

» TAPER AND DEBURRING COUNTERSINKERS



## Taper and deburring countersinkers

The flutes of the new RUKO high-performance taper and deburring countersinkers are CBN ground from the fully hardened material. Because CBN (cubic crystalline boron nitride) is a much harder abrasive than even silicon carbide or corundum, a better and sharper cutting edge is achieved - without burrs. And, with higher dimensional precision the countersinkers will last considerably longer while maintaining the precise tolerances. Because of the CBN deep-ground flutes the cutting edges are extremely sharp. Ideal for burr- and chatter-free deburring and countersinking. Applicable for steel, cast iron, non-ferrous and light metals. Best results at low cutting speeds.

The ideal tool for countersinking and deburring in the following sectors of industry: electrical, sanitary engineering, heating technics, mechanical engineering, switching systems, tubular steel construction, furniture and wood working, automotive and aviation.





















This tough tool is suitable for all standard industrial materials: non-ferrous metal, stainless steel, thermoplastics and duroplastics as well as sheet metals.

The taper and deburring countersinkers as per DIN 335 are suitable in particular for countersinkings of type A and B of fine execution as per DIN 74

By using RUKO cutting spray or RUKO cutting paste, longer tool life and superior surface quality of the workpiece is guaranteed.



## Overview of symbols

 <b>HSS</b> High-speed steel	 Shank: Morse taper	 Counters. angle: 90°	 Uncoated surface
 <b>HSSE Co5</b> High-speed steel with 5% Cobalt content, ground	 Shank: cylindrical	 Cutting edges: diagonal slot	 Black surface
 <b>TC</b> Tungsten carbide	 Shank: 3-way clamping surface	 Cutting edges: 1	 TiAlN coating
 right hand cutting	 Bit shank: 6,35 mm x 27,0 mm	 Cutting edges: 3	 TiN coating
 tolerance: h8	 Helical point normal ground	 Point angle: 118°	 For aluminium

## Product Information

### 1. CBN ground flute

CBN deep-ground flutes have better and sharper cutting edges - without burrs - unlike conventional milled flutes.

This guarantees a superior cutting edge and considerably longer tool life. The CBN ground countersinkers ensure an excellent chip flow, chatter free working, scratch-free surface and have ideal centring features.

### 2. Radially adjusted relief produced by CBN grinding

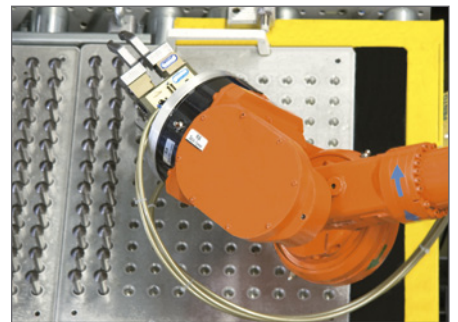
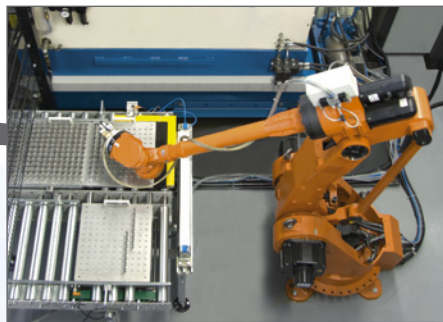
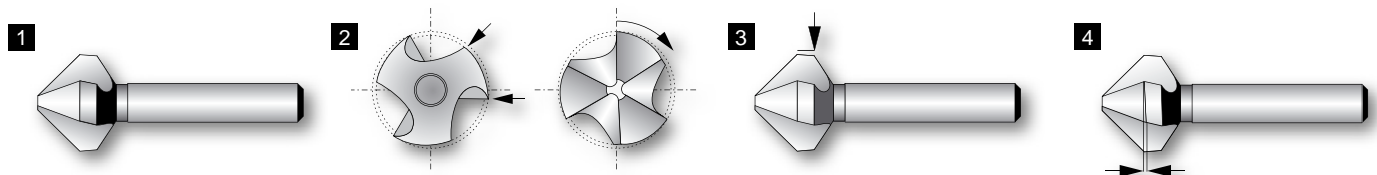
Because the radially-adjusted relief produced by CBN grinding relates directly to its diameter, the cutting edge is always the highest point of the diameter.

### 3. Axial relief produced by CBN grinding

The axial relief produced by CBN grinding guarantees a smooth low-heat cut.

### 4. CBN ground relief angle

Each diameter has its own relief angle. Consequently the cutting edge is always the highest point, too.







## Taper and deburring countersinkers DIN 335 type C 90°



Because of the CBN deep-ground flutes the cutting edges are extremely sharp. Ideal for burr- and chatter-free deburring and countersinking. Best results at low cutting speeds.



Packing unit: in plastic tubes of 1

Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Ø <sub>3</sub> mm	Countersinkings as per DIN 74		Article no. HSS	Article no. HSS for alu	Article no. HSSE-Co 5	Article no. HSS-TiN	Article no. HSS-TiAlN	Article no. Carbide K 20	Cont. pcs.
				AF	BF							
4,3	1,3	40,0	4,0			102 101	—	102 101 E	102 101 T	102 101 F	—	1
4,8	1,5	40,0	4,0			102 102	—	—	102 102 T	102 102 F	—	1
5,0	1,5	40,0	4,0	M 2,5		102 103	—	102 103 E	102 103 T	102 103 F	—	1
5,3	1,5	40,0	4,0			102 104	—	102 104 E	102 104 T	102 104 F	—	1
5,8	1,5	45,0	5,0			102 105	—	—	102 105 T	102 105 F	—	1
6,0	1,5	45,0	5,0	M 3		102 106	—	102 106 E	102 106 T	102 106 F	—	1
6,3	1,5	45,0	5,0		M 3	102 107	102 107 A	102 107 E	102 107 T	102 107 F	102 261	1
7,0	1,8	50,0	6,0	M 3,5		102 108	—	—	102 108 T	102 108 F	—	1
7,3	1,8	50,0	6,0			102 109	—	—	102 109 T	102 109 F	—	1
8,0	2,0	50,0	6,0	M 4		102 110	—	102 110 E	102 110 T	102 110 F	—	1
8,3	2,0	50,0	6,0		M 4	102 111	102 111 A	102 111 E	102 111 T	102 111 F	102 262	1
9,4	2,2	50,0	6,0			102 112	—	—	102 112 T	102 112 F	—	1
10,0	2,5	50,0	6,0	M 5		102 113	—	102 113 E	102 113 T	102 113 F	—	1
10,4	2,5	50,0	6,0		M 5	102 114	102 114 A	102 114 E	102 114 T	102 114 F	102 263	1
11,5	2,8	56,0	8,0	M 6		102 115	—	102 115 E	102 115 T	102 115 F	—	1
12,4	2,8	56,0	8,0		M 6	102 116	102 116 A	102 116 E	102 116 T	102 116 F	102 264	1
13,4	2,9	56,0	8,0			102 117	—	—	102 117 T	102 117 F	—	1
15,0	3,2	60,0	10,0	M 8		102 118	—	102 118 E	102 118 T	102 118 F	—	1
16,5	3,2	60,0	8,0		M 8	102 119	102 119 A	102 119 E	102 119 T	102 119 F	—	1
16,5	3,2	60,0	10,0		M 8	102 119-1	102 119-1 A	102 119-1 E	102 119-1 T	102 119-1 F	102 265	1
19,0	3,5	63,0	10,0	M 10		102 120	—	102 120 E	102 120 T	102 120 F	—	1
20,5	3,5	63,0	10,0		M 10	102 121	102 121 A	102 121 E	102 121 T	102 121 F	102 266	1
23,0	3,8	67,0	10,0	M 12		102 122	—	102 122 E	102 122 T	102 122 F	—	1
25,0	3,8	67,0	10,0		M 12	102 123	102 123 A	102 123 E	102 123 T	102 123 F	102 267	1
26,0	3,9	71,0	12,0	M 14		102 171	—	—	102 171 T	102 171 F	—	1
28,0	4,0	71,0	12,0		M 14	102 124	—	102 124 E	102 124 T	102 124 F	—	1
30,0	4,1	71,0	12,0	M 16		102 172	—	—	102 172 T	102 172 F	—	1
31,0	4,2	71,0	12,0		M 16	102 125	102 125 A	102 125 E	102 125 T	102 125 F	102 268	1
37,0	4,8	90,0	12,0			102 173	—	—	102 173 T	102 173 F	—	1
40,0	10,0	80,0	15,0			102 174	—	—	102 174 T	102 174 F	—	1

Taper and deburring countersinker sets DIN 335 type C 90°  
HSS, HSSE-Co 5 and tungsten carbide K 20 in steel case



102 152



102 152 T



102 154 F



102 154 T

Description	Article no.	Article no.	Article no.	Article no.	Article no.	Article no.
	HSS	HSS for alu	HSSE-Co 5	HSS-TiN	HSS-TiAlN	Carbide K 20
5-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 6,3 - 10,4 - 16,5 - 20,5 - 25,0 mm (Ø 16,5 mm = shank-Ø 10,0 mm)	102 154	102 154 A	102 154 E	102 154 T	102 154 F	—
6-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm (Ø 16,5 mm = shank-Ø 10,0 mm)	102 152	102 152 A	102 152 E	102 152 T	102 152 F	102 152 HM

Taper and deburring countersinker sets DIN 335 type C 90°  
HSS, HSSE-Co 5 and tungsten carbide K 20 in plastic case



102 152 RO



102 152 TRO



102 154 FRO



102 154 TRO

Description	Article no.	Article no.	Article no.	Article no.	Article no.
	HSS	HSSE-Co 5	HSS-TiN	HSS-TiAlN	Carbide K 20
5-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 6,3 - 10,4 - 16,5 - 20,5 - 25,0 mm (Ø 16,5 mm = shank-Ø 10,0 mm)	102 154 RO	102 154 ERO	102 154 TRO	102 154 FRO	—
6-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm (Ø 16,5 mm = shank-Ø 10,0 mm)	102 152 RO	102 152 ERO	102 152 TRO	102 152 FRO	102 152 HMRO



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## Taper and deburring countersinker sets DIN 335 type C 90° HSS and HSSE-Co 5 in plastic case / in steel case



102 142



102 150



102 155

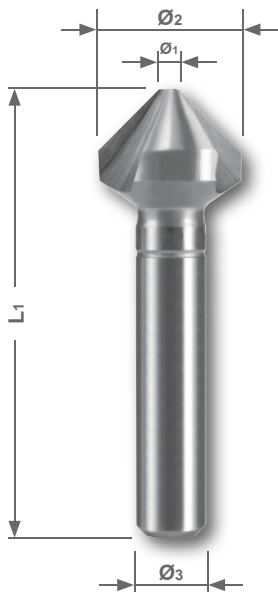
Description	Article no.	Article no.	Article no.	Article no.
	HSS	HSS for alu	HSSE-Co 5	HSS-TiN
6-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 6,3 - 10,4 - 16,5 - 20,5 - 25,0 mm (Ø 16,5 mm = shank-Ø 8,0 mm) + 1 x 50 ml tin of cutting spray in plastic case	102 142	102 142 A	102 142 E	102 142 T
5-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 10,4 - 16,5 - 20,5 - 25,0 mm (Ø 16,5 mm = shank-Ø 8,0 mm) + 1 x 30 g tin of cutting paste in steel case	102 150	102 150 A	102 150 E	102 150 T
5-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 8,3 - 10,4 - 16,5 - 20,5 mm (Ø 16,5 mm = shank-Ø 8,0 mm) + 1 x 30 g tin of cutting paste in steel case	102 151	102 151 A	102 151 E	102 151 T
17-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 4,3 - 5,0 - 6,0 - 6,3 - 7,0 - 8,0 - 8,3 - 10,0 - 10,4 - 11,5 - 12,4 - 15,0 - 16,5 - 19,0 - 20,5 - 23,0 - 25,0 mm (Ø 16,5 mm = shank-Ø 10,0 mm) in wooden case	102 155	—	—	—



## **N** Taper and deburring countersinker set DIN 335 type C 90° HSS in plastic case

Description	Article no. HSS
17-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 4,3 - 5,0 - 6,0 - 6,3 - 7,0 - 8,0 - 8,3 - 10,0 - 10,4 - 11,5 - 12,4 - 15,0 - 16,5 - 19,0 - 20,5 - 23,0 - 25,0 mm (Ø 16,5 mm = shank-Ø 10,0 mm)	102 155 RO





## Taper and deburring countersinkers DIN 335 type C 90° ASP



Because of the CBN deep-ground flutes the cutting edges are extremely sharp. Ideal for burr- and chatter-free deburring and countersinking. Best results at low cutting speeds.

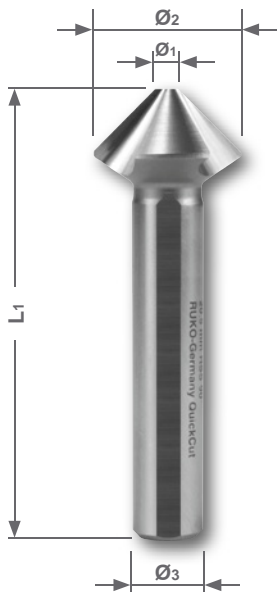
Packing unit: in plastic tubes of 1

Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Ø <sub>3</sub> mm	Countersinkings as per DIN 74 / BF	Article no. <b>HSS</b>	Cont. pcs.
6,3	1,5	45,0	5,0	M 3	102 107 ASP	1
8,3	2,0	50,0	6,0	M 4	102 111 ASP	1
10,4	2,5	50,0	6,0	M 5	102 114 ASP	1
12,4	2,8	56,0	8,0	M 6	102 116 ASP	1
16,5	3,2	60,0	10,0	M 8	102 119-1 ASP	1
20,5	3,5	63,0	10,0	M 10	102 121 ASP	1
25,0	3,8	67,0	10,0	M 12	102 123 ASP	1
31,0	4,2	71,0	12,0	M 16	102 125 ASP	1

## Taper and deburring countersinker sets DIN 335 type C 90° ASP in steel case

Description	Article no. <b>HSS</b>
6-piece set of taper and deburring countersinkers DIN 335 type C 90° ASP Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm	102 152 ASP
5-piece set of taper and deburring countersinkers DIN 335 type C 90° ASP Ø 6,3 - 10,4 - 16,5 - 20,5 - 25,0 mm	102 154 ASP





## Taper and deburring countersinkers "QUICKCut" (DIN 335) type C 90°



The optimised cutting geometry combined with the 3-surface section of the shaft leads to optimum countersinking results. The lower wear results in 25 %, with TiAlN coating as much as 40 % higher service lives. Due to its very good chip formation, the cutting geometry enables countersinking up to 30 % faster than with conventional countersinkers.

**Specially developed for automatic and quick feed!**



Packing unit: in plastic tubes of 1

$\varnothing_2$ mm	$\varnothing_1$ mm	$L_1$ mm	$\varnothing_3$ mm	Countersinkings as per DIN 74 / BF	Article no.	Article no.	Cont. pcs.
					HSS	HSS-TiAlN	
6,3	1,5	45,0	5,0	M 3	102 707	102 707 F	1
8,3	2,0	50,0	6,0	M 4	102 711	102 711 F	1
10,4	2,5	50,0	6,0	M 5	102 714	102 714 F	1
12,4	2,8	56,0	8,0	M 6	102 716	102 716 F	1
15,0	3,2	60,0	10,0	M 8	102 718	102 718 F	1
16,5	3,2	60,0	10,0	M 8	102 719	102 719 F	1
19,0	3,5	63,0	10,0	M 10	102 720	102 720 F	1
20,5	3,5	63,0	10,0	M 10	102 721	102 721 F	1
23,0	3,8	67,0	10,0	M 12	102 722	102 722 F	1
25,0	3,8	67,0	10,0	M 12	102 723	102 723 F	1
31,0	4,2	71,0	12,0	M 16	102 725	102 725 F	1





Taper and deburring countersinker sets "QUICKCut" (DIN 335)  
type C 90° in steel case



102 752



102 752 F



102 754



102 754 F

Description	Article no.	Article no.
	HSS	HSS-TiAlN
6-piece set of taper and deburring countersinkers "QUICKCut" (DIN 335) type C 90° Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm	102 752	102 752 F
5-piece set of taper and deburring countersinkers "QUICKCut" (DIN 335) type C 90° Ø 6,3 - 10,4 - 16,5 - 20,5 - 25,0 mm	102 754	102 754 F

Taper and deburring countersinker sets "QUICKCut" (DIN 335)  
type C 90° in plastic case



102 752 RO



102 752 FRO



102 754 RO

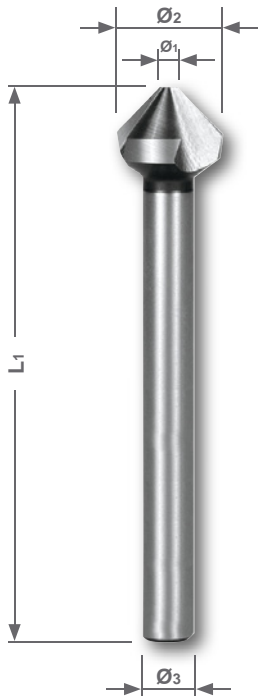


102 754 FRO

Description	Article no.	Article no.
	HSS	HSS-TiAlN
6-piece set of taper and deburring countersinkers "QUICKCut" (DIN 335) type C 90° Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm	102 752 RO	102 752 FRO
5-piece set of taper and deburring countersinkers "QUICKCut" (DIN 335) type C 90° Ø 6,3 - 10,4 - 16,5 - 20,5 - 25,0 mm	102 754 RO	102 754 FRO



1.05



## Taper and deburring countersinkers DIN 335 type C 90° HSS, with long cylindrical shank



Because of the CBN deep-ground flutes the cutting edges are extremely sharp. Ideal for burr- and chatter-free deburring and countersinking. Best results at low cutting speeds.

Packing unit: in plastic tubes of 1

Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Ø <sub>3</sub> mm	Countersinkings as per DIN 74		Article no. <b>HSS</b>	Cont. pcs.
				AF	BF		
6,3	1,5	85,0	5,0	-	M 3	102 271	1
8,3	2,0	85,0	6,0	-	M 4	102 272	1
10,4	2,5	88,0	6,0	-	M 5	102 273	1
12,4	2,8	108,0	8,0	-	M 6	102 274	1
15,0	3,2	110,0	10,0	M 8	-	102 275	1
16,5	3,2	112,0	10,0	-	M 8	102 276	1
20,5	3,5	115,0	10,0	-	M 10	102 277	1
25,0	3,8	118,0	10,0	-	M 12	102 278	1



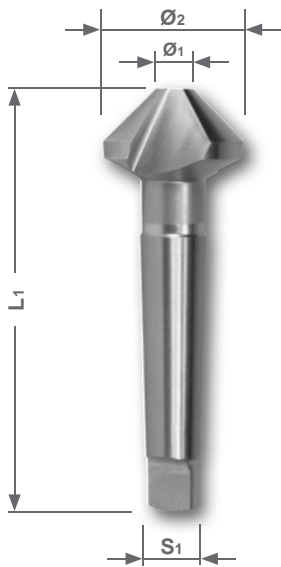
Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Ø <sub>3</sub> mm	Countersinkings as per DIN 74		Article no. <b>HSS</b>	Cont. pcs.
				AF	BF		
6,3	1,5	154,0	5,0	-	M 3	102 281	1
8,3	2,0	155,0	6,0	-	M 4	102 282	1
10,4	2,5	157,0	6,0	-	M 5	102 283	1
12,4	2,8	158,0	8,0	-	M 6	102 284	1
15,0	3,2	158,0	10,0	M 8	-	102 285	1
16,5	3,2	161,0	10,0	-	M 8	102 286	1
20,5	3,5	164,0	10,0	-	M 10	102 287	1
25,0	3,8	164,0	10,0	-	M 12	102 288	1

## **N** Taper and deburring countersinkers DIN 335 type C 90° HSS, with long cylindrical shank, in plastic case



Description	Article no.
6-piece set of taper and deburring countersinkers DIN 335 type C 90° Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm	102 158 RO





## Taper and deburring countersinkers DIN 335 type D 90° HSS



Packing unit: in plastic tubes of 1

Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Shank S <sub>1</sub>	Senkungen nach DIN 74		Article no. <b>HSS</b>	Cont. pcs.
				AF	BF		
15,0	3,2	85,0	MT 1	M 8	-	102 126	1
16,5	3,2	85,0	MT 1	-	M 8	102 127	1
19,0	3,5	100,0	MT 2	M 10	-	102 128	1
20,5	3,5	100,0	MT 2	-	M 10	102 129	1
23,0	3,8	106,0	MT 2	M 12	-	102 130	1
25,0	3,8	106,0	MT 2	-	M 12	102 131	1
26,0	3,8	106,0	MT 2	M 14	-	102 132	1
28,0	4,0	112,0	MT 2	-	M 14	102 133	1
30,0	4,2	112,0	MT 2	M 16	-	102 134	1
31,0	4,2	112,0	MT 2	-	M 16	102 135	1
34,0	4,5	118,0	MT 2	M 18	M 18	102 136	1
37,0	4,8	118,0	MT 2	M 20	M 20	102 137	1
40,0	10,0	140,0	MT 3	-	-	102 138	1
50,0	14,0	150,0	MT 3	-	-	102 139	1
63,0	16,0	180,0	MT 4	-	-	102 140	1
80,0	22,0	190,0	MT 4	-	-	102 141	1



102 143

## Hand deburrer DIN 335 type C 90° HSS, CBN ground



Packing unit: in plastic tubes of 1

Description	Article no.	Cont. pcs.
Hand deburrer with countersinker Ø 12,4 mm	102 143	1
Hand deburrer with countersinker Ø 15,0 mm	102 144	1
Hand deburrer with countersinker Ø 16,5 mm	102 145	1
Hand deburrer with countersinker Ø 20,5 mm	102 146	1
Hand deburrer with countersinker Ø 25,0 mm	102 147	1



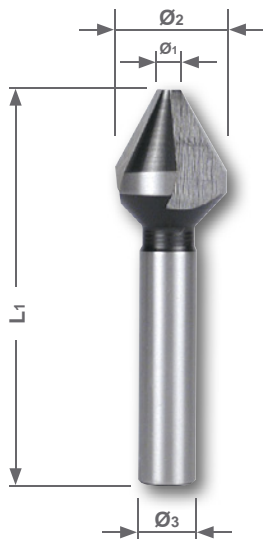
102 148

## Universal handle to fit countersinkers

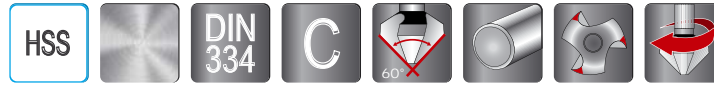
Packing unit: in plastic tubes of 1

Description	Article no.	Cont. pcs.
Universal handle for countersinker with 8,0 mm shank Ø	102 148	1
Universal handle for countersinker with 10,0 mm shank Ø	102 149	1
Universal handle for countersinker with 1/4" hexagon socket	102 320	1



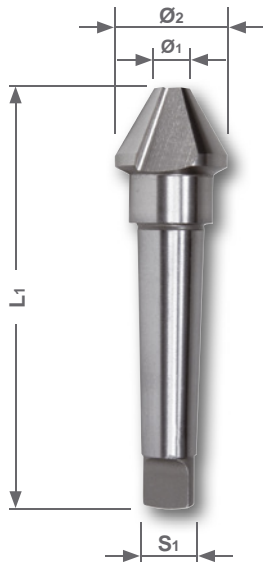


### Taper and deburring countersinkers DIN 334 type C 60° HSS



Packing unit: in plastic tubes of 1

Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Ø <sub>3</sub> mm	Article no.	Cont. pcs.
6,3	1,6	45,0	5,0	102 201	1
8,0	2,0	50,0	6,0	102 202	1
10,0	2,5	50,0	6,0	102 203	1
12,5	3,2	56,0	8,0	102 204	1
16,0	4,0	63,0	10,0	102 205	1
20,0	5,0	67,0	10,0	102 206	1
25,0	6,3	71,0	10,0	102 207	1



### Taper and deburring countersinkers DIN 334 type D 60° HSS



Packing unit: in plastic tubes of 1

Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Shank S <sub>1</sub>	Article no.	Cont. pcs.
16,0	4,0	90,0	MT 1	102 208	1
20,0	5,0	106,0	MT 2	102 209	1
25,0	6,3	112,0	MT 2	102 210	1
31,5	10,0	118,0	MT 2	102 211	1
40,0	12,5	150,0	MT 3	102 212	1
50,0	16,0	160,0	MT 3	102 213	1
63,0	20,0	190,0	MT 4	102 214	1
80,0	25,0	200,0	MT 4	102 215	1



### Taper and deburring countersinkers type C 75° HSS



Packing unit: in plastic tubes of 1

Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Ø <sub>3</sub> mm	Article no.	Cont. pcs.
6,3	1,6	45,0	5,0	102 221	1
8,3	2,0	50,0	6,0	102 222	1
10,4	2,5	50,0	6,0	102 223	1
12,4	3,2	56,0	8,0	102 224	1
16,5	4,0	63,0	10,0	102 225	1
20,5	5,0	67,0	10,0	102 226	1
25,0	6,3	71,0	10,0	102 227	1





### Taper and deburring countersinkers type D 75° HSS



Packing unit: in plastic tubes of 1

Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Shank S <sub>1</sub>	Article no.	Cont. pcs.
16,5	3,5	87,0	MT 1	102 228	1
20,5	4,5	102,0	MT 2	102 229	1
25,0	5,0	109,0	MT 2	102 230	1
31,0	5,0	116,0	MT 2	102 231	1
40,0	10,0	145,0	MT 3	102 232	1



### Taper and deburring countersinkers type C 120° HSS



Packing unit: in plastic tubes of 1

Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Ø <sub>3</sub> mm	Article no.	Cont. pcs.
6,3	1,5	45,0	5,0	102 241	1
8,3	2,0	50,0	6,0	102 242	1
10,4	2,5	50,0	6,0	102 243	1
12,4	3,0	56,0	8,0	102 244	1
16,5	3,5	63,0	10,0	102 245	1
20,5	4,0	67,0	10,0	102 246	1
25,0	5,0	71,0	10,0	102 247	1



### Taper and deburring countersinkers type D 120° HSS



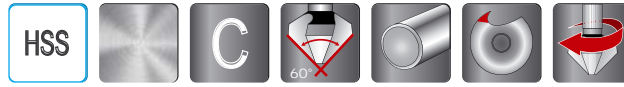
Packing unit: in plastic tubes of 1

Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	L <sub>1</sub> mm	Shank S <sub>1</sub>	Article no.	Cont. pcs.
16,5	3,5	87,0	MT 1	102 248	1
20,5	4,5	102,0	MT 2	102 249	1
25,0	5,0	109,0	MT 2	102 250	1
31,0	5,0	116,0	MT 2	102 251	1
40,0	10,0	145,0	MT 3	102 252	1



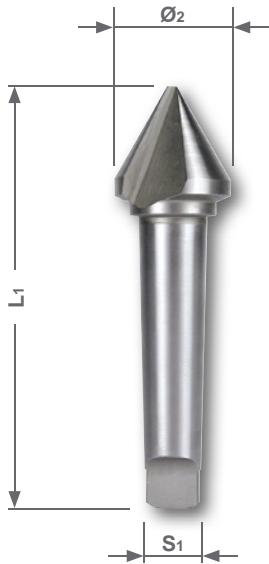


### Taper and deburring countersinkers type C 60° HSS

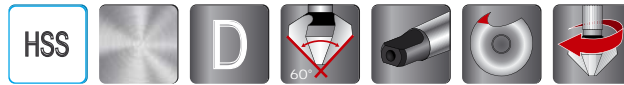


Packing unit: in plastic tubes of 1

Ø <sub>2</sub> mm	L <sub>1</sub> mm	Ø <sub>3</sub> mm	Article no.	Cont. pcs.
6,0	45,0	5,0	102 501	1
8,0	50,0	6,0	102 502	1
10,0	50,0	6,0	102 503	1
12,0	56,0	8,0	102 504	1
16,0	63,0	10,0	102 505	1
20,0	67,0	10,0	102 506	1
25,0	71,0	10,0	102 507	1
30,0	81,0	12,0	102 508	1
40,0	89,0	15,0	102 509	1
50,0	98,0	15,0	102 510	1



### Taper and deburring countersinkers type D 60° HSS



Packing unit: in plastic tubes of 1

Ø <sub>2</sub> mm	L <sub>1</sub> mm	Shank S <sub>1</sub>	Article no.	Cont. pcs.
16,0	92,0	MT 1	102 511	1
20,0	107,0	MT 2	102 512	1
25,0	110,0	MT 2	102 513	1
30,0	114,0	MT 2	102 514	1
40,0	145,0	MT 3	102 515	1
50,0	152,0	MT 3	102 516	1



### Taper and deburring countersinkers type C 90° HSS

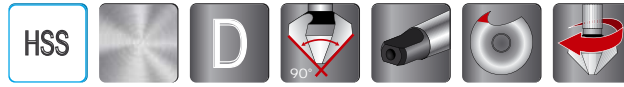


Packing unit: in plastic tubes of 1

Ø <sub>2</sub> mm	L <sub>1</sub> mm	Ø <sub>3</sub> mm	Article no.	Cont. pcs.
6,0	45,0	5,0	102 521	1
8,0	50,0	6,0	102 522	1
10,0	50,0	6,0	102 523	1
12,0	56,0	8,0	102 524	1
16,0	60,0	10,0	102 525	1
20,0	63,0	10,0	102 526	1
25,0	67,0	10,0	102 527	1
30,0	71,0	12,0	102 528	1
40,0	89,0	15,0	102 529	1
50,0	98,0	15,0	102 530	1



### Taper and deburring countersinkers type D 90° HSS

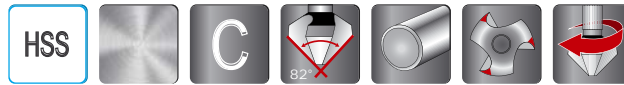


Packing unit: in plastic tubes of 1

Ø2 mm	L1 mm	Shank S1	Article no.	Cont. pcs.
16,0	92,0	MT 1	102 531	1
20,0	107,0	MT 2	102 532	1
25,0	110,0	MT 2	102 533	1
30,0	114,0	MT 2	102 534	1
40,0	145,0	MT 3	102 535	1
50,0	152,0	MT 3	102 536	1



### Taper and deburring countersinkers type C 82° HSS, inch size



Packing unit: in plastic tubes of 1

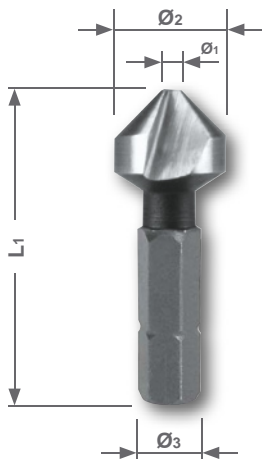
inch	Ø2 mm	Ø1 inch	inch	Ø3 mm	inch	L1 mm	Article no.	Cont. pcs.
1/4	6,4	3/64	3/16	5,0	1 3/4	45,0	102 182	1
5/16	7,9	4/64	1/4	6,0	2"	50,0	102 183	1
3/8	9,5	5/64	1/4	6,0	2"	50,0	102 184	1
1/2	12,7	6/64	5/16	8,0	2 3/16	56,0	102 186	1
5/8	15,9	7/64	3/8	10,0	2 3/8	60,0	102 188	1
3/4	19,1	8/64	3/8	10,0	2 1/2	63,0	102 189	1
7/8	22,2	9/64	3/8	10,0	2 5/8	67,0	102 190	1
1	25,4	9/64	3/8	10,0	2 5/8	76,0	102 191	1

### Taper and deburring countersinker set type C 82° HSS, inch size, in plastic case

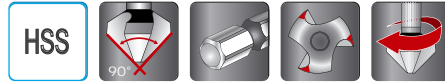


Description	Article no. HSS
5-piece set of taper and deburring countersinkers type C 82° HSS Ø 1/4 - 3/8 - 1/2 - 3/4 - 1 inch	102 193 RO





## Taper and deburring countersinker Bits 90° "short" HSS und HSS-TiN



Rapid tool-changing thanks to hexagonal bit holder. Ideal for burr- and chatter-free deburring and countersinking. Applicable for steel, cast iron, non-ferrous and light metals. Best results at low cutting speeds.



Packing unit: in plastic tubes of 1

Ø2 mm	Ø1 mm	L1 mm	Ø3 inch	Countersinkings as per DIN 74		Article no. HSS	Article no. HSS-TiN	Cont. pcs.
				AF	BF			
6,3	1,5	31,0	1/4"	-	M 3	W 102 313	W 102 313 T	1
8,3	2,0	31,0	1/4"	-	M 4	W 102 314	W 102 314 T	1
10,4	2,5	34,0	1/4"	-	M 5	W 102 315	W 102 315 T	1
12,4	2,8	35,0	1/4"	-	M 6	W 102 316	W 102 316 T	1
16,5	3,2	40,0	1/4"	-	M 8	W 102 317	W 102 317 T	1
20,5	3,5	41,0	1/4"	-	M 10	W 102 318	W 102 318 T	1



## Taper and deburring countersinker bit set "short" 90° HSS and HSS-TiN in steel case

Description	Article no. HSS	Article no. HSS-TiN
7-piece set of taper and deburring countersinker bits 90° "short" 6 taper and deburring countersinker bits Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm + 1 universal handle with 1/4" hexagon socket	W102 319	W102 319 T

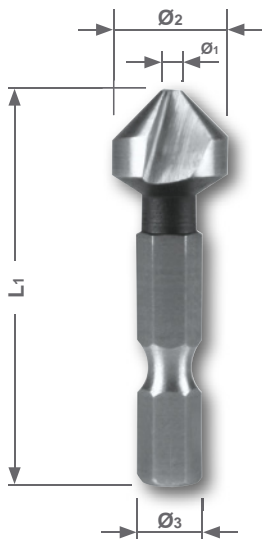


## Hexagonal magnetic holder

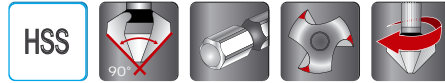
Packing unit: in plastic tubes of 1

Description	Article no.	Cont. pcs.
Hexagonal magnetic holder	270 013	1





## Taper and deburring countersinker Bits "long" 90° HSS and HSS-TiN



Rapid tool-changing thanks to hexagonal bit holder. Ideal for burr- and chatter-free deburring and countersinking. Applicable for steel, cast iron, non-ferrous and light metals. Best results at low cutting speeds.



Packing unit: in plastic tubes of 1

Ø2 mm	Ø1 mm	L1 mm	Ø3 inch	Countersinkings as per DIN 74		Article no. <b>HSS</b>	Article no. <b>HSS-TiN</b>	Cont. pcs.
				AF	BF			
6,3	1,5	38,0	1/4"	-	M 3	102 313	102 313 T	1
8,3	2,0	38,0	1/4"	-	M 4	102 314	102 314 T	1
10,4	2,5	41,0	1/4"	-	M 5	102 315	102 315 T	1
12,4	2,8	42,0	1/4"	-	M 6	102 316	102 316 T	1
16,5	3,2	47,0	1/4"	-	M 8	102 317	102 317 T	1
20,5	3,5	48,0	1/4"	-	M 10	102 318	102 318 T	1



## Taper and deburring countersinker bit set "long" 90° HSS and HSS-TiN in steel case

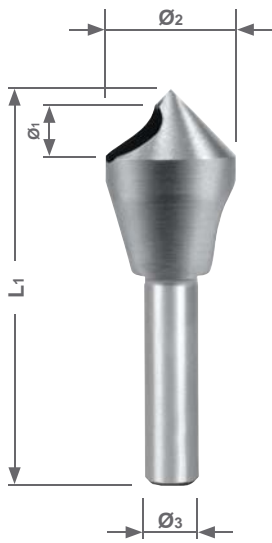
Description	Article no. <b>HSS</b>	Article no. <b>HSS-TiN</b>
7-piece set of taper and deburring countersinker bits 90° "long" 6 taper and deburring countersinker bits Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm + 1 universal handle with 1/4" hexagon socket	102 319	102 319 T



## Taper and deburring countersinker bit set "long" 90° HSS and HSS-TiN in plastic case

Description	Article no. <b>HSS</b>	Article no. <b>HSS-TiN</b>
7-piece set of taper and deburring countersinker bits 90° "long" 6 taper and deburring countersinker bits Ø 6,3 - 8,3 - 10,4 - 12,4 - 16,5 - 20,5 mm + 1 universal handle with 1/4" hexagon socket	102 319 RO	102 319 TRO





## Slotted taper and deburring countersinkers 90° HSS, HSSE-Co 5 and HSS-TiN



Peeling cut. Chip removal through the slot prevents chips from clogging the workpiece. Ideal for burr- and chatter-free deburring and countersinking. Applicable for steel, cast iron, non-ferrous and light metals. Best results at low cutting speeds.



Packing unit: in plastic tubes of 1

Size no.	Ø <sub>1</sub> mm	Ø <sub>2</sub> mm	Ø <sub>3</sub> mm	L <sub>1</sub> mm	Article no. HSS	Article no. HSSE-Co 5	Article no. HSS-TiN	Cont. pcs.
1/4	1,0 - 4,0	6,35	6,35	45,0	—	102 300 E	—	1
2/5	2,0 - 5,0	10,00	6,00	45,0	102 301	102 301 E	102 301 T	1
5/10	5,0 - 10,0	14,00	8,00	48,0	102 302	102 302 E	102 302 T	1
10/15	10,0 - 15,0	21,00	10,00	65,0	102 303	102 303 E	102 303 T	1
15/20	15,0 - 20,0	28,00	12,00	85,0	102 304	102 304 E	102 304 T	1
20/25	20,0 - 25,0	35,00	12,00	102,0	102 305	102 305 E	102 305 T	1



## Slotted taper and deburring countersinkers sets 90° HSS, HSSE-Co 5 and HSS-TiN

Description	Article no. HSS	Article no. HSSE-Co 5	Article no. HSS-TiN
6-piece set of slotted taper and deburring countersinkers 90° in polystyrene case nominal Ø mm: 2/5 - 5/10 - 10/15 - 15/20 + 1 x 50 ml tin of cutting spray	—	102 310 E	—
5-piece set of slotted taper and deburring countersinkers 90° in steel case nominal Ø mm: 2/5 - 5/10 - 10/15 - 15/20 + 1 x 30 g tin of cutting paste	102 312	102 312 E	102 312 T



## Slotted taper and deburring countersinkers sets 90° HSS, HSSE-Co 5 and HSS-TiN in plastic case

Description	Article no. HSS	Article no. HSSE-Co 5	Article no. HSS-TiN
4-piece set of slotted taper and deburring countersinkers 90° nominal Ø mm: 2/5 - 5/10 - 10/15 - 15/20	102 312 RO	102 312 ERO	102 312 TRO





## Flat countersinkers DIN 373 HSS and HSS-TiN with fixed guide



For producing countersinkings for cylinderhead screws, thread-cutting screws and thread-forming screws. Ideal for burr- and chatter-free deburring and countersinking. Applicable for steel, cast iron, non-ferrous and light metals. Best results at low cutting speeds.



Packing unit: in plastic tubes of 1

## Fine grade for through hole

For thread	Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	Ø <sub>3</sub> mm	L <sub>1</sub> mm	Article no. HSS	Article no. HSS-TiN	Cont. pcs.
M 3	6,0	3,2	5,0	71,0	102 401	102 401 T	1
M 4	8,0	4,3	5,0	71,0	102 402	102 402 T	1
M 5	10,0	5,3	8,0	80,0	102 403	102 403 T	1
M 6	11,0	6,4	8,0	80,0	102 404	102 404 T	1
M 8	15,0	8,4	12,5	100,0	102 405	102 405 T	1
M 10	18,0	10,5	12,5	100,0	102 406	102 406 T	1
M 12	20,0	13,0	12,5	100,0	102 407	102 407 T	1

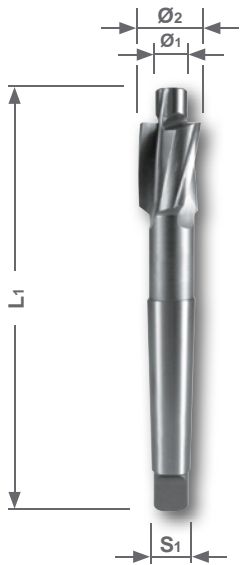
## Medium grade for through hole

For thread	Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	Ø <sub>3</sub> mm	L <sub>1</sub> mm	Article no. HSS	Article no. HSS-TiN	Cont. pcs.
M 3	6,0	3,4	5,0	71,0	102 408	102 408 T	1
M 4	8,0	4,5	5,0	71,0	102 409	102 409 T	1
M 5	10,0	5,5	8,0	80,0	102 410	102 410 T	1
M 6	11,0	6,6	8,0	80,0	102 411	102 411 T	1
M 8	15,0	9,0	12,5	100,0	102 412	102 412 T	1
M 10	18,0	11,0	12,5	100,0	102 413	102 413 T	1
M 12	20,0	13,5	12,5	100,0	102 414	102 414 T	1

## For thread core hole

For thread	Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	Ø <sub>3</sub> mm	L <sub>1</sub> mm	Article no. HSS	Article no. HSS-TiN	Cont. pcs.
M 3	6,0	2,5	5,0	71,0	102 415	102 415 T	1
M 4	8,0	3,3	5,0	71,0	102 416	102 416 T	1
M 5	10,0	4,2	8,0	80,0	102 417	102 417 T	1
M 6	11,0	5,0	8,0	80,0	102 418	102 418 T	1
M 8	15,0	6,8	12,5	100,0	102 419	102 419 T	1
M 10	18,0	8,5	12,5	100,0	102 420	102 420 T	1
M 12	20,0	10,2	12,5	100,0	102 421	102 421 T	1





## Flat countersinkers HSS with fixed guide



For producing countersinkings for cylinderhead screws, thread-cutting screws and thread-forming screws. Ideal for burr- and chatter-free deburring and countersinking. Applicable for steel, cast iron, non-ferrous and light metals. Best results at low cutting speeds.

Packing unit: in plastic tubes of 1

## Fine grade for through hole

For thread	Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	Shank MT	L <sub>1</sub> mm	Article no. HSS	Cont. pcs.
M 10	18,0	10,5	MT 2	150,0	102 422	1
M 12	20,0	13,0	MT 2	150,0	102 423	1
M 14	24,0	15,0	MT 2	160,0	102 424	1
M 16	26,0	17,0	MT 3	190,0	102 425	1
M 18	30,0	19,0	MT 3	190,0	102 426	1
M 20	33,0	21,0	MT 3	190,0	102 427	1
M 22	36,0	23,0	MT 3	205,0	102 428	1



## Medium grade for through hole

For thread	Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	Shank MT	L <sub>1</sub> mm	Article no. HSS	Cont. pcs.
M 10	18,0	11,0	MT 2	150,0	102 429	1
M 12	20,0	13,5	MT 2	150,0	102 430	1
M 14	24,0	15,5	MT 2	160,0	102 431	1
M 16	26,0	17,5	MT 3	190,0	102 432	1
M 18	30,0	20,0	MT 3	190,0	102 433	1
M 20	33,0	22,0	MT 3	190,0	102 434	1
M 22	36,0	24,0	MT 3	205,0	102 435	1

## For thread core hole

For thread	Ø <sub>2</sub> mm	Ø <sub>1</sub> mm	Shank MT	L <sub>1</sub> mm	Article no. HSS	Cont. pcs.
M 10	18,0	8,5	MT 2	150,0	102 436	1
M 12	20,0	10,2	MT 2	150,0	102 437	1
M 14	24,0	12,0	MT 2	160,0	102 438	1
M 16	26,0	14,0	MT 3	190,0	102 439	1
M 18	30,0	15,5	MT 3	190,0	102 440	1
M 20	33,0	17,5	MT 3	190,0	102 441	1
M 22	36,0	19,5	MT 3	205,0	102 442	1



Flat countersinker sets DIN 373 HSS and HSS-TiN  
with straight shank and fixed pilot in steel case



102 450



102 451



102 450 T



102 451 T

Description	Article no.	Article no.
	HSS	HSS-TiN
6-piece set of flat countersinkers for through holes, fine grade, for threads: M 3 - M 4 - M 5 - M 6 - M 8 - M 10	102 450	102 450 T
6-piece set of flat countersinkers for through holes, medium grade, for threads: M 3 - M 4 - M 5 - M 6 - M 8 - M 10	102 451	102 451 T
6-piece set of flat countersinkers for core holes, for threads: M 3 - M 4 - M 5 - M 6 - M 8 - M 10	102 452	102 452 T

Flat countersinker sets DIN 373 HSS and HSS-TiN  
with straight shank and fixed pilot in plastic case



102 450 RO



102 451 RO



102 450 TRO



102 451 TRO

Description	Article no.	Article no.
	HSS	HSS-TiN
6-piece set of flat countersinkers for through holes, fine grade, for threads: M 3 - M 4 - M 5 - M 6 - M 8 - M 10	102 450 RO	102 450 TRO
6-piece set of flat countersinkers for through holes, medium grade, for threads: M 3 - M 4 - M 5 - M 6 - M 8 - M 10	102 451 RO	102 451 TRO
6-piece set of flat countersinkers for core holes, for threads: M 3 - M 4 - M 5 - M 6 - M 8 - M 10	102 452 RO	102 452 TRO



1.05



## Subland drills long type N HSS



Enables drilling and sinking combined in one step.  
Application: adjust the cutting speed according to the big diameter and the feed rate according to the small diameter.

Packing unit: in plastic tubes of 1

## 90° fine grade for through hole

For efficient drilling of through holes and screw head counterborings with 90° angle.



For thread	Ø <sub>1</sub> mm	Ø <sub>2</sub> mm	L <sub>3</sub> mm	L <sub>2</sub> mm	L <sub>1</sub> mm	Article no.	Cont. pcs.
M 3	3,2	6,0	9,0	57,0	93,0	102 601	1
M 4	4,3	8,0	11,0	75,0	117,0	102 602	1
M 5	5,3	10,0	13,0	87,0	133,0	102 603	1
M 6	6,4	11,5	15,0	94,0	142,0	102 604	1
M 8	8,4	15,0	19,0	114,0	169,0	102 605	1
M 10	10,5	19,0	23,0	135,0	198,0	102 606	1



## 180° medium grade for through hole

For efficient drilling of through holes and screw head counterborings with 180° angle.



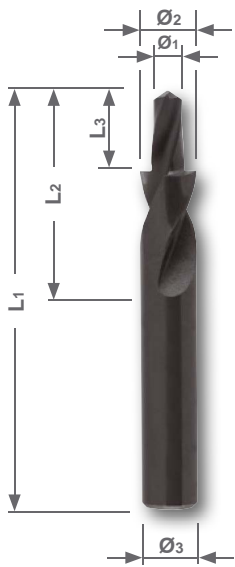
For thread	Ø <sub>1</sub> mm	Ø <sub>2</sub> mm	L <sub>3</sub> mm	L <sub>2</sub> mm	L <sub>1</sub> mm	Article no.	Cont. pcs.
M 3	3,4	6,0	9,0	57,0	93,0	102 607	1
M 4	4,5	8,0	11,0	75,0	117,0	102 608	1
M 5	5,5	10,0	13,0	87,0	133,0	102 609	1
M 6	6,6	11,0	15,0	94,0	142,0	102 610	1
M 8	9,0	15,0	19,0	114,0	169,0	102 611	1
M 10	11,0	18,0	23,0	130,0	191,0	102 612	1

## 90° for thread core hole

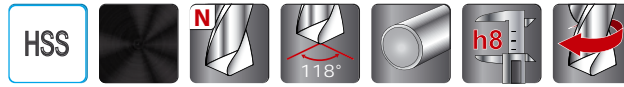
For efficient drilling of tapping holes and countersinkings with 90° angle.



For thread	Ø <sub>1</sub> mm	Ø <sub>2</sub> mm	L <sub>3</sub> mm	L <sub>2</sub> mm	L <sub>1</sub> mm	Article no.	Cont. pcs.
M 3	2,5	3,4	8,8	39,0	70,0	102 613	1
M 4	3,3	4,5	11,4	47,0	80,0	102 614	1
M 5	4,2	5,5	13,6	57,0	93,0	102 615	1
M 6	5,0	6,6	16,5	63,0	101,0	102 616	1
M 8	6,8	9,0	21,0	81,0	125,0	102 617	1
M 10	8,5	11,0	25,5	94,0	142,0	102 618	1
M 12	10,2	13,5	30,0	108,0	160,0	102 619	1



## Short step drill bit type N HSS



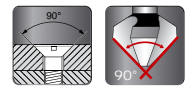
Enables drilling and sinking combined in one step.

Application: adjust the cutting speed according to the big diameter and the feed rate according to the small diameter.

Packing unit: in plastic tubes of 1

## 90° fine grade for through hole

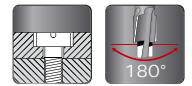
For efficient drilling of through holes and screw head counterborings with 90° angle.



For thread	Ø <sub>1</sub> mm	Ø <sub>2</sub> mm	L <sub>3</sub> mm	L <sub>2</sub> mm	L <sub>1</sub> mm	Article no.	Cont. pcs.
M 3	3,2	6,0	9,0	28,0	66,0	102 620	1
M 4	4,3	8,0	11,0	37,0	79,0	102 621	1
M 5	5,3	10,0	13,0	43,0	89,0	102 622	1
M 6	6,4	11,5	15,0	47,0	95,0	102 623	1
M 8	8,4	15,0	19,0	56,0	111,0	102 624	1
M 10	10,5	19,0	23,0	64,0	127,0	102 625	1

## 180° medium grade for through hole

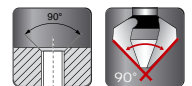
For efficient drilling of through holes and screw head counterborings with 180° angle.



For thread	Ø <sub>1</sub> mm	Ø <sub>2</sub> mm	L <sub>3</sub> mm	L <sub>2</sub> mm	L <sub>1</sub> mm	Article no.	Cont. pcs.
M 3	3,4	6,0	9,0	28,0	66,0	102 626	1
M 4	4,5	8,0	11,0	37,0	79,0	102 627	1
M 5	5,5	10,0	13,0	43,0	89,0	102 628	1
M 6	6,6	11,0	15,0	47,0	95,0	102 629	1
M 8	9,0	15,0	19,0	56,0	111,0	102 630	1
M 10	11,0	18,0	23,0	62,0	123,0	102 631	1

## 90° for thread core hole

For efficient drilling of tapping holes and countersinkings with 90° angle.



For thread	Ø <sub>1</sub> mm	Ø <sub>2</sub> mm	L <sub>3</sub> mm	L <sub>2</sub> mm	L <sub>1</sub> mm	Article no.	Cont. pcs.
M 3	2,5	3,4	8,8	20,0	52,0	102 632	1
M 4	3,3	4,5	11,1	24,0	58,0	102 633	1
M 5	4,2	5,5	13,6	28,0	66,0	102 634	1
M 6	5,0	6,6	16,5	31,0	70,0	102 635	1
M 8	6,8	9,0	21,0	40,0	84,0	102 636	1
M 10	8,5	11,0	25,5	47,0	95,0	102 637	1
M 12	10,2	13,5	30,0	54,0	107,0	102 638	1

## Table of recommended cutting speeds for taper and deburring countersinkers

Material:	High carbon struc. steel up to 700 N/mm <sup>2</sup>	High carbon struc. steel up to 700 N/mm <sup>2</sup>	Alloyed steel up to 1000 N/mm <sup>2</sup>	Cast iron up to 250 N/mm <sup>2</sup>	Cast iron over 250 N/mm <sup>2</sup>	CuZn alloy brittle	CuZn alloy tough	Aluminium alloy up to 11% Si	Thermo-plastics	Duro-plastics
Vc = m/min	20	15	10	10	8	40	20	20	15	10
Cooling lubricant	Cutting spray	Cutting spray	Cutting spray	Compressed air	Compressed air	Compressed air	Compressed air	Cutting spray	Water	Compressed air
Ø mm	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.	r.p.m.
4,3	1481	1111	741	741	593	2963	1481	1481	1111	741
5,0	1274	955	637	637	510	2548	1274	1274	955	637
5,3	1202	901	601	601	481	2404	1202	1202	901	601
5,8	1098	824	549	549	439	2196	1098	1098	824	549
6,0	1062	796	531	531	425	2123	1062	1062	796	531
6,3	1011	758	506	506	404	2022	1011	1011	758	506
7,0	910	682	455	455	364	1820	910	910	682	455
7,3	873	654	436	436	349	1745	873	873	654	436
8,0	796	597	398	398	318	1592	796	796	597	398
8,3	767	576	384	384	307	1535	767	767	576	384
9,4	678	508	339	339	271	1355	678	678	508	339
10,0	637	478	318	318	255	1274	637	637	478	318
10,4	612	459	306	306	245	1225	612	612	459	306
11,5	554	415	277	277	222	1108	554	554	415	277
12,0	531	398	265	265	212	1062	531	531	398	265
12,4	514	385	257	257	205	1027	514	514	385	257
12,5	510	382	255	255	204	1019	510	510	382	255
13,4	475	356	238	238	190	951	475	475	356	238
15,0	425	318	212	212	170	849	425	425	318	212
16,0	398	299	199	199	159	796	398	398	299	199
16,5	386	290	193	193	154	772	386	386	290	193
19,0	335	251	168	168	134	670	335	335	251	168
20,0	318	239	159	159	127	637	318	318	239	159
20,5	311	233	155	155	124	621	311	311	233	155
23,0	277	208	138	138	111	554	277	277	208	138
25,0	255	191	127	127	102	510	255	255	191	127
26,0	245	184	122	122	98	490	245	245	184	122
28,0	227	171	114	114	91	455	227	227	171	114
30,0	212	159	106	106	85	425	212	212	159	106
31,0	205	154	103	103	82	411	205	205	154	103
31,5	202	152	101	101	81	404	202	202	152	101
34,0	187	141	94	94	75	375	187	187	141	94
37,0	172	129	86	86	69	344	172	172	129	86
40,0	159	119	80	80	64	318	159	159	119	80
50,0	127	96	64	64	51	255	127	127	96	64
63,0	101	76	51	51	40	202	101	101	76	51
80,0	80	60	40	40	32	159	80	80	60	40



## Countersinkings as per DIN 74 for countersunk screws as per DIN

as per DIN 74	
type AF	type BF
DIN 963 / DIN 964 DIN 965 / DIN 966 DIN 7513 F. u. G. DIN 7516 D. u. E.	DIN 7991 (ISO 10642)



## Table of recommended cutting speeds for Solid TC countersinkers

Material:	High carbon struc. steel		High carbon struc. steel		Alloyed steel		Cast iron		Cast iron		CuZn alloy		CuZn alloy		Aluminium alloy		Thermo-plastics		Duro-plastics	
	up to 700 N/mm <sup>2</sup>		up to 700 N/mm <sup>2</sup>		up to 1200 N/mm <sup>2</sup>		up to 250 N/mm <sup>2</sup>		over 250 N/mm <sup>2</sup>		brittle		tough		up to 11% Si					
Vc = m/min	15		12		8		12		10		25		15		20		20		10	
Ø mm	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f	r.p.m.	f
6,3	758	0,10	606	0,10	404	0,10	606	0,15	505	0,15	1263	0,13	758	0,13	1011	0,13	1011	0,13	505	0,13
8,3	575	0,15	460	0,15	307	0,15	460	0,20	384	0,20	959	0,16	575	0,16	767	0,16	767	0,18	384	0,18
10,4	459	0,15	367	0,15	245	0,15	367	0,20	306	0,20	765	0,16	459	0,16	612	0,16	612	0,20	306	0,20
12,4	385	0,20	308	0,20	205	0,20	308	0,25	257	0,25	642	0,20	385	0,20	513	0,20	513	0,20	257	0,20
16,5	289	0,20	231	0,20	154	0,20	231	0,25	193	0,25	482	0,22	289	0,22	386	0,22	386	0,25	193	0,25
20,5	233	0,25	186	0,25	124	0,25	186	0,30	155	0,30	388	0,25	233	0,25	311	0,25	311	0,25	155	0,25
25,0	191	0,30	153	0,30	102	0,30	153	0,30	127	0,30	318	0,25	191	0,25	255	0,25	255	0,30	127	0,30
31,0	154	0,35	123	0,35	82	0,35	123	0,35	103	0,35	257	0,30	154	0,30	205	0,30	205	0,35	103	0,35

f in mm/rev = feed per revolution

## Countersinkings as per DIN 74, Sheet 2

### Countersinkings, type H

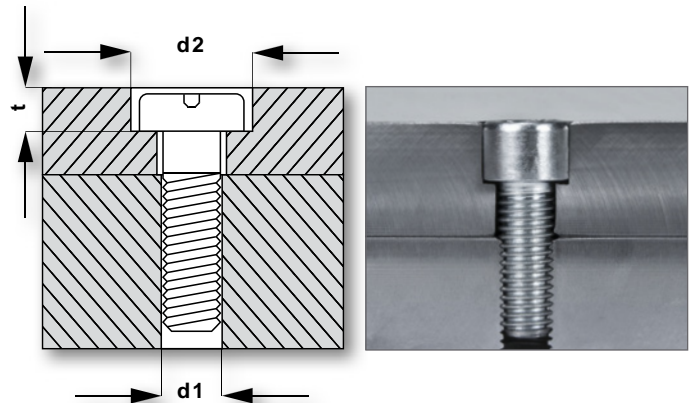
for cylinder-head screws as per DIN 84 and DIN 7984  
for thread-cutting screws as per DIN 7513, Type B  
for thread-furrowing screws as per DIN 7500, Type B

### Countersinkings, type J

for cylinder-head screws as per DIN 6912

### Countersinkings, type K

for cylinder-head screws as per DIN 912



For thread	d1 fine H 12 mm	d1 medium H 13 mm	d1 core hole mm	d2 H 13 mm	t type H mm	t type J mm	t type K mm	Tolerance for t mm
M 3	3,2	3,4	2,5	6,0	2,4	—	3,4	0 + 0,1
M 4	4,3	4,5	3,3	8,0	3,2	3,4	4,6	0 + 0,4
M 5	5,3	5,5	4,2	10,0	4,0	4,2	5,7	0 + 0,4
M 6	6,4	6,6	5,0	11,0	4,7	4,8	6,8	0 + 0,4
M 8	8,4	9,0	6,8	15,0	6,0	6,0	6,0	0 + 0,4
M 10	10,5	11,0	8,5	18,0	7,0	7,5	11,0	0 + 0,4
M 12	13,0	13,5	10,2	20,0	8,0	8,5	13,0	0 + 0,4
M 14	15,0	15,5	12,0	24,0	9,0	9,5	15,0	0 + 0,4
M 16	17,0	17,5	14,0	26,0	10,5	11,5	17,5	0 + 0,4
M 18	19,0	20,0	15,5	30,0	11,5	12,5	19,5	0 + 0,4
M 20	21,0	22,0	17,5	33,0	12,5	13,5	21,5	0 + 0,4
M 22	23,0	24,0	19,5	36,0	13,5	14,5	23,5	0 + 0,4

### Type A for:

- countersunk screws as per DIN 963 and DIN 965,
- raised countersunk head screws as per DIN 964 and DIN 966,
- thread forming screws type F and G as per DIN 7513 and type D and E as per DIN 7516,
- countersunk tapping screws type K, L, M and N as per DIN 7500,
- wood screws as per DIN 97 and DIN 7997
- oval head wood screws as per DIN 95 DIN 7997

### Type B for:

countersunk screws with hexagon socket DIN 7991



