.245	0.290	0.330	0.370	0.410
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm², 180 HB	120	0.125	0.155	0.210	0.260	0.305	0.355	0.395	0.440
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm², 275 HB	120	0.125	0.155	0.210	0.260	0.305	0.355	0.395	0.440
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm², 300 HB	100	0.105	0.130	0.175	0.220	0.260	0.300	0.335	0.375
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm², 350 HB	90	0.090	0.115	0.155	0.195	0.230	0.265	0.295	0.330
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm², 200 HB	80	0.095	0.120	0.165	0.205	0.240	0.275	0.310	0.345
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm², 325 HB	70	0.080	0.100	0.140	0.170	0.205	0.235	0.265	0.290
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	60	0.075	0.095	0.130	0.160	0.190	0.220	0.250	0.275
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm², 200 HB	55	0.070	0.085	0.115	0.145	0.175	0.200	0.225	0.245
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm², 240 HB	50	0.065	0.080	0.110	0.140	0.165	0.185	0.210	0.235
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	55	0.040	0.050	0.065	0.080	0.095	0.110	0.125	0.135
M2.2.1 Duplex steel, high-strength stainless steels	45	0.035	0.040	0.055	0.070	0.080	0.095	0.105	0.115
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	110	0.155	0.190	0.260	0.325	0.385	0.440	0.495	0.550
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	95	0.130	0.165	0.220	0.275	0.325	0.375	0.420	0.465
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	95	0.130	0.165	0.220	0.275	0.325	0.375	0.420	0.465
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	90	0.125	0.155	0.210	0.260	0.305	0.355	0.395	0.440
K1.3.1 Malleable cast iron, ferritic, 130 HB	90	0.125	0.155	0.210	0.260	0.305	0.355	0.395	0.440
K1.3.2 Malleable cast iron, pearlitic, 230 HB	75	0.110	0.135	0.180	0.225	0.270	0.310	0.345	0.385
K2.1.1 Vermicular graphite cast iron (GJV)	90	0.155	0.190	0.260	0.325	0.385	0.440	0.495	0.550
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	70	0.115	0.145	0.195	0.245	0.290	0.330	0.370	0.410
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	185	0.155	0.190	0.260	0.325	0.385	0.440	0.495	0.550
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	185	0.155	0.190	0.260	0.325	0.385	0.440	0.495	0.550
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	170	0.155	0.190	0.260	0.325	0.385	0.440	0.495	0.550
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	170	0.155	0.190	0.260	0.325	0.385	0.440	0.495	0.550
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	145	0.130	0.165	0.220	0.275	0.325	0.375	0.420	0.465
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %	130	0.125	0.155	0.210	0.260	0.305	0.355	0.395	0.440
N3.1.2 Copper and copper alloys: CuZn, CuSnZn	110	0.105	0.130	0.175	0.220	0.260	0.300	0.335	0.375
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte	105	0.100	0.120	0.165	0.205	0.245	0.280	0.315	0.350
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics									
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.									
N4.1.3 Non-metallic materials: Graphite									
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	40	0.060	0.075	0.105	0.130	0.155	0.175	0.200	0.220
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	30	0.050	0.060	0.085	0.105	0.120	0.140	0.160	0.175
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	35	0.060	0.075	0.105	0.130	0.155	0.175	0.200	0.220
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	20	0.045	0.055	0.075	0.090	0.105	0.125	0.140	0.155
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	25	0.045	0.055	0.075	0.090	0.105	0.125	0.140	0.155
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm²	40	0.060	0.075	0.105	0.130	0.155	0.175	0.200	0.220
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm²	30	0.050	0.060	0.085	0.105	0.120	0.140	0.160	0.175
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC	45	0.040	0.050	0.065	0.080	0.095	0.110	0.125	0.135
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC	30	0.030	0.040	0.050	0.065	0.075	0.090	0.100	0.110
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC	25	0.030	0.035	0.050	0.060	0.070	0.085	0.095	0.105
H2.1.1 Chilled cast iron, 400 HB	40	0.050	0.060	0.080	0.100	0.120	0.140	0.155	0.175
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC	30	0.035	0.040	0.055	0.070	0.085	0.095	0.110	0.120

Taps for ISO metric threads

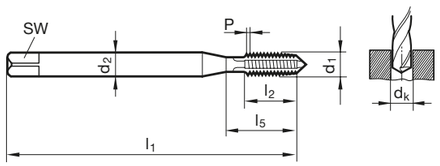
Article no. **8354**

cutting data see page 9

NEW | HSS-E | S | 6HX | R | Cyl | B | 3xD

P	M	K	N	S	H
●	●	○	○	○	

maximum performance • for universal application



Standard **DIN 371/DIN 376**

Article no. **8354**

d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm		Order no.
M4	0.700	4.50	3.40	3.30	63.00	12.00	21.00	DIN 371	8354 4.000
M5	0.800	6.00	4.90	4.20	70.00	14.00	25.00	DIN 371	8354 5.000
M6	1.000	6.00	4.90	5.00	80.00	16.00	30.00	DIN 371	8354 6.000
M8	1.250	8.00	6.20	6.80	90.00	17.00	35.00	DIN 371	8354 8.000
M10	1.500	10.00	8.00	8.50	100.00	20.00	39.00	DIN 371	8354 10.000
M12	1.750	9.00	7.00	10.20	110.00	24.00	49.00	DIN 376	8354 12.000
M14	2.000	11.00	9.00	12.00	110.00	26.00	53.00	DIN 376	8354 14.000
M16	2.000	12.00	9.00	14.00	110.00	26.00	54.00	DIN 376	8354 16.000

Taps for ISO metric threads

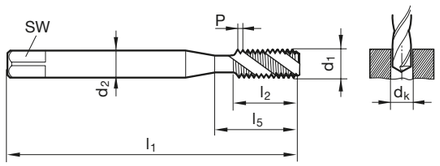
Article no. **8330**

cutting data see page 9

NEW | HSS-E | X | 6HX | R | Cyl | C | 3xD

P	M	K	N	S	H
●	●	○	○	○	

maximum performance • for universal application



Standard **DIN 371/DIN 376**

Article no. **8330**

d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm		Order no.
M4	0.700	4.50	3.40	3.30	63.00	7.50	21.00	DIN 371	8330 4.000
M5	0.800	6.00	4.90	4.20	70.00	8.50	25.00	DIN 371	8330 5.000
M6	1.000	6.00	4.90	5.00	80.00	11.00	30.00	DIN 371	8330 6.000
M8	1.250	8.00	6.20	6.80	90.00	14.00	35.00	DIN 371	8330 8.000
M10	1.500	10.00	8.00	8.50	100.00	16.00	39.00	DIN 371	8330 10.000
M12	1.750	9.00	7.00	10.20	110.00	18.50	49.00	DIN 376	8330 12.000
M14	2.000	11.00	9.00	12.00	110.00	20.00	53.00	DIN 376	8330 14.000
M16	2.000	12.00	9.00	14.00	110.00	20.00	54.00	DIN 376	8330 16.000

Fluteless taps for ISO metric threads

Article no. **4487**

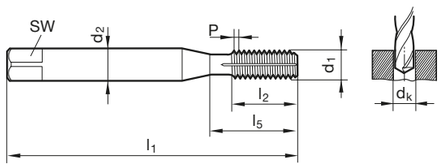
cutting data see page 9

HSS-E-PM | C | N | 4HX/6HX | R | Cyl | C | 3xD

with oil grooves ≥ M2 • Ø tolerance ≤ M1.4 = 4HX

P	M	K	N	S	H
●	○	●	●	○	

N ≥ 7% Si



Standard	~DIN 371/~DIN 376
Article no.	4487

d1	P mm	d2 mm	SW mm	dk mm	l1 mm	l2 mm	l5 mm		Order no.
M4	0.700	4.50	3.40	3.70	63.00	12.00	21.00	~DIN 371	4487 4.000
M5	0.800	6.00	4.90	4.65	70.00	14.00	25.00	~DIN 371	4487 5.000
M6	1.000	6.00	4.90	5.55	80.00	16.00	30.00	~DIN 371	4487 6.000
M8	1.250	8.00	6.20	7.40	90.00	17.00	35.00	~DIN 371	4487 8.000
M10	1.500	10.00	8.00	9.30	100.00	20.00	39.00	~DIN 371	4487 10.000
M12	1.750	9.00	7.00	11.20	110.00	24.00	49.00	~DIN 376	4487 12.000
M14	2.000	11.00	9.00	13.10	110.00	26.00	53.00	~DIN 376	4487 14.000
M16	2.000	12.00	9.00	15.10	110.00	26.00	54.00	~DIN 376	4487 16.000

High-performance taps and fluteless taps Pionex

Machining group	Taps		Fluteless taps
	Blind holes	Through-holes	
	HSS-E	HSS-E	HSS-E-PM
	A	S	C
	v_c (m/min)		
P1.1.1 Unalloyed steel, annealed, 0.15 % C, Rm 420 N/mm², 125 HB	18	20	27
P1.1.2 Unalloyed steel, heat-treated, 0.15 % C, Rm 420 N/mm², 125 HB	18	20	27
P1.1.3 Unalloyed steel, annealed, 0.45 % C, Rm 640 N/mm², 190 HB	18	20	27
P1.1.4 Unalloyed steel, heat-treated, 0.45 % C, Rm 640 N/mm², 190 HB	18	20	27
P1.1.5 Unalloyed steel, heat-treated, 0.45 % C, Rm 850 N/mm², 250 HB	18	20	27
P1.1.6 Unalloyed steel, annealed, 0.75 % C, Rm 915 N/mm², 270 HB	15	17	27
P1.1.7 Unalloyed steel, heat-treated, 0.75 % C, Rm 1020 N/mm², 300 HB	13	14	27
P2.1.1 Low-alloy steel, annealed, Rm 610 N/mm², 180 HB	18	20	22
P2.1.2 Low-alloy steel, heat-treated, Rm 930 N/mm², 275 HB	15	17	22
P2.1.3 Low-alloy steel, heat-treated, Rm 1020 N/mm², 300 HB	13	14	22
P2.1.4 Low-alloy steel, heat-treated, Rm 1190 N/mm², 350 HB	11	12	22
P3.1.1 High-alloy steel and tool steel, annealed, Rm 680 N/mm², 200 HB	11	12	16
P3.1.2 High-alloy steel and tool steel, hardened and tempered, Rm 1100 N/mm², 325 HB	11	12	16
M1.1.1 Stainless steel, ferritic/martensitic, with machining additives	11	12	11
M1.1.2 Stainless steel, ferritic/martensitic, annealed, Rm 680 N/mm², 200 HB	11	12	11
M1.1.3 Stainless steel, ferritic/martensitic, heat-treated, Rm 810 N/mm², 240 HB	6	7	8
M2.1.1 Stainless steel, austenitic, quenched, 180 HB	4	4	7
M2.2.1 Duplex steel, high-strength stainless steels	3	3	
K1.1.1 Grey cast iron, pearlitic/ferritic, 180 HB	14	16	
K1.1.2 Grey cast iron, pearlitic/martensitic, 260 HB	14	16	
K1.2.1 Cast iron with spheroidal graphite, ferritic, 160 HB	14	16	27
K1.2.2 Cast iron with spheroidal graphite, pearlitic, 250 HB	14	16	27
K1.3.1 Malleable cast iron, ferritic, 130 HB	14	16	27
K1.3.2 Malleable cast iron, pearlitic, 230 HB	14	16	27
K2.1.1 Vermicular graphite cast iron (GJV)	9	10	22
K2.2.1 Austenitic-ferritic spheroidal graphite cast iron (ADI)	9	10	22
N1.1.1 Wrought aluminium alloys, non-hardened, 60 HB	25	28	17
N1.1.2 Wrought aluminium alloys, hardened, 100 HB	25	28	17
N2.1.1 Aluminium casting alloys, non-hardened, ≤ 12 % Si, 75 HB	20	22	33
N2.1.2 Aluminium casting alloys, hardened, ≤ 12 % Si, 90 HB	20	22	33
N2.1.3 Aluminium casting alloys, non-hardened, > 12 % Si, 130 HB	15	17	27
N3.1.1 Copper and copper alloys: Free-machining alloy, Pb > 1 %			
N3.1.2 Copper and copper alloys: CuZn, CuSnZn			
N3.1.3 Copper and copper alloys: CuSn, lead-free copper and copper electrolyte			
N4.1.1 Non-metallic materials: Duroplastics, fibre-reinforced plastics			
N4.1.2 Non-metallic materials: Hard rubber, wood, etc.			
N4.1.3 Non-metallic materials: Graphite			
S1.1.1 Heat-resistant alloys, Fe-based, annealed, 200 HB	2	2	4
S1.1.2 Heat-resistant alloys, Fe-based, hardened, 280 HB	2	2	4
S1.1.3 Heat-resistant alloys, Ni- or Co-based, annealed, 250 HB	2	2	4
S1.1.4 Heat-resistant alloys, Ni- or Co-based, hardened, 350 HB	2	2	4
S1.1.5 Heat-resistant alloys, Ni- or Co-based, cast, 320 HB	2	2	4
S2.1.1 Titanium alloys, pure titanium, Rm 400 N/mm²	2	2	4
S2.1.2 Titanium alloys, Alpha and Beta alloys, hardened, Rm 1050 N/mm²	2	2	4
H1.1.1 Hardened steel, hardened and tempered, < 55 HRC			
H1.1.2 Hardened steel, hardened and tempered, < 60 HRC			
H1.1.3 Hardened steel, hardened and tempered, > 60 HRC			
H2.1.1 Chilled cast iron, 400 HB			
H2.1.2 Chilled cast iron, hardened and tempered, < 55 HRC			

All the values stated are guide values. You can find detailed cutting values online in our Gühring Navigator at webnavigator.guehring.de/en.

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RT 100 U step drill

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GÜHRING

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