



LATZ



Drilling
catalogue 2014










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Tool selector

according to the drilling depth and material to work

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 HSS	 with oil holes	 no coating
 HSSCo	 straight shank	 TiN
 HM	 taper shank	 TiAlN

N°	Work material	Resistance	Hardness	3 x D		5 x D		8 x D		10/12 x D		15 x D		20 x D		30 x D						
				Family	Page	Family	Page	Family	Page	Family	Page	Family	Page	Family	Page	Family	Page					
1	Easy to machine mild steels (high sulphur carbon steels a phosphorus)	≤ 500		630.63	11	640.63	13	650.63	14	660.63	15	670.63	16	680.63	17	690.63	18					
				610.63	10	620.63	12	250.30	75	184.43	33	124.40	37	125.40	38	126.40	39					
				100.60	19	105.60	21	138.30	74	184.44	35	124.30	64	125.30	65	126.30	66					
				185.43	23	183.43	27	136.30	72	118.30	58	144.30	79	122.30	62	123.30	63					
				185.44	25	183.44	29			143.30	78	121.30	61									
				100.30	40	105.34	45			115.30	56	142.30	77									
						130.34	69			141.30	76											
						109.30	53															
						105.30	43															
						130.30	67															
						111.30	55															
				2	Non-alloyed carbon steels (≤0,4%C) (structural steels)	≤ 800		630.63	11	640.63	13	650.63	14	660.63	15	670.63	16	680.63	17	690.63	18	
								610.63	10	620.63	12	250.30	75	184.43	33	124.40	37	125.40	38	126.40	39	
								100.60	19	105.60	21	138.30	74	184.44	35	124.30	64	125.30	65	126.30	66	
								185.43	23	183.43	27	136.30	72	118.30	58	144.30	79	122.30	62	123.30	63	
185.44	25	183.44	29							143.30	78	121.30	61									
100.30	40	105.34	45							115.30	56	142.30	77									
		130.34	69							141.30	76											
		109.30	53																			
		105.30	43																			
		130.30	67																			
3	Non-alloyed carbon steels (≤0,4%C) (structural steels)	800-1.000 ≤ 700						630.63	11	640.63	13	650.63	14	660.63	15	670.63	16	680.63	17	690.63	18	
								610.63	10	620.63	12	250.30	75	184.43	33	124.40	37	125.40	38	126.40	39	
								100.60	19	105.60	21	138.30	74	184.44	35	124.30	64	125.30	65	126.30	66	
								185.43	23	183.43	27	136.30	72	182.40	60	144.30	79	122.30	62	123.30	63	
								185.44	25	183.44	29			118.30	58	121.30	61					
				100.40	41	105.34	45			143.30	78	142.30	77									
				100.30	40	130.34	69			115.30	56											
						180.40	47			141.30	76											
						192.40	71															
						109.30	53															
						105.30	43															
						130.30	67															
				4	Non-alloyed fine steels, low-alloyed steels (nitrided)	800÷1.000		630.63	11	640.63	13	650.63	14	660.63	15	670.63	16	680.63	17	690.63	18	
								610.63	10	620.63	12	250.30	75	184.43	33	124.40	37	125.40	38	126.40	39	
								100.60	19	105.60	21	138.30	74	184.44	35	124.30	64	125.30	65	126.30	66	
185.43	23	183.43	27					136.30	72	182.40	60	144.30	79	122.30	62	123.30	63					
185.44	25	183.44	29							118.30	58	121.30	61									
Casehardened and bonified alloyed structural steels	700-1.000				100.40	41	105.34	45			143.30	78	142.30	77								
					100.30	40	130.34	69			115.30	56										
							180.40	47			141.30	76										
							192.40	71														
							109.30	53														
Tool steels	≤ 850						105.30	43														
							130.30	67														
					5	Tool alloyed steels	800-1.000		630.63	11	640.63	13	650.63	14	660.63	15	670.63	16	680.63	17	690.63	18
									610.63	10	620.63	12	250.30	75	184.43	33	124.40	37	125.40	38	126.40	39
									100.60	19	105.60	21	138.30	74	184.44	35	124.30	64	125.30	65	126.30	66
185.43	23	183.43	27							182.40	60	144.30	79									
185.44	25	183.44	29							118.30	58											
Bonified fine alloyed steels (undeformable, moldings)	1.000-1.200			100.40		41	180.40	47			143.30	78										
							192.40	71														
							105.34	45														
							130.34	69														
							109.30	53														
6	Austenitic sulphurated stainless steels easy to machine	≤ 850		630.63		11	640.63	13	650.63	14	660.63	15	670.63	16	680.63	17	690.63	18				
				610.63		10	620.63	12	250.30	75	184.43	33	124.40	37	125.40	38	126.40	39				
				100.60		19	105.60	21			184.44	35										
				185.43		23	183.43	27			182.40	60										
				185.44		25	183.44	29														
						100.40	41	181.40	31													
						180.40	47															
						192.40	71															


Tool selector | according to the drilling depth and material to work










Family	Page
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HSS	with oil holes	no coating
HSSCo	straight shank	TiN
HM	taper shank	TiAlN

N°	Work material	Resistance	Hardness	3 x D		5 x D		8 x D		10/12 x D		15 x D		20 x D		30 x D					
				Family	Page	Family	Page	Family	Page	Family	Page	Family	Page	Family	Page	Family	Page				
7	Cr-Mo ferritic and martensitic stainless steels. Acid-resisting steels	≤ 850		630.63	11	640.63	13	650.63	14	660.63	15	670.63	16	680.63	17	690.63	18				
				610.63	10	620.63	12	250.30	75	184.43	33	124.40	37	125.40	38	126.40	39				
				100.60	19	105.60	21			184.44	35										
				185.43	23	183.43	27			182.40	60										
				185.44	25	183.44	29														
				100.40	41	181.40	31														
						180.40	47														
						192.40	71														
				8	Cr-Ni austenitic, stainless and highly heat-resistant steels (refractory)	≤ 850		630.63	11	640.63	13	650.63	14	660.63	15	670.63	16	680.63	17	690.63	18
								610.63	10	620.63	12			184.43	33	124.40	37	125.40	38	126.40	39
100.60	19	105.60	21							184.44	35										
185.43	23	183.43	27							182.40	60										
185.44	25	183.44	29																		
100.40	41	181.40	31																		
		180.40	47																		
		192.40	71																		
9	Martensitic stainless steels. Tempered steels		45-63 HRC					630.63	11	640.63	13	650.63	14	660.63	15	670.63	16	680.63	17	690.63	18
								610.63	10	620.63	12										
10	Special alloys: Nimonic, Hastelloy, Inconel, K-Monel etc. Titanium and its alloys			630.63	11	640.63	13	650.63	14	660.63	15	670.63	16	680.63	17	690.63	18				
				610.63	10	620.63	12			184.43	33	124.40	37	125.40	38	126.40	39				
				100.60	19	105.60	21			184.44	35										
				185.43	23	183.43	27			182.40	60										
				185.44	25	183.44	29														
				100.40	41	181.40	31														
						180.40	47														
						192.40	71														
				11	Spring steel	>1.300		630.63	11	640.63	13	650.63	14	660.63	15	670.63	16	680.63	17	690.63	18
				12	Manganese steels	>1.300		610.63	10	620.63	12										
630.63	11	640.63	13					650.63	14	660.63	15	670.63	16	680.63	17	690.63	18				
13.1	Castings: Grey: GGG Nodular: GGG Malleable: GTW-GTS	< 250 HB		630.63	11	640.63	13	650.63	14	660.63	15	670.63	16	680.63	17	690.63	18				
				610.63	10	620.63	12	250.30*	75	184.43	33	124.40	37	125.40	38	126.40	39				
				100.60	19	105.60	21	138.30	74	184.44	35	124.30	64	125.30	65	126.30	66				
				185.43	23	183.43	27	136.30	72	182.40	60	144.30	79	122.30	62	123.30	63				
				185.44	25	183.44	29			* Only for hardness <250 HB	118.30	58	121.30	61							
				100.40	41	105.34	45			143.30	78	142.30	77								
				100.30	40	130.34	69			115.30	56										
						180.40	47			141.30	76										
						192.40	71														
						109.30	53														
		105.30	43																		
		130.30	67																		
14	Hardened casting	> 350 HB		630.63	11	640.63	13	650.63	14	660.63	15	670.63	16	680.63	17	690.63	18				
				610.63	10	620.63	12														
15	Brittle brass			100.60	19	105.60	21														
						107.30	49														
				100.60	19	105.60	21														
16	Tough brass			185.43	23	183.43	27														
				185.44	25	183.44	29														
						105.34	45														
						130.34	69														
17	Special high-resistant brass			185.43	23	183.43	27			184.43	33	124.40	37	125.40	38	126.40	39				
				185.44	25	183.44	29			184.44	35										
						105.34	45														
						130.34	69														
		181.40	31																		

Tool selector | according to the drilling depth and material to work





















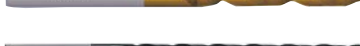









Family		Page
630.63		11










 HSS	 with oil holes	 no coating
 HSSCo	 straight shank	 TiN
 HM	 taper shank	 TiAlN

N°	Work material	3 x D		5 x D		8 x D		10/12 x D		15 x D		20 x D		30 x D			
		Family	Page	Family	Page	Family	Page	Family	Page	Family	Page	Family	Page	Family	Page		
NON FERROUS METALS	18 Pure copper	100.60	19	105.60	21			184.43	33								
		185.43	23	183.43	27			184.44	35								
		185.44	25	183.44	29												
				108.30	51												
				111.30	55												
	19 Coper-nickel, Copper-Tin, Copper-manganese, Copper-silicon alloys	100.60	19	105.60	21			184.43	33								
		185.43	23	183.43	27			184.44	35								
		185.44	25	183.44	29												
				105.34	45												
				130.34	69												
	20 Cu-Zn-Pb, Copper-nickel, Copper-aluminium alloys	100.60	19	105.60	21			184.43	33								
		185.43	23	183.43	27			184.44	35								
		185.44	25	183.44	29												
				105.34	45												
				130.34	69												
	21 Zinc and alloys (Zamak)	100.60	19	105.60	21			184.44	35								
		185.44	25	183.44	29												
				107.30	49												
			108.30	51													
			111.30	55													
22 Magnesium alloys	100.60	19	105.60	21													
			107.30	49													
			108.30	51													
			111.30	55													
	23 Pure Aluminium and Aluminium alloys	100.60	19	105.60	21	138.30	74	118.30	58	124.30	64	125.30	65	126.30	66		
			108.30	51			143.30	78	144.30	79	122.30	62					
			111.30	55													
			109.30	53													
24		24.1 AISi <10%Si Melted alloys	100.60	19	105.60	21			184.43	33							
	185.43		23	183.43	23			184.44	35								
	185.44		25	183.44	29												
				108.30	51												
				111.30	55												
	24.2 AISi 10-14%Si Melted alloys	100.60	19	105.60	21			184.43	33								
		185.43	23	183.43	23			184.44	35								
		185.44	25	183.44	29												
				108.30	51												
				111.30	55												
NON METALLIC MATERIALS	25 Thermoplastics (soft plastics) such as PVC-plexiglas, celluloid, nylon, polystyrene..	185.44	25	183.44	29	138.30	74	184.44	35	124.30	64	125.30	65	126.30	66		
		100.60	19	105.60	21			118.30	58	144.30	79	122.30	62				
				109.30	53			143.30	78								
				107.30	49												
				108.30	51												
	26 Plastics with organic fillings. Pressed boards or similar, cardboards..	100.60	19	105.60	21	136.30	72	115.30	56								
		100.30	40	105.34	45												
				130.34	69												
				105.30	43												
				130.30	67												
				107.30	49												
				108.30	51												
			111.30	55													
27 Hard rubbers (ebonite, vulcanite) Synthetic resins (bakelite, galatite, artificial erinoid-header)	100.60	19	105.60	21													
			107.30	49													
28 Duroplastics - Thermostables	100.60	19	105.60	21													
29 Graphite			105.34	45													
			130.34	69													
			107.30	49													
30 Fiber cement, slate, marble	100.60	19	105.60	21													



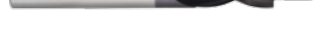
Production programme

Straight shank drills

FAMILY	MATERIAL	DEPTH	DIN	TYPE	PAGE	COATING	OIL HOLES	
100.30	HSS	3 X Ø	DIN 1897	N	40	-	-	
100.40	HSSCo 5 %	3 X Ø	DIN 1897	NF	41	-	-	
100.60	MD	3 X Ø	DIN 1897	N	19	-	-	
185.43	HSSCo 5 %	3 X Ø	DIN 1897	SLZ	23	TINAL	-	
185.44	HSSCo 5 %	3 X Ø	DIN 1897	SLZ	25	TIN	-	
105.30	HSS	5 X Ø	DIN 338	N	43	-	-	
105.34	HSS	5 X Ø	DIN 338	N	45	TIN	-	
107.30	HSS	5 X Ø	DIN 338	H	49	-	-	
108.30	HSS	5 X Ø	DIN 338	W	51	-	-	
109.30	HSS	5 X Ø	DIN 338	NV	53	-	-	
111.30	HSS	5 X Ø	DIN 338	WV	55	-	-	
180.40	HSSCo 5 %	5 X Ø	DIN 338	NF	47	-	-	
181.40	HSSCo 5 %	5 X Ø	DIN 338	NG	31	-	-	
183.43	HSSCo 5 %	5 X Ø	DIN 338	SLZ	27	TINAL	-	
183.44	HSSCo 5 %	5 X Ø	DIN 338	SLZ	29	TIN	-	
115.30	HSS	10/12 X Ø	DIN 340	N	56	-	-	
118.30	HSS	10/12 X Ø	DIN 340	NV	58	-	-	
182.40	HSSCo 5 %	10/12 X Ø	DIN 340	NF	60	-	-	
184.43	HSSCo 5 %	10/12 X Ø	DIN 340	SLZ	33	TINAL	-	
184.44	HSSCo 5 %	10/12 X Ø	DIN 340	SLZ	35	TIN	-	
121.30	HSS	15 X Ø	DIN 1869/1	N	61	-	-	
124.30	HSS	15 X Ø	DIN 1869/1	NV	64	-	-	
124.40	HSSCo 5 %	15 X Ø	DIN 1869/1	SLZ	37	-	-	
122.30	HSS	20 X Ø	DIN 1869/2	N	62	-	-	
125.30	HSS	20 X Ø	DIN 1869/2	NV	65	-	-	
125.40	HSSCo 5 %	20 X Ø	DIN 1869/2	SLZ	38	-	-	
123.30	HSS	30 X Ø	DIN 1869/3	N	63	-	-	
126.30	HSS	30 X Ø	DIN 1869/3	NV	66	-	-	
126.40	HSSCo 5 %	30 X Ø	DIN 1869/3	SLZ	39	-	-	
610.63	HM	3 X Ø	DIN 6537 K 3 X D	SN	10	TINAL	-	

















FAMILY	MATERIAL	DEPTH	DIN	TYPE	PAGE	COATING	OIL HOLES	
630.63	HM	3 X Ø	DIN 6537 K 3 X D	SN	11	TINAL	⊗	
105.60	HM	5 X Ø	DIN 338	N	21	-	-	
620.63	HM	5 X Ø	DIN 6537 L 5 X D	SN	12	TINAL	-	
640.63	HM	5 X Ø	DIN 6537 L 5 X D	SN	13	TINAL	⊗	
650.63	HM	8 X Ø	-	SN	14	TINAL	⊗	
660.63	HM	12 x Ø	-	SN	15	TINAL	⊗	
670.63	HM	15 X Ø	-	SN	16	TINAL	⊗	
680.63	HM	20 X Ø	-	SN	17	TINAL	⊗	
690.63	HM	30 X Ø	-	SN	18	TINAL	⊗	

Multifunction drills











FAMILY	MATERIAL	DEPTH	DIN	TYPE	PAGE	COATING	OIL HOLES	
102.30	HSS	-	DIN 1897	N	42	-	-	
160.30	HSS	-	DIN 8374 N	N	88	-	-	
162.30	HSS	-	DIN 8376 N	N	88	-	-	
163.30	HSS	-	DIN 8377 N	N	93	-	-	
164.30	HSS	-	DIN 8378 N	N	94	-	-	
167.30	HSS	-	LATZ N	N	94	-	-	
168.30	HSS	-	LATZ N	N	95	-	-	
664.63	HM	-	-	SN	95	TINAL	-	
662.63	HM	-	-	SN	96	TINAL	-	

Production programme

Centre drills

FAMILY	MATERIAL	DEPTH	DIN	FORM	TYPE	PAGE	COATING	OIL HOLES	
150.3B	HSS	-	DIN 333	R	N	80	-	-	
150.3N	HSS	-	DIN 333	R	N	80	-	-	
150.34	HSS	-	DIN 333	R	N	81	TIN	-	
151.3B	HSS	-	DIN 333	A	N	81	-	-	
151.3N	HSS	-	DIN 333	A	N	82	-	-	
151.34	HSS	-	DIN 333	A	N	82	TIN	-	
151.60	HM	-	DIN 333	A	N	87	-	-	
152.3B	HSS	-	DIN 333	B	N	83	-	-	
152.3N	HSS	-	DIN 333	B	N	83	-	-	
152.34	HSS	-	DIN 333	B	N	84	TIN	-	
153.3B	HSS	-	DIN 333	AR	N	84	-	-	
153.3N	HSS	-	DIN 333	AR	N	85	-	-	
153.34	HSS	-	DIN 333	AR	N	85	TIN	-	
156.3B	HSS	-	DIN 333	A	N	86	-	-	
156.3N	HSS	-	DIN 333	A	N	86	-	-	
156.34	HSS	-	DIN 333	A	N	87	TIN	-	

Taper shank drills

FAMILY	MATERIAL	DEPTH	DIN	TYPE	PAGE	COATING	OIL HOLES	
130.30	HSS	5 X Ø	DIN 345	N	67	-	-	
130.34	HSS	5 X Ø	DIN 345	N	69	TIN	-	
136.30	HSS	8 X Ø	DIN 341	N	72	-	-	
138.30	HSS	8 X Ø	DIN 341	NV	74	-	-	
250.30	HSS REFRIG	8 X Ø	DIN 341/346	NV	75	-	⊗	
141.30	HSS	10/12 X Ø	DIN 1870/1	N	76	-	-	
142.30	HSS	15 X Ø	DIN 1870/2	N	77	-	-	
143.30	HSS	10/12 X Ø	DIN 1870/1	NV	78	-	-	
144.30	HSS	15 X Ø	DIN 1870/2	NV	79	-	-	
192.40	HSSCo 5 %	5 X Ø	DIN 345	NF	71	-	-	

Spotting drills

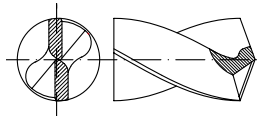
FAMILY	MATERIAL	DEPTH	DIN	TYPE	PAGE	COATING	OIL HOLES	
176.40	HSSCo 5 %	60	DIN 1897	NC	89	-	-	
176.44	HSSCo 5 %	60	DIN 1897	NC	89	TIN	-	
177.40	HSSCo 5 %	120	DIN 1897	NC	90	-	-	
177.44	HSSCo 5 %	120	DIN 1897	NC	90	TIN	-	
178.40	HSSCo 5 %	90	DIN 1897	NC	91	-	-	
178.44	HSSCo 5 %	90	DIN 1897	NC	91	TIN	-	
178.60	HM	90	LATZ NC	NC	92	-	-	
179.40	HSSCo 5 %	90	DIN 1897	NC	92	-	-	
179.44	HSSCo 5 %	90	DIN 1897	NC	93	TIN	-	

Boxed sets of drills

FAMILY	MATERIAL	DEPTH	DIN	TYPE	POINT ANGLE	PAGE	COATING	
129.30	HSS	5 X Ø	DIN 338	105.30	N	97	-	
129.34	HSS	5 X Ø	DIN 338	105.34	N	97	TIN	
129.40	HSSCo 5 %	5 X Ø	DIN 338	181.40	NG	97	-	
129.40	HSSCo 5 %	5 X Ø	DIN 338	180.40	NF	97	-	
129.43	HSSCo 5 %	5 X Ø	DIN 338	183.43	SLZ	97	TINAL	
129.44	HSSCo 5 %	5 X Ø	DIN 338	183.44	SLZ	97	TIN	
129.63	HM	5 X Ø	DIN 6537 L 5 X D	620.63	SN	97	TINAL	
129.63	HM	5 X Ø	DIN 6537 L 5 X D	640.63	SN + REF	97	TINAL	

610.63

DIN 6537 K 3 X D



Optimus series HM

Type SN 3 x D

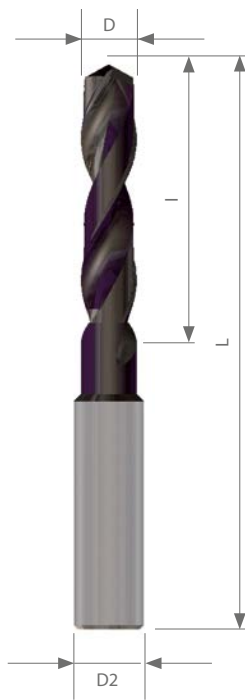
TiAlN

Short series. High performance

Straight shank drills

Design and technical specifications

Helix angle	30°
Point angle	140°
Point grinding	4 Lands with web thinning
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Super-N
Tolerance D	m7 (Dz: h6)
Other specifications	DIN 6535 HA
Finish	Coated
Coating	TiAlN



Details and applications

High production helicoidal drills, TiAlN coated, to reach optimal hole quality at economic cost. To drill castings, cast steel, Cr-Ni steels, alloyed steels (cementation steels, tools steels spring steels etc.). Titanium and its alloys, stainless steels (martensitic, austenitic) special alloys with Co-Ni-Fe base etc.

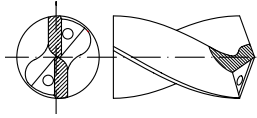
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3,4	62	20	6	A610630340000	36,47
3,5	62	20	6	A610630350000	36,47
3,6	62	20	6	A610630360000	36,47
3,7	62	20	6	A610630370000	36,47
3,8	66	24	6	A610630380000	36,47
3,9	66	24	6	A610630390000	36,47
4	66	24	6	A610630400000	36,47
4,1	66	24	6	A610630410000	36,47
4,2	66	24	6	A610630420000	36,47
4,3	66	24	6	A610630430000	36,47
4,4	66	24	6	A610630440000	36,47
4,5	66	24	6	A610630450000	36,47
4,6	66	24	6	A610630460000	36,47
4,7	66	24	6	A610630470000	36,47
4,8	66	28	6	A610630480000	36,47
4,9	66	28	6	A610630490000	36,47
5	66	28	6	A610630500000	36,47
5,1	66	28	6	A610630510000	36,47
5,2	66	28	6	A610630520000	36,47
5,3	66	28	6	A610630530000	36,47
5,4	66	28	6	A610630540000	36,47
5,5	66	28	6	A610630550000	36,47
5,6	66	28	6	A610630560000	36,47
5,7	66	28	6	A610630570000	36,47
5,8	66	28	6	A610630580000	36,47
5,9	66	28	6	A610630590000	36,47
6	66	28	6	A610630600000	36,47
6,1	79	34	8	A610630610000	43,47
6,2	79	34	8	A610630620000	43,47
6,3	79	34	8	A610630630000	43,47
6,4	79	34	8	A610630640000	43,47
6,5	79	34	8	A610630650000	43,47
6,6	79	34	8	A610630660000	43,47
6,7	79	34	8	A610630670000	43,47
6,8	79	34	8	A610630680000	43,47
6,9	79	34	8	A610630690000	43,47
7	79	34	8	A610630700000	43,47
7,1	79	41	8	A610630710000	43,47
7,2	79	41	8	A610630720000	43,47
7,3	79	41	8	A610630730000	43,47
7,4	79	41	8	A610630740000	43,47
7,5	79	41	8	A610630750000	43,47
7,6	79	41	8	A610630760000	43,47
7,7	79	41	8	A610630770000	43,47
7,8	79	41	8	A610630780000	43,47
7,9	79	41	8	A610630790000	43,47
8	79	41	8	A610630800000	43,47
8,1	89	47	10	A610630810000	51,24

D	L	I	D2	Code	Price
mm.	mm.	mm.	mm.		€
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8,3	89	47	10	A610630830000	51,24
8,4	89	47	10	A610630840000	51,24
8,5	89	47	10	A610630850000	51,24
8,6	89	47	10	A610630860000	51,24
8,7	89	47	10	A610630870000	51,24
8,8	89	47	10	A610630880000	51,24
8,9	89	47	10	A610630890000	51,24
9	89	47	10	A610630900000	51,24
9,1	89	47	10	A610630910000	51,24
9,2	89	47	10	A610630920000	51,24
9,3	89	47	10	A610630930000	51,24
9,4	89	47	10	A610630940000	51,24
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9,8	89	47	10	A610630980000	51,24
9,9	89	47	10	A610630990000	51,24
10	89	47	10	A610631000000	51,24
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10,3	102	55	12	A610631030000	69,51
10,5	102	55	12	A610631050000	69,51
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11	102	55	12	A610631100000	69,51
11,2	102	55	12	A610631120000	69,51
11,3	102	55	12	A610631130000	69,51
11,5	102	55	12	A610631150000	69,51
11,8	102	55	12	A610631180000	69,51
12	102	55	12	A610631200000	69,51
12,5	107	60	14	A610631250000	94,50
12,8	107	60	14	A610631280000	94,50
13	107	60	14	A610631300000	94,50
13,5	107	60	14	A610631350000	94,50
13,8	107	60	14	A610631380000	94,50
14	107	60	14	A610631400000	94,50
14,5	115	65	16	A610631450000	115,50
14,8	115	65	16	A610631480000	115,50
15	115	65	16	A610631500000	115,50
15,5	115	65	16	A610631550000	115,50
15,8	115	65	16	A610631580000	115,50
16	115	65	16	A610631600000	115,50
16,5	123	73	18	A610631650000	171,50
17	123	73	18	A610631700000	171,50
17,5	123	73	18	A610631750000	171,50
18	123	73	18	A610631800000	171,50
18,5	131	79	20	A610631850000	216,30
19	131	79	20	A610631900000	216,30
19,5	131	79	20	A610631950000	216,30
20	131	79	20	A610632000000	216,30

Shank type	Family
HE	A61563DDDDD00
HB	A61863DDDDD00

630.63

DIN 6537 K 3 X D



Optimus series HM

Type SN 3 x D

TiAlN

Short series with internal cooling. High performance

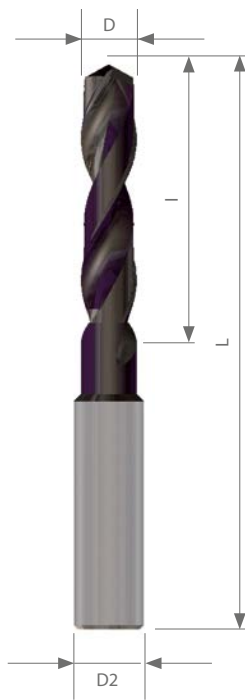
Straight shank drills

Design and technical specifications

Helix angle	30°
Point angle	140°
Point grinding	4 Lands with web thinning
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Super-N
Tolerance D	m7 (Dz: h6)
Other specifications	DIN 6535 HA
Finish	Coated
Coating	TiAlN

Details and applications

High production helicoidal drills, TiAlN coated, to reach optimal hole quality at economic cost. To drill castings, cast steel, Cr-Ni steels, alloyed steels (cementation steels, tools steels spring steels etc.). Titanium and its alloys, stainless steels (martensitic, austenitic) special alloys with Co-Ni-Fe base etc.



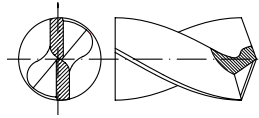
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3,3	62	20	6	A630630330000	49,35
3,4	62	20	6	A630630340000	49,35
3,5	62	20	6	A630630350000	49,35
3,6	62	20	6	A630630360000	49,35
3,7	62	20	6	A630630370000	49,35
3,8	66	24	6	A630630380000	49,35
3,9	66	24	6	A630630390000	49,35
4	66	24	6	A630630400000	49,35
4,1	66	24	6	A630630410000	49,35
4,2	66	24	6	A630630420000	49,35
4,3	66	24	6	A630630430000	49,35
4,4	66	24	6	A630630440000	49,35
4,5	66	24	6	A630630450000	49,35
4,6	66	24	6	A630630460000	49,35
4,7	66	24	6	A630630470000	49,35
4,8	66	28	6	A630630480000	49,35
4,9	66	28	6	A630630490000	49,35
5	66	28	6	A630630500000	49,35
5,1	66	28	6	A630630510000	49,35
5,2	66	28	6	A630630520000	49,35
5,3	66	28	6	A630630530000	49,35
5,4	66	28	6	A630630540000	49,35
5,5	66	28	6	A630630550000	49,35
5,6	66	28	6	A630630560000	49,35
5,7	66	28	6	A630630570000	49,35
5,8	66	28	6	A630630580000	49,35
5,9	66	28	6	A630630590000	49,35
6	66	28	6	A630630600000	49,35
6,1	79	34	8	A630630610000	59,22
6,2	79	34	8	A630630620000	59,22
6,3	79	34	8	A630630630000	59,22
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6,5	79	34	8	A630630650000	59,22
6,6	79	34	8	A630630660000	59,22
6,7	79	34	8	A630630670000	59,22
6,8	79	34	8	A630630680000	59,22
6,9	79	34	8	A630630690000	59,22
7	79	34	8	A630630700000	59,22
7,1	79	41	8	A630630710000	59,22
7,2	79	41	8	A630630720000	59,22
7,3	79	41	8	A630630730000	59,22
7,4	79	41	8	A630630740000	59,22
7,5	79	41	8	A630630750000	59,22
7,6	79	41	8	A630630760000	59,22
7,7	79	41	8	A630630770000	59,22
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7,9	79	41	8	A630630790000	59,22

D	L	I	D2	Code	Price
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8,2	89	47	10	A630630820000	69,02
8,3	89	47	10	A630630830000	69,02
8,4	89	47	10	A630630840000	69,02
8,5	89	47	10	A630630850000	69,02
8,6	89	47	10	A630630860000	69,02
8,7	89	47	10	A630630870000	69,02
8,8	89	47	10	A630630880000	69,02
8,9	89	47	10	A630630890000	69,02
9	89	47	10	A630630900000	69,02
9,1	89	47	10	A630630910000	69,02
9,2	89	47	10	A630630920000	69,02
9,3	89	47	10	A630630930000	69,02
9,4	89	47	10	A630630940000	69,02
9,5	89	47	10	A630630950000	69,02
9,6	89	47	10	A630630960000	69,02
9,7	89	47	10	A630630970000	69,02
9,8	89	47	10	A630630980000	69,02
9,9	89	47	10	A630630990000	69,02
10	89	47	10	A630631000000	69,02
10,2	102	55	12	A630631020000	93,80
10,5	102	55	12	A630631050000	93,80
10,8	102	55	12	A630631080000	93,80
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11,2	102	55	12	A630631120000	93,80
11,5	102	55	12	A630631150000	93,80
11,8	102	55	12	A630631180000	93,80
12	102	55	12	A630631200000	93,80
12,5	107	60	14	A630631250000	128,10
12,8	107	60	14	A630631280000	128,10
13	107	60	14	A630631300000	128,10
13,5	107	60	14	A630631350000	128,10
13,8	107	60	14	A630631380000	128,10
14	107	60	14	A630631400000	128,10
14,5	115	65	16	A630631450000	168,00
14,8	115	65	16	A630631480000	168,00
15	115	65	16	A630631500000	168,00
15,5	115	65	16	A630631550000	168,00
15,8	115	65	16	A630631580000	168,00
16	115	65	16	A630631600000	168,00
16,5	123	73	18	A630631650000	212,10
17	123	73	18	A630631700000	212,10
17,5	123	73	18	A630631750000	212,10
18	123	73	18	A630631800000	212,10
18,5	131	79	20	A630631850000	256,20
19	131	79	20	A630631900000	256,20
19,5	131	79	20	A630631950000	256,20
20	131	79	20	A630632000000	256,20

Shank type	Family
HE	A63563DDDDDD00
HB	A63863DDDDDD00

620.63

DIN 6537 L 5 X D



Optimus series HM

Type SN 5 x D

TiAlN

Long series. High performance

Straight shank drills

Design and technical specifications

Helix angle	30°
Point angle	140°
Point grinding	4 Lands with web thinning
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Super-N
Tolerance D	m7 (Dz: h6)
Other specifications	DIN 6535 HA
Finish	Coated
Coating	TiAlN

Details and applications

High production helicoidal drills, TiAlN coated, to reach optimal hole quality at economic cost. To drill castings, cast steel, Cr-Ni steels, alloyed steels (cementation steels, tools steels spring steels etc.). Titanium and its alloys, stainless steels (martensitic, austenitic) special alloys with Co-Ni-Fe base etc.



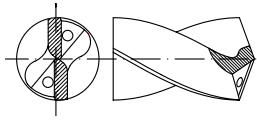
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3,3	66	28	6	A620630330000	47,67
3,4	66	28	6	A620630340000	47,67
3,5	66	28	6	A620630350000	47,67
3,6	66	28	6	A620630360000	47,67
3,7	66	28	6	A620630370000	47,67
3,8	74	36	6	A620630380000	47,67
3,9	74	36	6	A620630390000	47,67
4	74	36	6	A620630400000	47,67
4,1	74	36	6	A620630410000	47,67
4,2	74	36	6	A620630420000	47,67
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4,7	74	36	6	A620630470000	47,67
4,8	82	44	6	A620630480000	47,67
4,9	82	44	6	A620630490000	47,67
5	82	44	6	A620630500000	47,67
5,1	82	44	6	A620630510000	47,67
5,2	82	44	6	A620630520000	47,67
5,3	82	44	6	A620630530000	47,67
5,4	82	44	6	A620630540000	47,67
5,5	82	44	6	A620630550000	47,67
5,6	82	44	6	A620630560000	47,67
5,7	82	44	6	A620630570000	47,67
5,8	82	44	6	A620630580000	47,67
5,9	82	44	6	A620630590000	47,67
6	82	44	6	A620630600000	47,67
6,1	91	53	8	A620630610000	56,84
6,2	91	53	8	A620630620000	56,84
6,3	91	53	8	A620630630000	56,84
6,4	91	53	8	A620630640000	56,84
6,5	91	53	8	A620630650000	56,84
6,6	91	53	8	A620630660000	56,84
6,7	91	53	8	A620630670000	56,84
6,8	91	53	8	A620630680000	56,84
6,9	91	53	8	A620630690000	56,84
7	91	53	8	A620630700000	56,84
7,1	91	53	8	A620630710000	56,84
7,2	91	53	8	A620630720000	56,84
7,3	91	53	8	A620630730000	56,84
7,4	91	53	8	A620630740000	56,84
7,5	91	53	8	A620630750000	56,84

D	L	I	D2	Code	Price
mm.	mm.	mm.	mm.		€
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7,7	91	53	8	A620630770000	56,84
7,8	91	53	8	A620630780000	56,84
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8	91	53	8	A620630800000	56,84
8,1	103	61	10	A620630810000	67,20
8,2	103	61	10	A620630820000	67,20
8,3	103	61	10	A620630830000	67,20
8,4	103	61	10	A620630840000	67,20
8,5	103	61	10	A620630850000	67,20
8,6	103	61	10	A620630860000	67,20
8,7	103	61	10	A620630870000	67,20
8,8	103	61	10	A620630880000	67,20
8,9	103	61	10	A620630890000	67,20
9	103	61	10	A620630900000	67,20
9,1	103	61	10	A620630910000	67,20
9,2	103	61	10	A620630920000	67,20
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9,6	103	61	10	A620630960000	67,20
9,7	103	61	10	A620630970000	67,20
9,8	103	61	10	A620630980000	67,20
9,9	103	61	10	A620630990000	67,20
10	103	61	10	A620631000000	67,20
10,2	118	71	12	A620631020000	91,00
10,5	118	71	12	A620631050000	91,00
10,8	118	71	12	A620631080000	91,00
11	118	71	12	A620631100000	91,00
11,2	118	71	12	A620631120000	91,00
11,5	118	71	12	A620631150000	91,00
11,8	118	71	12	A620631180000	91,00
12	118	71	12	A620631200000	91,00
12,5	124	77	14	A620631250000	124,60
12,8	124	77	14	A620631280000	124,60
13	124	77	14	A620631300000	124,60
13,5	124	77	14	A620631350000	124,60
13,8	124	77	14	A620631380000	124,60
14	124	77	14	A620631400000	124,60
14,5	133	83	16	A620631450000	151,90
14,8	133	83	16	A620631480000	151,90
15	133	83	16	A620631500000	151,90
15,5	133	83	16	A620631550000	151,90
15,8	133	83	16	A620631580000	151,90
16	133	83	16	A620631600000	151,90

Shank type	Family
HE	A62563DDDDD00
HB	A62863DDDDD00

640.63

DIN 6537 L 5 X D



Optimus series HM

Type SN 5 x D

TiAlN

Long series with internal cooling. High performance

Straight shank drills

Design and technical specifications

Helix angle	30°
Point angle	140°
Point grinding	4 Lands with web thinning
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Super-N
Tolerance D	m7 (Dz: h6)
Other specifications	DIN 6535 HA
Finish	Coated
Coating	TiAlN

Details and applications

High production helicoidal drills, TiAlN coated, to reach optimal hole quality at economic cost. To drill castings, cast steel, Cr-Ni steels, alloyed steels (cementation steels, tools steels spring steels etc.). Titanium and its alloys, stainless steels (martensitic, austenitic) special alloys with Co-Ni-Fe base etc.



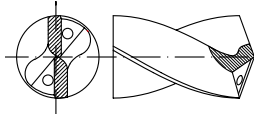
D	L	I	D2	Code	Price
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3,3	66	28	6	A640630330000	61,67
3,4	66	28	6	A640630340000	61,67
3,5	66	28	6	A640630350000	61,67
3,6	66	28	6	A640630360000	61,67
3,7	66	28	6	A640630370000	61,67
3,8	74	36	6	A640630380000	61,67
3,9	74	36	6	A640630390000	61,67
4	74	36	6	A640630400000	61,67
4,1	74	36	6	A640630410000	61,67
4,2	74	36	6	A640630420000	61,67
4,3	74	36	6	A640630430000	61,67
4,4	74	36	6	A640630440000	61,67
4,5	74	36	6	A640630450000	61,67
4,6	74	36	6	A640630460000	61,67
4,7	74	36	6	A640630470000	61,67
4,8	82	44	6	A640630480000	61,67
4,9	82	44	6	A640630490000	61,67
5	82	44	6	A640630500000	61,67
5,1	82	44	6	A640630510000	61,67
5,2	82	44	6	A640630520000	61,67
5,3	82	44	6	A640630530000	61,67
5,4	82	44	6	A640630540000	61,67
5,5	82	44	6	A640630550000	61,67
5,6	82	44	6	A640630560000	61,67
5,7	82	44	6	A640630570000	61,67
5,8	82	44	6	A640630580000	61,67
5,9	82	44	6	A640630590000	61,67
6	82	44	6	A640630600000	61,67
6,1	91	53	8	A640630610000	74,20
6,2	91	53	8	A640630620000	74,20
6,3	91	53	8	A640630630000	74,20
6,4	91	53	8	A640630640000	74,20
6,5	91	53	8	A640630650000	74,20
6,6	91	53	8	A640630660000	74,20
6,7	91	53	8	A640630670000	74,20
6,8	91	53	8	A640630680000	74,20
6,9	91	53	8	A640630690000	74,20
7	91	53	8	A640630700000	74,20
7,1	91	53	8	A640630710000	74,20
7,2	91	53	8	A640630720000	74,20
7,3	91	53	8	A640630730000	74,20
7,4	91	53	8	A640630740000	74,20
7,5	91	53	8	A640630750000	74,20
7,6	91	53	8	A640630760000	74,20
7,7	91	53	8	A640630770000	74,20
7,8	91	53	8	A640630780000	74,20
7,9	91	53	8	A640630790000	74,20

D	L	I	D2	Code	Price
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8,2	103	61	10	A640630820000	86,10
8,3	103	61	10	A640630830000	86,10
8,4	103	61	10	A640630840000	86,10
8,5	103	61	10	A640630850000	86,10
8,6	103	61	10	A640630860000	86,10
8,7	103	61	10	A640630870000	86,10
8,8	103	61	10	A640630880000	86,10
8,9	103	61	10	A640630890000	86,10
9	103	61	10	A640630900000	86,10
9,1	103	61	10	A640630910000	86,10
9,2	103	61	10	A640630920000	86,10
9,3	103	61	10	A640630930000	86,10
9,4	103	61	10	A640630940000	86,10
9,5	103	61	10	A640630950000	86,10
9,6	103	61	10	A640630960000	86,10
9,7	103	61	10	A640630970000	86,10
9,8	103	61	10	A640630980000	86,10
9,9	103	61	10	A640630990000	86,10
10	103	61	10	A640631000000	86,10
10,2	118	71	12	A640631020000	116,90
10,5	118	71	12	A640631050000	116,90
10,8	118	71	12	A640631080000	116,90
11	118	71	12	A640631100000	116,90
11,2	118	71	12	A640631120000	116,90
11,5	118	71	12	A640631150000	116,90
11,8	118	71	12	A640631180000	116,90
12	118	71	12	A640631200000	116,90
12,1	124	77	14	A640631210000	160,30
12,5	124	77	14	A640631250000	160,30
12,8	124	77	14	A640631280000	160,30
13	124	77	14	A640631300000	160,30
13,5	124	77	14	A640631350000	160,30
13,8	124	77	14	A640631380000	160,30
14	124	77	14	A640631400000	160,30
14,1	133	83	16	A640631410000	209,30
14,8	133	83	16	A640631480000	209,30
15	133	83	16	A640631500000	209,30
15,5	133	83	16	A640631550000	209,30
15,6	133	83	16	A640631560000	209,30
16	133	83	16	A640631600000	209,30
16,5	143	93	18	A640631650000	265,30
17	143	93	18	A640631700000	265,30
17,5	143	93	18	A640631750000	265,30
18	143	93	18	A640631800000	265,30
18,5	153	101	20	A640631850000	320,60
19	153	101	20	A640631900000	320,60
19,5	153	101	20	A640631950000	320,60
20	153	101	20	A640632000000	320,60

Shank type	Family
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HB	A64863DDDDDD00

650.63

DIN 6537 L 8 X D



Optimus series HM

Type SN 8 x D

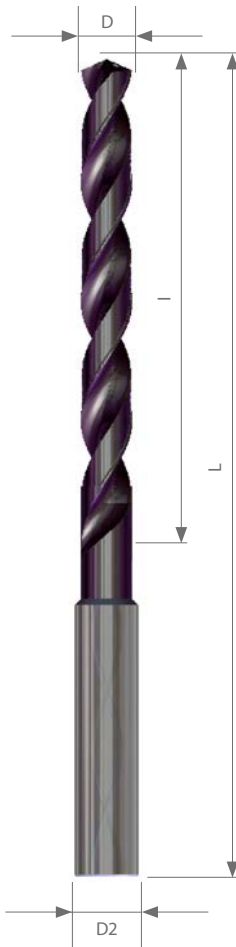
TiAlN

Extra long series with internal cooling. High performance

Straight shank drills

Design and technical specifications

Helix angle	30°
Point angle	140°
Point grinding	4 Lands with web thinning
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Super-N
Tolerance D	m7 (Dz: h6)
Other specifications	DIN 6535 HA
Finish	Coated
Coating	TiAlN



Details and applications

High production helicoidal drills, TiAlN coated, to reach optimal hole quality at economic cost. To drill castings, cast steel, Cr-Ni steels, alloyed steels (cementation steels, tool steels spring steels etc.). Titanium and its alloys, stainless steels (martensitic, austenitic) special alloys with Co-Ni-Fe base etc.

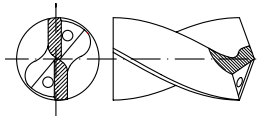
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1,3	55	17	3	A650630130000	60,60
1,4	55	17	3	A650630140000	60,60
1,5	65	22	3	A650630150000	62,63
1,6	65	22	3	A650630160000	62,63
1,7	65	22	3	A650630170000	62,63
1,8	65	22	3	A650630180000	62,63
1,9	65	22	3	A650630190000	62,63
2	74	28	3	A650630200000	70,23
2,1	74	28	3	A650630210000	62,71
2,2	74	28	3	A650630220000	70,23
2,3	74	28	3	A650630230000	70,23
2,4	74	28	3	A650630240000	70,23
2,5	81	32	3	A650630250000	62,63
2,6	81	32	3	A650630260000	62,63
2,7	81	32	3	A650630270000	62,63
2,8	81	32	3	A650630280000	62,63
2,9	81	32	3	A650630290000	62,63
3	72	34	6	A650630300000	88,42
3,1	72	34	6	A650630310000	88,42
3,2	72	34	6	A650630320000	88,42
3,3	72	34	6	A650630330000	88,42
3,4	72	34	6	A650630340000	88,42
3,5	72	34	6	A650630350000	88,42
3,6	72	34	6	A650630360000	88,42
3,7	72	34	6	A650630370000	88,42
3,8	81	43	6	A650630380000	88,42
3,9	81	43	6	A650630390000	88,42
4	81	43	6	A650630400000	88,42
4,1	81	43	6	A650630410000	88,42
4,2	81	43	6	A650630420000	88,42
4,3	81	43	6	A650630430000	88,42
4,4	81	43	6	A650630440000	88,42
4,5	81	43	6	A650630450000	88,42
4,6	81	43	6	A650630460000	96,35
4,7	95	57	6	A650630470000	98,57
4,8	95	57	6	A650630480000	98,57
4,9	95	57	6	A650630490000	98,57
5	95	57	6	A650630500000	98,57
5,1	95	57	6	A650630510000	98,57
5,2	95	57	6	A650630520000	98,57
5,3	95	57	6	A650630530000	98,57
5,4	95	57	6	A650630540000	98,57
5,5	95	57	6	A650630550000	98,57
5,6	95	57	6	A650630560000	98,57
5,7	95	57	6	A650630570000	98,57
5,8	95	57	6	A650630580000	100,08
5,9	95	57	6	A650630590000	105,86
6	95	57	6	A650630600000	105,86
6,1	114	76	8	A650630610000	145,38
6,2	114	76	8	A650630620000	145,38
6,3	114	76	8	A650630630000	145,38
6,4	114	76	8	A650630640000	145,38
6,5	114	76	8	A650630650000	145,38
6,6	114	76	8	A650630660000	145,38
6,7	114	76	8	A650630670000	145,38
6,8	114	76	8	A650630680000	145,38
6,9	114	76	8	A650630690000	145,38

D	L	I	D2	Code	Price
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7,2	114	76	8	A650630720000	145,38
7,3	114	76	8	A650630730000	145,38
7,4	114	76	8	A650630740000	145,38
7,5	114	76	8	A650630750000	145,38
7,6	114	76	8	A650630760000	145,38
7,7	114	76	8	A650630770000	152,59
7,8	114	76	8	A650630780000	152,59
7,9	114	76	8	A650630790000	152,59
8	114	76	8	A650630800000	152,59
8,1	142	95	10	A650630810000	196,09
8,2	142	95	10	A650630820000	196,09
8,3	142	95	10	A650630830000	196,09
8,4	142	95	10	A650630840000	196,09
8,5	142	95	10	A650630850000	196,09
8,6	142	95	10	A650630860000	196,09
8,7	142	95	10	A650630870000	196,09
8,8	142	95	10	A650630880000	196,09
8,9	142	95	10	A650630890000	196,09
9	142	95	10	A650630900000	196,09
9,1	142	95	10	A650630910000	196,09
9,2	142	95	10	A650630920000	196,09
9,3	142	95	10	A650630930000	196,09
9,4	142	95	10	A650630940000	196,09
9,5	142	95	10	A650630950000	196,09
9,6	142	95	10	A650630960000	196,09
9,7	142	95	10	A650630970000	196,09
9,8	130	88	10	A650630980000	196,09
9,9	142	95	10	A650630990000	196,09
10	142	95	10	A650631000000	199,89
10,1	162	114	12	A650631010000	265,30
10,2	162	114	12	A650631020000	265,30
10,3	162	114	12	A650631030000	265,30
10,4	162	114	12	A650631040000	265,30
10,5	162	114	12	A650631050000	265,30
10,6	162	114	12	A650631060000	265,30
10,7	162	114	12	A650631070000	265,30
10,8	162	114	12	A650631080000	265,30
10,9	162	114	12	A650631090000	265,30
11	162	114	12	A650631100000	265,30
11,1	162	114	12	A650631110000	265,30
11,2	162	114	12	A650631120000	265,30
11,3	162	114	12	A650631130000	265,30
11,4	162	114	12	A650631140000	265,30
11,5	162	114	12	A650631150000	265,30
11,6	162	114	12	A650631160000	265,30
11,7	162	114	12	A650631170000	265,30
11,8	162	114	12	A650631180000	265,30
11,9	162	114	12	A650631190000	265,30
12	162	114	12	A650631200000	265,30
12,5	178	133	14	A650631250000	386,09
12,8	178	133	14	A650631280000	386,09
13	178	133	14	A650631300000	386,09
13,5	178	133	14	A650631350000	386,09
14	178	133	14	A650631400000	394,51
14,5	203	152	16	A650631450000	472,67
15	203	152	16	A650631500000	472,67
16	203	152	16	A650631600000	472,67

Shank type	Family
HE	A65563DDDDD00
HB	A65863DDDDD00

660.63

DIN 6537 L 12 X D



Optimus series HM

Type SN 12 x D

TiAlN

Extra long series with internal cooling. High performance

Straight shank drills

Design and technical specifications

Helix angle	30°
Point angle	140°
Point grinding	4 Lands with web thinning
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Super-N
Tolerance D	m7 (Dz: h6)
Other specifications	DIN 6535 HA
Finish	Coated
Coating	TiAlN

Details and applications

High production helicoidal drills, TiAlN coated, to reach optimal hole quality at economic cost. To drill castings, cast steel, Cr-Ni steels, alloyed steels (cementation steels, tools steels spring steels etc.). Titanium and its alloys, stainless steels (martensitic, austenitic) special alloys with Co-Ni-Fe base etc.



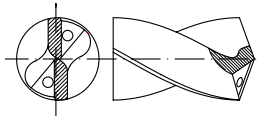
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1,3	55	23	3	A660630130000	71,13
1,4	55	23	3	A660630140000	71,13
1,5	65	23	3	A660630150000	62,52
1,6	65	30	3	A660630160000	62,52
1,7	65	30	3	A660630170000	62,52
1,8	65	30	3	A660630180000	62,52
1,9	65	30	3	A660630190000	62,52
2	74	30	3	A660630200000	67,89
2,1	74	38	3	A660630210000	67,89
2,2	74	38	3	A660630220000	67,89
2,3	74	38	3	A660630230000	67,89
2,4	74	38	3	A660630240000	67,89
2,5	81	38	3	A660630250000	73,23
2,6	81	44	3	A660630260000	73,23
2,7	81	44	3	A660630270000	73,23
2,8	81	44	3	A660630280000	73,23
2,9	81	44	3	A660630290000	73,23
3	92	54	6	A660630300000	147,37
3,2	92	54	6	A660630320000	129,51
3,3	92	54	6	A660630330000	129,51
3,5	92	54	6	A660630350000	129,51
3,7	92	54	6	A660630370000	142,93
3,8	102	64	6	A660630380000	131,69
3,9	102	64	6	A660630390000	142,93
4	102	64	6	A660630400000	142,93
4,2	102	64	6	A660630420000	131,69
4,3	102	64	6	A660630430000	142,93
4,4	102	64	6	A660630440000	157,22
4,5	102	64	6	A660630450000	131,69
4,6	102	64	6	A660630460000	157,22
4,7	102	64	6	A660630470000	157,22
4,8	116	78	6	A660630480000	135,49
4,9	116	78	6	A660630490000	157,22
5	116	78	6	A660630500000	135,49
5,1	116	78	6	A660630510000	157,22
5,2	116	78	6	A660630520000	142,93
5,3	116	78	6	A660630530000	142,93
5,4	116	78	6	A660630540000	157,22
5,5	116	78	6	A660630550000	135,49
5,6	116	78	6	A660630560000	157,22
5,7	116	78	6	A660630570000	157,22

D	L	I	D2	Code	Price
mm.	mm.	mm.	mm.		€
5,8	116	78	6	A660630580000	135,49
5,9	116	78	6	A660630590000	142,93
6	116	78	6	A660630600000	135,49
6,1	146	108	8	A660630610000	192,59
6,2	146	108	8	A660630620000	192,59
6,5	146	108	8	A660630650000	192,59
6,6	146	108	8	A660630660000	192,59
6,7	146	108	8	A660630670000	192,59
6,8	146	108	8	A660630680000	204,36
6,9	146	108	8	A660630690000	204,36
7	146	108	8	A660630700000	204,36
7,4	146	108	8	A660630740000	204,36
7,5	146	108	8	A660630750000	192,56
7,7	146	108	8	A660630770000	192,56
7,8	146	108	8	A660630780000	225,56
8	146	108	8	A660630800000	228,53
8,2	162	120	10	A660630820000	255,49
8,5	162	120	10	A660630850000	255,49
8,8	162	120	10	A660630880000	255,49
9	162	120	10	A660630900000	255,49
9,5	162	120	10	A660630950000	255,49
9,8	162	120	10	A660630980000	255,49
9,9	162	120	10	A660630990000	255,49
10	162	120	10	A660631000000	255,49
10,1	204	156	12	A660631010000	357,67
10,2	204	156	12	A660631020000	357,67
10,3	204	156	12	A660631030000	357,67
10,5	204	156	12	A660631050000	357,67
10,8	204	156	12	A660631080000	357,67
11	204	156	12	A660631100000	357,67
11,2	204	156	12	A660631120000	357,67
11,4	204	156	12	A660631140000	357,67
11,5	204	156	12	A660631150000	357,67
11,8	204	156	12	A660631180000	357,67
12	204	156	12	A660631200000	357,67
12,5	230	182	14	A660631250000	467,71
12,8	230	182	14	A660631280000	467,71
13	230	182	14	A660631300000	467,71
13,5	230	182	14	A660631350000	467,71
13,8	230	182	14	A660631380000	467,71
14	230	182	14	A660631400000	467,71
14,5	260	208	16	A660631450000	609,17
15	260	208	16	A660631500000	609,17
15,5	260	208	16	A660631550000	609,17
16	260	208	16	A660631600000	609,17

Shank type	Family
HE	A66563DDDDD00
HB	A66863DDDDD00

670.63

DIN 6537 L 15 X D



Optimus series HM

Type SN | TiAlN 15 x D

Extra long series with internal cooling. High performance

Straight shank drills

Design and technical specifications

Helix angle	30°
Point angle	140°
Point grinding	4 Lands with web thinning
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Super-N
Tolerance D	m7 (Dz: h6)
Other specifications	DIN 6535 HA
Finish	Coated
Coating	TiAlN

Details and applications

High production helicoidal drills, TiAlN coated, to reach optimal hole quality at economic cost. To drill castings, cast steel, Cr-Ni steels, alloyed steels (cementation steels, tools steels spring steels etc.). Titanium and its alloys, stainless steels (martensitic, austenitic) special alloys with Co-Ni-Fe base etc.

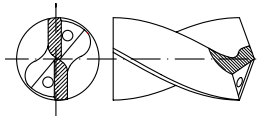


D	L	I	D2	Code	Price
mm.	mm.	mm.	mm.		€
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1,1	60	22	3	A670630110000	162,52
1,2	60	24	3	A670630120000	162,52
1,3	60	25	3	A670630130000	162,52
1,4	60	27	3	A670630140000	162,52
1,5	60	27	3	A670630150000	162,52
1,6	65	32	3	A670630160000	162,52
1,7	65	32	3	A670630170000	162,52
1,8	65	35	3	A670630180000	162,52
1,9	65	35	3	A670630190000	162,52
2	65	35	3	A670630200000	162,52
2,1	75	40	3	A670630210000	162,52
2,2	75	40	3	A670630220000	162,52
2,3	75	40	3	A670630230000	162,52
2,4	75	45	3	A670630240000	162,52
2,5	75	45	3	A670630250000	162,52
2,6	80	48	3	A670630260000	162,52
2,7	80	48	3	A670630270000	162,52
2,8	80	50	3	A670630280000	162,52
2,9	80	50	3	A670630290000	162,52
3	100	60	6	A670630300000	205,94
3,2	100	60	6	A670630320000	205,94
3,3	100	60	6	A670630330000	205,94
3,5	100	60	6	A670630350000	205,94
3,8	108	68	6	A670630380000	205,94
3,9	108	68	6	A670630390000	205,94
4	108	68	6	A670630400000	205,94
4,2	115	78	6	A670630420000	229,32
4,5	115	78	6	A670630450000	229,32
5	125	84	6	A670630500000	235,71
5,5	130	92	6	A670630550000	239,85
5,9	140	100	6	A670630590000	239,85
6	140	100	6	A670630600000	239,85
6,5	145	108	8	A670630650000	315,11
6,8	170	130	8	A670630680000	358,35
7	170	130	8	A670630700000	358,35
7,5	170	130	8	A670630750000	358,35
7,8	170	130	8	A670630780000	358,35
8	170	130	8	A670630800000	358,35
8,5	208	163	10	A670630850000	485,90
9	208	163	10	A670630900000	485,90
9,5	208	163	10	A670630950000	485,90
9,8	208	163	10	A670630980000	485,90
10	208	163	10	A670631000000	485,90
10,5	245	195	12	A670631050000	624,44
11	245	195	12	A670631100000	624,44
11,5	245	195	12	A670631150000	624,44
11,8	245	195	12	A670631180000	624,44
12	245	195	12	A670631200000	624,44
12,5	280	230	14	A670631250000	855,41
13	280	230	14	A670631300000	855,41
14	280	230	14	A670631400000	855,41
15	310	260	16	A670631500000	1041,69

Shank type	Family
HE	A67563DDDDD00
HB	A67863DDDDD00

680.63

DIN 6537 L 20 X D



Optimus series HM

Type SN | TiAlN 20 x D

Extra long series with internal cooling. High performance

Straight shank drills

Design and technical specifications

Helix angle	30°
Point angle	140°
Point grinding	4 Lands with web thinning
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Super-N
Tolerance D	m7 (Dz: h6)
Other specifications	DIN 6535 HA
Finish	Coated
Coating	TiAlN

Details and applications

High production helicoidal drills, TiAlN coated, to reach optimal hole quality at economic cost. To drill castings, cast steel, Cr-Ni steels, alloyed steels (cementation steels, tool steels spring steels etc.). Titanium and its alloys, stainless steels (martensitic, austenitic) special alloys with Co-Ni-Fe base etc.

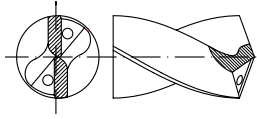
D	L	I	D2	Code	Price*
mm.	mm.	mm.	mm.		€
3	110	70	6	A680630300000	
3,5	122	82	6	A680630350000	
4	133	93	6	A680630400000	
4,5	145	105	6	A680630450000	
5	156	116	6	A680630500000	
5,5	168	128	6	A680630550000	
6	179	139	6	A680630600000	
6,5	191	151	8	A680630650000	
7	202	162	8	A680630700000	
7,5	214	174	8	A680630750000	
8	225	185	8	A680630800000	
8,5	241	197	10	A680630850000	
9	252	208	10	A680630900000	
9,5	265	221	10	A680630950000	
10	276	232	10	A680631000000	
10,5	293	244	12	A680631050000	
11	304	255	12	A680631100000	
11,5	313	264	12	A680631150000	
12	322	273	12	A680631200000	

* On request.



Shank type	Family
HE	A68563DDDDD00
HB	A68863DDDDD00

690.63
DIN 6537 L 30 X D



Optimus series
HM

Type SN | **TiAlN**
30 x D

Extra long series with internal cooling.
High performance

Straight shank drills

Design and technical specifications

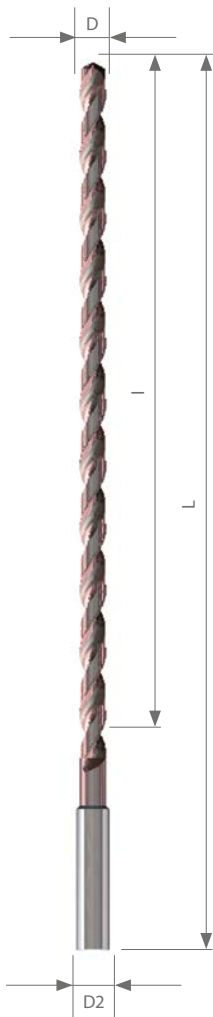
Helix angle	30°
Point angle	140°
Point grinding	4 Lands with web thinning
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Super-N
Tolerance D	m7 (Dz: h6)
Other specifications	DIN 6535 HA
Finish	Coated
Coating	TiAlN

Details and applications

High production helicoidal drills, TiAlN coated, to reach optimal hole quality at economic cost. To drill castings, cast steel, Cr-Ni steels, alloyed steels (cementation steels, tool steels spring steels etc.). Titanium and its alloys, stainless steels (martensitic, austenitic) special alloys with Co-Ni-Fe base etc.

D	L	I	D2	Code	Price*
mm.	mm.	mm.	mm.		€
3	140	100	6	A690630300000	
3,5	157	117	6	A690630350000	
4	173	133	6	A690630400000	
4,5	190	150	6	A690630450000	
5	206	166	6	A690630500000	
5,5	223	183	6	A690630550000	
6	239	199	6	A690630600000	
6,5	256	216	8	A690630650000	
7	272	232	8	A690630700000	
7,5	289	249	8	A690630750000	
8	305	265	8	A690630800000	

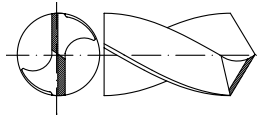
* On request.



Shank type	Family
HE	A69563DDDDD00
HB	A69863DDDDD00

100.60

DIN 1897

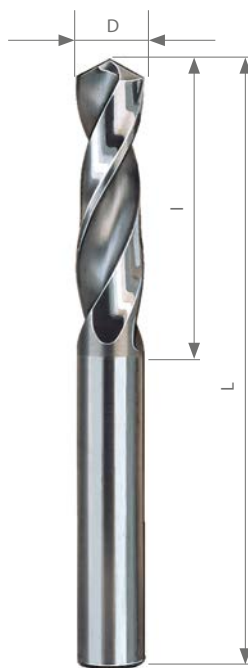


Classic series | Type N HM | 3 x D

Standard stub drills Straight shank drills

Dessin et spécifications techniques

Angle hélice	Standard (DIN1414 type N)
Angle pointe	120°
Affutage pointe	4 Faces
Epaisseur noyau	Normal
Cône noyau	Normal
Profil rainures	Normal
Tolérance D	h8
Autres caractéristiques	DIN 1414
Finition	Pas de traitement de surfaces, brillant



Details and applications

High performance straight shank drill for the highest hole quality at a economic cost. To drill castings, cast steel, Cr-Ni steels, alloyed steels (cementation steels, tools steels spring steels etc.). Titanium and its alloys, stainless steels (martensitic, austenitic) special alloys with Co-Ni-Fe base etc..

D	L	l	Code	Price
mm.	mm.	mm.		€
1	26	6	A100600100000	8,08
1,5	32	9	A100600150000	8,68
2	38	12	A100600200000	10,56
2,1	38	12	A100600210000	10,56
2,2	40	13	A100600220000	10,56
2,25	40	13	A100600225000	11,17
2,3	40	13	A100600230000	10,56
2,4	43	14	A100600240000	10,56
2,5	43	14	A100600250000	10,15
2,6	43	14	A100600260000	10,56
2,7	46	16	A100600270000	15,53
2,75	46	16	A100600275000	16,35
2,8	46	16	A100600280000	15,53
2,9	46	16	A100600290000	15,53
3	46	16	A100600300000	14,29
3,1	49	18	A100600310000	15,53
3,2	49	18	A100600320000	15,53
3,25	49	18	A100600325000	27,11
3,3	49	18	A100600330000	15,53
3,4	52	20	A100600340000	16,13
3,5	52	20	A100600350000	15,71
3,6	52	20	A100600360000	17,59
3,7	52	20	A100600370000	17,59
3,75	52	20	A100600375000	32,26
3,8	55	22	A100600380000	19,25
3,9	55	22	A100600390000	19,25
4	55	22	A100600400000	18,61
4,1	55	22	A100600410000	21,09
4,2	55	22	A100600420000	20,26
4,25	55	22	A100600425000	40,53
4,3	58	24	A100600430000	21,09
4,4	58	24	A100600440000	21,09
4,5	58	24	A100600450000	20,26
4,6	58	24	A100600460000	21,09
4,7	58	24	A100600470000	22,33
4,75	58	24	A100600475000	43,42
4,8	62	26	A100600480000	22,33
4,9	62	26	A100600490000	22,33

D	L	l	Code	Price
mm.	mm.	mm.		€
5	62	26	A100600500000	22,33
5,1	62	26	A100600510000	37,86
5,2	62	26	A100600520000	37,86
5,25	62	26	A100600525000	49,62
5,3	62	26	A100600530000	37,86
5,4	66	28	A100600540000	42,41
5,5	66	28	A100600550000	28,76
5,6	66	28	A100600560000	41,77
5,7	66	28	A100600570000	41,77
5,75	66	28	A100600575000	53,17
5,8	66	28	A100600580000	37,44
5,9	66	28	A100600590000	41,77
6	66	28	A100600600000	29,36
6,5	70	31	A100600650000	37,03
7	74	34	A100600700000	46,32
7,5	74	34	A100600750000	53,76
8	79	37	A100600800000	59,55
8,5	79	37	A100600850000	78,80
9	84	40	A100600900000	88,91
9,5	84	40	A100600950000	88,91
10	89	43	A100601000000	107,11
10,5	89	43	A100601050000	103,61
11	95	47	A100601100000	118,08
11,5	95	47	A100601150000	134,21
12	102	51	A100601200000	129,44
12,5	102	51	A100601250000	178,46
13	102	51	A100601300000	201,62
13,5	107	54	A100601350000	191,05
14	107	54	A100601400000	201,39
14,5	111	56	A100601450000	216,69
15	111	56	A100601500000	234,47
16	115	58	A100601600000	297,74
16,5	115	58	A100601650000	279,14
18	123	62	A100601800000	382,11
20	131	66	A100602000000	490,45

Cutting conditions and recommended material

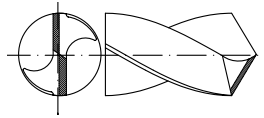
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill										
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20
1	80	90	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
2	60	80	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
3	65	80	(A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
4	55	70	(A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
5	34	45	(A) (B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180
6	25	30	(B)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
7	25	30	(B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180
8	25	30	(B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180
10	17	23	(B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180
13.1	80	100	(A) (D)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
13.2	65	90	(A) (D)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
15	200	200	(A) (B)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
16	135	135	(A) (B)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
18	80	80	(A) (B)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
19	50	80	(A) (B)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
20	40	80	(A) (B)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
21	180	180	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
22	200	200	(D)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
23	170	200	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
24.1	170	170	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
24.2	135	170	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
25	45	45	(A) (D)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
26	45	45	(D)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
27	55	55	(D)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
29	90	90	(D)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180
31	18	35	(D)	MANUAL										

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

 r.p.m. = $V_c \times 1000 / (\pi \times D)$

105.60

DIN 338



Classic series | Type N HM | 5 x D

Jobber drills Straight shank drills

Design and technical specifications

Helix angle	Standard (DIN 1414 type N)
Point angle	120°
Point grinding	4 Lands
Web thickness	Normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	No surface treatment, bright finish



Details and applications

High performance straight shank drill for the highest hole quality at a economic cost. To drill castings, cast steel, Cr-Ni steels, alloyed steels (cementation steels, tools steels spring steels etc.). Titanium and its alloys, stainless steels (martensitic, austenitic) special alloys with Co-Ni-Fe base etc.

D	L	I	Code	Price
mm.	mm.	mm.		€
0,4	20	5	A105600040000	22,33
0,5	22	6	A105600050000	10,56
0,9	32	11	A105600090000	10,56
1	34	12	A105600100000	9,10
1,1	36	14	A105600110000	9,92
1,2	38	16	A105600120000	9,92
1,3	38	16	A105600130000	9,92
1,4	40	18	A105600140000	9,92
1,5	40	18	A105600150000	9,51
1,55	43	20	A105600155000	15,30
1,6	43	20	A105600160000	10,15
1,7	43	20	A105600170000	10,15
1,8	46	22	A105600180000	10,15
1,85	46	22	A105600185000	21,17
1,9	46	22	A105600190000	10,15
2	49	24	A105600200000	12,41
2,05	49	24	A105600205000	17,18
2,1	49	24	A105600210000	14,47
2,2	53	27	A105600220000	16,13
2,3	53	27	A105600230000	16,13
2,4	57	30	A105600240000	18,83
2,5	57	30	A105600250000	15,71
2,6	57	30	A105600260000	22,33
2,7	61	33	A105600270000	22,33
2,8	61	33	A105600280000	22,33
2,9	61	33	A105600290000	22,33
2,95	61	33	A105600295000	33,31
3	61	33	A105600300000	20,26
3,1	65	36	A105600310000	21,09
3,2	65	36	A105600320000	20,26
3,3	65	36	A105600330000	20,26
3,4	70	39	A105600340000	23,98
3,5	70	39	A105600350000	22,33
3,6	70	39	A105600360000	25,64
3,7	70	39	A105600370000	25,64
3,8	75	43	A105600380000	25,64
3,9	75	43	A105600390000	25,64
4	75	43	A105600400000	24,81
4,1	75	43	A105600410000	27,29
4,2	75	43	A105600420000	26,28
4,3	80	47	A105600430000	35,38
4,4	80	47	A105600440000	35,38
4,5	80	47	A105600450000	32,07
4,6	80	47	A105600460000	37,03
4,7	80	47	A105600470000	37,03
4,8	86	52	A105600480000	37,03
4,9	86	52	A105600490000	37,03
5	86	52	A105600500000	34,14
5,1	86	52	A105600510000	46,54
5,2	86	52	A105600520000	46,54
5,3	86	52	A105600530000	46,54
5,4	93	57	A105600540000	50,86
5,5	93	57	A105600550000	48,20
5,6	93	57	A105600560000	50,86
5,7	93	57	A105600570000	53,76
5,8	93	57	A105600580000	53,76
5,9	93	57	A105600590000	53,76
6	93	57	A105600600000	47,97

D	L	I	Code	Price
mm.	mm.	mm.		€
6,1	101	63	A105600610000	65,15
6,2	101	63	A105600620000	65,15
6,3	101	63	A105600630000	65,15
6,4	101	63	A105600640000	70,53
6,5	101	63	A105600650000	59,55
6,6	101	63	A105600660000	70,53
6,7	101	63	A105600670000	70,53
6,8	109	69	A105600680000	73,83
6,9	109	69	A105600690000	80,64
7	109	69	A105600700000	73,83
7,1	109	69	A105600710000	80,64
7,2	109	69	A105600720000	87,26
7,3	109	69	A105600730000	87,26
7,4	109	69	A105600740000	87,26
7,5	109	69	A105600750000	73,83
7,6	117	75	A105600760000	94,92
7,7	117	75	A105600770000	94,92
7,8	117	75	A105600780000	94,92
7,9	117	75	A105600790000	94,92
8	117	75	A105600800000	82,93
8,1	117	75	A105600810000	104,44
8,2	117	75	A105600820000	104,44
8,3	117	75	A105600830000	104,44
8,4	117	75	A105600840000	104,44
8,5	117	75	A105600850000	97,18
8,6	125	81	A105600860000	124,06
8,7	125	81	A105600870000	124,06
8,8	125	81	A105600880000	126,54
8,9	125	81	A105600890000	126,54
9	125	81	A105600900000	104,85
9,1	125	81	A105600910000	140,19
9,2	125	81	A105600920000	140,19
9,3	125	81	A105600930000	140,19
9,4	125	81	A105600940000	140,19
9,5	125	81	A105600950000	115,38
9,6	133	87	A105600960000	143,31
9,7	133	87	A105600970000	143,31
9,8	133	87	A105600980000	143,31
9,9	133	87	A105600990000	143,31
10	133	87	A105601000000	124,29
10,2	133	87	A105601020000	147,63
10,4	133	87	A105601040000	222,89
10,5	133	87	A105601050000	150,34
10,6	133	87	A105601060000	229,32
10,8	142	94	A105601080000	215,68
11	142	94	A105601100000	179,89
11,5	142	94	A105601150000	190,64
11,8	142	94	A105601180000	190,56
12	151	101	A105601200000	202,03
12,5	151	101	A105601250000	312,22
12,8	151	101	A105601280000	312,22
13	151	101	A105601300000	312,22
13,5	160	108	A105601350000	382,11
14,5	169	114	A105601450000	407,74
15	169	114	A105601500000	413,95
16	178	120	A105601600000	433,20

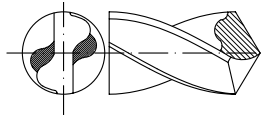
Cutting conditions and recommended material														
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill										
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20
1	70	80	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
2	55	70	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
3	60	70	(A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
4	50	60	(A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
5	30	40	(A) (B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180
6	22	27	(B)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
7	22	27	(B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180
8	22	27	(B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180
10	15	20	(B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180
13.1	70	90	(A) (D)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
13.2	60	80	(A) (D)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
15	180	180	(A) (B)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
16	120	120	(A) (B)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
18	70	70	(A) (B)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
19	45	70	(A) (B)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
20	35	70	(A) (B)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
21	160	160	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
22	180	180	(D)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
23	150	180	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
24.1	150	150	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
24.2	120	150	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
25	40	40	(A) (D)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
26	40	40	(D)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
27	50	50	(D)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
29	80	80	(D)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180
31	16	31,5	(D)	MANUAL										

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

 r.p.m. = $V_c \times 1000 / (\pi \times D)$

185.43

DIN 1897



Optimus series | **Type SLZ** | **TiAlN**
HSSCo 5% | **3 x D**

Standard stub drills.

High performance

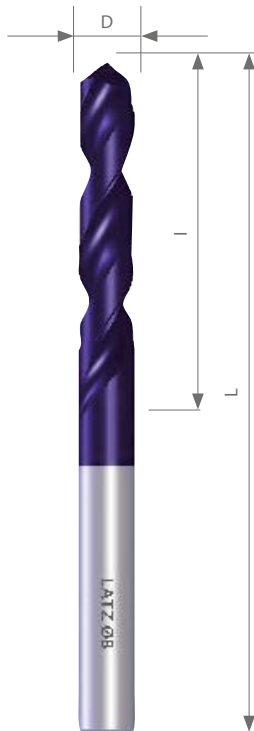
Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web type U
Web thickness	Heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Coated
Coating	TiAlN

Details and applications

This robust drill with reinforced web and wide flutes, form type SLZ, self-centring and TiAlN coating, is specially appropriate for drilling deeper holes in difficult conditions where chip removal is difficult and swarf creates problems of coolant reaching the drill point, and in those cases where the depth to drill is less than 3 x D. This is our highest performance drill, ideal for intensive working processes. We also have more economic families such as series 100.40 and 100.30. Use to drill: Steel and cast steel, alloyed and non alloyed over 900 N/mm² to 1200 N/mm². Some nickel-chrome steels-Ferritic and martensitic stainless steels-Acid resistant steels-Spring steels-Tough grey cast iron, malleable cast iron-Spheroidal cast iron.



D	L	I	Code	Price
mm.	mm.	mm.		€
2	38	12	A185430200000	7,72
2,1	38	12	A185430210000	8,20
2,2	40	13	A185430220000	8,33
2,3	40	13	A185430230000	8,68
2,4	43	14	A185430240000	8,90
2,5	43	14	A185430250000	9,04
2,6	43	14	A185430260000	8,93
2,7	46	16	A185430270000	8,93
2,8	46	16	A185430280000	9,18
2,9	46	16	A185430290000	9,25
3	46	16	A185430300000	9,37
3,1	49	18	A185430310000	9,33
3,2	49	18	A185430320000	8,85
3,3	49	18	A185430330000	8,85
3,4	52	20	A185430340000	9,40
3,5	52	20	A185430350000	9,53
3,6	52	20	A185430360000	9,74
3,7	52	20	A185430370000	9,82
3,8	55	22	A185430380000	9,95
3,9	55	22	A185430390000	10,06
4	55	22	A185430400000	10,59
4,1	55	22	A185430410000	10,59
4,2	55	22	A185430420000	10,91
4,3	58	24	A185430430000	10,59
4,4	58	24	A185430440000	10,89
4,5	58	24	A185430450000	11,07
4,6	58	24	A185430460000	11,07
4,7	58	24	A185430470000	11,07
4,8	62	26	A185430480000	11,33
4,9	62	26	A185430490000	11,57
5	62	26	A185430500000	11,85
5,1	62	26	A185430510000	11,81
5,2	62	26	A185430520000	12,33
5,3	62	26	A185430530000	12,54
5,4	66	28	A185430540000	13,00
5,5	66	28	A185430550000	13,28
5,6	66	28	A185430560000	13,28
5,7	66	28	A185430570000	13,28
5,8	66	28	A185430580000	13,51
5,9	66	28	A185430590000	13,51
6	66	28	A185430600000	13,28
6,1	70	31	A185430610000	18,99

D	L	I	Code	Price
mm.	mm.	mm.		€
6,2	70	31	A185430620000	19,28
6,3	70	31	A185430630000	19,48
6,4	70	31	A185430640000	20,51
6,5	70	31	A185430650000	17,85
6,6	70	31	A185430660000	20,71
6,7	70	31	A185430670000	21,11
6,8	74	34	A185430680000	21,53
6,9	74	34	A185430690000	21,72
7	74	34	A185430700000	19,74
7,1	74	34	A185430710000	25,42
7,2	74	34	A185430720000	25,79
7,3	74	34	A185430730000	25,79
7,4	74	34	A185430740000	26,16
7,5	74	34	A185430750000	21,31
7,6	79	37	A185430760000	26,16
7,7	79	37	A185430770000	26,16
7,8	79	37	A185430780000	27,17
7,9	79	37	A185430790000	27,17
8	79	37	A185430800000	21,91
8,1	79	37	A185430810000	27,17
8,2	79	37	A185430820000	28,00
8,3	79	37	A185430830000	29,01
8,4	79	37	A185430840000	30,67
8,5	79	37	A185430850000	22,73
8,6	84	40	A185430860000	31,04
8,7	84	40	A185430870000	31,04
8,8	84	40	A185430880000	32,51
8,9	84	40	A185430890000	32,70
9	84	40	A185430900000	24,96
9,1	84	40	A185430910000	33,07
9,2	84	40	A185430920000	34,26
9,3	84	40	A185430930000	34,26
9,4	84	40	A185430940000	34,91
9,5	84	40	A185430950000	26,62
9,6	89	43	A185430960000	35,28
9,7	89	43	A185430970000	37,58
9,8	89	43	A185430980000	38,41
9,9	89	43	A185430990000	39,61
10	89	43	A185431000000	28,00
10,2	89	43	A185431020000	43,01
10,3	89	43	A185431030000	43,01
10,5	89	43	A185431050000	38,41

185.43
DIN 1897

 Optimus series
 HSSCo 5%

 Type SLZ
 3 x D

TiAlN

 Standard stub drills. High performance
 Straight shank drills

D	L	I	Code	Price
mm.	mm.	mm.		€
10,8	95	47	A185431080000	53,97
11	95	47	A185431100000	41,45
11,2	95	47	A185431120000	54,80
11,3	95	47	A185431130000	56,46
11,5	95	47	A185431150000	42,18
11,8	95	47	A185431180000	57,66
12	102	51	A185431200000	42,18
12,5	102	51	A185431250000	47,07
12,8	102	51	A185431280000	57,66
13	102	51	A185431300000	50,38
13,3	107	54	A185431330000	64,20
13,5	107	54	A185431350000	57,66
13,8	107	54	A185431380000	64,20
14	107	54	A185431400000	58,49
14,5	111	56	A185431450000	62,17
14,8	111	56	A185431480000	65,76
15	111	56	A185431500000	65,76
15,3	115	58	A185431530000	79,21
15,5	115	58	A185431550000	67,79
15,8	115	58	A185431580000	75,48
16	115	58	A185431600000	69,82
16,5	115	58	A185431650000	78,75
17	119	60	A185431700000	79,21
17,5	123	62	A185431750000	80,78
18	123	62	A185431800000	81,24
18,5	127	64	A185431850000	82,89
19	127	64	A185431900000	83,63
19,5	131	66	A185431950000	85,29
20	131	66	A185432000000	87,68

Cutting conditions and recommended material

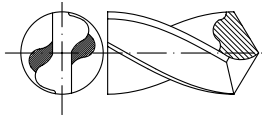
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	50	55	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
2	45	55	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
3	33	40	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
4	31,5	40	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
5	17	22,5	(A) (B)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
6	25	25	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
7	19	22,5	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
8	14,5	18	(B) (A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
10	6,5	8,5	(B) (A)	0,020	0,030	0,030	0,040	0,050	0,060	0,060	0,080	0,100	0,120	0,140	0,160
13.1	50	62,5	(C) (A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
13.2	45	50	(C) (A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
16	70	70	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
17	55	55	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
18	70	70	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
19	52,5	52,5	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
20	45	45	(A) (B)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
24.1	75	100	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
24.2	55	80	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

 $r.p.m. = V_c \times 1000 / (\pi \times D)$

185.44

DIN 1897



Optimus series HSSCo 5%

Type SLZ 3 x D

TiN

Standard stub drills. High performance

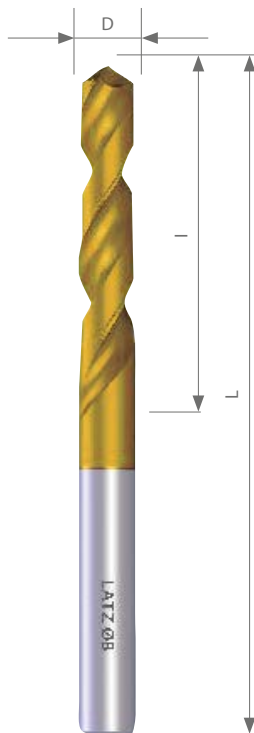
Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web type U
Web thickness	Heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Coated
Coating	TiN

Details and applications

This robust drill with reinforced web and wide flutes, form type SLZ, self-centring and TiN coating, is specially appropriate for drilling deeper holes in difficult conditions where chip removal is difficult and swarf creates problems of coolant reaching the drill point, and in those cases where the depth to drill is less than 3 x D. This is our highest performance drill, ideal for intensive working processes. We also have more economic families such as series 100.40 and 100.30. Use to drill: Steel and cast steel, alloyed and non alloyed over 900 N/mm² to 1200 N/mm². Some nickel-chrome steels-Ferritic and martensitic stainless steels-Acid resistant steels-Spring steels-Tough grey cast iron, malleable cast iron-Spheroidal cast iron.



D	L	I	Code	Price
mm.	mm.	mm.		€
2	38	12	A185440200000	7,33
2,1	38	12	A185440210000	7,79
2,2	40	13	A185440220000	7,91
2,3	40	13	A185440230000	8,25
2,4	43	14	A185440240000	8,46
2,5	43	14	A185440250000	8,59
2,6	43	14	A185440260000	8,48
2,7	46	16	A185440270000	8,48
2,8	46	16	A185440280000	8,72
2,9	46	16	A185440290000	8,79
3	46	16	A185440300000	8,90
3,1	49	18	A185440310000	8,86
3,2	49	18	A185440320000	8,41
3,3	49	18	A185440330000	8,41
3,4	52	20	A185440340000	8,93
3,5	52	20	A185440350000	9,05
3,6	52	20	A185440360000	9,25
3,7	52	20	A185440370000	9,33
3,8	55	22	A185440380000	9,45
3,9	55	22	A185440390000	9,56
4	55	22	A185440400000	10,06
4,1	55	22	A185440410000	10,06
4,2	55	22	A185440420000	10,36
4,3	58	24	A185440430000	10,06
4,4	58	24	A185440440000	10,35
4,5	58	24	A185440450000	10,52
4,6	58	24	A185440460000	10,52
4,7	58	24	A185440470000	10,52
4,8	62	26	A185440480000	10,76
4,9	62	26	A185440490000	10,99
5	62	26	A185440500000	11,26
5,1	62	26	A185440510000	11,22
5,2	62	26	A185440520000	11,71
5,3	62	26	A185440530000	11,91
5,4	66	28	A185440540000	12,35
5,5	66	28	A185440550000	12,62
5,6	66	28	A185440560000	12,62
5,7	66	28	A185440570000	12,62
5,8	66	28	A185440580000	12,83
5,9	66	28	A185440590000	12,83
6	66	28	A185440600000	12,62
6,1	70	31	A185440610000	18,04
6,2	70	31	A185440620000	18,32
6,3	70	31	A185440630000	18,51

D	L	I	Code	Price
mm.	mm.	mm.		€
6,4	70	31	A185440640000	19,48
6,5	70	31	A185440650000	16,96
6,6	70	31	A185440660000	19,67
6,7	70	31	A185440670000	20,05
6,8	74	34	A185440680000	20,45
6,9	74	34	A185440690000	20,63
7	74	34	A185440700000	18,75
7,1	74	34	A185440710000	24,15
7,2	74	34	A185440720000	24,50
7,3	74	34	A185440730000	24,50
7,4	74	34	A185440740000	24,85
7,5	74	34	A185440750000	20,24
7,6	79	37	A185440760000	24,85
7,7	79	37	A185440770000	24,85
7,8	79	37	A185440780000	25,81
7,9	79	37	A185440790000	25,81
8	79	37	A185440800000	20,81
8,1	79	37	A185440810000	25,81
8,2	79	37	A185440820000	26,60
8,3	79	37	A185440830000	27,56
8,4	79	37	A185440840000	29,14
8,5	79	37	A185440850000	21,59
8,6	84	40	A185440860000	29,49
8,7	84	40	A185440870000	29,49
8,8	84	40	A185440880000	30,88
8,9	84	40	A185440890000	31,07
9	84	40	A185440900000	23,71
9,1	84	40	A185440910000	31,42
9,2	84	40	A185440920000	32,55
9,3	84	40	A185440930000	32,55
9,4	84	40	A185440940000	33,16
9,5	84	40	A185440950000	25,29
9,6	89	43	A185440960000	33,52
9,7	89	43	A185440970000	35,70
9,8	89	43	A185440980000	36,49
9,9	89	43	A185440990000	37,63
10	89	43	A185441000000	26,60
10,2	89	43	A185441020000	40,86
10,3	89	43	A185441030000	40,86
10,5	89	43	A185441050000	36,49
10,8	95	47	A185441080000	51,27
11	95	47	A185441100000	39,38
11,2	95	47	A185441120000	52,06
11,3	95	47	A185441130000	53,64

185.44
DIN 1897

 Optimus series
 HSSCo 5%

 Type SLZ
 3 x D

TiN

 Standard stub drills. High performance
 Straight shank drills

D	L	I	Code	Price
mm.	mm.	mm.		€
11,5	95	47	A185441150000	40,07
11,8	95	47	A185441180000	54,78
12	102	51	A185441200000	40,07
12,5	102	51	A185441250000	44,72
12,8	102	51	A185441280000	54,78
13	102	51	A185441300000	47,86
13,3	107	54	A185441330000	60,99
13,5	107	54	A185441350000	54,78
13,8	107	54	A185441380000	60,99
14	107	54	A185441400000	55,57
14,5	111	56	A185441450000	59,06
14,8	111	56	A185441480000	62,47
15	111	56	A185441500000	62,47
15,3	115	58	A185441530000	75,25
15,5	115	58	A185441550000	64,40
15,8	115	58	A185441580000	71,71
16	115	58	A185441600000	66,33
16,5	115	58	A185441650000	74,81
17	119	60	A185441700000	75,25
17,5	123	62	A185441750000	76,74
18	123	62	A185441800000	77,18
18,5	127	64	A185441850000	78,75
19	127	64	A185441900000	79,45
19,5	131	66	A185441950000	81,03
20	131	66	A185442000000	83,30

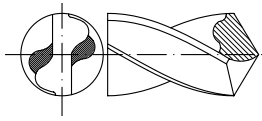
Cutting conditions and recommended material

Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	45	50	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
2	40	50	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
3	40	45	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
4	25	34	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
5	13,5	20	(A) (B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180	0,200
6	20	20	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
7	14	19	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
8	11	16	(B) (A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
10	5,5	7	(B) (A)	0,020	0,030	0,030	0,040	0,050	0,060	0,060	0,080	0,100	0,120	0,140	0,160
13.1	40	50	(C) (A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
13.2	31,5	40	(C) (A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
16	70	70	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
17	56	56	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
18	70	70	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
19	45	45	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
20	33	40	(A) (B)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
21	70	70	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
24.1	80	100	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
24.2	55	75	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
25	45	45	(E)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

 $r.p.m. = Vc \times 1000 / (\pi \times D)$

183.43
DIN 338



Optimus series
HSSCo 5%

Type SLZ
5 x D

TiAlN

Jobber drills.
High performance

Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web type U
Web thickness	Heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Coated
Coating	TiAlN

Details and applications

This robust drill with reinforced web and wide flutes, form type SLZ, self-centring and TiAlN coating, is specially appropriate for drilling deeper holes in difficult conditions where chip removal is difficult and swarf creates problems of coolant reaching the drill point, and in those cases where the depth to drill is less than 5 x D. This is our highest performance drill, ideal for intensive working processes. We also have more economic families such as series 180.40 and 105.30. Use to drill: Steel and cast steel, alloyed and non alloyed over 900 N/mm² to 1200 N/mm². Some nickel-chrome steels-Ferritic and martensitic stainless steels-Acid resistant steels-Spring steels-Tough grey cast iron, malleable cast iron-Spheroidal cast iron.



D	L	I	Code	Price
mm.	mm.	mm.		€
2	49	24	A183430200000	11,07
2,1	49	24	A183430210000	11,33
2,2	53	27	A183430220000	11,33
2,3	53	27	A183430230000	11,33
2,4	57	30	A183430240000	11,57
2,5	57	30	A183430250000	11,07
2,6	57	30	A183430260000	11,57
2,7	61	33	A183430270000	12,04
2,8	61	33	A183430280000	12,33
2,9	61	33	A183430290000	12,33
3	61	33	A183430300000	11,33
3,1	65	36	A183430310000	12,54
3,2	65	36	A183430320000	12,04
3,3	65	36	A183430330000	12,46
3,4	70	39	A183430340000	13,00
3,5	70	39	A183430350000	12,46
3,6	70	39	A183430360000	13,39
3,7	70	39	A183430370000	13,51
3,8	75	43	A183430380000	13,64
3,9	75	43	A183430390000	13,68
4	75	43	A183430400000	13,03
4,1	75	43	A183430410000	13,81
4,2	75	43	A183430420000	13,28
4,3	80	47	A183430430000	13,96
4,4	80	47	A183430440000	14,04
4,5	80	47	A183430450000	13,51
4,6	80	47	A183430460000	14,33
4,7	80	47	A183430470000	14,44
4,8	86	52	A183430480000	14,59
4,9	86	52	A183430490000	14,70
5	86	52	A183430500000	14,21
5,1	86	52	A183430510000	14,94
5,2	86	52	A183430520000	15,06
5,3	86	52	A183430530000	15,18
5,4	93	57	A183430540000	15,39
5,5	93	57	A183430550000	14,94
5,6	93	57	A183430560000	15,64
5,7	93	57	A183430570000	15,87
5,8	93	57	A183430580000	16,16
5,9	93	57	A183430590000	16,16
6	93	57	A183430600000	15,87
6,1	101	63	A183430610000	21,53

D	L	I	Code	Price
mm.	mm.	mm.		€
6,2	101	63	A183430620000	22,33
6,3	101	63	A183430630000	23,58
6,4	101	63	A183430640000	23,76
6,5	101	63	A183430650000	21,53
6,6	101	63	A183430660000	25,42
6,7	101	63	A183430670000	25,42
6,8	109	69	A183430680000	25,79
6,9	109	69	A183430690000	27,82
7	109	69	A183430700000	23,12
7,1	109	69	A183430710000	30,67
7,2	109	69	A183430720000	30,67
7,3	109	69	A183430730000	30,67
7,4	109	69	A183430740000	30,67
7,5	109	69	A183430750000	27,17
7,6	117	75	A183430760000	31,32
7,7	117	75	A183430770000	31,87
7,8	117	75	A183430780000	32,61
7,9	117	75	A183430790000	33,34
8	117	75	A183430800000	28,00
8,1	117	75	A183430810000	34,91
8,2	117	75	A183430820000	36,93
8,3	117	75	A183430830000	37,95
8,4	117	75	A183430840000	39,61
8,5	117	75	A183430850000	29,84
8,6	125	81	A183430860000	41,82
8,7	125	81	A183430870000	42,18
8,8	125	81	A183430880000	42,18
8,9	125	81	A183430890000	43,01
9	125	81	A183430900000	30,67
9,1	125	81	A183430910000	43,01
9,2	125	81	A183430920000	44,67
9,3	125	81	A183430930000	44,67
9,4	125	81	A183430940000	44,67
9,5	125	81	A183430950000	33,89
9,6	133	87	A183430960000	46,33
9,7	133	87	A183430970000	47,07
9,8	133	87	A183430980000	47,89
9,9	133	87	A183430990000	48,72
10	133	87	A183431000000	34,26
10,2	133	87	A183431020000	49,55
10,5	133	87	A183431050000	46,33
11	142	94	A183431100000	46,70

183.43
DIN 338

 Optimus series
 HSSCo 5%

 Type SLZ
 5 x D

TiAlN

 Jobber drills. High performance
 Straight shank drills

D	L	I	Code	Price
mm.	mm.	mm.		€
11,2	142	94	A183431120000	86,12
11,5	142	94	A183431150000	51,21
12	151	101	A183431200000	58,12
12,5	151	101	A183431250000	72,30
13	151	101	A183431300000	89,34
13,5	160	108	A183431350000	99,47
14	160	108	A183431400000	101,32
14,5	169	114	A183431450000	103,16
15	169	114	A183431500000	106,84
15,3	178	120	A183431530000	108,68
15,5	178	120	A183431550000	110,53
16	178	120	A183431600000	113,29
16,5	184	125	A183431650000	127,11
17	184	125	A183431700000	128,03
17,5	191	130	A183431750000	130,79
18	191	130	A183431800000	131,71
18,5	198	135	A183431850000	151,05
20	205	140	A183432000000	141,84

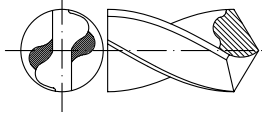
Cutting conditions and recommended material

Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
3	45	50	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
4	40	50	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
5	30	35	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
6	28	35	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
7	15	20	(A) (B)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
8	23	23	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
5	17	20	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
6	13	16	(B) (A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
7	6	7,5	(B) (A)	0,020	0,030	0,030	0,040	0,050	0,060	0,060	0,080	0,100	0,120	0,140	0,160
8	45	55	(C) (A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
7	40	45	(C) (A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
5	63	63	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
6	50	50	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
7	63	63	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
8	47	47	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
10	40	40	(A) (B)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
13.1	70	90	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630
13.2	50	70	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

 r.p.m. = $V_c \times 1000 / (\pi \times D)$

183.44
DIN 338



Optimus series
HSSCo 5%

Type SLZ
5 x D

TiN

Jobber drills.
High performance

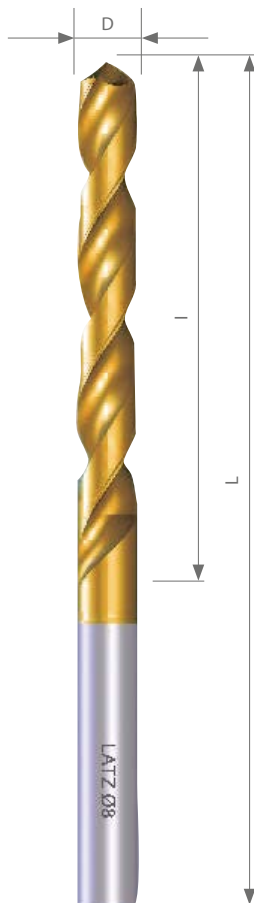
Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web type U
Web thickness	Heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Coated
Coating	TiN

Details and applications

This robust drill with reinforced web and wide flutes, form type SLZ, self-centring and TiN coating, is specially appropriate for drilling deeper holes in difficult conditions where chip removal is difficult and swarf creates problems of coolant reaching the drill point, and in those cases where the depth to drill is less than 5 x D. This is our highest performance drill, ideal for intensive working processes. We also have more economic families such as series 180.40 and 105.30. Use to drill: Steel and cast steel, alloyed and non alloyed over 900 N/mm² to 1200 N/mm². Some nickel-chrome steels-Ferritic and martensitic stainless steels-Acid resistant steels-Spring steels-Tough grey cast iron, malleable cast iron-Spheroidal cast iron.



D	L	I	Code	Price
mm.	mm.	mm.		€
2	49	24	A183440200000	10,51
2,1	49	24	A183440210000	10,76
2,2	53	27	A183440220000	10,76
2,3	53	27	A183440230000	10,76
2,4	57	30	A183440240000	10,99
2,5	57	30	A183440250000	10,51
2,6	57	30	A183440260000	10,99
2,7	61	33	A183440270000	11,43
2,8	61	33	A183440280000	11,71
2,9	61	33	A183440290000	11,71
3	61	33	A183440300000	10,76
3,1	65	36	A183440310000	11,91
3,2	65	36	A183440320000	11,43
3,3	65	36	A183440330000	11,83
3,4	70	39	A183440340000	12,35
3,5	70	39	A183440350000	11,83
3,6	70	39	A183440360000	12,72
3,7	70	39	A183440370000	12,83
3,8	75	43	A183440380000	12,95
3,9	75	43	A183440390000	12,99
4	75	43	A183440400000	12,37
4,1	75	43	A183440410000	13,11
4,2	75	43	A183440420000	12,61
4,3	80	47	A183440430000	13,26
4,4	80	47	A183440440000	13,33
4,5	80	47	A183440450000	12,83
4,6	80	47	A183440460000	13,61
4,7	80	47	A183440470000	13,71
4,8	86	52	A183440480000	13,86
4,9	86	52	A183440490000	13,96
5	86	52	A183440500000	13,49
5,1	86	52	A183440510000	14,19
5,2	86	52	A183440520000	14,30
5,3	86	52	A183440530000	14,42
5,4	93	57	A183440540000	14,62
5,5	93	57	A183440550000	14,19
5,6	93	57	A183440560000	14,85
5,7	93	57	A183440570000	15,07
5,8	93	57	A183440580000	15,35
5,9	93	57	A183440590000	15,35
6	93	57	A183440600000	15,07
6,1	101	63	A183440610000	20,45
6,2	101	63	A183440620000	21,21
6,3	101	63	A183440630000	22,40

D	L	I	Code	Price
mm.	mm.	mm.		€
6,4	101	63	A183440640000	22,57
6,5	101	63	A183440650000	20,45
6,6	101	63	A183440660000	24,14
6,7	101	63	A183440670000	24,14
6,8	109	69	A183440680000	24,50
6,9	109	69	A183440690000	26,42
7	109	69	A183440700000	21,96
7,1	109	69	A183440710000	29,13
7,2	109	69	A183440720000	29,13
7,3	109	69	A183440730000	29,13
7,4	109	69	A183440740000	29,13
7,5	109	69	A183440750000	25,81
7,6	117	75	A183440760000	29,75
7,7	117	75	A183440770000	30,27
7,8	117	75	A183440780000	30,97
7,9	117	75	A183440790000	31,67
8	117	75	A183440800000	26,60
8,1	117	75	A183440810000	33,16
8,2	117	75	A183440820000	35,08
8,3	117	75	A183440830000	36,05
8,4	117	75	A183440840000	37,62
8,5	117	75	A183440850000	28,34
8,6	125	81	A183440860000	39,72
8,7	125	81	A183440870000	40,07
8,8	125	81	A183440880000	40,07
8,9	125	81	A183440890000	40,85
9	125	81	A183440900000	29,13
9,1	125	81	A183440910000	40,85
9,2	125	81	A183440920000	42,43
9,3	125	81	A183440930000	42,43
9,4	125	81	A183440940000	42,43
9,5	125	81	A183440950000	32,19
9,6	133	87	A183440960000	44,01
9,7	133	87	A183440970000	44,71
9,8	133	87	A183440980000	45,49
9,9	133	87	A183440990000	46,28
10	133	87	A183441000000	32,54
10,2	133	87	A183441020000	47,07
10,5	133	87	A183441050000	44,01
11	142	94	A183441100000	44,36
11,2	142	94	A183441120000	81,81
11,5	142	94	A183441150000	48,64
12	151	101	A183441200000	55,21
12,5	151	101	A183441250000	68,68

183.44
DIN 338

 Optimus series
 HSSCo 5%

 Type SLZ
 5 x D

TiN

 Jobber drills. High performance
 Straight shank drills

D	L	I	Code	Price
mm.	mm.	mm.		€
13	151	101	A183441300000	84,87
13,5	160	108	A183441350000	94,49
14	160	108	A183441400000	96,25
14,5	169	114	A183441450000	98,00
15	169	114	A183441500000	101,49
15,3	178	120	A183441530000	103,24
15,5	178	120	A183441550000	105,00
16	178	120	A183441600000	107,62
16,5	184	125	A183431650000	120,75
17	184	125	A183431700000	121,62
17,5	191	130	A183431750000	124,25
18	191	130	A183431800000	125,12
18,5	198	135	A183431850000	143,49
20	205	140	A183432000000	134,74

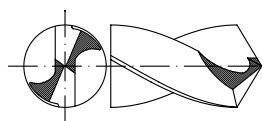
Cutting conditions and recommended material																
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill												
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25	
4	40	45	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500	
5	35	45	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500	
5	35	40	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630	
6	23	30	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310	
7	12	17	(A) (B)	0,030	0,030	0,040	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,200	
8	18	18	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310	
5	12,5	17	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310	
6	10	14	(B) (A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250	
7	5	6,5	(B) (A)	0,020	0,030	0,030	0,040	0,050	0,060	0,060	0,080	0,100	0,120	0,140	0,160	
4	35	45	(C) (A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500	
5	28	35	(C) (A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500	
8	63	63	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500	
7	50	50	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400	
5	63	63	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500	
6	40	40	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400	
7	30	35	(A) (B)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310	
8	63	63	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630	
10	70	90	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630	
13.1	50	70	(A)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630	
13.2	40	40	(E)	0,080	0,100	0,130	0,160	0,200	0,250	0,280	0,310	0,400	0,500	0,560	0,630	

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000/ (π x D)

181.40

DIN 338



Optimus series | Type NG

HSSCo 5% | 5 x D

Jobber drills. Heavy duty.

Straight shank drills

Design and technical specifications

Helix angle	Standard (DIN 1414 type N)
Point angle	130°
Point grinding	Relieved cone and web thinned according to DIN 1412-C ("Split point")
Web thickness	Much heavier than normal
Web taper	Light
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	No surface treatment, bright finish

Details and applications

The high strength at elevated temperatures of the cobalt high speed steel HSSCo and the special design for heavy duty applications provide this drill with exceptional qualities for the drilling of extra hard steels, forgings and other highly resistant materials (with reinforced web and pointed in the same way as crankshaft drills). Use to drill: Titanium and titanium alloys-Refines alloy steels over 900 N/mm². Stainless austenitic, nickel-chrome, heat resisting steels- Vanadium stainless steels-hastelloy, Inconel, nimonic and other special alloy steels used in the aircraft industry.



D	L	I	Code	Price
mm.	mm.	mm.		€
0,3	19	3	A181400030000	11,17
0,4	20	5	A181400040000	8,46
0,45	20	5	A181400045000	11,35
0,5	22	6	A181400050000	6,88
0,55	24	7	A181400055000	11,35
0,6	24	7	A181400060000	6,88
0,65	26	8	A181400065000	10,08
0,7	28	9	A181400070000	6,17
0,75	28	9	A181400075000	7,86
0,8	30	10	A181400080000	5,98
0,85	30	10	A181400085000	7,07
0,9	32	11	A181400090000	5,79
0,95	32	11	A181400095000	6,80
1	34	12	A181400100000	5,38
1,05	34	12	A181400105000	6,88
1,1	36	14	A181400110000	5,56
1,15	36	14	A181400115000	7,26
1,2	38	16	A181400120000	6,09
1,25	38	16	A181400125000	7,07
1,3	38	16	A181400130000	5,79
1,35	40	18	A181400135000	7,37
1,4	40	18	A181400140000	5,38
1,45	40	18	A181400145000	6,39
1,5	40	18	A181400150000	5,08
1,55	43	20	A181400155000	6,69
1,6	43	20	A181400160000	5,38
1,65	43	20	A181400165000	6,25
1,7	43	20	A181400170000	5,56
1,75	46	22	A181400175000	7,67
1,8	46	22	A181400180000	5,38
1,85	46	22	A181400185000	7,18
1,9	46	22	A181400190000	5,56
1,95	49	24	A181400195000	7,86
2	49	24	A181400200000	4,35
2,05	49	24	A181400205000	6,12
2,1	49	24	A181400210000	5,52
2,15	49	24	A181400215000	6,37
2,2	53	27	A181400220000	5,52
2,25	53	27	A181400225000	6,74
2,3	53	27	A181400230000	5,52
2,35	53	27	A181400235000	6,94
2,4	57	30	A181400240000	5,56
2,45	57	30	A181400245000	7,10
2,5	57	30	A181400250000	4,52
2,55	57	30	A181400255000	7,21
2,6	57	30	A181400260000	5,64
2,65	57	30	A181400265000	7,48
2,7	61	33	A181400270000	5,86
2,75	61	33	A181400275000	7,81
2,8	61	33	A181400280000	5,82
2,85	61	33	A181400285000	7,86
2,9	61	33	A181400290000	5,82

D	L	I	Code	Price
mm.	mm.	mm.		€
2,95	61	33	A181400295000	7,94
3	61	33	A181400300000	4,52
3,1	65	36	A181400310000	5,86
3,2	65	36	A181400320000	5,12
3,25	65	36	A181400325000	7,88
3,3	65	36	A181400330000	5,12
3,4	70	39	A181400340000	6,29
3,5	70	39	A181400350000	5,17
3,6	70	39	A181400360000	6,47
3,7	70	39	A181400370000	6,56
3,75	70	39	A181400375000	9,92
3,8	75	43	A181400380000	6,61
3,9	75	43	A181400390000	6,83
4	75	43	A181400400000	5,52
4,1	75	43	A181400410000	6,83
4,2	75	43	A181400420000	6,51
4,25	75	43	A181400425000	14,06
4,3	80	47	A181400430000	6,94
4,4	80	47	A181400440000	7,13
4,5	80	47	A181400450000	6,83
4,6	80	47	A181400460000	7,38
4,7	80	47	A181400470000	7,43
4,75	80	47	A181400475000	14,06
4,8	86	52	A181400480000	7,57
4,9	86	52	A181400490000	7,69
5	86	52	A181400500000	6,69
5,1	86	52	A181400510000	7,69
5,2	86	52	A181400520000	7,86
5,25	86	52	A181400525000	15,52
5,3	86	52	A181400530000	8,11
5,4	93	57	A181400540000	8,70
5,5	93	57	A181400550000	9,34
5,6	93	57	A181400560000	8,92
5,7	93	57	A181400570000	9,05
5,75	93	57	A181400575000	16,97
5,8	93	57	A181400580000	9,13
5,9	93	57	A181400590000	9,34
6	93	57	A181400600000	8,78
6,1	101	63	A181400610000	9,91
6,2	101	63	A181400620000	9,99
6,25	101	63	A181400625000	20,72
6,3	101	63	A181400630000	10,20
6,4	101	63	A181400640000	10,81
6,5	101	63	A181400650000	9,91
6,6	101	63	A181400660000	10,92
6,7	101	63	A181400670000	11,08
6,75	106	69	A181400675000	23,26
6,8	109	69	A181400680000	11,86
6,9	109	69	A181400690000	11,86
7	109	69	A181400700000	10,62
7,1	109	69	A181400710000	14,22
7,2	109	69	A181400720000	14,22

181.40
DIN 338

 Optimus series
 HSSCo 5%

 Type NG
 5 x D

 Jobber drills. Heavy duty.
 Straight shank drills

D	L	I	Code	Price
mm.	mm.	mm.		€
7,25	109	69	A181400725000	27,74
7,3	109	69	A181400730000	14,22
7,4	109	69	A181400740000	14,22
7,5	109	69	A181400750000	12,19
7,6	117	75	A181400760000	16,99
7,7	117	75	A181400770000	16,99
7,75	117	75	A181400775000	29,07
7,8	117	75	A181400780000	16,99
7,9	117	75	A181400790000	16,99
8	117	75	A181400800000	13,65
8,1	117	75	A181400810000	16,99
8,2	117	75	A181400820000	18,04
8,25	117	75	A181400825000	34,04
8,3	117	75	A181400830000	18,04
8,4	117	75	A181400840000	18,59
8,5	117	75	A181400850000	15,22
8,6	125	81	A181400860000	20,14
8,7	125	81	A181400870000	20,14
8,75	125	81	A181400875000	41,20
8,8	125	81	A181400880000	21,64
8,9	125	81	A181400890000	22,83
9	125	81	A181400900000	17,84
9,1	125	81	A181400910000	23,93
9,2	125	81	A181400920000	25,63
9,25	125	81	A181400925000	42,41
9,3	125	81	A181400930000	26,74
9,4	125	81	A181400940000	28,52
9,5	125	81	A181400950000	19,56
9,6	133	87	A181400960000	29,11
9,7	133	87	A181400970000	30,47
9,75	133	87	A181400975000	46,30
9,8	133	87	A181400980000	31,74
9,9	133	87	A181400990000	33,10
10	133	87	A181401000000	20,62
10,2	133	87	A181401020000	37,85
10,25	133	87	A181401025000	46,53
10,5	133	87	A181401050000	29,11
10,75	142	94	A181401075000	46,30
11	142	94	A181401100000	32,42
11,2	142	94	A181401120000	53,98
11,25	142	94	A181401125000	62,77
11,5	142	94	A181401150000	41,08
11,75	142	94	A181401175000	63,36
12	151	101	A181401200000	46,51
12,5	151	101	A181401250000	55,68
13	151	101	A181401300000	66,54

D	L	I	Code	Price
mm.	mm.	mm.		€
13,5	160	108	A181401350000	68,32
14	160	108	A181401400000	77,41
14,25	169	114	A181401425000	112,70
14,5	169	114	A181401450000	96,76
15	169	114	A181401500000	99,30
15,5	178	120	A181401550000	124,81
16	178	120	A181401600000	126,63

Cutting conditions and recommended material

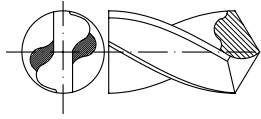
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill										
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20
5	14	14	(B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180
6	14	14	(B)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
7	8	12,5	(B)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
8	6,3	10	(B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180
10	4	6,3	(B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180
17	25	40	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

 r.p.m. = $V_c \times 1000 / (\pi \times D)$

184.43

DIN 340



Optimus series HSSCo 5%

Type SLZ 10 x D

TiAlN

Taper length. High performance

Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web type U
Web thickness	Heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Coated
Coating	TiN

Details and applications

This robust drill with reinforced web and wide flutes, form type SLZ, self-centring and TiAlN coating, is specially appropriate for drilling deeper holes in difficult conditions where chip removal is difficult and swarf creates problems of coolant reaching the drill point, and in those cases where the depth to drill is less than 10 x D. This is our highest performance drill, ideal for intensive working processes. We also have more economic families such as series 182.40 and 115.30. Use to drill: Steel and cast steel, alloyed and non alloyed over 900 N/mm² to 1200 N/mm²- Some nickel-chrome steels-Ferritic and martensitic stainless steels-Acid resistant steels-Spring steels-Tough grey cast iron, malleable cast iron-Spheroidal cast iron.



D	L	I	Code	Price
mm.	mm.	mm.		€
2	85	56	A184430200000	23,67
2,1	85	56	A184430210000	24,50
2,2	90	59	A184430220000	24,50
2,3	90	59	A184430230000	24,50
2,4	95	62	A184430240000	24,87
2,5	95	62	A184430250000	23,67
2,6	95	62	A184430260000	24,87
2,7	100	66	A184430270000	25,79
2,8	100	66	A184430280000	26,62
2,9	100	66	A184430290000	26,62
3	100	66	A184430300000	24,50
3,1	106	69	A184430310000	27,54
3,2	106	69	A184430320000	24,78
3,3	106	69	A184430330000	25,05
3,4	112	73	A184430340000	28,37
3,5	112	73	A184430350000	25,42
3,6	112	73	A184430360000	28,74
3,7	112	73	A184430370000	29,47
3,8	119	78	A184430380000	29,84
3,9	119	78	A184430390000	30,49
4	119	78	A184430400000	26,62
4,1	119	78	A184430410000	30,95
4,2	119	78	A184430420000	28,74
4,3	126	82	A184430430000	31,41
4,4	126	82	A184430440000	31,41
4,5	126	82	A184430450000	29,47
4,6	126	82	A184430460000	31,41
4,7	126	82	A184430470000	31,41
4,8	132	87	A184430480000	31,41
4,9	132	87	A184430490000	32,61
5	132	87	A184430500000	30,30
5,1	132	87	A184430510000	32,61
5,2	132	87	A184430520000	32,61
5,3	132	87	A184430530000	32,61
5,4	139	91	A184430540000	32,97
5,5	139	91	A184430550000	33,16
5,6	139	91	A184430560000	33,62
5,7	139	91	A184430570000	33,99
5,8	139	91	A184430580000	34,72
5,9	139	91	A184430590000	36,01
6	139	91	A184430600000	36,47
6,1	148	97	A184430610000	47,07
6,2	148	97	A184430620000	48,26
6,3	148	97	A184430630000	50,11

D	L	I	Code	Price
mm.	mm.	mm.		€
6,4	148	97	A184430640000	50,57
6,5	148	97	A184430650000	45,50
6,6	148	97	A184430660000	53,24
6,7	148	97	A184430670000	53,24
6,8	156	102	A184430680000	56,74
6,9	156	102	A184430690000	57,11
7	156	102	A184430700000	52,41
7,1	156	102	A184430710000	58,67
7,2	156	102	A184430720000	61,71
7,3	156	102	A184430730000	64,84
7,4	156	102	A184430740000	64,84
7,5	156	102	A184430750000	58,21
7,6	165	109	A184430760000	65,95
7,7	165	109	A184430770000	67,88
7,8	165	109	A184430780000	69,82
7,9	165	109	A184430790000	71,75
8	165	109	A184430800000	60,14
8,1	165	109	A184430810000	74,42
8,2	165	109	A184430820000	76,72
8,3	165	109	A184430830000	81,79
8,4	165	109	A184430840000	85,66
8,5	165	109	A184430850000	64,84
8,6	175	115	A184430860000	88,70
8,7	175	115	A184430870000	89,53
8,8	175	115	A184430880000	89,53
8,9	175	115	A184430890000	93,03
9	175	115	A184430900000	67,51
9,1	175	115	A184430910000	93,03
9,2	175	115	A184430920000	95,79
9,3	175	115	A184430930000	95,79
9,4	175	115	A184430940000	95,79
9,5	175	115	A184430950000	76,72
9,6	184	121	A184430960000	101,32
9,7	184	121	A184430970000	105,00
9,8	184	121	A184430980000	107,76
9,9	184	121	A184430990000	107,76
10	184	121	A184431000000	77,18
10,2	184	121	A184431020000	107,76
10,5	184	121	A184431050000	101,32
11	195	128	A184431100000	106,84
11,5	195	128	A184431150000	116,05
12	205	134	A184431200000	129,87

184.43
DIN 340

 Optimus series
 HSSCo 5%

 Type SLZ
 10 x D

TiAlN

 Taper length. High performance
 Straight shank drills

Cutting conditions and recommended material

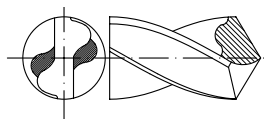
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	36	40	(A)	0,072	0,090	0,117	0,144	0,180	0,225	0,252	0,279	0,360	0,450	0,504	0,567
2	32	40	(A)	0,072	0,090	0,117	0,144	0,180	0,225	0,252	0,279	0,360	0,450	0,504	0,567
3	24	28	(A)	0,054	0,072	0,090	0,117	0,144	0,180	0,198	0,225	0,279	0,360	0,405	0,450
4	22,5	28	(A)	0,045	0,054	0,072	0,090	0,117	0,144	0,162	0,180	0,225	0,279	0,315	0,360
5	12	16	(A) (B)	0,027	0,036	0,045	0,054	0,072	0,090	0,090	0,117	0,144	0,180	0,198	0,225
6	18,5	18,5	(A)	0,045	0,054	0,072	0,090	0,117	0,144	0,162	0,180	0,225	0,279	0,315	0,360
7	13,5	16	(A)	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,180	0,225	0,252	0,279
8	10,5	13	(B) (A)	0,027	0,036	0,045	0,054	0,072	0,090	0,090	0,117	0,144	0,180	0,198	0,225
10	4,5	6	(B) (A)	0,018	0,027	0,027	0,036	0,045	0,054	0,054	0,072	0,090	0,108	0,126	0,144
13.1	36	44	(C) (A)	0,072	0,090	0,117	0,144	0,180	0,225	0,252	0,279	0,360	0,450	0,504	0,567
13.2	32	36	(C) (A)	0,072	0,090	0,117	0,144	0,180	0,225	0,252	0,279	0,360	0,450	0,504	0,567
16	50	50	(A)	0,054	0,072	0,090	0,117	0,144	0,180	0,198	0,225	0,279	0,360	0,405	0,450
17	40	40	(A)	0,045	0,054	0,072	0,090	0,117	0,144	0,162	0,180	0,225	0,279	0,315	0,360
18	50	50	(A)	0,054	0,072	0,090	0,117	0,144	0,180	0,198	0,225	0,279	0,360	0,405	0,450
19	35	38	(A)	0,045	0,054	0,072	0,090	0,117	0,144	0,162	0,180	0,225	0,279	0,315	0,360
20	32	32	(A) (B)	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,180	0,225	0,252	0,279
24.1	56	72	(A)	0,072	0,090	0,117	0,144	0,180	0,225	0,252	0,279	0,360	0,450	0,504	0,567
24.2	40	56	(A)	0,072	0,090	0,117	0,144	0,180	0,225	0,252	0,279	0,360	0,450	0,504	0,567

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

 r.p.m. = $V_c \times 1000 / (\pi \times D)$

184.44

DIN 340



Optimus series HSSCo 5%

Type SLZ 10 x D

TiN

Taper length. High performance

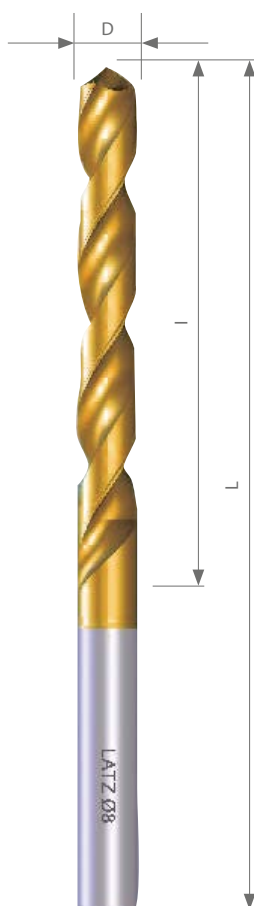
Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web type U
Web thickness	Heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Coated
Coating	TiN

Details and applications

This robust drill with reinforced web and wide flutes, form type SLZ, self-centring and TiN coating, is specially appropriate for drilling deeper holes in difficult conditions where chip removal is difficult and swarf creates problems of coolant reaching the drill point, and in those cases where the depth to drill is less than 10 x D. This is our highest performance drill, ideal for intensive working processes. We also have more economic families such as series 182.40 and 115.30. Use to drill: Steel and cast steel, alloyed and non alloyed over 900 N/mm² to 1200 N/mm². Some nickel-chrome steels-Ferritic and martensitic stainless steels-Acid resistant steels-Spring steels-Tough grey cast iron, malleable cast iron-Spheroidal cast iron.



D	L	L'	Code	Price
mm.	mm.	mm.		€
2	85	56	A184440200000	22,49
2,1	85	56	A184440210000	23,28
2,2	90	59	A184440220000	23,28
2,3	90	59	A184440230000	23,28
2,4	95	62	A184440240000	23,63
2,5	95	62	A184440250000	22,49
2,6	95	62	A184440260000	23,63
2,7	100	66	A184440270000	24,50
2,8	100	66	A184440280000	25,29
2,9	100	66	A184440290000	25,29
3	100	66	A184440300000	23,28
3,1	106	69	A184440310000	26,16
3,2	106	69	A184440320000	23,54
3,3	106	69	A184440330000	23,80
3,4	112	73	A184440340000	26,95
3,5	112	73	A184440350000	24,15
3,6	112	73	A184440360000	27,30
3,7	112	73	A184440370000	28,00
3,8	119	78	A184440380000	28,35
3,9	119	78	A184440390000	28,97
4	119	78	A184440400000	25,29
4,1	119	78	A184440410000	29,40
4,2	119	78	A184440420000	27,30
4,3	126	82	A184440430000	29,84
4,4	126	82	A184440440000	29,84
4,5	126	82	A184440450000	28,00
4,6	126	82	A184440460000	29,84
4,7	126	82	A184440470000	29,84
4,8	132	87	A184440480000	29,84
4,9	132	87	A184440490000	30,98
5	132	87	A184440500000	28,79
5,1	132	87	A184440510000	30,98
5,2	132	87	A184440520000	30,98
5,3	132	87	A184440530000	30,98
5,4	139	91	A184440540000	31,32
5,5	139	91	A184440550000	31,50
5,6	139	91	A184440560000	31,94
5,7	139	91	A184440570000	32,29
5,8	139	91	A184440580000	32,98
5,9	139	91	A184440590000	34,21
6	139	91	A184440600000	34,65
6,1	148	97	A184440610000	44,72
6,2	148	97	A184440620000	45,85
6,3	148	97	A184440630000	47,60

D	L	L'	Code	Price
mm.	mm.	mm.		€
6,4	148	97	A184440640000	48,04
6,5	148	97	A184440650000	43,23
6,6	148	97	A184440660000	50,58
6,7	148	97	A184440670000	50,58
6,8	156	102	A184440680000	53,90
6,9	156	102	A184440690000	54,25
7	156	102	A184440700000	49,79
7,1	156	102	A184440710000	55,74
7,2	156	102	A184440720000	58,62
7,3	156	102	A184440730000	61,60
7,4	156	102	A184440740000	61,60
7,5	156	102	A184440750000	55,30
7,6	165	109	A184440760000	62,65
7,7	165	109	A184440770000	64,49
7,8	165	109	A184440780000	66,33
7,9	165	109	A184440790000	68,16
8	165	109	A184440800000	57,13
8,1	165	109	A184440810000	70,70
8,2	165	109	A184440820000	72,88
8,3	165	109	A184440830000	77,70
8,4	165	109	A184440840000	81,38
8,5	165	109	A184440850000	61,60
8,6	175	115	A184440860000	84,27
8,7	175	115	A184440870000	85,05
8,8	175	115	A184440880000	85,05
8,9	175	115	A184440890000	88,38
9	175	115	A184440900000	64,13
9,1	175	115	A184440910000	88,38
9,2	175	115	A184440920000	91,00
9,3	175	115	A184440930000	91,00
9,4	175	115	A184440940000	91,00
9,5	175	115	A184440950000	72,88
9,6	184	121	A184440960000	96,25
9,7	184	121	A184440970000	99,75
9,8	184	121	A184440980000	102,37
9,9	184	121	A184440990000	102,37
10	184	121	A184441000000	73,32
10,2	184	121	A184441020000	102,37
10,5	184	121	A184441050000	96,25
11	195	128	A184441100000	101,50
11,5	195	128	A184441150000	110,25
12	205	134	A184441200000	123,38

184.44
DIN 340

 Optimus series
 HSSCo 5%

 Type SLZ
 10 x D

TiN

 Taper length. High performance
 Straight shank drills

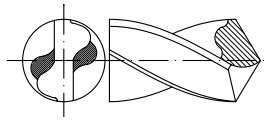
Cutting conditions and recommended material															
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	32	36	(A)	0,05	0,07	0,09	0,12	0,14	0,18	0,20	0,23	0,28	0,36	0,41	0,45
2	28	36	(A)	0,05	0,07	0,09	0,12	0,14	0,18	0,20	0,23	0,28	0,36	0,41	0,45
3	28	32	(A)	0,07	0,09	0,12	0,14	0,18	0,23	0,25	0,28	0,36	0,45	0,50	0,57
4	18	24	(A)	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,18	0,23	0,25	0,28
5	9,5	13,5	(A) (B)	0,03	0,03	0,04	0,05	0,05	0,07	0,07	0,09	0,12	0,14	0,16	0,18
6	14	15	(A)	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,18	0,23	0,25	0,28
7	10	14	(A)	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,18	0,23	0,25	0,28
8	8	11	(B) (A)	0,03	0,04	0,05	0,05	0,07	0,09	0,09	0,12	0,14	0,18	0,20	0,23
10	4	5,2	(B) (A)	0,02	0,03	0,03	0,04	0,05	0,05	0,05	0,07	0,09	0,11	0,13	0,14
13.1	28	36	(C) (A)	0,05	0,07	0,09	0,12	0,14	0,18	0,20	0,23	0,28	0,36	0,41	0,45
13.2	22	28	(C) (A)	0,05	0,07	0,09	0,12	0,14	0,18	0,20	0,23	0,28	0,36	0,41	0,45
16	50	50	(A)	0,05	0,07	0,09	0,12	0,14	0,18	0,20	0,23	0,28	0,36	0,41	0,45
17	40	40	(A)	0,05	0,05	0,07	0,09	0,12	0,14	0,16	0,18	0,23	0,28	0,32	0,36
18	50	50	(A)	0,05	0,07	0,09	0,12	0,14	0,18	0,20	0,23	0,28	0,36	0,41	0,45
19	32	32	(A)	0,05	0,05	0,07	0,09	0,12	0,14	0,16	0,18	0,23	0,28	0,32	0,36
20	24	28	(A) (B)	0,04	0,05	0,05	0,07	0,09	0,11	0,13	0,14	0,18	0,23	0,25	0,28
21	50	50	(A)	0,07	0,09	0,12	0,14	0,18	0,23	0,25	0,28	0,36	0,45	0,50	0,57
24.1	56	72	(A)	0,07	0,09	0,12	0,14	0,18	0,23	0,25	0,28	0,36	0,45	0,50	0,57
24.2	40	56	(A)	0,07	0,09	0,12	0,14	0,18	0,23	0,25	0,28	0,36	0,45	0,50	0,57
25	32	32	(E)	0,07	0,09	0,12	0,14	0,18	0,23	0,25	0,28	0,36	0,45	0,50	0,57

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

 $r.p.m. = Vc \times 1000 / (\pi \times D)$

124.40

DIN 1869/1



Optimus series | Type SLZ HSSCo 5% | 15 x D

Extra length drills. Series 1 High performance

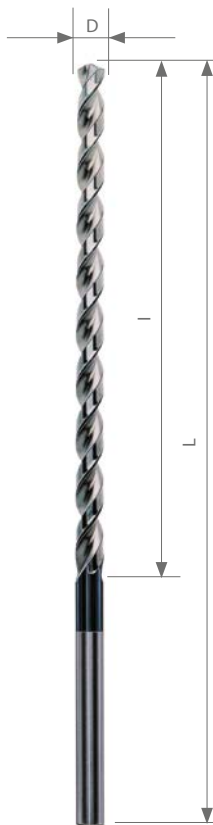
Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web type U
Web thickness	Much heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated land, bright finish flutes

Details and applications

This robust drill with reinforced web and wide flutes, form type SLZ, self-centring, nitrided phase and polished slot, is specially appropriate for continuous drilling of extremely deep holes where chip removal and lubrication of the edge make working difficult, for drilling no more than 15 x D. This is our highest performance drill, ideal for intensive working processes. We also have more economic families such as series 121.30 and 124.30. Use to drill: Steel and cast steel, alloyed and non alloyed over 900 N/mm² to 1200 N/mm²- Some nickel-chrome steels-Ferritic and martensitic stainless steels-Acid resistant steels-Spring steels-Tough grey cast iron, malleable cast iron-Spheroidal cast iron.



D	L	I	Code	Price
mm.	mm.	mm.		€
2	125	85	A124400200000	12,71
2,1	125	85	A124400210000	15,80
2,2	135	90	A124400220000	15,80
2,3	135	90	A124400230000	15,80
2,4	140	95	A124400240000	16,50
2,5	140	95	A124400250000	12,71
2,6	140	95	A124400260000	16,50
2,7	150	100	A124400270000	17,60
2,8	150	100	A124400280000	17,60
2,9	150	100	A124400290000	17,60
3	150	100	A124400300000	14,70
3,1	155	105	A124400310000	18,28
3,2	155	105	A124400320000	16,16
3,3	155	105	A124400330000	16,54
3,4	165	115	A124400340000	18,49
3,5	165	115	A124400350000	14,70
3,6	165	115	A124400360000	18,49
3,7	165	115	A124400370000	20,12
3,8	175	120	A124400380000	20,12
3,9	175	120	A124400390000	20,12
4	175	120	A124400400000	14,97
4,1	175	120	A124400410000	20,12
4,2	175	120	A124400420000	15,04
4,3	185	125	A124400430000	23,12
4,4	185	125	A124400440000	23,12
4,5	185	125	A124400450000	16,04
4,6	185	125	A124400460000	23,12
4,7	185	125	A124400470000	23,49
4,8	195	135	A124400480000	23,86
4,9	195	135	A124400490000	24,68
5	195	135	A124400500000	16,95
5,1	195	135	A124400510000	25,88
5,2	195	135	A124400520000	26,34
5,3	195	135	A124400530000	26,34
5,4	205	140	A124400540000	26,34
5,5	205	140	A124400550000	18,67
5,6	205	140	A124400560000	26,34
5,7	205	140	A124400570000	26,89
5,8	205	140	A124400580000	28,00
5,9	205	140	A124400590000	28,00
6	205	140	A124400600000	18,67
6,1	215	150	A124400610000	29,47

D	L	I	Code	Price
mm.	mm.	mm.		€
6,2	215	150	A124400620000	29,11
6,3	215	150	A124400630000	31,04
6,4	215	150	A124400640000	31,78
6,5	215	150	A124400650000	25,88
6,6	215	150	A124400660000	31,78
6,7	215	150	A124400670000	33,43
6,8	225	155	A124400680000	33,07
6,9	225	155	A124400690000	35,18
7	225	155	A124400700000	26,89
7,1	225	155	A124400710000	39,14
7,2	225	155	A124400720000	39,14
7,3	225	155	A124400730000	39,14
7,4	225	155	A124400740000	39,14
7,5	225	155	A124400750000	30,67
7,6	240	165	A124400760000	40,62
7,7	240	165	A124400770000	42,09
7,8	240	165	A124400780000	44,39
7,9	240	165	A124400790000	45,87
8	240	165	A124400800000	33,07
8,1	240	165	A124400810000	51,86
8,2	240	165	A124400820000	51,86
8,3	240	165	A124400830000	51,86
8,4	240	165	A124400840000	54,16
8,5	240	165	A124400850000	43,57
8,6	250	175	A124400860000	55,63
8,7	250	175	A124400870000	58,30
8,8	250	175	A124400880000	60,97
8,9	250	175	A124400890000	62,45
9	250	175	A124400900000	46,61
9,1	250	175	A124400910000	65,49
9,2	250	175	A124400920000	68,80
9,3	250	175	A124400930000	71,11
9,4	250	175	A124400940000	72,95
9,5	250	175	A124400950000	53,42
9,6	265	185	A124400960000	75,25
9,7	265	185	A124400970000	75,25
9,8	265	185	A124400980000	76,72
9,9	265	185	A124400990000	79,03
10	265	185	A124401000000	55,26
10,5	265	185	A124401050000	75,25
11	280	195	A124401100000	63,18
11,5	280	195	A124401150000	78,20
12	295	205	A124401200000	72,21

Cutting conditions and recommended material

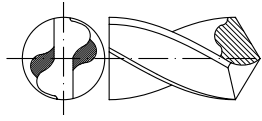
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill										
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20
1	22	28	(A)	0,040	0,048	0,064	0,080	0,104	0,128	0,144	0,160	0,200	0,248	0,280
2	21	28	(A)	0,040	0,048	0,064	0,080	0,104	0,128	0,144	0,160	0,200	0,248	0,280
3	17,5	21	(A)	0,040	0,048	0,064	0,080	0,104	0,128	0,144	0,160	0,200	0,248	0,280
4	10,5	14	(A)	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,160	0,200	0,224
5	7	9	(B)	0,024	0,024	0,032	0,040	0,048	0,064	0,064	0,080	0,104	0,128	0,144
6	10	10	(B)	0,024	0,032	0,040	0,048	0,064	0,080	0,080	0,104	0,128	0,160	0,176
7	5	9	(B)	0,024	0,032	0,040	0,048	0,064	0,080	0,080	0,104	0,128	0,160	0,176
8	4,5	7	(B)	0,024	0,024	0,032	0,040	0,048	0,064	0,064	0,080	0,104	0,128	0,144
10	3	4,5	(B)	0,024	0,024	0,032	0,040	0,048	0,064	0,064	0,080	0,104	0,128	0,144
13.1	21	25	(A)	0,040	0,048	0,064	0,080	0,104	0,128	0,144	0,160	0,200	0,248	0,280
13.2	15	22,5	(A)	0,048	0,064	0,080	0,104	0,128	0,160	0,176	0,200	0,248	0,320	0,360
17	17,5	28	(A)	0,040	0,048	0,064	0,080	0,104	0,128	0,144	0,160	0,200	0,248	0,280

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = $V_c \times 1000 / (\pi \times D)$

125.40

DIN 1869/2



Optimus series | Type SLZ

HSSCo 5% | 20 x D

Extra length drills. Series 2.

High performance

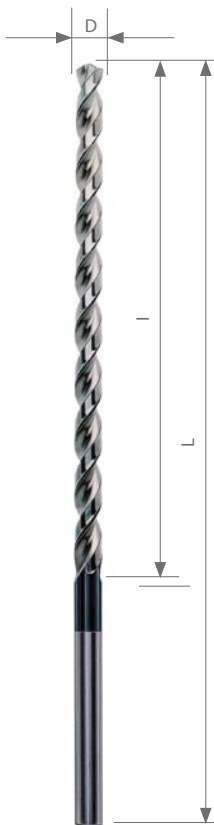
Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web type U
Web thickness	Much heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated land, bright finish flutes

Details and applications

This robust drill with reinforced web and wide flutes, form type SLZ, self-centring, nitrided phase and polished slot, is specially appropriate for continuous drilling of extremely deep holes where chip removal and lubrication of the edge make working difficult, for drilling no more than 20 x D. This is our highest performance drill, ideal for intensive working processes. We also have more economic families such as series 122.30 and 125.30. Use to drill: Steel and cast steel, alloyed and non alloyed over 900 N/mm² to 1200 N/mm². Some nickel-chrome steels-Ferritic and martensitic stainless steels-Acid resistant steels-Spring steels-Tough grey cast iron, malleable cast iron-Spheroidal cast iron.



D	L	l	Code	Price
mm.	mm.	mm.		€
3	190	130	A125400300000	19,74
3,5	210	145	A125400350000	19,92
4	220	150	A125400400000	21,06
4,5	235	160	A125400450000	23,12
5	245	170	A125400500000	24,59
5,5	260	180	A125400550000	27,08
6	260	180	A125400600000	28,09
6,5	275	190	A125400650000	31,41
7	290	200	A125400700000	34,82
7,5	290	200	A125400750000	38,32
8	305	210	A125400800000	41,63
8,5	305	210	A125400850000	55,63
9	320	220	A125400900000	60,97
9,5	320	220	A125400950000	63,18
10	340	235	A125401000000	64,66
10,5	340	235	A125401050000	91,74
11	365	250	A125401100000	93,95
11,5	365	250	A125401150000	101,32
12	375	260	A125401200000	106,84

Cutting conditions and recommended material

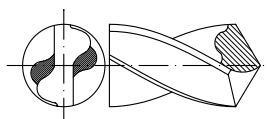
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill										
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20
1	22	28	(A)	0,04	0,04	0,06	0,07	0,09	0,11	0,13	0,14	0,18	0,22	0,25
2	21	28	(A)	0,04	0,04	0,06	0,07	0,09	0,11	0,13	0,14	0,18	0,22	0,25
3	17,5	21	(A)	0,04	0,04	0,06	0,07	0,09	0,11	0,13	0,14	0,18	0,22	0,25
4	10,5	14	(A)	0,03	0,04	0,04	0,06	0,07	0,08	0,10	0,11	0,14	0,18	0,20
5	7	9	(B)	0,02	0,02	0,03	0,04	0,04	0,06	0,06	0,07	0,09	0,11	0,13
6	10	10	(B)	0,02	0,03	0,04	0,04	0,06	0,07	0,07	0,09	0,11	0,14	0,15
7	5	9	(B)	0,02	0,03	0,04	0,04	0,06	0,07	0,07	0,09	0,11	0,14	0,15
8	4,5	7	(B)	0,02	0,02	0,03	0,04	0,04	0,06	0,06	0,07	0,09	0,11	0,13
10	3	4,5	(B)	0,02	0,02	0,03	0,04	0,04	0,06	0,06	0,07	0,09	0,11	0,13
13.1	21	25	(A)	0,04	0,04	0,06	0,07	0,09	0,11	0,13	0,14	0,18	0,22	0,25
13.2	15	22,5	(A)	0,04	0,06	0,07	0,09	0,11	0,14	0,15	0,18	0,22	0,28	0,32
17	17,5	28	(A)	0,04	0,04	0,06	0,07	0,09	0,11	0,13	0,14	0,18	0,22	0,25

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = $V_c \times 1000 / (\pi \times D)$

126.40

DIN 1869/3



Optimus series | Type SLZ

HSSCo 5% | 30 x D

Extra length drills. Series 3.

High performance

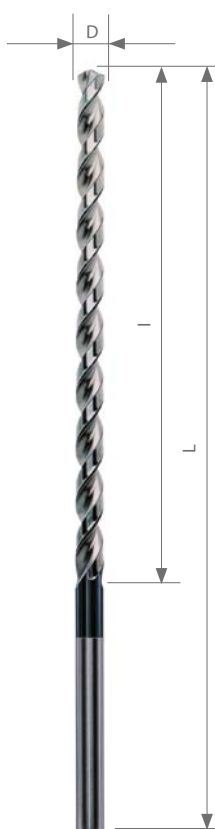
Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web type U
Web thickness	Much heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated land, bright finish flutes

Details and applications

This robust drill with reinforced web and wide flutes, form type SLZ, self-centring, nitrided phase and polished slot, is specially appropriate for continuous drilling of extremely deep holes where chip removal and lubrication of the edge make working difficult, for drilling no more than 30 x D. This is our highest performance drill, ideal for intensive working processes. We also have more economic families such as series 123.30 and 126.30. Use to drill: Steel and cast steel, alloyed and non alloyed over 900 N/mm² to 1200 N/mm²- Some nickel-chrome steels-Ferritic and martensitic stainless steels-Acid resistant steels-Spring steels-Tough grey cast iron, malleable cast iron-Spheroidal cast iron.



D	L	I	Code	Price
mm.	mm.	mm.		€
3,5	265	180	A126400350000	27,36
4	280	190	A126400400000	27,36
4,5	295	200	A126400450000	32,97
5	315	210	A126400500000	32,97
5,5	330	225	A126400550000	35,83
6	330	225	A126400600000	37,76
6,5	350	235	A126400650000	42,92
7	370	250	A126400700000	52,50
7,5	370	250	A126400750000	59,78
8	390	265	A126400800000	61,34
8,5	390	265	A126400850000	77,37
9	410	280	A126400900000	83,54
9,5	410	280	A126400950000	98,55
10	430	295	A126401000000	97,63
10,5	430	295	A126401050000	106,84
11	455	310	A126401100000	113,29
11,5	455	330	A126401150000	125,26
12	480	330	A126401200000	132,63

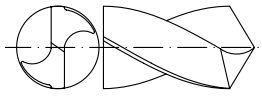
Cutting conditions and recommended material

Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill										
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20
1	22	28	(A)	0,030	0,036	0,048	0,060	0,078	0,096	0,108	0,120	0,150	0,186	0,210
2	21	28	(A)	0,030	0,036	0,048	0,060	0,078	0,096	0,108	0,120	0,150	0,186	0,210
3	17,5	21	(A)	0,030	0,036	0,048	0,060	0,078	0,096	0,108	0,120	0,150	0,186	0,210
4	10,5	14	(A)	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,120	0,150	0,168
5	7	9	(B)	0,018	0,018	0,024	0,030	0,036	0,048	0,048	0,060	0,078	0,096	0,108
6	10	10	(B)	0,018	0,024	0,030	0,036	0,048	0,060	0,060	0,078	0,096	0,120	0,132
7	5	9	(B)	0,018	0,024	0,030	0,036	0,048	0,060	0,060	0,078	0,096	0,120	0,132
8	4,5	7	(B)	0,018	0,018	0,024	0,030	0,036	0,048	0,048	0,060	0,078	0,096	0,108
10	3	4,5	(B)	0,018	0,018	0,024	0,030	0,036	0,048	0,048	0,060	0,078	0,096	0,108
13.1	21	25	(A)	0,030	0,036	0,048	0,060	0,078	0,096	0,108	0,120	0,150	0,186	0,210
13.2	15	22,5	(A)	0,036	0,048	0,060	0,078	0,096	0,120	0,132	0,150	0,186	0,240	0,270
17	17,5	28	(A)	0,030	0,036	0,048	0,060	0,078	0,096	0,108	0,120	0,150	0,186	0,210

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = $V_c \times 1000 / (\pi \times D)$

100.30
DIN 1897

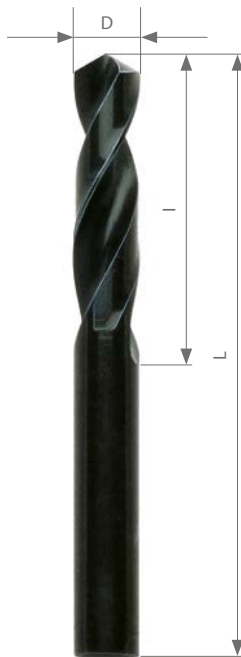


Classic series | Type N HSS | 3 x D

Standard stub drills Straight shank drills

Design and technical specifications

Helix angle	Standard (DIN1414 type N)
Point angle	118°
Point grinding	Relieved cone
Web thickness	Normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated. Nitrided (D<2,5mm Bright Finish)



Details and applications

This drill offers the maximum stiffness when working with hand drilling machines in the drilling of thin sections, sheet metal and in general in machining with automatic and capstan lathes: SHORT HOLES DRILLING. Excellent production drill for a wide range of applications. In this sizes this is our most economic family. For a higher performance we suggest our Optimus families 185.43 and 185.44. Use to drill: Steel and cast steel, alloyed and non-alloyed, up to 900 N/mm²- Grey cast iron-Malleable cast iron-Pressure casting-German silver-Graphite-Phosphor bronze for bearings-Bronze alloys of aluminium, lead, magnesium or silicon-Soft brass (≥60% Cu) continuous swarf-Electrolytic copper-Zinc alloys-Light alloys with thin broken swarf (alloys of silicon).

D	L	I	Code	Price
mm.	mm.	mm.		€
1	26	6	A100300100000	1,93
1,5	32	9	A100300150000	1,75
2	38	12	A100300200000	1,70
2,1	38	12	A100300210000	2,02
2,2	40	13	A100300220000	2,02
2,25	40	13	A100300225000	1,70
2,3	40	13	A100300230000	2,02
2,4	43	14	A100300240000	2,02
2,5	43	14	A100300250000	1,52
2,6	43	14	A100300260000	1,84
2,7	46	16	A100300270000	1,84
2,75	46	16	A100300275000	1,61
2,8	46	16	A100300280000	1,88
2,9	46	16	A100300290000	1,88
3	46	16	A100300300000	1,61
3,1	49	18	A100300310000	1,84
3,2	49	18	A100300320000	1,84
3,25	49	18	A100300325000	1,75
3,3	49	18	A100300330000	1,84
3,4	52	20	A100300340000	2,02
3,5	52	20	A100300350000	1,75
3,6	52	20	A100300360000	2,19
3,7	52	20	A100300370000	2,19
3,75	52	20	A100300375000	1,93
3,8	55	22	A100300380000	2,19
3,9	55	22	A100300390000	2,19
4	55	22	A100300400000	1,93
4,1	55	22	A100300410000	2,37
4,2	55	22	A100300420000	2,37
4,25	55	22	A100300425000	2,28
4,3	58	24	A100300430000	2,60
4,4	58	24	A100300440000	2,64
4,5	58	24	A100300450000	2,28
4,6	58	24	A100300460000	2,96
4,7	58	24	A100300470000	2,96
4,75	58	24	A100300475000	2,55
4,8	62	26	A100300480000	2,96
4,9	62	26	A100300490000	2,96
5	62	26	A100300500000	2,55
5,1	62	26	A100300510000	3,27

D	L	I	Code	Price
mm.	mm.	mm.		€
5,2	62	26	A100300520000	3,22
5,25	62	26	A100300525000	2,78
5,3	62	26	A100300530000	3,27
5,4	66	28	A100300540000	3,27
5,5	66	28	A100300550000	2,78
5,6	66	28	A100300560000	3,72
5,7	66	28	A100300570000	3,72
5,75	66	28	A100300575000	3,18
5,8	66	28	A100300580000	3,72
5,9	66	28	A100300590000	3,72
6	66	28	A100300600000	3,18
6,25	70	31	A100300625000	3,81
6,5	70	31	A100300650000	3,81
6,75	74	34	A100300675000	4,43
7	74	34	A100300700000	4,43
7,25	74	34	A100300725000	5,02
7,5	74	34	A100300750000	5,02
7,75	79	37	A100300775000	5,51
8	79	37	A100300800000	5,51
8,25	79	37	A100300825000	6,54
8,5	79	37	A100300850000	6,54
8,75	84	40	A100300875000	7,12
9	84	40	A100300900000	7,12
9,25	84	40	A100300925000	8,02
9,5	84	40	A100300950000	8,02
9,75	89	43	A100300975000	8,96
10	89	43	A100301000000	8,96
10,5	89	43	A100301050000	10,08
11	95	47	A100301100000	11,24
11,5	95	47	A100301150000	12,49
12	102	51	A100301200000	13,17
12,5	102	51	A100301250000	14,82
13	102	51	A100301300000	16,21
13,5	107	54	A100301350000	20,56
14	107	54	A100301400000	22,26
14,5	111	56	A100301450000	25,39
15	111	56	A100301500000	28,62
15,5	115	58	A100301550000	34,48
16	115	58	A100301600000	34,48

Cutting conditions and recommended material

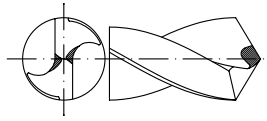
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	28	45	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
2	22,5	35	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
3	18	28	(A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
4	14	22,5	(A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
13.1	28	40	(A) (B)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
13.2	22,5	28	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
26	18	28	(D)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000 / (π x D)

100.40

DIN 1897



Classic series | Type NF

HSSCo 5% | 3 x D

Standard stub drills

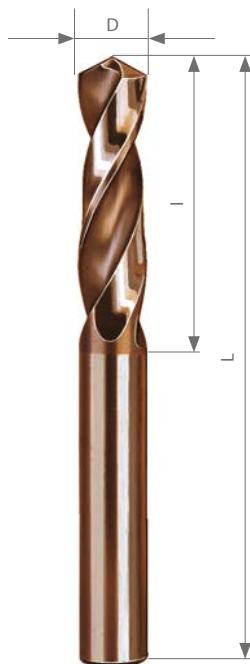
Straight shank drills

Design and technical specifications

Helix angle	Standard (DIN1414 type N)
Point angle	135°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated, golden-brown

Details and applications

Made of HSSCo, this drill increases the resistance of our family 100.30 to high temperatures. Its design, with reinforced web along all its length enables this drill to be used in working hard, difficult and resistant materials. For higher performance we suggest our Optimus families 185.43 and 185.44. Use to drill: Steel and cast steel, alloyed and non alloyed over 900 N/mm² to 1200 N/mm²- Some nickel-chrome steels-Ferritic and martensitic stainless steels-Acid resistant steels-Spring steels-Tough grey cast iron, malleable cast iron-Spheroidal cast iron.



D	L	l	Code	Price
mm.	mm.	mm.		€
1	26	6	A100400100000	3,81
1,5	32	9	A100400150000	3,81
2	38	12	A100400200000	3,13
2,1	38	12	A100400210000	4,16
2,2	40	13	A100400220000	4,12
2,25	40	13	A100400225000	4,30
2,3	40	13	A100400230000	4,16
2,4	43	14	A100400240000	4,16
2,5	43	14	A100400250000	2,82
2,6	43	14	A100400260000	3,36
2,7	46	16	A100400270000	3,31
2,75	46	16	A100400275000	3,40
2,8	46	16	A100400280000	3,36
2,9	46	16	A100400290000	3,36
3	46	16	A100400300000	2,78
3,1	49	18	A100400310000	3,00
3,2	49	18	A100400320000	3,05
3,25	49	18	A100400325000	3,00
3,3	49	18	A100400330000	3,00
3,4	52	20	A100400340000	3,72
3,5	52	20	A100400350000	3,00
3,6	52	20	A100400360000	3,72
3,7	52	20	A100400370000	3,72
3,75	52	20	A100400375000	3,85
3,8	55	22	A100400380000	3,72
3,9	55	22	A100400390000	3,72
4	55	22	A100400400000	3,31
4,1	55	22	A100400410000	3,94
4,2	55	22	A100400420000	3,99
4,25	55	22	A100400425000	3,94
4,3	58	24	A100400430000	4,66
4,4	58	24	A100400440000	4,66
4,5	58	24	A100400450000	3,94
4,6	58	24	A100400460000	4,84
4,7	58	24	A100400470000	4,84
4,75	58	24	A100400475000	4,43
4,8	62	26	A100400480000	4,84
4,9	62	26	A100400490000	4,84
5	62	26	A100400500000	4,43
5,1	62	26	A100400510000	5,46

D	L	l	Code	Price
mm.	mm.	mm.		€
5,2	62	26	A100400520000	5,46
5,25	62	26	A100400525000	4,93
5,3	62	26	A100400530000	5,42
5,4	66	28	A100400540000	5,42
5,5	66	28	A100400550000	4,93
5,6	66	28	A100400560000	5,78
5,7	66	28	A100400570000	5,78
5,75	66	28	A100400575000	5,96
5,8	66	28	A100400580000	5,78
5,9	66	28	A100400590000	5,78
6	66	28	A100400600000	5,60
6,25	70	31	A100400625000	7,39
6,5	70	31	A100400650000	6,67
6,75	74	34	A100400675000	9,36
7	74	34	A100400700000	7,70
7,25	74	34	A100400725000	9,81
7,5	74	34	A100400750000	9,90
7,75	79	37	A100400775000	9,90
8	79	37	A100400800000	9,63
8,25	79	37	A100400825000	12,67
8,5	79	37	A100400850000	11,42
8,75	84	40	A100400875000	13,70
9	84	40	A100400900000	12,45
9,25	84	40	A100400925000	15,54
9,5	84	40	A100400950000	14,02
9,75	89	43	A100400975000	17,47
10	89	43	A100401000000	15,63
10,5	89	43	A100401050000	17,24
11	95	47	A100401100000	19,48
11,5	95	47	A100401150000	21,63
12	102	51	A100401200000	22,84
12,5	102	51	A100401250000	25,93
13	102	51	A100401300000	28,35
13,5	107	54	A100401350000	35,87
14	107	54	A100401400000	38,60
14,5	111	56	A100401450000	53,56
15	111	56	A100401500000	54,37
15,5	115	58	A100401550000	62,92
16	115	58	A100401600000	65,25

Cutting conditions and recommended material

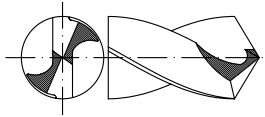
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
3	28	33,75	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
4	16,5	22,5	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
5	11,25	18	(A)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180	0,200
6	15,75	15,75	(A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
7	9	14	(A) (B)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
8	7	11,25	(A) (B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180	0,200
10	4,5	6,75	(A) (B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180	0,200
13.1	33	39	(B) (A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
13.2	25	36	(B) (A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = $V_c \times 1000 / (\pi \times D)$

102.30

DIN 1897

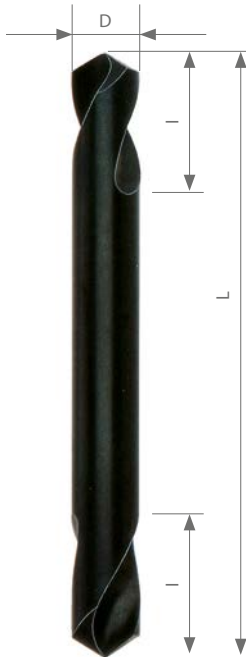


Classic series | Type N HSS

Double ended. Body drills Straight shank drills

Design and technical specifications

Helix angle	Standard (DIN1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-C ("Split point")
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Normal, uncleared flutes
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated. Nitrided (D<2,5mm Bright Finish)



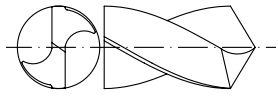
Details and applications

A rigid drill, pointed at both ends (better performance and more use). Its use is specially recommended in hand drilling machines for drilling sheet metal (car bodies, etc.), and making the holes for rivets in thin sections. It is possible to drill in polished and inclined surfaces without sliding thanks to its better stability and the self centring capacity (thanks to the split point). Generally used in sheet metal works. Use to drill: Thin metals (sheets) with tensile strength not higher than 900 N/mm².

D	L	I	Code	Price
mm.	mm.	mm.		€
2	38	8	A102300200000	3,45
2,5	43	10	A102300250000	3,40
3	46	10	A102300300000	2,96
3,1	49	11	A102300310000	3,00
3,25	49	11	A102300325000	2,96
3,3	49	11	A102300330000	3,05
3,5	52	12	A102300350000	3,27
4	55	14	A102300400000	3,40
4,1	55	14	A102300410000	3,58
4,2	55	14	A102300420000	3,58
4,25	55	14	A102300425000	3,67
4,5	58	15	A102300450000	3,76
4,75	58	15	A102300475000	6,09
5	62	17	A102300500000	4,30
5,1	62	17	A102300510000	5,96
5,5	66	19	A102300550000	5,19
6	66	19	A102300600000	5,82
6,5	70	21	A102300650000	6,76
7	74	24	A102300700000	7,30
7,5	74	24	A102300750000	8,24
8	79	25	A102300800000	9,36
8,5	79	25	A102300850000	9,90
9	84	25	A102300900000	13,17
9,5	84	25	A102300950000	14,91
9,75	89	25	A102300975000	16,57
10	89	25	A102301000000	11,29

105.30

DIN 338



Classic series | Type N HSS | 5 x D

Jobber drills Straight shank drills

Design and technical specifications

Helix angle	Standard (DIN 1414 type N)
Point angle	118°
Point grinding	Relieved cone
Web thickness	Normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated, Nitrided (D<2,5mm Bright Finish)



Details and applications

The slender geometry and the strength of this tool, the surface treatment and its dimensional characteristics make this drill "the standard straight shank drill". It can be used in a wide range of applications. In this range of sizes it is our most economic family. For higher performance we suggest our Optimus families 183.43 and 183.44. Use to drill: Steel and cast steel, alloyed and non-alloyed, up to 900 N/mm²- Grey cast iron-Malleable cast iron-Spheroidal cast iron-Pressure casting-Sintered iron-German silver-Graphite or carbon-Phosphor bronze for bearings-Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu), continuous swarf-Electrolytic copper-Zinc alloys-Light metal with thin, broken swarf (alloys of silicon)

D	L	I	Code	Price
mm.	mm.	mm.		€
0,2	19	2,5	A105300020000	6,12
0,21	19	2,5	A105300021000	6,12
0,22	19	2,5	A105300022000	6,12
0,23	19	2,5	A105300023000	6,12
0,24	19	2,5	A105300024000	6,12
0,25	19	3	A105300025000	4,43
0,26	19	3	A105300026000	5,57
0,27	19	3	A105300027000	5,57
0,28	19	3	A105300028000	5,57
0,29	19	3	A105300029000	5,57
0,3	19	3	A105300030000	3,88
0,31	19	4	A105300031000	4,52
0,32	19	4	A105300032000	4,52
0,33	19	4	A105300033000	4,52
0,34	19	4	A105300034000	4,52
0,35	19	4	A105300035000	3,24
0,36	19	4	A105300036000	4,52
0,37	19	4	A105300037000	4,52
0,38	19	4	A105300038000	4,52
0,39	20	5	A105300039000	4,52
0,4	20	5	A105300040000	3,38
0,41	20	5	A105300041000	4,25
0,42	20	5	A105300042000	4,25
0,43	20	5	A105300043000	4,25
0,44	20	5	A105300044000	4,25
0,45	20	5	A105300045000	2,69
0,46	20	5	A105300046000	4,25
0,47	20	5	A105300047000	4,25
0,48	20	5	A105300048000	4,25
0,49	22	6	A105300049000	4,25
0,5	22	6	A105300050000	2,56
0,51	22	6	A105300051000	3,47
0,52	22	6	A105300052000	3,47
0,53	22	6	A105300053000	3,47
0,54	24	7	A105300054000	3,47
0,55	24	7	A105300055000	3,10
0,56	24	7	A105300056000	3,47
0,57	24	7	A105300057000	3,47
0,58	24	7	A105300058000	3,47
0,59	24	7	A105300059000	3,47
0,6	24	7	A105300060000	2,56
0,61	26	8	A105300061000	3,47
0,62	26	8	A105300062000	3,47
0,63	26	8	A105300063000	3,47
0,64	26	8	A105300064000	3,47
0,65	26	8	A105300065000	3,10
0,66	26	8	A105300066000	3,61
0,67	26	8	A105300067000	3,61
0,68	28	9	A105300068000	3,38
0,69	28	9	A105300069000	3,38
0,7	28	9	A105300070000	2,37
0,71	28	9	A105300071000	2,69
0,72	28	9	A105300072000	2,69
0,73	28	9	A105300073000	2,69
0,74	28	9	A105300074000	2,69
0,75	28	9	A105300075000	2,10
0,76	30	10	A105300076000	2,65
0,77	30	10	A105300077000	2,65
0,78	30	10	A105300078000	2,65
0,79	30	10	A105300079000	2,65
0,8	30	10	A105300080000	2,15

D	L	I	Code	Price
mm.	mm.	mm.		€
0,81	30	10	A105300081000	2,78
0,82	30	10	A105300082000	2,78
0,83	30	10	A105300083000	2,78
0,84	30	10	A105300084000	2,78
0,85	30	10	A105300085000	2,42
0,86	32	11	A105300086000	2,78
0,87	32	11	A105300087000	2,78
0,88	32	11	A105300088000	2,78
0,89	32	11	A105300089000	2,78
0,9	32	11	A105300090000	2,10
0,91	32	11	A105300091000	2,56
0,92	32	11	A105300092000	2,56
0,93	32	11	A105300093000	2,56
0,94	32	11	A105300094000	2,56
0,95	32	11	A105300095000	2,28
0,96	34	12	A105300096000	2,51
0,97	34	12	A105300097000	2,51
0,98	34	12	A105300098000	2,51
0,99	34	12	A105300099000	2,51
1	34	12	A105300100000	1,48
1,05	34	12	A105300105000	1,84
1,1	36	14	A105300110000	1,48
1,15	36	14	A105300115000	1,97
1,2	38	16	A105300120000	1,48
1,25	38	16	A105300125000	1,57
1,3	38	16	A105300130000	1,48
1,35	40	18	A105300135000	1,84
1,4	40	18	A105300140000	1,48
1,45	40	18	A105300145000	1,84
1,5	40	18	A105300150000	1,30
1,55	43	20	A105300155000	1,61
1,6	43	20	A105300160000	1,61
1,65	43	20	A105300165000	1,61
1,7	43	20	A105300170000	1,61
1,75	46	22	A105300175000	1,43
1,8	46	22	A105300180000	1,43
1,85	46	22	A105300185000	1,43
1,9	46	22	A105300190000	1,43
1,95	49	24	A105300195000	1,43
2	49	24	A105300200000	1,21
2,05	49	24	A105300205000	1,39
2,1	49	24	A105300210000	1,43
2,15	49	24	A105300215000	1,39
2,2	53	27	A105300220000	1,39
2,25	53	27	A105300225000	1,30
2,3	53	27	A105300230000	1,61
2,35	53	27	A105300235000	1,66
2,4	57	30	A105300240000	1,66
2,45	57	30	A105300245000	1,66
2,5	57	30	A105300250000	1,34
2,55	57	30	A105300255000	1,70
2,6	57	30	A105300260000	1,66
2,65	57	30	A105300265000	1,66
2,7	61	33	A105300270000	1,66
2,75	61	33	A105300275000	1,43
2,8	61	33	A105300280000	1,66
2,85	61	33	A105300285000	1,66
2,9	61	33	A105300290000	1,66
2,95	61	33	A105300295000	1,66
3	61	33	A105300300000	1,21
3,1	65	36	A105300310000	1,43

D	L	I	Code	Price
mm.	mm.	mm.		€
3,2	65	36	A105300320000	1,43
3,25	65	36	A105300325000	1,43
3,3	65	36	A105300330000	1,43
3,4	70	39	A105300340000	1,84
3,5	70	39	A105300350000	1,39
3,6	70	39	A105300360000	1,88
3,7	70	39	A105300370000	1,93
3,75	70	39	A105300375000	1,61
3,8	75	43	A105300380000	1,97
3,9	75	43	A105300390000	1,97
4	75	43	A105300400000	1,57
4,1	75	43	A105300410000	1,75
4,2	75	43	A105300420000	1,79
4,25	75	43	A105300425000	1,75
4,3	80	47	A105300430000	2,33
4,4	80	47	A105300440000	2,33
4,5	80	47	A105300450000	1,79
4,6	80	47	A105300460000	2,37
4,7	80	47	A105300470000	2,37
4,75	80	47	A105300475000	2,10
4,8	86	52	A105300480000	2,60
4,9	86	52	A105300490000	2,55
5	86	52	A105300500000	1,93
5,1	86	52	A105300510000	2,64
5,2	86	52	A105300520000	2,64
5,25	86	52	A105300525000	2,46
5,3	86	52	A105300530000	3,27
5,4	93	57	A105300540000	3,27
5,5	93	57	A105300550000	2,55
5,6	93	57	A105300560000	3,49
5,7	93	57	A105300570000	3,49
5,75	93	57	A105300575000	3,36
5,8	93	57	A105300580000	3,27
5,9	93	57	A105300590000	3,27
6	93	57	A105300600000	2,64
6,1	101	63	A105300610000	3,81
6,2	101	63	A105300620000	3,81
6,25	101	63	A105300625000	3,58
6,3	101	63	A105300630000	3,99
6,4	101	63	A105300640000	4,08
6,5	101	63	A105300650000	3,09
6,6	101	63	A105300660000	4,97
6,7	101	63	A105300670000	5,02
6,75	109	69	A105300675000	3,76
6,8	109	69	A105300680000	3,90
6,9	109	69	A105300690000	5,46
7	109	69	A105300700000	3,76
7,1	109	69	A105300710000	5,82
7,2	109	69	A105300720000	5,82

D	L	I	Code	Price
mm.	mm.	mm.		€
7,25	109	69	A105300725000	4,75
7,3	109	69	A105300730000	5,82
7,4	109	69	A105300740000	5,82
7,5	109	69	A105300750000	3,94
7,6	117	75	A105300760000	6,85
7,7	117	75	A105300770000	6,85
7,75	117	75	A105300775000	5,33
7,8	117	75	A105300780000	6,94
7,9	117	75	A105300790000	6,94
8	117	75	A105300800000	4,52
8,1	117	75	A105300810000	7,08
8,2	117	75	A105300820000	7,08
8,25	117	75	A105300825000	5,33
8,3	117	75	A105300830000	7,39
8,4	117	75	A105300840000	7,34
8,5	117	75	A105300850000	4,93
8,6	125	81	A105300860000	9,23
8,7	125	81	A105300870000	9,27
8,75	125	81	A105300875000	7,08
8,8	125	81	A105300880000	9,27
8,9	125	81	A105300890000	9,27
9	125	81	A105300900000	5,96
9,1	125	81	A105300910000	9,31
9,2	125	81	A105300920000	9,36
9,25	125	81	A105300925000	7,25
9,3	125	81	A105300930000	8,87
9,4	125	81	A105300940000	8,87
9,5	125	81	A105300950000	6,49
9,6	133	87	A105300960000	11,15
9,7	133	87	A105300970000	11,15
9,75	133	87	A105300975000	8,06
9,8	133	87	A105300980000	10,97
9,9	133	87	A105300990000	11,02
10	133	87	A105301000000	6,94
10,1	133	87	A105301010000	9,54
10,2	133	87	A105301020000	8,87
10,25	133	87	A105301025000	9,72
10,3	133	87	A105301030000	11,02
10,4	133	87	A105301040000	11,02
10,5	133	87	A105301050000	8,78
10,6	133	87	A105301060000	12,18
10,7	142	94	A105301070000	12,18
10,75	142	94	A105301075000	11,42
10,8	142	94	A105301080000	13,48
10,9	142	94	A105301090000	13,48
11	142	94	A105301100000	10,26
11,1	142	94	A105301110000	13,75
11,2	142	94	A105301120000	13,75
11,25	142	94	A105301125000	11,60

D	L	I	Code	Price
mm.	mm.	mm.		€
11,3	142	94	A105301130000	13,52
11,4	142	94	A105301140000	13,48
11,5	142	94	A105301150000	10,93
11,6	142	94	A105301160000	13,48
11,7	142	94	A105301170000	13,48
11,75	142	94	A105301175000	11,60
11,8	142	94	A105301180000	14,69
11,9	151	101	A105301190000	14,78
12	151	101	A105301200000	12,18
12,1	151	101	A105301210000	17,24
12,2	151	101	A105301220000	17,24
12,25	151	101	A105301225000	15,14
12,3	151	101	A105301230000	16,30
12,4	151	101	A105301240000	16,30
12,5	151	101	A105301250000	13,30
12,6	151	101	A105301260000	16,75
12,7	151	101	A105301270000	16,93
12,75	151	101	A105301275000	14,82
12,8	151	101	A105301280000	18,67
12,9	151	101	A105301290000	18,67
13	151	101	A105301300000	13,88
13,1	151	101	A105301310000	19,08
13,2	151	101	A105301320000	19,08
13,25	160	108	A105301325000	21,59
13,3	160	108	A105301330000	29,51
13,4	160	108	A105301340000	29,51
13,5	160	108	A105301350000	19,44
13,6	160	108	A105301360000	29,51
13,7	160	108	A105301370000	29,51
13,75	160	108	A105301375000	21,81
13,8	160	108	A105301380000	28,26
13,9	160	108	A105301390000	28,03
14	160	108	A105301400000	20,64
14,25	169	114	A105301425000	24,45
14,5	169	114	A105301450000	22,21
14,75	169	114	A105301475000	24,45
15	169	114	A105301500000	22,70
15,25	178	120	A105301525000	33,14
15,5	178	120	A105301550000	26,56
15,75	178	120	A105301575000	33,77
16	178	120	A105301600000	27,63
16,5	184	125	A105301650000	31,75
17	184	125	A105301700000	31,84
17,5	191	130	A105301750000	36,50
18	191	130	A105301800000	38,60
18,5	198	135	A105301850000	42,81
19	198	135	A105301900000	42,81
19,5	205	140	A105301950000	45,99
20	205	140	A105302000000	52,89

Cutting conditions and recommended material

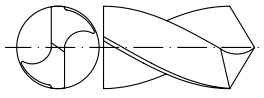
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	25	40	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
2	20	31,5	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
3	16	25	(A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
4	12,5	20	(A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
13.1	25	35	(A) (B)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
13.2	20	25	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
26	16	25	(D)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000 / (π x D)

105.34

DIN 338



Classic series HSS

Type N 5 x D

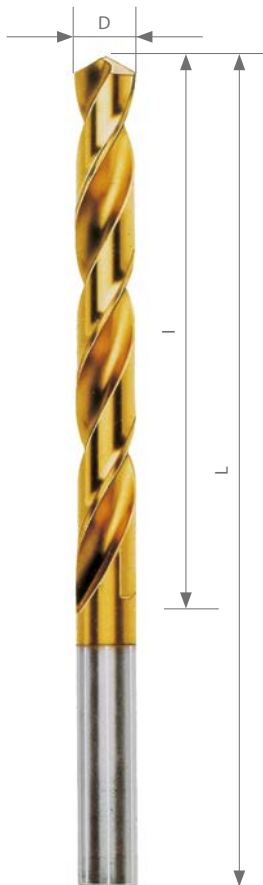
TiN

Jobber drills

Straight shank drills

Design and technical specifications

Helix angle	Standard (DIN 1414 type N)
Point angle	118°
Point grinding	Relieved cone
Web thickness	Normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Coated
Coating	TiN



Details and applications

Thanks to its Titanium coating, this drill offers a higher performance than our family 105.30 and it also allows an increase of the cutting conditions. This is our most economic version among our coated drills. For higher performance we suggest our Optimus families 183.43 and 183.44. Use to drill: Steel and cast steel, alloyed and non-alloyed, up to 900 N/mm² - Grey cast iron-Malleable cast iron-Pressure casting-German silver-Graphite-phosphor bronze for bearings-Bronze alloys of aluminium, lead, magnesium or silicon-Soft brass (≥60% Cu) continuous swarf-Electrolytic copper-Zinc alloys with thin broken swarf (alloys of silicon).

D	L	l	Code	Price
mm.	mm.	mm.		€
0,2	19	2,5	A105340020000	14,38
0,21	19	2,5	A105340021000	14,38
0,22	19	2,5	A105340022000	14,38
0,23	19	2,5	A105340023000	14,38
0,24	19	2,5	A105340024000	14,38
0,25	19	3	A105340025000	10,43
0,26	19	3	A105340026000	13,08
0,27	19	3	A105340027000	13,08
0,28	19	3	A105340028000	13,08
0,29	19	3	A105340029000	13,08
0,3	19	3	A105340030000	9,14
0,31	19	4	A105340031000	10,61
0,32	19	4	A105340032000	10,61
0,33	19	4	A105340033000	10,61
0,34	19	4	A105340034000	10,61
0,35	19	4	A105340035000	7,66
0,36	19	4	A105340036000	10,61
0,37	19	4	A105340037000	10,61
0,38	19	4	A105340038000	10,61
0,39	20	5	A105340039000	10,61
0,4	20	5	A105340040000	7,97
0,41	20	5	A105340041000	9,99
0,42	20	5	A105340042000	9,99
0,43	20	5	A105340043000	9,99
0,44	20	5	A105340044000	9,99
0,45	20	5	A105340045000	6,36
0,46	20	5	A105340046000	9,99
0,47	20	5	A105340047000	9,99
0,48	20	5	A105340048000	9,99
0,49	22	6	A105340049000	9,99
0,5	22	6	A105340050000	6,05
0,51	22	6	A105340051000	8,20
0,52	22	6	A105340052000	8,20
0,53	22	6	A105340053000	8,20
0,54	24	7	A105340054000	8,20
0,55	24	7	A105340055000	7,34
0,56	24	7	A105340056000	8,20
0,57	24	7	A105340057000	8,20
0,58	24	7	A105340058000	8,20
0,59	24	7	A105340059000	8,20
0,6	24	7	A105340060000	6,05
0,61	26	8	A105340061000	8,20
0,62	26	8	A105340062000	8,20
0,63	26	8	A105340063000	8,20
0,64	26	8	A105340064000	8,20
0,65	26	8	A105340065000	7,34
0,66	26	8	A105340066000	8,46
0,67	26	8	A105340067000	8,46
0,68	28	9	A105340068000	7,97
0,69	28	9	A105340069000	7,97
0,7	28	9	A105340070000	5,55
0,71	28	9	A105340071000	6,36
0,72	28	9	A105340072000	6,36
0,73	28	9	A105340073000	6,36
0,74	28	9	A105340074000	6,36
0,75	28	9	A105340075000	4,88
0,76	30	10	A105340076000	6,18
0,77	30	10	A105340077000	6,18
0,78	30	10	A105340078000	6,18
0,79	30	10	A105340079000	6,18

D	L	l	Code	Price
mm.	mm.	mm.		€
0,8	30	10	A105340080000	5,06
0,81	30	10	A105340081000	6,54
0,82	30	10	A105340082000	6,54
0,83	30	10	A105340083000	6,54
0,84	30	10	A105340084000	6,54
0,85	30	10	A105340085000	5,73
0,86	32	11	A105340086000	6,54
0,87	32	11	A105340087000	6,54
0,88	32	11	A105340088000	6,54
0,89	32	11	A105340089000	6,54
0,9	32	11	A105340090000	4,88
0,91	32	11	A105340091000	6,05
0,92	32	11	A105340092000	6,05
0,93	32	11	A105340093000	6,05
0,94	32	11	A105340094000	6,05
0,95	32	11	A105340095000	5,37
0,96	34	12	A105340096000	5,87
0,97	34	12	A105340097000	5,87
0,98	34	12	A105340098000	5,87
0,99	34	12	A105340099000	5,87
1	34	12	A105340100000	3,58
1,05	34	12	A105340105000	4,39
1,1	36	14	A105340110000	3,58
1,15	36	14	A105340115000	4,75
1,2	38	16	A105340120000	3,58
1,25	38	16	A105340125000	3,76
1,3	38	16	A105340130000	3,58
1,35	40	18	A105340135000	4,39
1,4	40	18	A105340140000	3,58
1,45	40	18	A105340145000	4,39
1,5	40	18	A105340150000	3,09
1,55	43	20	A105340155000	3,90
1,6	43	20	A105340160000	3,85
1,65	43	20	A105340165000	3,90
1,7	43	20	A105340170000	3,85
1,75	46	22	A105340175000	3,40
1,8	46	22	A105340180000	3,40
1,85	46	22	A105340185000	3,40
1,9	46	22	A105340190000	3,45
1,95	49	24	A105340195000	3,45
2	49	24	A105340200000	2,91
2,05	49	24	A105340205000	3,36
2,1	49	24	A105340210000	3,40
2,15	49	24	A105340215000	3,36
2,2	53	27	A105340220000	3,36
2,25	53	27	A105340225000	3,09
2,3	53	27	A105340230000	3,90
2,35	53	27	A105340235000	3,94
2,4	57	30	A105340240000	3,94
2,45	57	30	A105340245000	3,94
2,5	57	30	A105340250000	3,22
2,55	57	30	A105340255000	4,08
2,6	57	30	A105340260000	4,03
2,65	57	30	A105340265000	4,03
2,7	61	33	A105340270000	4,03
2,75	61	33	A105340275000	3,45
2,8	61	33	A105340280000	4,03
2,85	61	33	A105340285000	3,99
2,9	61	33	A105340290000	3,99
2,95	61	33	A105340295000	3,99

D	L	I	Code	Price
mm.	mm.	mm.		€
3	61	33	A105340300000	2,91
3,1	65	36	A105340310000	3,45
3,2	65	36	A105340320000	3,45
3,25	65	36	A105340325000	3,40
3,3	65	36	A105340330000	3,45
3,4	70	39	A105340340000	4,39
3,5	70	39	A105340350000	3,36
3,6	70	39	A105340360000	4,52
3,7	70	39	A105340370000	4,57
3,75	70	39	A105340375000	3,90
3,8	75	43	A105340380000	4,70
3,9	75	43	A105340390000	4,70
4	75	43	A105340400000	3,81
4,1	75	43	A105340410000	4,21
4,2	75	43	A105340420000	4,25
4,25	75	43	A105340425000	4,21
4,3	80	47	A105340430000	5,60
4,4	80	47	A105340440000	5,64
4,5	80	47	A105340450000	4,34
4,6	80	47	A105340460000	5,69
4,7	80	47	A105340470000	5,69
4,75	80	47	A105340475000	5,02
4,8	86	52	A105340480000	6,22
4,9	86	52	A105340490000	6,14
5	86	52	A105340500000	4,61
5,1	86	52	A105340510000	6,31
5,2	86	52	A105340520000	6,31
5,25	86	52	A105340525000	5,91
5,3	86	52	A105340530000	7,84
5,4	93	57	A105340540000	7,84
5,5	93	57	A105340550000	6,18
5,6	93	57	A105340560000	8,37
5,7	93	57	A105340570000	8,37
5,75	93	57	A105340575000	8,06
5,8	93	57	A105340580000	7,84
5,9	93	57	A105340590000	7,84
6	93	57	A105340600000	6,36
6,1	101	63	A105340610000	9,14
6,2	101	63	A105340620000	9,14
6,25	101	63	A105340625000	8,55
6,3	101	63	A105340630000	9,54
6,4	101	63	A105340640000	9,81
6,5	101	63	A105340650000	7,48
6,6	101	63	A105340660000	11,87
6,7	101	63	A105340670000	12,00
6,75	109	69	A105340675000	9,00
6,8	109	69	A105340680000	9,31
6,9	109	69	A105340690000	13,12
7	109	69	A105340700000	9,00
7,1	109	69	A105340710000	14,02

D	L	I	Code	Price
mm.	mm.	mm.		€
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7,25	109	69	A105340725000	11,37
7,3	109	69	A105340730000	13,97
7,4	109	69	A105340740000	13,97
7,5	109	69	A105340750000	9,49
7,6	117	75	A105340760000	16,44
7,7	117	75	A105340770000	16,44
7,75	117	75	A105340775000	12,81
7,8	117	75	A105340780000	16,61
7,9	117	75	A105340790000	16,61
8	117	75	A105340800000	10,88
8,1	117	75	A105340810000	17,02
8,2	117	75	A105340820000	16,97
8,25	117	75	A105340825000	12,85
8,3	117	75	A105340830000	17,73
8,4	117	75	A105340840000	17,69
8,5	117	75	A105340850000	11,87
8,6	125	81	A105340860000	22,12
8,7	125	81	A105340870000	22,21
8,75	125	81	A105340875000	16,93
8,8	125	81	A105340880000	22,30
8,9	125	81	A105340890000	22,21
9	125	81	A105340900000	14,29
9,1	125	81	A105340910000	22,30
9,2	125	81	A105340920000	22,44
9,25	125	81	A105340925000	17,42
9,3	125	81	A105340930000	21,23
9,4	125	81	A105340940000	21,23
9,5	125	81	A105340950000	15,58
9,6	133	87	A105340960000	26,74
9,7	133	87	A105340970000	26,74
9,75	133	87	A105340975000	19,35
9,8	133	87	A105340980000	26,33
9,9	133	87	A105340990000	26,47
10	133	87	A105341000000	16,70
10,1	133	87	A105341010000	22,84
10,2	133	87	A105341020000	21,32
10,25	133	87	A105341025000	23,33
10,3	133	87	A105341030000	26,38
10,4	133	87	A105341040000	26,38
10,5	133	87	A105341050000	21,05
10,6	133	87	A105341060000	29,24
10,7	142	94	A105341070000	29,24
10,75	142	94	A105341075000	27,36
10,8	142	94	A105341080000	32,38
10,9	142	94	A105341090000	32,38
11	142	94	A105341100000	24,59
11,1	142	94	A105341110000	32,96
11,2	142	94	A105341120000	32,96
11,25	142	94	A105341125000	27,81

D	L	I	Code	Price
mm.	mm.	mm.		€
11,3	142	94	A105341130000	32,51
11,4	142	94	A105341140000	32,38
11,5	142	94	A105341150000	26,20
11,6	142	94	A105341160000	32,38
11,7	142	94	A105341170000	32,38
11,75	142	94	A105341175000	27,81
11,8	142	94	A105341180000	35,29
11,9	151	101	A105341190000	35,47
12	151	101	A105341200000	29,24
12,1	151	101	A105341210000	41,33
12,2	151	101	A105341220000	41,33
12,25	151	101	A105341225000	36,27
12,3	151	101	A105341230000	39,14
12,4	151	101	A105341240000	39,14
12,5	151	101	A105341250000	31,93
12,6	151	101	A105341260000	40,26
12,7	151	101	A105341270000	40,62
12,75	151	101	A105341275000	35,56
12,8	151	101	A105341280000	44,87
12,9	151	101	A105341290000	44,87
13	151	101	A105341300000	33,27
13,1	151	101	A105341310000	45,77
13,2	151	101	A105341320000	45,77
13,25	160	108	A105341325000	51,77
13,3	160	108	A105341330000	70,89
13,4	160	108	A105341340000	70,89
13,5	160	108	A105341350000	46,66
13,6	160	108	A105341360000	70,89
13,7	160	108	A105341370000	70,89
13,75	160	108	A105341375000	52,35
13,8	160	108	A105341380000	67,85
13,9	160	108	A105341390000	67,22
14	160	108	A105341400000	49,57
14,25	169	114	A105341425000	58,62
14,5	169	114	A105341450000	53,34
14,75	169	114	A105341475000	58,62
15	169	114	A105341500000	54,46
15,25	178	120	A105341525000	79,53
15,5	178	120	A105341550000	63,77
15,75	178	120	A105341575000	81,01
16	178	120	A105341600000	66,32
16,5	184	125	A105341650000	76,18
17	184	125	A105341700000	76,40
17,5	191	130	A105341750000	87,55
18	191	130	A105341800000	92,61
18,5	198	135	A105341850000	102,78
19	198	135	A105341900000	102,78
19,5	205	140	A105341950000	110,39
20	205	140	A105342000000	126,91

Cutting conditions and recommended material

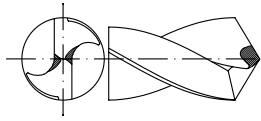
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	32	45	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
2	25	40	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
3	20	31,5	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
4	16	25	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
5	10	14	(A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
13.1	31,5	40	(C)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
13.2	25	31,5	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
16	40	63	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
17	32	50	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
19	25	40	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
20	16	30	(B)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
26	20	31,5	(D)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
30	3	6,25	(D)												

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000 / (π x D)

180.40

DIN 338



Classic series HSSCo 5%

Type NF 5 x D

Jobber drills

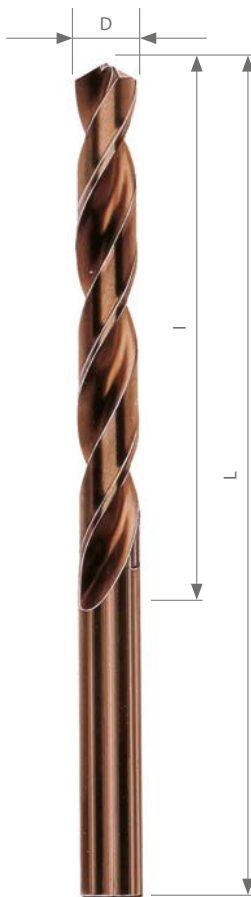
Straight shank drills

Design and technical specifications

Helix angle	Standard (DIN1414 type N)
Point angle	135°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated, golden-brown

Details and applications

The high strength at elevated temperatures of the cobalt high speed steel HSSCo and the design of the reinforced web in the whole length of the drill are characteristics which give to this drill its capacity for use in working with materials which are hard, strong and difficult to machine. It is our standard economic straight shank made of HSSCo 5%. For high performance we suggest our Optimus families 183.43 and 183.44. Use to drill: Steel and cast steel, alloyed and non alloyed over 900 to 1200 N/mm². - Some nickel-chrome steels-Ferritic and martensitic stainless steels-Acid resistant steels-Spring steels-Tough grey cast iron, malleable cast iron, spheroidal cast iron.



D	L	l	Code	Price
mm.	mm.	mm.		€
0,2	19	2,5	A180400020000	17,92
0,21	19	2,5	A180400021000	30,09
0,22	19	2,5	A180400022000	30,09
0,23	19	2,5	A180400023000	30,09
0,25	19	3	A180400025000	26,23
0,26	19	3	A180400026000	26,23
0,27	19	3	A180400027000	22,02
0,28	19	3	A180400028000	22,02
0,3	19	3	A180400030000	14,83
0,31	19	4	A180400031000	22,89
0,32	19	4	A180400032000	24,05
0,33	19	4	A180400033000	25,21
0,34	19	4	A180400034000	24,05
0,35	19	4	A180400035000	16,61
0,36	19	4	A180400036000	26,23
0,37	19	4	A180400037000	22,89
0,38	19	4	A180400038000	26,23
0,39	20	5	A180400039000	26,23
0,4	20	5	A180400040000	11,15
0,41	20	5	A180400041000	25,21
0,42	20	5	A180400042000	25,21
0,43	20	5	A180400043000	26,23
0,44	20	5	A180400044000	26,23
0,45	20	5	A180400045000	13,18
0,46	20	5	A180400046000	25,45
0,47	20	5	A180400047000	24,29
0,48	20	5	A180400048000	24,29
0,49	22	6	A180400049000	24,29
0,5	22	6	A180400050000	9,22
0,51	22	6	A180400051000	23,28
0,52	22	6	A180400052000	25,45
0,53	22	6	A180400053000	25,45
0,54	24	7	A180400054000	26,23
0,55	24	7	A180400055000	15,60
0,56	24	7	A180400056000	20,72
0,57	24	7	A180400057000	21,64
0,58	24	7	A180400058000	21,25
0,59	24	7	A180400059000	21,25
0,6	24	7	A180400060000	9,32
0,61	26	8	A180400061000	20,24
0,62	26	8	A180400062000	17,92
0,64	26	8	A180400064000	18,69
0,65	26	8	A180400065000	13,71
0,66	26	8	A180400066000	17,14
0,67	26	8	A180400067000	19,56
0,68	28	9	A180400068000	17
0,7	28	9	A180400070000	8,45
0,71	28	9	A180400071000	18,30
0,72	28	9	A180400072000	18,30
0,73	28	9	A180400073000	18,30
0,74	28	9	A180400074000	18,30
0,75	28	9	A180400075000	10,62
0,76	30	10	A180400076000	19,17
0,77	30	10	A180400077000	19,08
0,78	30	10	A180400078000	17,14
0,79	30	10	A180400079000	14,73

D	L	l	Code	Price
mm.	mm.	mm.		€
0,8	30	10	A180400080000	7,92
0,81	30	10	A180400081000	16,61
0,82	30	10	A180400082000	16,52
0,83	30	10	A180400083000	18,06
0,84	30	10	A180400084000	10,62
0,85	30	10	A180400085000	9,22
0,86	32	11	A180400086000	19,95
0,87	32	11	A180400087000	17,92
0,88	32	11	A180400088000	17,92
0,89	32	11	A180400089000	15,60
0,9	32	11	A180400090000	7,82
0,91	32	11	A180400091000	17,00
0,92	32	11	A180400092000	16,28
0,93	32	11	A180400093000	19,56
0,94	32	11	A180400094000	10,48
0,95	32	11	A180400095000	9,08
0,96	34	12	A180400096000	16,90
0,97	34	12	A180400097000	16,90
0,98	34	12	A180400098000	16,90
0,99	34	12	A180400099000	16,13
1	34	12	A180400100000	2,33
1,05	34	12	A180400105000	9,32
1,1	36	14	A180400110000	2,87
1,15	36	14	A180400115000	10,24
1,2	38	16	A180400120000	2,87
1,25	38	16	A180400125000	2,73
1,3	38	16	A180400130000	2,87
1,35	40	18	A180400135000	9,61
1,4	40	18	A180400140000	2,87
1,45	40	18	A180400145000	8,59
1,5	40	18	A180400150000	2,19
1,55	43	20	A180400155000	8,59
1,6	43	20	A180400160000	2,87
1,65	43	20	A180400165000	7,92
1,7	43	20	A180400170000	2,87
1,75	46	22	A180400175000	2,73
1,8	46	22	A180400180000	2,87
1,85	46	22	A180400185000	8,84
1,9	46	22	A180400190000	2,87
1,95	49	24	A180400195000	11,15
2	49	24	A180400200000	2,28
2,05	49	24	A180400205000	9,32
2,1	49	24	A180400210000	2,96
2,15	49	24	A180400215000	10,38
2,2	53	27	A180400220000	2,96
2,25	53	27	A180400225000	2,82
2,3	53	27	A180400230000	2,96
2,35	53	27	A180400235000	13,57
2,4	57	30	A180400240000	2,96
2,45	57	30	A180400245000	13,71
2,5	57	30	A180400250000	2,33
2,55	57	30	A180400255000	13,33
2,6	57	30	A180400260000	2,91
2,65	57	30	A180400265000	16,13
2,7	61	33	A180400270000	2,91
2,75	61	33	A180400275000	2,82

D	L	I	Code	Price
mm.	mm.	mm.		€
2,8	61	33	A180400280000	2,91
2,85	61	33	A180400285000	15,5
2,9	61	33	A180400290000	2,91
2,95	61	33	A180400295000	11,64
3	61	33	A180400300000	2,28
3,1	65	36	A180400310000	2,73
3,2	65	36	A180400320000	2,73
3,25	65	36	A180400325000	2,73
3,3	65	36	A180400330000	2,73
3,4	70	39	A180400340000	2,87
3,5	70	39	A180400350000	2,69
3,6	70	39	A180400360000	3,45
3,7	70	39	A180400370000	3,45
3,75	70	39	A180400375000	3,22
3,8	75	43	A180400380000	3,45
3,9	75	43	A180400390000	3,45
4	75	43	A180400400000	2,91
4,1	75	43	A180400410000	3,27
4,2	75	43	A180400420000	3,27
4,25	75	43	A180400425000	3,22
4,3	80	47	A180400430000	3,49
4,4	80	47	A180400440000	3,49
4,5	80	47	A180400450000	3,31
4,6	80	47	A180400460000	3,85
4,7	80	47	A180400470000	3,85
4,75	80	47	A180400475000	3,63
4,8	86	52	A180400480000	3,90
4,9	86	52	A180400490000	3,90
5	86	52	A180400500000	3,49
5,1	86	52	A180400510000	4,21
5,2	86	52	A180400520000	4,21
5,25	86	52	A180400525000	4,08
5,3	86	52	A180400530000	4,16
5,4	93	57	A180400540000	4,16
5,5	93	57	A180400550000	4,43
5,6	93	57	A180400560000	5,28
5,7	93	57	A180400570000	5,28
5,75	93	57	A180400575000	5,02
5,8	93	57	A180400580000	5,28
5,9	93	57	A180400590000	5,28
6	93	57	A180400600000	4,75
6,1	101	63	A180400610000	5,82
6,2	101	63	A180400620000	5,82
6,25	101	63	A180400625000	5,51
6,3	101	63	A180400630000	5,82
6,4	101	63	A180400640000	5,91
6,5	101	63	A180400650000	5,69
6,6	101	63	A180400660000	6,99
6,7	101	63	A180400670000	6,99
6,75	109	69	A180400675000	6,58
6,8	109	69	A180400680000	6,58
6,9	109	69	A180400690000	7,03

D	L	I	Code	Price
mm.	mm.	mm.		€
7	109	69	A180400700000	6,18
7,1	109	69	A180400710000	8,87
7,2	109	69	A180400720000	8,87
7,25	109	69	A180400725000	8,33
7,3	109	69	A180400730000	8,82
7,4	109	69	A180400740000	8,82
7,5	109	69	A180400750000	6,63
7,6	117	75	A180400760000	10,70
7,7	117	75	A180400770000	10,70
7,75	117	75	A180400775000	9,99
7,8	117	75	A180400780000	10,79
7,9	117	75	A180400790000	10,70
8	117	75	A180400800000	7,75
8,1	117	75	A180400810000	10,30
8,2	117	75	A180400820000	10,30
8,25	117	75	A180400825000	9,72
8,3	117	75	A180400830000	10,30
8,4	117	75	A180400840000	10,30
8,5	117	75	A180400850000	8,11
8,6	125	81	A180400860000	13,03
8,7	125	81	A180400870000	13,03
8,75	125	81	A180400875000	12,18
8,8	125	81	A180400880000	13,03
8,9	125	81	A180400890000	13,03
9	125	81	A180400900000	10,30
9,1	125	81	A180400910000	14,51
9,2	125	81	A180400920000	14,51
9,25	125	81	A180400925000	13,30
9,3	125	81	A180400930000	14,51
9,4	125	81	A180400940000	14,51
9,5	125	81	A180400950000	10,66
9,6	133	87	A180400960000	17,06
9,7	133	87	A180400970000	17,06
9,75	133	87	A180400975000	15,81
9,8	133	87	A180400980000	17,06
9,9	133	87	A180400990000	17,06
10	133	87	A180401000000	11,73
10,1	133	87	A180401010000	49,90
10,2	133	87	A180401020000	16,75
10,25	133	87	A180401025000	20,33
10,3	133	87	A180401030000	65,26
10,4	133	87	A180401040000	66,57
10,5	133	87	A180401050000	16,26
10,6	133	87	A180401060000	84,49
10,7	142	94	A180401070000	85,74
10,75	142	94	A180401075000	23,69
10,8	142	94	A180401080000	83,18
10,9	142	94	A180401090000	89,61
11	142	94	A180401100000	18,27
11,1	142	94	A180401110000	93,42
11,2	142	94	A180401120000	92,17
11,25	142	94	A180401125000	26,87

D	L	I	Code	Price
mm.	mm.	mm.		€
11,3	142	94	A180401130000	102,41
11,4	142	94	A180401140000	89,61
11,5	142	94	A180401150000	21,76
11,6	142	94	A180401160000	106,23
11,7	142	94	A180401170000	106,23
11,75	142	94	A180401175000	27,81
11,8	142	94	A180401180000	94,73
11,9	151	101	A180401190000	106,23
12	151	101	A180401200000	23,42
12,1	151	101	A180401210000	106,23
12,2	151	101	A180401220000	99,85
12,25	151	101	A180401225000	125,45
12,3	151	101	A180401230000	79,37
12,4	151	101	A180401240000	111,35
12,5	151	101	A180401250000	28,80
12,6	151	101	A180401260000	128,01
12,7	151	101	A180401270000	79,37
12,75	151	101	A180401275000	139,51
12,8	151	101	A180401280000	120,33
12,9	151	101	A180401290000	128,01
13	151	101	A180401300000	29,91
13,1	151	101	A180401310000	92,17
13,2	151	101	A180401320000	136,95
13,3	160	108	A180401330000	160
13,4	160	108	A180401340000	162,56
13,5	160	108	A180401350000	32,96
13,6	160	108	A180401360000	179,22
13,7	160	108	A180401370000	179,22
13,75	160	108	A180401375000	200,96
13,8	160	108	A180401380000	117,77
13,9	160	108	A180401390000	188,16
14	160	108	A180401400000	32,42
14,25	169	114	A180401425000	54,59
14,5	169	114	A180401450000	46,22
15	169	114	A180401500000	46,71
15,25	178	120	A180401525000	243,23
15,5	178	120	A180401550000	54,23
15,75	178	120	A180401575000	254,73
16	178	120	A180401600000	55,75
16,5	184	125	A180401650000	217,63
17	184	125	A180401700000	231,69
17,5	191	130	A180401750000	247,05
18	191	130	A180401800000	239,37
18,5	198	135	A180401850000	261,15
19	198	135	A180401900000	254,73
19,5	205	140	A180401950000	279,08
20	205	140	A180402000000	294,44

Cutting conditions and recommended material

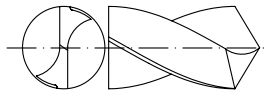
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
3	25	30	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
4	15	20	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
5	10	16	(A)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180	0,200
6	14	14	(A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
7	8	12,5	(A) (B)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
8	6,3	10	(A) (B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180	0,200
10	4	6	(A) (B)	0,030	0,030	0,040	0,050	0,060	0,080	0,080	0,100	0,130	0,160	0,180	0,200
13.1	30	35	(B) (A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
13.2	22	32	(B) (A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500

Lubrifiant: (A) Huile soluble / (B) Huile de coupe / (C) A sec / (D) Air comprimé / (E) Eau

r.p.m. = Vc x 1000 / (π x D)

107.30

DIN 338



Classic series HSS

Type H 5 x D

Slow helix. Jobber drills

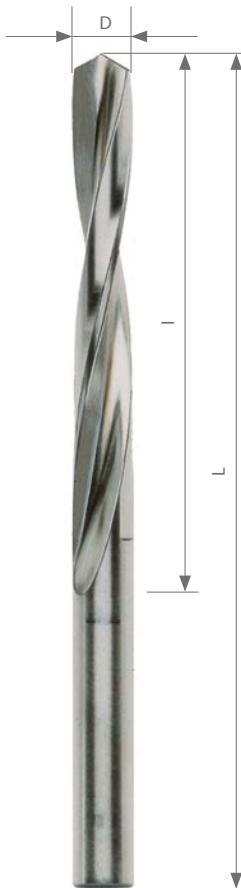
Straight shank drills

Design and technical specifications

Helix angle	Slow Helix (DIN 1414 type H)
Point angle	118°
Point grinding	Relieved cone
Web thickness	Normal
Web taper	Normal
Flute form	Flutes wider than normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	No surface treatment, bright finish

Details and applications

This is a drill designed with wide flutes which offers plenty of room for chip. Especially recommended for working in materials with small chip-hard, brittle and crumbly materials. Use to drill: Brittle brass (<60%Cu), naval, discontinuous swarf-Bronze, phosphor bronze-Magnesium alloys-Slate, marble-Mica-Thin, rigid insulating materials-Hard rubbers (ebonite, vulcanite...) Synthetic resins (Bakelite, galelithe-artificial horn...) Plastic laminates (Perspex...) Hard duroplastics in general-Thin fibre, celluloid, Plexiglas, electron, zamak-Asbestos cement sheeting- Hardboard and similar products (against the fibre).



D	L	I	Code	Price
mm.	mm.	mm.		€
0,2	19	2,5	A107300020000	24,40
0,21	19	2,5	A107300021000	34,85
0,22	19	2,5	A107300022000	34,85
0,24	19	2,5	A107300024000	30,38
0,25	19	3	A107300025000	18,91
0,28	19	3	A107300028000	30,38
0,29	19	3	A107300029000	30,86
0,3	19	3	A107300030000	17,44
0,31	19	4	A107300031000	30,38
0,32	19	4	A107300032000	30,38
0,34	19	4	A107300034000	30,38
0,35	19	4	A107300035000	15,23
0,4	20	5	A107300040000	11,65
0,41	20	5	A107300041000	24,40
0,42	20	5	A107300042000	24,40
0,44	20	5	A107300044000	24,40
0,45	20	5	A107300045000	13,95
0,46	20	5	A107300046000	21,92
0,48	20	5	A107300048000	21,92
0,5	22	6	A107300050000	7,97
0,52	22	6	A107300052000	17,14
0,53	22	6	A107300053000	13,65
0,55	24	7	A107300055000	13,23
0,56	24	7	A107300056000	15,23
0,57	24	7	A107300057000	15,23
0,6	24	7	A107300060000	7,86
0,62	26	8	A107300062000	15,23
0,64	26	8	A107300064000	14,25
0,65	26	8	A107300065000	12,67
0,66	26	8	A107300066000	15,04
0,67	26	8	A107300067000	16,54
0,68	28	9	A107300068000	16,54
0,69	28	9	A107300069000	16,54
0,7	28	9	A107300070000	7,26
0,71	28	9	A107300071000	16,54
0,72	28	9	A107300072000	15,04
0,73	28	9	A107300073000	14,55
0,74	28	9	A107300074000	14,55
0,75	28	9	A107300075000	8,68
0,76	30	10	A107300076000	14,55
0,77	30	10	A107300077000	14,55
0,78	30	10	A107300078000	14,55
0,79	30	10	A107300079000	7,67
0,8	30	10	A107300080000	7,07
0,81	30	10	A107300081000	14,55
0,82	30	10	A107300082000	14,55
0,83	30	10	A107300083000	14,55
0,84	30	10	A107300084000	10,94
0,85	30	10	A107300085000	9,47
0,86	32	11	A107300086000	14,55
0,87	32	11	A107300087000	14,55
0,88	32	11	A107300088000	14,25

D	L	I	Code	Price
mm.	mm.	mm.		€
0,89	32	11	A107300089000	13,95
0,9	32	11	A107300090000	7,07
0,91	32	11	A107300091000	13,95
0,92	32	11	A107300092000	14,92
0,93	32	11	A107300093000	13,95
0,95	32	11	A107300095000	8,68
0,96	34	12	A107300096000	13,76
0,97	34	12	A107300097000	13,16
0,98	34	12	A107300098000	13,23
0,99	34	12	A107300099000	13,23
1	34	12	A107300100000	5,26
1,05	34	12	A107300105000	8,57
1,1	36	14	A107300110000	6,09
1,15	36	14	A107300115000	7,78
1,2	38	16	A107300120000	5,98
1,25	38	16	A107300125000	6,95
1,3	38	16	A107300130000	5,98
1,35	40	18	A107300135000	8,16
1,4	40	18	A107300140000	5,98
1,45	40	18	A107300145000	7,37
1,5	40	18	A107300150000	5,08
1,55	43	20	A107300155000	7,07
1,6	43	20	A107300160000	5,49
1,65	43	20	A107300165000	6,39
1,7	43	20	A107300170000	5,68
1,75	46	22	A107300175000	7,48
1,8	46	22	A107300180000	5,56
1,85	46	22	A107300185000	6,77
1,9	46	22	A107300190000	5,19
1,95	49	24	A107300195000	6,69
2	49	24	A107300200000	4,25
2,05	49	24	A107300205000	5,86
2,1	49	24	A107300210000	4,92
2,15	49	24	A107300215000	6,77
2,2	53	27	A107300220000	5,08
2,25	53	27	A107300225000	7,18
2,3	53	27	A107300230000	5,08
2,35	53	27	A107300235000	7,67
2,4	57	30	A107300240000	5,19
2,45	57	30	A107300245000	7,78
2,5	57	30	A107300250000	4,40
2,55	57	30	A107300255000	7,07
2,6	57	30	A107300260000	5,26
2,65	57	30	A107300265000	7,37
2,7	61	33	A107300270000	5,38
2,75	61	33	A107300275000	7,97
2,8	61	33	A107300280000	5,38
2,85	61	33	A107300285000	10,08
2,9	61	33	A107300290000	5,49
2,95	61	33	A107300295000	8,38
3	61	33	A107300300000	4,70
3,1	65	36	A107300310000	6,39

D	L	I	Code	Price
mm.	mm.	mm.		€
3,2	65	36	A107300320000	6,09
3,25	65	36	A107300325000	7,67
3,3	65	36	A107300330000	5,98
3,4	70	39	A107300340000	6,39
3,5	70	39	A107300350000	5,26
3,6	70	39	A107300360000	7,07
3,7	70	39	A107300370000	6,58
3,75	70	39	A107300375000	10,38
3,8	75	43	A107300380000	6,95
3,9	75	43	A107300390000	8,16
4	75	43	A107300400000	5,38
4,1	75	43	A107300410000	7,86
4,2	75	43	A107300420000	7,07
4,25	75	43	A107300425000	11,05
4,3	80	47	A107300430000	8,68
4,4	80	47	A107300440000	9,55
4,5	80	47	A107300450000	7,18
4,6	80	47	A107300460000	8,76
4,7	80	47	A107300470000	9,66
4,75	80	47	A107300475000	14,25
4,8	86	52	A107300480000	8,95
4,9	86	52	A107300490000	8,68
5	86	52	A107300500000	7,26
5,1	86	52	A107300510000	9,17
5,2	86	52	A107300520000	9,25
5,25	86	52	A107300525000	16,54
5,3	86	52	A107300530000	9,25
5,4	93	57	A107300540000	12,37
5,5	93	57	A107300550000	9,25
5,6	93	57	A107300560000	12,93
5,7	93	57	A107300570000	12,93
5,75	93	57	A107300575000	22,41
5,8	93	57	A107300580000	11,17
5,9	93	57	A107300590000	12,37
6	93	57	A107300600000	9,47
6,1	101	63	A107300610000	11,77
6,2	101	63	A107300620000	11,77
6,25	101	63	A107300625000	22,89
6,3	101	63	A107300630000	13,23
6,4	101	63	A107300640000	13,95

D	L	I	Code	Price
mm.	mm.	mm.		€
6,5	101	63	A107300650000	11,95
6,6	101	63	A107300660000	12,14
6,7	101	63	A107300670000	14,25
6,75	109	69	A107300675000	15,75
6,8	109	69	A107300680000	13,23
6,9	109	69	A107300690000	15,75
7	109	69	A107300700000	13,05
7,1	109	69	A107300710000	18,12
7,2	109	69	A107300720000	19,92
7,25	109	69	A107300725000	34,85
7,3	109	69	A107300730000	20,90
7,4	109	69	A107300740000	19,92
7,5	109	69	A107300750000	15,94
7,6	117	75	A107300760000	20,41
7,7	117	75	A107300770000	21,43
7,8	117	75	A107300780000	21,43
7,9	117	75	A107300790000	20,41
8	117	75	A107300800000	15,75
8,1	117	75	A107300810000	20,90
8,2	117	75	A107300820000	20,90
8,25	117	75	A107300825000	36,84
8,3	117	75	A107300830000	22,89
8,4	117	75	A107300840000	25,41
8,5	117	75	A107300850000	20,41
8,6	125	81	A107300860000	29,40
8,7	125	81	A107300870000	28,38
8,75	125	81	A107300875000	39,36
8,8	125	81	A107300880000	29,40
8,9	125	81	A107300890000	26,39
9	125	81	A107300900000	21,43
9,1	125	81	A107300910000	32,86
9,2	125	81	A107300920000	32,86
9,25	125	81	A107300925000	48,80
9,3	125	81	A107300930000	32,86
9,4	125	81	A107300940000	32,86
9,5	125	81	A107300950000	25,41
9,6	133	87	A107300960000	35,86
9,7	133	87	A107300970000	35,86
9,8	133	87	A107300980000	35,86
9,9	133	87	A107300990000	38,83

D	L	I	Code	Price
mm.	mm.	mm.		€
10	133	87	A107301000000	24,40
10,1	133	87	A107301010000	51,80
10,2	133	87	A107301020000	49,81
10,25	133	87	A107301025000	64,74
10,3	133	87	A107301030000	53,80
10,5	133	87	A107301050000	31,39
10,6	133	87	A107301060000	54,77
10,8	142	94	A107301080000	58,76
10,9	142	94	A107301090000	60,75
11	142	94	A107301100000	35,38
11,1	142	94	A107301110000	63,76
11,2	142	94	A107301120000	55,79
11,4	142	94	A107301140000	63,76
11,5	142	94	A107301150000	43,35
11,7	142	94	A107301170000	73,72
11,9	151	101	A107301190000	77,71
12	151	101	A107301200000	46,80
12,1	151	101	A107301210000	77,71
12,2	151	101	A107301220000	73,72
12,3	151	101	A107301230000	56,77
12,5	151	101	A107301250000	51,80
12,7	151	101	A107301270000	45,34
12,8	151	101	A107301280000	109,59
13	151	101	A107301300000	52,78
13,2	151	101	A107301320000	110,56
13,5	160	108	A107301350000	76,69
14	160	108	A107301400000	64,74
14,5	169	114	A107301450000	87,67
15	169	114	A107301500000	76,69
15,5	178	120	A107301550000	148,42
16	178	120	A107301600000	94,62
17	184	125	A107301700000	187,29
18	191	130	A107301800000	196,24
19	198	135	A107301900000	259,02
20	205	140	A107302000000	308,83

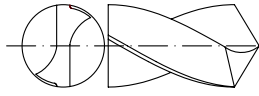
Cutting conditions and recommended material

Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill										
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20
15	50	80	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450
21	63	80	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
22	80	100	(C)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450
25	25	32	(E)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
26	16	25	(C)(D)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220
27	16	31,5	(D)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450
29	2,5	5	(D)											

MANUAL

108.30

DIN 338



Classic series | Type W HSS | 5 x D

Quick helix. Jobber drills Straight shank drills

Design and technical specifications

Helix angle	Quick Helix (DIN 14141 type W)
Point angle	130°
Point grinding	Relieved cone
Web thickness	Normal
Web taper	None
Flute form	Flutes wider than normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	No surface treatment, bright finish

Details and applications

A drill designed with wide polished flutes for easy and rapid chip removal. Especially appropriate for working soft materials with long chip. For drilling: ALUMINIUM and its alloys- Silumin or alpac- Zink-Refined copper-Soft thermoplastics in general-Nylon, polystyrene- Thicker Plexiglas, celluloid, electron, zamak-Wood-Hardboard and similar products (with the fibre)- Light metals with broken swarf(silicon alloys)-for holes deeper than 5 times the drill diameter.



D	L	I	Code	Price
mm.	mm.	mm.		€
0,2	19	2,5	A108300020000	20,90
0,25	19	3	A108300025000	30,38
0,3	19	3	A108300030000	14,06
0,34	19	4	A108300034000	30,38
0,35	19	4	A108300035000	14,25
0,4	20	5	A108300040000	11,84
0,41	20	5	A108300041000	30,38
0,45	20	5	A108300045000	12,37
0,46	20	5	A108300046000	21,92
0,5	22	6	A108300050000	7,18
0,51	22	6	A108300051000	18,23
0,52	22	6	A108300052000	15,23
0,55	24	7	A108300055000	14,55
0,57	24	7	A108300057000	18,23
0,6	24	7	A108300060000	7,78
0,61	26	8	A108300061000	18,23
0,62	26	8	A108300062000	18,23
0,64	26	8	A108300064000	18,23
0,65	26	8	A108300065000	13,16
0,66	26	8	A108300066000	16,13
0,7	28	9	A108300070000	6,69
0,72	28	9	A108300072000	9,85
0,75	28	9	A108300075000	8,38
0,79	30	10	A108300079000	6,39
0,8	30	10	A108300080000	5,79
0,81	30	10	A108300081000	11,84
0,82	30	10	A108300082000	13,23
0,84	30	10	A108300084000	12,67
0,85	30	10	A108300085000	8,16
0,86	32	11	A108300086000	13,23
0,87	32	11	A108300087000	8,95
0,9	32	11	A108300090000	5,86
0,95	32	11	A108300095000	8,16
0,97	34	12	A108300097000	13,23
0,99	34	12	A108300099000	13,23
1	34	12	A108300100000	5,79
1,05	34	12	A108300105000	7,97
1,1	36	14	A108300110000	6,39
1,15	36	14	A108300115000	7,67
1,2	38	16	A108300120000	5,68
1,25	38	16	A108300125000	6,95
1,3	38	16	A108300130000	5,68
1,35	40	18	A108300135000	6,39
1,4	40	18	A108300140000	5,68
1,45	40	18	A108300145000	7,67
1,5	40	18	A108300150000	5,38
1,55	43	20	A108300155000	7,26
1,6	43	20	A108300160000	5,08
1,65	43	20	A108300165000	6,39
1,7	43	20	A108300170000	5,38
1,75	46	22	A108300175000	7,37
1,8	46	22	A108300180000	5,19
1,85	46	22	A108300185000	6,28
1,9	46	22	A108300190000	5,19

D	L	I	Code	Price
mm.	mm.	mm.		€
1,95	49	24	A108300195000	5,86
2	49	24	A108300200000	3,98
2,05	49	24	A108300205000	5,56
2,1	49	24	A108300210000	4,92
2,15	49	24	A108300215000	6,39
2,2	53	27	A108300220000	4,92
2,25	53	27	A108300225000	6,58
2,3	53	27	A108300230000	4,92
2,35	53	27	A108300235000	7,67
2,4	57	30	A108300240000	5,08
2,45	57	30	A108300245000	6,69
2,5	57	30	A108300250000	3,98
2,55	57	30	A108300255000	7,78
2,6	57	30	A108300260000	5,19
2,65	57	30	A108300265000	8,57
2,7	61	33	A108300270000	5,26
2,75	61	33	A108300275000	7,67
2,8	61	33	A108300280000	5,79
2,85	61	33	A108300285000	10,45
2,9	61	33	A108300290000	6,17
2,95	61	33	A108300295000	8,95
3	61	33	A108300300000	4,44
3,1	65	36	A108300310000	5,86
3,2	65	36	A108300320000	5,26
3,25	65	36	A108300325000	7,26
3,3	65	36	A108300330000	5,08
3,4	70	39	A108300340000	5,86
3,5	70	39	A108300350000	5,49
3,6	70	39	A108300360000	6,17
3,7	70	39	A108300370000	6,09
3,75	70	39	A108300375000	8,87
3,8	75	43	A108300380000	6,58
3,9	75	43	A108300390000	7,26
4	75	43	A108300400000	5,56
4,1	75	43	A108300410000	6,58
4,2	75	43	A108300420000	5,56
4,25	75	43	A108300425000	10,45
4,3	80	47	A108300430000	7,97
4,4	80	47	A108300440000	8,38
4,5	80	47	A108300450000	7,07
4,6	80	47	A108300460000	7,97
4,7	80	47	A108300470000	8,76
4,75	80	47	A108300475000	13,16
4,8	86	52	A108300480000	7,97
4,9	86	52	A108300490000	7,56
5	86	52	A108300500000	7,26
5,1	86	52	A108300510000	8,08
5,2	86	52	A108300520000	8,95
5,25	86	52	A108300525000	15,75
5,3	86	52	A108300530000	9,36
5,4	93	57	A108300540000	10,94
5,5	93	57	A108300550000	8,68
5,6	93	57	A108300560000	10,86
5,7	93	57	A108300570000	10,38

D	L	I	Code	Price
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5,75	93	57	A108300575000	17,74
5,8	93	57	A108300580000	10,38
5,9	93	57	A108300590000	11,35
6	93	57	A108300600000	9,66
6,1	101	63	A108300610000	10,86
6,2	101	63	A108300620000	11,35
6,25	101	63	A108300625000	20,41
6,3	101	63	A108300630000	12,37
6,4	101	63	A108300640000	12,37
6,5	101	63	A108300650000	10,56
6,6	101	63	A108300660000	14,55
6,7	101	63	A108300670000	12,37
6,75	109	69	A108300675000	15,75
6,8	109	69	A108300680000	13,53
6,9	109	69	A108300690000	15,75
7	109	69	A108300700000	11,47
7,1	109	69	A108300710000	18,72
7,2	109	69	A108300720000	19,62
7,25	109	69	A108300725000	32,86
7,3	109	69	A108300730000	18,72
7,4	109	69	A108300740000	18,72
7,5	109	69	A108300750000	13,95
7,6	117	75	A108300760000	21,43
7,7	117	75	A108300770000	21,43
7,75	117	75	A108300775000	36,84
7,8	117	75	A108300780000	20,41
7,9	117	75	A108300790000	24,40
8	117	75	A108300800000	14,66
8,1	117	75	A108300810000	23,91
8,2	117	75	A108300820000	26,39
8,3	117	75	A108300830000	27,89
8,4	117	75	A108300840000	25,41
8,5	117	75	A108300850000	16,92
8,6	125	81	A108300860000	26,39
8,7	125	81	A108300870000	29,40
8,75	125	81	A108300875000	41,35
8,8	125	81	A108300880000	29,40
8,9	125	81	A108300890000	27,89
9	125	81	A108300900000	18,42
9,1	125	81	A108300910000	34,85
9,2	125	81	A108300920000	34,85
9,25	125	81	A108300925000	53,80
9,3	125	81	A108300930000	31,39
9,4	125	81	A108300940000	34,85
9,5	125	81	A108300950000	25,41
9,6	133	87	A108300960000	39,36

D	L	I	Code	Price
mm.	mm.	mm.		€
9,7	133	87	A108300970000	39,85
9,8	133	87	A108300980000	34,85
9,9	133	87	A108300990000	40,83
10	133	87	A108301000000	22,41
10,1	133	87	A108301010000	38,35
10,2	133	87	A108301020000	36,35
10,25	133	87	A108301025000	48,80
10,4	133	87	A108301040000	43,83
10,5	133	87	A108301050000	29,40
10,7	142	94	A108301070000	45,83
10,8	142	94	A108301080000	52,78
10,9	142	94	A108301090000	52,78
11	142	94	A108301100000	34,85
11,2	142	94	A108301120000	54,77
11,5	142	94	A108301150000	43,35
11,6	142	94	A108301160000	73,72
11,7	142	94	A108301170000	73,72
11,8	142	94	A108301180000	70,71
11,9	151	101	A108301190000	66,73
12	151	101	A108301200000	39,85
12,1	151	101	A108301210000	83,68
12,2	151	101	A108301220000	76,69
12,3	151	101	A108301230000	52,78
12,5	151	101	A108301250000	42,33
12,6	151	101	A108301260000	81,69
12,7	151	101	A108301270000	50,79
12,8	151	101	A108301280000	92,63
12,9	151	101	A108301290000	92,63
13	151	101	A108301300000	49,81
13,1	151	101	A108301310000	89,66
13,2	151	101	A108301320000	103,61
13,5	160	108	A108301350000	63,76
13,8	160	108	A108301380000	136,47
14	160	108	A108301400000	59,77
14,5	169	114	A108301450000	82,67
15	169	114	A108301500000	70,71
15,5	178	120	A108301550000	104,2
16	178	120	A108301600000	95,64
16,5	184	125	A108301650000	167,37
17	184	125	A108301700000	178,31
17,5	191	130	A108301750000	354,66
18	191	130	A108301800000	182,29
20	205	140	A108302000000	259,02

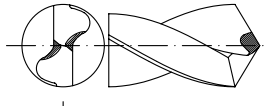
Cutting conditions and recommended material

Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill										
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20
18	25	40	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
21	50	63	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
22	80	100	(C)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450
23	63	100	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
24	40	63	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450
25	25	32	(E)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
26	16	25	(D)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

109.30

DIN 338



Classic series | Type NV HSS | 5 x D

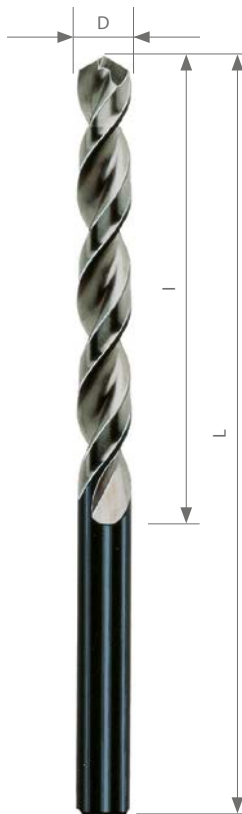
Jobber drills. Worm pattern Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Much heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated land, bright finish flutes

Details and applications

This robust drill (with reinforced web and wide flutes) is specially appropriate for drilling deep holes in difficult conditions, where chip removal and lubrication of the edge make working difficult. To be used when the hole deepness is not higher than 5 x D. Use to drill: Steel and cast steel, alloyed and non alloyed, up to 1000 N/mm²- Grey iron castings- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite-Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu). continuous swarf- Electrolytic cooper-Zinc castings- Not recommended for nickel-chrome steels or similar materials).



D	L	I	Code	Price
mm.	mm.	mm.		€
0,6	24	7	A109300060000	6,58
0,7	28	9	A109300070000	6,58
0,71	28	9	A109300071000	8,76
0,79	30	10	A109300079000	6,88
0,8	30	10	A109300080000	5,68
0,89	32	11	A109300089000	7,78
0,9	32	11	A109300090000	5,86
0,95	32	11	A109300095000	8,76
0,97	34	12	A109300097000	8,76
0,99	34	12	A109300099000	7,37
1	34	12	A109300100000	4,55
1,05	34	12	A109300105000	8,95
1,1	36	14	A109300110000	5,38
1,15	36	14	A109300115000	7,18
1,2	38	16	A109300120000	5,38
1,25	38	16	A109300125000	6,58
1,3	38	16	A109300130000	5,38
1,35	40	18	A109300135000	7,56
1,4	40	18	A109300140000	5,38
1,45	40	18	A109300145000	7,86
1,5	40	18	A109300150000	5,26
1,55	43	20	A109300155000	6,17
1,6	43	20	A109300160000	4,96
1,65	43	20	A109300165000	5,79
1,7	43	20	A109300170000	4,96
1,75	46	22	A109300175000	7,37
1,8	46	22	A109300180000	4,96
1,85	46	22	A109300185000	5,98
1,9	46	22	A109300190000	5,08
1,95	49	24	A109300195000	7,86
2	49	24	A109300200000	4,47
2,05	49	24	A109300205000	6,58
2,1	49	24	A109300210000	5,08
2,15	49	24	A109300215000	7,56
2,2	53	27	A109300220000	5,08
2,25	53	27	A109300225000	6,09
2,3	53	27	A109300230000	5,08
2,35	53	27	A109300235000	7,18
2,4	57	30	A109300240000	5,19
2,45	57	30	A109300245000	7,56
2,5	57	30	A109300250000	4,47
2,55	57	30	A109300255000	8,38
2,6	57	30	A109300260000	5,26
2,65	57	30	A109300265000	8,68
2,7	61	33	A109300270000	5,56
2,75	61	33	A109300275000	7,07
2,8	61	33	A109300280000	5,68
2,85	61	33	A109300285000	7,86
2,9	61	33	A109300290000	5,56
2,95	61	33	A109300295000	6,58
3	61	33	A109300300000	4,70
3,1	65	36	A109300310000	5,79
3,2	65	36	A109300320000	5,56
3,25	65	36	A109300325000	7,97

D	L	I	Code	Price
mm.	mm.	mm.		€
3,3	65	36	A109300330000	5,79
3,4	70	39	A109300340000	6,17
3,5	70	39	A109300350000	5,08
3,6	70	39	A109300360000	6,58
3,7	70	39	A109300370000	6,58
3,75	70	39	A109300375000	11,17
3,8	75	43	A109300380000	6,69
3,9	75	43	A109300390000	7,26
4	75	43	A109300400000	5,56
4,1	75	43	A109300410000	6,95
4,2	75	43	A109300420000	6,39
4,25	75	43	A109300425000	10,45
4,3	80	47	A109300430000	7,26
4,4	80	47	A109300440000	7,48
4,5	80	47	A109300450000	6,58
4,6	80	47	A109300460000	8,68
4,7	80	47	A109300470000	7,86
4,75	80	47	A109300475000	12,44
4,8	86	52	A109300480000	7,86
4,9	86	52	A109300490000	8,08
5	86	52	A109300500000	6,95
5,1	86	52	A109300510000	8,08
5,2	86	52	A109300520000	8,57
5,25	86	52	A109300525000	15,45
5,3	86	52	A109300530000	9,47
5,4	93	57	A109300540000	8,95
5,5	93	57	A109300550000	8,27
5,6	93	57	A109300560000	9,36
5,7	93	57	A109300570000	9,36
5,75	93	57	A109300575000	14,25
5,8	93	57	A109300580000	9,55
5,9	93	57	A109300590000	10,86
6	93	57	A109300600000	9,17
6,1	101	63	A109300610000	11,05
6,2	101	63	A109300620000	10,75
6,25	101	63	A109300625000	14,66
6,3	101	63	A109300630000	11,05
6,4	101	63	A109300640000	11,77
6,5	101	63	A109300650000	9,96
6,6	101	63	A109300660000	12,14
6,7	101	63	A109300670000	12,14
6,75	109	69	A109300675000	12,67
6,8	109	69	A109300680000	11,84
6,9	109	69	A109300690000	12,56
7	109	69	A109300700000	10,38
7,1	109	69	A109300710000	17,63
7,2	109	69	A109300720000	17,63
7,25	109	69	A109300725000	24,40
7,3	109	69	A109300730000	18,91
7,4	109	69	A109300740000	17,14
7,5	109	69	A109300750000	13,05
7,6	117	75	A109300760000	20,90
7,7	117	75	A109300770000	20,41
7,75	117	75	A109300775000	31,39

D	L	I	Code	Price
mm.	mm.	mm.		€
7,8	117	75	A109300780000	18,65
7,9	117	75	A109300790000	20,41
8	117	75	A109300800000	13,53
8,1	117	75	A109300810000	20,90
8,2	117	75	A109300820000	20,90
8,25	117	75	A109300825000	34,36
8,3	117	75	A109300830000	28,87
8,4	117	75	A109300840000	25,41
8,5	117	75	A109300850000	15,15
8,6	125	81	A109300860000	25,41
8,7	125	81	A109300870000	28,38
8,75	125	81	A109300875000	39,36
8,8	125	81	A109300880000	26,88
8,9	125	81	A109300890000	28,87
9	125	81	A109300900000	16,05
9,1	125	81	A109300910000	31,39
9,2	125	81	A109300920000	28,87
9,25	125	81	A109300925000	35,38
9,3	125	81	A109300930000	28,87
9,4	125	81	A109300940000	31,88
9,5	125	81	A109300950000	20,41
9,6	133	87	A109300960000	30,38
9,7	133	87	A109300970000	35,86
9,75	133	87	A109300975000	49,81
9,8	133	87	A109300980000	32,37
9,9	133	87	A109300990000	33,38
10	133	87	A109301000000	17,82
10,2	133	87	A109301020000	32,86
10,3	133	87	A109301030000	40,34
10,4	133	87	A109301040000	44,32
10,5	133	87	A109301050000	28,38
10,6	133	87	A109301060000	48,80
10,7	142	94	A109301070000	50,79
10,75	142	94	A109301075000	70,71
10,8	142	94	A109301080000	44,81
10,9	142	94	A109301090000	53,80

D	L	I	Code	Price
mm.	mm.	mm.		€
11	142	94	A109301100000	30,86
11,1	142	94	A109301110000	53,80
11,2	142	94	A109301120000	59,77
11,3	142	94	A109301130000	68,72
11,4	142	94	A109301140000	70,71
11,5	142	94	A109301150000	33,87
11,6	142	94	A109301160000	70,71
11,7	142	94	A109301170000	68,72
11,8	142	94	A109301180000	78,68
11,9	151	101	A109301190000	75,71
12	151	101	A109301200000	38,83
12,1	151	101	A109301210000	83,68
12,2	151	101	A109301220000	75,71
12,25	151	101	A109301225000	76,69
12,3	151	101	A109301230000	51,80
12,4	151	101	A109301240000	93,65
12,5	151	101	A109301250000	44,81
12,7	151	101	A109301270000	44,32
12,75	151	101	A109301275000	76,69
12,8	151	101	A109301280000	85,68
13	151	101	A109301300000	50,79
13,1	151	101	A109301310000	73,72
13,2	151	101	A109301320000	73,72
13,5	160	108	A109301350000	63,76
13,6	160	108	A109301360000	101,62
13,7	160	108	A109301370000	101,62
14	160	108	A109301400000	55,79
14,25	169	114	A109301425000	113,57
14,5	169	114	A109301450000	72,71
15	169	114	A109301500000	70,71
15,5	178	120	A109301550000	104,59
15,75	178	120	A109301575000	209,21
16	178	120	A109301600000	85,68

Cutting conditions and recommended material

Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	32	45	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
2	25	40	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
3	20	31,5	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
4	16	25	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
5	10	14	(A)	0,030	0,040	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250
13.1	31,5	40	(C)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
13.2	25	31,5	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
16	40	63	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
17	32	50	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
19	25	40	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400
20	16	30	(B)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310
26	20	31,5	(D)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500
30	3	6,25	(D)												

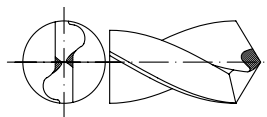
MANUAL

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

 r.p.m. = $V_c \times 1000 / (\pi \times D)$

111.30

DIN 338



Classic series | Type WV HSS | 5 x D

Jobber drills. Worm pattern. Quick helix

Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Much heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	No surface treatment, bright finish

Details and applications

This drill with wide and polished flutes are suitable for rapid and easy removal of chip. They are designed especially for drilling deep holes (more than 3 x D) in soft materials with long, stringy swarf, with a maximum hardness of 500 N/mm². Use to drill: Mild steel-Aluminium and its alloys-Aluminium castings-Silumin, alpac, etc. Zinc-Refined copper-Soft plastics (thermoplastics) in general-Nylon-Wood-Hardboard and similar products (with the fibre).



D	L	I	Code	Price
mm.	mm.	mm.		€
2	49	24	A111300200000	3,12
2,1	49	24	A111300210000	3,12
2,2	53	27	A111300220000	3,12
2,25	53	27	A111300225000	3,12
2,3	53	27	A111300230000	3,12
2,4	57	30	A111300240000	3,12
2,5	57	30	A111300250000	3,12
2,6	57	30	A111300260000	3,55
2,7	61	33	A111300270000	3,55
2,8	61	33	A111300280000	3,55
2,9	61	33	A111300290000	3,55
3	61	33	A111300300000	3,55
3,1	65	36	A111300310000	3,96
3,2	65	36	A111300320000	3,96
3,3	65	36	A111300330000	3,79
3,4	70	39	A111300340000	3,96
3,5	70	39	A111300350000	3,88
3,6	70	39	A111300360000	4,23
3,7	70	39	A111300370000	4,23
3,8	75	43	A111300380000	4,55
3,9	75	43	A111300390000	4,55
4	75	43	A111300400000	4,55
4,1	75	43	A111300410000	5,04
4,2	75	43	A111300420000	5,04
4,3	80	47	A111300430000	5,04
4,4	80	47	A111300440000	5,04
4,5	80	47	A111300450000	5,15
4,6	80	47	A111300460000	5,39
4,7	80	47	A111300470000	5,39
4,8	86	52	A111300480000	5,23
4,9	86	52	A111300490000	5,39
5	86	52	A111300500000	5,39
5,1	86	52	A111300510000	6,56
5,2	86	52	A111300520000	6,56
5,3	86	52	A111300530000	6,56
5,4	93	57	A111300540000	6,83
5,5	93	57	A111300550000	6,56
5,6	93	57	A111300560000	7,07
5,7	93	57	A111300570000	7,07
5,8	93	57	A111300580000	7,07
5,9	93	57	A111300590000	7,07
6	93	57	A111300600000	7,07

Cutting conditions and recommended material

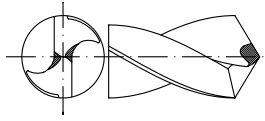
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill										
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20
1	25	40	(A)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280
18	25	40	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
21	50	63	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
22	80	100	(C)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450
23	63	100	(A)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
24	40	63	(A)	0,060	0,080	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450
25	25	32	(E)	0,050	0,060	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350
26	16	25	(D)	0,040	0,050	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000 / (π x D)

115.30

DIN 340



Classic series | Type N HSS | 10 x D

Taper length Straight shank drills

Design and technical specifications

Helix angle	Standard (DIN1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Slightly heavier than normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated. Nitrided (D<2,5mm Bright Finish)



Details and applications

This drill responds to the demand for long series drills for deep hole drilling in a wide range of applications and in work requiring the use of a guide bush. For deep continued holes we recommend our family 118.30 and for a high performance our Optimus families 184.43 and 184.44. Use to drill: Steel and cast steel, alloyed and non-alloyed steel, up to 900 N/mm²- Grey cast iron- Malleable cast iron- Pressure casting- Sintered iron- German silver- Graphite-Phosphor bronze for bearings-Bronze alloys of aluminium, lead, manganese, or silicon-Soft brass (≥60% Cu), continuous swarf-Electrolytic copper-Zinc castings.

D	L	I	Code	Price
mm.	mm.	mm.		€
0,4	30	10	A115300040000	22,17
0,44	30	10	A115300044000	43,21
0,45	30	10	A115300045000	38,15
0,47	30	10	A115300047000	41,74
0,5	32	12	A115300050000	10,08
0,52	32	12	A115300052000	40,33
0,55	35	15	A115300055000	39,62
0,57	35	15	A115300057000	25,76
0,6	35	15	A115300060000	8,20
0,62	38	18	A115300062000	23,32
0,65	38	18	A115300065000	23,32
0,7	42	21	A115300070000	7,66
0,73	42	21	A115300073000	34,57
0,75	42	21	A115300075000	18,32
0,76	46	25	A115300076000	33,86
0,79	46	25	A115300079000	28,80
0,8	46	25	A115300080000	7,61
0,82	46	25	A115300082000	29,51
0,85	46	25	A115300085000	17,28
0,9	51	29	A115300090000	7,48
0,91	51	29	A115300091000	30,98
0,92	51	29	A115300092000	30,98
0,95	51	29	A115300095000	18,32
0,97	56	33	A115300097000	24,35
1	56	33	A115300100000	7,30
1,05	56	33	A115300105000	17,01
1,1	60	37	A115300110000	7,21
1,15	60	37	A115300115000	15,43
1,2	65	41	A115300120000	7,21
1,25	65	41	A115300125000	7,34
1,3	65	41	A115300130000	7,21
1,35	70	45	A115300135000	14,67
1,4	70	45	A115300140000	7,21
1,45	70	45	A115300145000	12,83
1,5	70	45	A115300150000	5,24
1,55	76	50	A115300155000	14,13
1,6	76	50	A115300160000	7,21
1,65	76	50	A115300165000	12,66
1,7	76	50	A115300170000	7,12
1,75	80	53	A115300175000	5,87
1,8	80	53	A115300180000	5,73
1,85	80	53	A115300185000	11,79
1,9	80	53	A115300190000	5,73
1,95	85	56	A115300195000	10,92
2	85	56	A115300200000	3,76
2,05	85	56	A115300205000	10,49
2,1	85	56	A115300210000	5,69
2,15	90	59	A115300215000	10,92
2,2	90	59	A115300220000	5,69
2,25	90	59	A115300225000	10,92
2,3	90	59	A115300230000	5,46
2,35	90	59	A115300235000	13,26

D	L	I	Code	Price
mm.	mm.	mm.		€
2,4	95	62	A115300240000	5,46
2,45	95	62	A115300245000	10,82
2,5	95	62	A115300250000	4,16
2,55	95	62	A115300255000	12,23
2,6	95	62	A115300260000	5,60
2,65	95	62	A115300265000	12,23
2,7	100	66	A115300270000	5,60
2,75	100	66	A115300275000	5,73
2,8	100	66	A115300280000	5,60
2,85	100	66	A115300285000	12,23
2,9	100	66	A115300290000	5,60
2,95	100	66	A115300295000	10,65
3	100	66	A115300300000	3,85
3,1	106	69	A115300310000	4,48
3,2	106	69	A115300320000	4,48
3,25	106	69	A115300325000	4,48
3,3	106	69	A115300330000	4,48
3,4	112	73	A115300340000	5,73
3,5	112	73	A115300350000	4,16
3,6	112	73	A115300360000	5,73
3,7	112	73	A115300370000	5,73
3,75	112	73	A115300375000	5,87
3,8	119	78	A115300380000	7,08
3,9	119	78	A115300390000	7,08
4	119	78	A115300400000	4,52
4,1	119	78	A115300410000	5,96
4,2	119	78	A115300420000	5,96
4,25	119	78	A115300425000	5,96
4,3	126	82	A115300430000	7,70
4,4	126	82	A115300440000	7,70
4,5	126	82	A115300450000	5,37
4,6	126	82	A115300460000	7,66
4,7	126	82	A115300470000	7,70
4,75	126	82	A115300475000	7,97
4,8	132	87	A115300480000	8,82
4,9	132	87	A115300490000	8,82
5	132	87	A115300500000	5,78
5,1	132	87	A115300510000	8,87
5,2	132	87	A115300520000	8,87
5,25	132	87	A115300525000	9,14
5,3	132	87	A115300530000	9,63
5,4	139	91	A115300540000	9,72
5,5	139	91	A115300550000	7,61
5,6	139	91	A115300560000	9,67
5,7	139	91	A115300570000	9,67
5,75	139	91	A115300575000	9,99
5,8	139	91	A115300580000	10,57
5,9	139	91	A115300590000	10,57
6	139	91	A115300600000	7,08
6,1	148	97	A115300610000	10,61
6,2	148	97	A115300620000	10,61
6,25	148	97	A115300625000	10,97

115.30
DIN 340

Classic series
HSS

Type N
10 x D

Taper length
Straight shank drills

D	L	I	Code	Price
mm.	mm.	mm.		€
6,3	148	97	A115300630000	10,75
6,4	148	97	A115300640000	10,75
6,5	148	97	A115300650000	9,05
6,6	148	97	A115300660000	10,75
6,7	148	97	A115300670000	10,75
6,75	156	102	A115300675000	11,06
6,8	156	102	A115300680000	11,06
6,9	156	102	A115300690000	11,42
7	156	102	A115300700000	10,52
7,1	156	102	A115300710000	11,37
7,2	156	102	A115300720000	11,37
7,25	156	102	A115300725000	11,73
7,3	156	102	A115300730000	11,60
7,4	156	102	A115300740000	11,60
7,5	156	102	A115300750000	11,20
7,6	165	109	A115300760000	11,60
7,7	165	109	A115300770000	11,60
7,75	165	109	A115300775000	12,05
7,8	165	109	A115300780000	12,94
7,9	165	109	A115300790000	12,94
8	165	109	A115300800000	12,54
8,1	165	109	A115300810000	12,94
8,2	165	109	A115300820000	12,94
8,25	165	109	A115300825000	13,48
8,3	165	109	A115300830000	19,84
8,4	165	109	A115300840000	20,02
8,5	165	109	A115300850000	13,88
8,6	175	115	A115300860000	20,20
8,7	175	115	A115300870000	20,20
8,75	175	115	A115300875000	20,60
8,8	175	115	A115300880000	20,38
8,9	175	115	A115300890000	20,38
9	175	115	A115300900000	15,09
9,1	175	115	A115300910000	20,64
9,2	175	115	A115300920000	20,64
9,25	175	115	A115300925000	21,08
9,3	175	115	A115300930000	21,90
9,4	175	115	A115300940000	21,90
9,5	175	115	A115300950000	15,32
9,6	184	121	A115300960000	22,21
9,7	184	121	A115300970000	21,90
9,75	184	121	A115300975000	22,66
9,8	184	121	A115300980000	22,21
9,9	184	121	A115300990000	21,90
10	184	121	A115301000000	16,35
10,1	184	121	A115301010000	36,74

D	L	I	Code	Price
mm.	mm.	mm.		€
10,2	184	121	A115301020000	22,48
10,25	184	121	A115301025000	20,42
10,3	184	121	A115301030000	43,21
10,4	184	121	A115301040000	46,09
10,5	184	121	A115301050000	22,26
10,6	184	121	A115301060000	44,62
10,7	195	128	A115301070000	47,50
10,75	195	128	A115301075000	22,66
10,8	195	128	A115301080000	51,14
11	195	128	A115301100000	24,76
11,2	195	128	A115301120000	65,54
11,25	195	128	A115301125000	30,01
11,4	195	128	A115301140000	73,42
11,5	195	128	A115301150000	25,48
11,6	195	128	A115301160000	77,77
11,7	195	128	A115301170000	76,30
11,75	195	128	A115301175000	33,45
11,8	195	128	A115301180000	59,78
12	205	134	A115301200000	28,48
12,1	205	134	A115301210000	80,65
12,2	205	134	A115301220000	70,54
12,3	205	134	A115301230000	54,02
12,5	205	134	A115301250000	30,00
12,7	205	134	A115301270000	51,85
12,8	205	134	A115301280000	92,17
13	205	134	A115301300000	34,03
13,2	205	134	A115301320000	106,58
13,5	214	140	A115301350000	37,98
13,8	214	140	A115301380000	128,15
14	214	140	A115301400000	41,02
14,25	220	144	A115301425000	172,83
14,5	220	144	A115301450000	48,01
15	220	144	A115301500000	46,48
15,25	227	149	A115301525000	188,64
15,5	227	149	A115301550000	68,97
16	227	149	A115301600000	53,29
16,5	235	154	A115301650000	131,03
17	235	154	A115301700000	115,22
17,5	241	158	A115301750000	155,54
18	241	158	A115301800000	107,99
18,5	247	162	A115301850000	236,20
19	247	162	A115301900000	120,98
20	254	166	A115302000000	148,32

Cutting conditions and recommended material

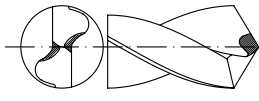
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	20	32	(A)	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,180	0,225	0,252	0,279
2	16	25,2	(A)	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,180	0,225	0,252	0,279
3	12,8	20	(A)	0,027	0,036	0,045	0,054	0,072	0,090	0,090	0,117	0,144	0,180	0,198	0,225
4	10	16	(A)	0,027	0,036	0,045	0,054	0,072	0,090	0,090	0,117	0,144	0,180	0,198	0,225
13.1	20	28	(A) (B)	0,054	0,072	0,090	0,117	0,144	0,180	0,198	0,225	0,279	0,360	0,405	0,450
13.2	16	20	(A)	0,054	0,072	0,090	0,117	0,144	0,180	0,198	0,225	0,279	0,360	0,405	0,450
26	12,8	20	(D)	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,180	0,225	0,252	0,279

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000 / (π x D)

118.30

DIN 340



Classic series | Type NV

HSS | 10 x D

Taper length. Worm pattern

Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Much heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated land, bright finish flutes

Details and applications

Drills with reinforced web and wide flutes especially appropriate for drilling deep holes in difficult conditions, for drilling no more than 10 x D. For a higher performance we suggest our Optimus families 184.43 and 184.44. Use to drill: Steel and cast steel, alloyed and non-alloyed steel, up to up to 1000 N/mm²- Grey iron castings- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite-Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu). continuous swarf- Electrolytic copper-Zinc castings-(Not recommended for nickel-chrome steels or similar materials).



D	L	I	Code	Price
mm.	mm.	mm.		€
1	56	33	A118300100000	8,35
1,05	56	33	A118300105000	19,81
1,1	60	37	A118300110000	12,56
1,15	60	37	A118300115000	24,89
1,2	65	41	A118300120000	11,65
1,25	65	41	A118300125000	21,92
1,3	65	41	A118300130000	11,95
1,35	70	45	A118300135000	24,89
1,4	70	45	A118300140000	11,05
1,45	70	45	A118300145000	24,40
1,5	70	45	A118300150000	6,56
1,55	76	50	A118300155000	21,92
1,6	76	50	A118300160000	9,17
1,65	76	50	A118300165000	16,92
1,7	76	50	A118300170000	8,95
1,75	80	53	A118300175000	19,81
1,8	80	53	A118300180000	8,95
1,85	80	53	A118300185000	13,16
1,9	80	53	A118300190000	8,87
1,95	85	56	A118300195000	19,21
2	85	56	A118300200000	5,20
2,05	85	56	A118300205000	13,76
2,1	85	56	A118300210000	5,75
2,15	90	59	A118300215000	17,74
2,2	90	59	A118300220000	5,75
2,25	90	59	A118300225000	12,00
2,3	90	59	A118300230000	5,75
2,35	90	59	A118300235000	20,41
2,4	95	62	A118300240000	5,75
2,45	95	62	A118300245000	17,82
2,5	95	62	A118300250000	5,07
2,55	95	62	A118300255000	18,91
2,6	95	62	A118300260000	5,75
2,65	95	62	A118300265000	21,92
2,7	100	66	A118300270000	5,75
2,75	100	66	A118300275000	6,99
2,8	100	66	A118300280000	6,10
2,85	100	66	A118300285000	20,90
2,9	100	66	A118300290000	6,10
2,95	100	66	A118300295000	14,44
3	100	66	A118300300000	5,45
3,1	106	69	A118300310000	5,96
3,2	106	69	A118300320000	6,18
3,25	106	69	A118300325000	6,18
3,3	106	69	A118300330000	6,18
3,4	112	73	A118300340000	7,07
3,5	112	73	A118300350000	6,18
3,6	112	73	A118300360000	6,26
3,7	112	73	A118300370000	6,26
3,75	112	73	A118300375000	8,35
3,8	119	78	A118300380000	7,50
3,9	119	78	A118300390000	7,50

D	L	I	Code	Price
mm.	mm.	mm.		€
4	119	78	A118300400000	6,26
4,1	119	78	A118300410000	8,65
4,2	119	78	A118300420000	8,19
4,25	119	78	A118300425000	8,19
4,3	126	82	A118300430000	8,65
4,4	126	82	A118300440000	8,19
4,5	126	82	A118300450000	8,19
4,6	126	82	A118300460000	9,08
4,7	126	82	A118300470000	9,08
4,75	126	82	A118300475000	9,08
4,8	132	87	A118300480000	9,08
4,9	132	87	A118300490000	9,08
5	132	87	A118300500000	9,08
5,1	132	87	A118300510000	10,65
5,2	132	87	A118300520000	10,65
5,25	132	87	A118300525000	10,65
5,3	132	87	A118300530000	10,73
5,4	139	91	A118300540000	10,44
5,5	139	91	A118300550000	9,62
5,6	139	91	A118300560000	10,44
5,7	139	91	A118300570000	10,44
5,75	139	91	A118300575000	12,96
5,8	139	91	A118300580000	12,20
5,9	139	91	A118300590000	12,20
6	139	91	A118300600000	9,62
6,1	148	97	A118300610000	13,55
6,2	148	97	A118300620000	13,55
6,25	148	97	A118300625000	13,55
6,3	148	97	A118300630000	13,55
6,4	148	97	A118300640000	13,55
6,5	148	97	A118300650000	12,66
6,6	148	97	A118300660000	13,55
6,7	148	97	A118300670000	15,64
6,75	156	102	A118300675000	13,55
6,8	156	102	A118300680000	13,55
6,9	156	102	A118300690000	13,55
7	156	102	A118300700000	12,36
7,1	156	102	A118300710000	17,05
7,2	156	102	A118300720000	17,05
7,25	156	102	A118300725000	17,73
7,3	156	102	A118300730000	17,05
7,4	156	102	A118300740000	17,05
7,5	156	102	A118300750000	15,21
7,6	165	109	A118300760000	18,46
7,7	165	109	A118300770000	18,46
7,75	165	109	A118300775000	15,21
7,8	165	109	A118300780000	18,46
7,9	165	109	A118300790000	36,84
8	165	109	A118300800000	15,21
8,1	165	109	A118300810000	37,37
8,2	165	109	A118300820000	34,36
8,25	165	109	A118300825000	18,62

118.30
 DIN 340

 Classic series
 HSS

 Type NV
 10 x D

 Taper length. Worm pattern
 Straight shank drills

D	L	I	Code	Price
mm.	mm.	mm.		€
8,3	165	109	A118300830000	39,36
8,4	165	109	A118300840000	41,35
8,5	165	109	A118300850000	18,62
8,6	175	115	A118300860000	39,85
8,7	175	115	A118300870000	37,37
8,75	175	115	A118300875000	24,00
8,8	175	115	A118300880000	39,85
8,9	175	115	A118300890000	46,32
9	175	115	A118300900000	18,62
9,1	175	115	A118300910000	47,82
9,2	175	115	A118300920000	46,32
9,25	175	115	A118300925000	46,5
9,3	175	115	A118300930000	48,80
9,4	175	115	A118300940000	57,78
9,5	175	115	A118300950000	21,60
9,6	184	121	A118300960000	63,76
9,7	184	121	A118300970000	66,73
9,75	184	121	A118300975000	29,00
9,8	184	121	A118300980000	63,76
9,9	184	121	A118300990000	76,69
10	184	121	A118301000000	21,60
10,1	184	121	A118301010000	91,65
10,2	184	121	A118301020000	67,74
10,25	184	121	A118301025000	32,47
10,3	184	121	A118301030000	119,55
10,4	184	121	A118301040000	126,50
10,5	184	121	A118301050000	29,95
10,6	184	121	A118301060000	137,48
10,75	195	128	A118301075000	33,07
10,8	195	128	A118301080000	112,56
11	195	128	A118301100000	31,28
11,25	195	128	A118301125000	32,50
11,4	195	128	A118301140000	140,45
11,5	195	128	A118301150000	33,83
11,75	195	128	A118301175000	37,03
11,8	195	128	A118301180000	115,56
12	205	134	A118301200000	35,32
12,2	205	134	A118301220000	140,45
12,3	205	134	A118301230000	119,55
12,5	205	134	A118301250000	39,87
12,7	205	134	A118301270000	74,70
13	205	134	A118301300000	42,61
13,5	214	140	A118301350000	50,44
14	214	140	A118301400000	51,64
14,5	220	144	A118301450000	62,88
15	220	144	A118301500000	58,63
15,5	227	149	A118301550000	70,50
16	227	149	A118301600000	68,31

Cutting conditions and recommended material

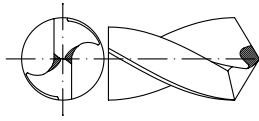
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	20	32	(A)	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,180	0,225	0,252	0,279
2	16	25,2	(A)	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,180	0,225	0,252	0,279
3	12,8	20	(A)	0,027	0,036	0,045	0,054	0,072	0,090	0,090	0,117	0,144	0,180	0,198	0,225
4	10	16	(A)	0,027	0,036	0,045	0,054	0,072	0,090	0,090	0,117	0,144	0,180	0,198	0,225
5	6,4	10	(B)	0,018	0,027	0,027	0,036	0,045	0,054	0,054	0,072	0,090	0,108	0,126	0,144
13.1	20	28	(C)	0,054	0,072	0,090	0,117	0,144	0,180	0,198	0,225	0,279	0,360	0,405	0,450
13.2	16	20	(A)	0,054	0,072	0,090	0,117	0,144	0,180	0,198	0,225	0,279	0,360	0,405	0,450
23	50,4	80	(A)	0,045	0,054	0,072	0,090	0,117	0,144	0,162	0,180	0,225	0,279	0,315	0,360
25	20	32	(A)	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,180	0,225	0,252	0,279

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000/ (π x D)

182.40

DIN 340



Classic series HSSCo 5%

Type NF 10 x D

Taper length Straight shank drills

Design and technical specifications

Helix angle	Standard (DIN 1414 type N)
Point angle	135°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Much heavier than normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated, golden-brown



Details and applications

The high strength at elevated temperatures of the cobalt high speed steel HSSCo and the design of the reinforced web in the whole length of the drill are characteristics which give to this drill its capacity for use in working with guide bushing on materials which are hard, strong and difficult to machine. It is our standard economic straight shank made of HSSCo. For high performance we suggest our Optimus families 184.43 and 184.44. Use to drill: Steel and cast steel, alloyed and non-alloyed over 900 N/mm² to 1200N/mm². - Some nickel-chrome steels-Ferritic and martensitic stainless steels-Acid resistant steels-Spring steels-Tough grey cast iron, malleable cast iron-spheroidal cast iron.

D	L	I	Code	Price
mm.	mm.	mm.		€
2	85	56	A182400200000	9,90
2,1	85	56	A182400210000	10,93
2,2	90	59	A182400220000	10,93
2,25	90	59	A182400225000	10,93
2,3	90	59	A182400230000	10,93
2,4	95	62	A182400240000	10,93
2,5	95	62	A182400250000	9,63
2,6	95	62	A182400260000	10,93
2,7	100	66	A182400270000	10,93
2,75	100	66	A182400275000	13,30
2,8	100	66	A182400280000	11,60
2,9	100	66	A182400290000	11,60
3	100	66	A182400300000	10,34
3,1	106	69	A182400310000	11,33
3,2	106	69	A182400320000	11,78
3,25	106	69	A182400325000	11,78
3,3	106	69	A182400330000	11,78
3,4	112	73	A182400340000	13,43
3,5	112	73	A182400350000	11,78
3,6	112	73	A182400360000	11,91
3,7	112	73	A182400370000	11,91
3,75	112	73	A182400375000	15,85
3,8	119	78	A182400380000	11,91
3,9	119	78	A182400390000	11,91
4	119	78	A182400400000	11,91
4,1	119	78	A182400410000	16,44
4,2	119	78	A182400420000	15,58
4,25	119	78	A182400425000	15,58
4,3	126	82	A182400430000	16,44
4,4	126	82	A182400440000	15,58
4,5	126	82	A182400450000	15,58
4,6	126	82	A182400460000	17,24
4,7	126	82	A182400470000	17,24
4,75	126	82	A182400475000	17,24
4,8	132	87	A182400480000	17,24
4,9	132	87	A182400490000	17,24
5	132	87	A182400500000	17,24
5,1	132	87	A182400510000	20,24
5,2	132	87	A182400520000	20,24
5,25	132	87	A182400525000	20,24
5,3	132	87	A182400530000	20,38
5,4	139	91	A182400540000	19,84
5,5	139	91	A182400550000	18,27
5,6	139	91	A182400560000	19,84
5,7	139	91	A182400570000	19,84
5,75	139	91	A182400575000	24,63
5,8	139	91	A182400580000	19,84
5,9	139	91	A182400590000	19,84

D	L	I	Code	Price
mm.	mm.	mm.		€
6	139	91	A182400600000	18,27
6,1	148	97	A182400610000	25,79
6,2	148	97	A182400620000	25,79
6,25	148	97	A182400625000	25,79
6,3	148	97	A182400630000	25,79
6,4	148	97	A182400640000	25,79
6,5	148	97	A182400650000	24,09
6,6	148	97	A182400660000	25,79
6,7	148	97	A182400670000	29,74
6,75	156	102	A182400675000	25,79
6,8	156	102	A182400680000	25,79
6,9	156	102	A182400690000	25,79
7	156	102	A182400700000	23,51
7,1	156	102	A182400710000	32,42
7,2	156	102	A182400720000	32,42
7,25	156	102	A182400725000	33,68
7,3	156	102	A182400730000	32,42
7,4	156	102	A182400740000	32,42
7,5	156	102	A182400750000	28,88
7,6	165	109	A182400760000	35,11
7,7	165	109	A182400770000	35,11
7,75	165	109	A182400775000	28,88
7,8	165	109	A182400780000	35,11
8	165	109	A182400800000	28,88
8,25	165	109	A182400825000	35,42
8,5	165	109	A182400850000	35,42
8,75	175	115	A182400875000	35,42
9	175	115	A182400900000	35,42
9,25	175	115	A182400925000	42,25
9,5	175	115	A182400950000	41,07
9,75	184	121	A182400975000	41,07
10	184	121	A182401000000	41,07
10,25	184	121	A182401025000	61,71
10,5	184	121	A182401050000	56,87
10,75	195	128	A182401075000	62,83
11	195	128	A182401100000	59,47
11,25	195	128	A182401125000	71,30
11,5	195	128	A182401150000	64,26
11,75	195	128	A182401175000	70,35
12	205	134	A182401200000	67,08
12,5	205	134	A182401250000	75,73
13	205	134	A182401300000	80,92
13,5	214	140	A182401350000	95,83
14	214	140	A182401400000	98,07
14,5	220	144	A182401450000	119,44
15	220	144	A182401500000	111,37
15,5	227	149	A182401550000	125,79
16	227	149	A182401600000	129,78

Cutting conditions and recommended material

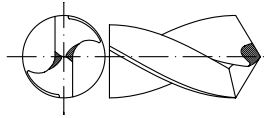
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
3	20	24	(A)	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,180	0,225	0,252	0,279
4	12	16	(A)	0,036	0,045	0,054	0,072	0,090	0,108	0,126	0,144	0,180	0,225	0,252	0,279
5	8	13	(A)	0,027	0,027	0,036	0,045	0,054	0,072	0,072	0,090	0,117	0,144	0,162	0,180
6	11	11	(A)	0,027	0,036	0,045	0,054	0,072	0,090	0,090	0,117	0,144	0,180	0,198	0,225
7	6,5	10	(A) (B)	0,027	0,036	0,045	0,054	0,072	0,090	0,090	0,117	0,144	0,180	0,198	0,225
8	5	8	(A) (B)	0,027	0,027	0,036	0,045	0,054	0,072	0,072	0,090	0,117	0,144	0,162	0,180
10	3,25	4,75	(A) (B)	0,027	0,027	0,036	0,045	0,054	0,072	0,072	0,090	0,117	0,144	0,162	0,180
13.1	24	28	(B) (A)	0,045	0,054	0,072	0,090	0,117	0,144	0,162	0,180	0,225	0,279	0,315	0,360
13.2	17,5	25,5	(B) (A)	0,054	0,072	0,090	0,117	0,144	0,180	0,198	0,225	0,279	0,360	0,405	0,450

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000/ (π x D)

121.30

DIN 1869/1

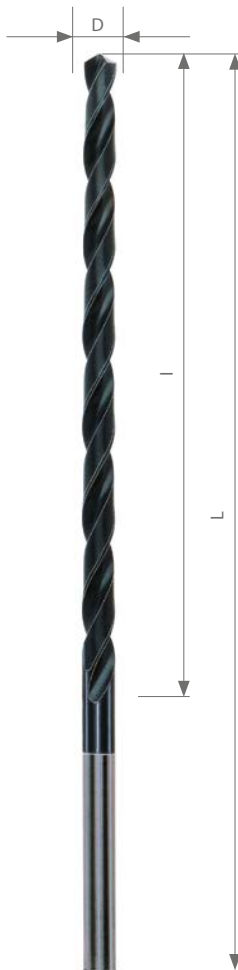


Classic series | Type N HSS | 15 x D

Extra length drills. Series 1 Straight shank drills

Design and technical specifications

Helix angle	Standard (DIN 1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated. Nitrided (D<2,5mm Bright Finish)



Details and applications

Drill for drilling deep holes. Requires a thorough study in order to determine workholding methods, feeds and speeds to avoid vibration. It is of vital importance to remove the drill frequently from the hole and to have a good supply of the correct coolant. For a high performance we suggest our Optimus family 124.40. Use to drill: Steel and cast steel, alloyed and non-alloyed steel, up to up to 700 N/mm²- Grey cast iron- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite-Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu). continuous swarf- Electrolytic cooper-Zinc castings.

D	L	I	Code	Price
mm.	mm.	mm.		€
1,6	115	75	A121300160000	19,62
1,7	115	75	A121300170000	26,88
1,8	120	80	A121300180000	22,89
1,9	120	80	A121300190000	19,62
1,95	125	85	A121300195000	26,88
2	125	85	A121300200000	10,14
2,05	125	85	A121300205000	26,39
2,1	125	85	A121300210000	17,52
2,2	135	90	A121300220000	16,73
2,3	135	90	A121300230000	14,92
2,35	135	90	A121300235000	28,87
2,4	140	95	A121300240000	18,23
2,5	140	95	A121300250000	10,27
2,6	140	95	A121300260000	19,21
2,7	150	100	A121300270000	17,44
2,8	150	100	A121300280000	18,35
2,9	150	100	A121300290000	15,94
3	150	100	A121300300000	11,17
3,1	155	105	A121300310000	16,73
3,2	155	105	A121300320000	15,75
3,25	155	105	A121300325000	20,41
3,3	155	105	A121300330000	16,54
3,4	165	115	A121300340000	19,21
3,5	165	115	A121300350000	11,63
3,6	165	115	A121300360000	17,82
3,7	165	115	A121300370000	19,62
3,75	165	115	A121300375000	34,85
3,8	175	120	A121300380000	19,14
3,9	175	120	A121300390000	19,92
4	175	120	A121300400000	11,55
4,1	175	120	A121300410000	19,92
4,2	175	120	A121300420000	19,32
4,3	185	125	A121300430000	21,92
4,4	185	125	A121300440000	20,41
4,5	185	125	A121300450000	12,66
4,6	185	125	A121300460000	26,39
4,7	185	125	A121300470000	27,89
4,8	195	135	A121300480000	22,89
4,9	195	135	A121300490000	23,42
5	195	135	A121300500000	13,25
5,1	195	135	A121300510000	23,91
5,2	195	135	A121300520000	24,89
5,3	195	135	A121300530000	24,89
5,4	205	140	A121300540000	28,87
5,5	205	140	A121300550000	15,12
5,6	205	140	A121300560000	31,88
5,7	205	140	A121300570000	29,40
5,8	205	140	A121300580000	27,41

D	L	I	Code	Price
mm.	mm.	mm.		€
5,9	205	140	A121300590000	32,86
6	205	140	A121300600000	15,50
6,1	215	150	A121300610000	31,88
6,2	215	150	A121300620000	27,41
6,25	215	150	A121300625000	58,76
6,3	215	150	A121300630000	31,39
6,4	215	150	A121300640000	31,39
6,5	215	150	A121300650000	19,38
6,6	215	150	A121300660000	33,87
6,7	215	150	A121300670000	35,86
6,75	215	150	A121300675000	39,36
6,8	225	155	A121300680000	30,38
7	225	155	A121300700000	21,68
7,2	225	155	A121300720000	41,84
7,4	225	155	A121300740000	39,36
7,5	225	155	A121300750000	26,45
7,7	240	165	A121300770000	47,82
7,8	240	165	A121300780000	43,35
7,9	240	165	A121300790000	47,82
8	240	165	A121300800000	28,51
8,1	240	165	A121300810000	57,78
8,2	240	165	A121300820000	51,80
8,3	240	165	A121300830000	60,75
8,4	240	165	A121300840000	63,76
8,5	240	165	A121300850000	36,29
8,7	250	175	A121300870000	66,73
8,8	250	175	A121300880000	54,77
8,9	250	175	A121300890000	66,73
9	250	175	A121300900000	39,71
9,5	250	175	A121300950000	44,99
9,6	265	185	A121300960000	79,70
9,7	265	185	A121300970000	72,71
9,8	265	185	A121300980000	69,74
9,9	265	185	A121300990000	86,65
10	265	185	A121301000000	41,58
10,1	265	185	A121301010000	132,48
10,2	265	185	A121301020000	72,71
10,25	265	185	A121301025000	99,62
10,5	265	185	A121301050000	74,70
11	280	195	A121301100000	64,67
11,5	280	195	A121301150000	98,61
11,8	280	195	A121301180000	133,50
12	295	205	A121301200000	77,20
12,1	295	205	A121301210000	167,37
12,25	295	205	A121301225000	154,4
12,3	295	205	A121301230000	109,59
12,5	295	205	A121301250000	97,63
12,7	295	205	A121301270000	103,61
13	295	205	A121301300000	97,63

Cutting conditions and recommended material

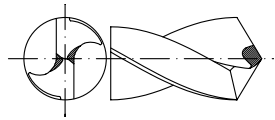
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	17,5	28	(A)	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,160	0,200	0,224	0,248
2	14	22	(A)	0,032	0,040	0,048	0,064	0,080	0,096	0,112	0,128	0,160	0,200	0,224	0,248
3	11	17,5	(A)	0,024	0,032	0,040	0,048	0,064	0,080	0,104	0,128	0,160	0,176	0,200	
4	8,75	14	(A)	0,024	0,032	0,040	0,048	0,064	0,080	0,080	0,104	0,128	0,160	0,176	0,200
13.1	17,5	24,5	(A) (B)	0,048	0,064	0,080	0,104	0,128	0,160	0,176	0,200	0,248	0,320	0,360	0,400
13.2	14	17,5	(A)	0,048	0,064	0,080	0,104	0,128	0,160	0,176	0,200	0,248	0,320	0,360	0,400

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000/ (π x D)

122.30

DIN 1869/2



Classic series | Type N

HSS | 20 x D

Extra length drills. Series 2

Straight shank drills

Design and technical specifications

Helix angle	Standard (DIN1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated. Nitrided (D<2,5mm Bright Finish)

Details and applications

Drill for drilling deep holes. Requires a thorough study in order to determine workholding methods, feeds and speeds to avoid vibration. It is of vital importance to remove the drill frequently from the hole and to have a good supply of the correct coolant. For a high performance we suggest our Optimus family 125.40. Use to drill: Steel and cast steel, alloyed and non-alloyed steel, up to up to 700 N/mm²- Grey iron castings- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite-Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu). continuous swarf- Electrolytic cooper-Zinc castings.



D	L	l	Code	Price
mm.	mm.	mm.		€
2	160	110	A122300200000	10,14
2,5	180	120	A122300250000	10,27
2,7	190	130	A122300270000	29,40
2,8	190	130	A122300280000	39,36
2,9	190	130	A122300290000	37,37
3	190	130	A122300300000	11,17
3,1	200	135	A122300310000	30,38
3,2	200	135	A122300320000	28,87
3,3	200	135	A122300330000	37,37
3,5	210	145	A122300350000	11,63
3,6	210	145	A122300360000	33,38
3,8	220	150	A122300380000	33,87
4	220	150	A122300400000	11,55
4,1	220	150	A122300410000	31,39
4,2	220	150	A122300420000	28,87
4,3	235	160	A122300430000	35,86
4,5	235	160	A122300450000	12,66
4,8	245	170	A122300480000	36,84
4,9	245	170	A122300490000	39,36
5	245	170	A122300500000	13,25
5,2	245	170	A122300520000	36,35
5,5	260	180	A122300550000	15,12
5,8	260	180	A122300580000	34,85
5,9	260	180	A122300590000	41,35
6	260	180	A122300600000	15,50
6,2	275	190	A122300620000	48,80
6,5	275	190	A122300650000	19,38
6,7	275	190	A122300670000	41,35
6,8	290	200	A122300680000	61,77
7	290	200	A122300700000	21,68
7,5	290	200	A122300750000	26,45
7,8	305	210	A122300780000	84,66
8	305	210	A122300800000	28,51
8,1	305	210	A122300810000	64,74
8,5	305	210	A122300850000	36,29
8,7	320	220	A122300870000	77,71
8,8	320	220	A122300880000	80,68
8,9	320	220	A122300890000	76,69
9	320	220	A122300900000	39,71
9,5	320	220	A122300950000	44,99

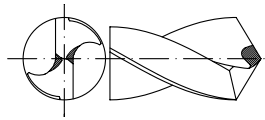
D	L	l	Code	Price
mm.	mm.	mm.		€
9,8	340	235	A122300980000	93,65
10	340	235	A122301000000	41,58
10,2	340	235	A122301020000	98,61
10,5	340	235	A122301050000	106,58
11	365	250	A122301100000	64,67
11,5	365	250	A122301150000	118,53
12	375	260	A122301200000	77,20
13	375	260	A122301300000	131,50

Cutting conditions and recommended material

Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	17,5	28	(A)	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,140	0,175	0,196	0,217
2	14	22	(A)	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,140	0,175	0,196	0,217
3	11,2	17,5	(A)	0,021	0,028	0,035	0,042	0,056	0,070	0,090	0,112	0,140	0,154	0,175	0,175
4	8,75	14	(A)	0,021	0,028	0,035	0,042	0,056	0,070	0,070	0,091	0,112	0,140	0,154	0,175
13.1	17,5	24,5	(A) (B)	0,042	0,056	0,070	0,091	0,112	0,140	0,154	0,175	0,217	0,280	0,315	0,350
13.2	14	17,5	(A)	0,042	0,056	0,070	0,091	0,112	0,140	0,154	0,175	0,217	0,280	0,315	0,350

123.30

DIN 1869/3



Classic series | Type N HSS | 30 x D

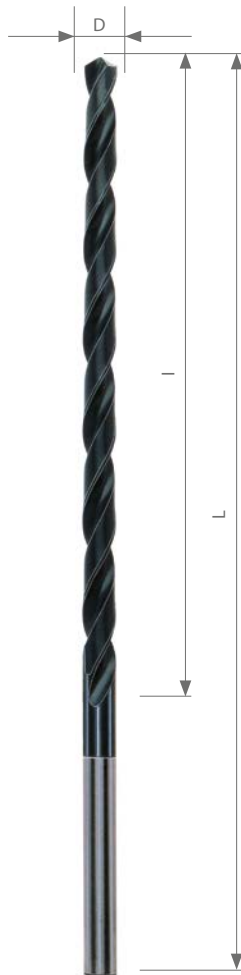
Extra length drills. Series 3 Straight shank drills

Design and technical specifications

Helix angle	Standard (DIN 1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated. Nitrided (D<2,5mm Bright Finish)

Details and applications

Drill for drilling deep holes. Requires a thorough study in order to determine workholding methods, feeds and speeds to avoid vibration. It is of vital importance to remove the drill frequently from the hole and to have a good supply of the correct coolant. For a high performance we suggest our Optimus family 126.40. Use to drill: Steel and cast steel, alloyed and non-alloyed steel, up to up to 700 N/mm²- Grey iron castings- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite-Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu). continuous swarf- Electrolytic cooper-Zinc castings.



D	L	l	Code	Price
mm.	mm.	mm.		€
3,5	265	180	A123300350000	21,09
3,8	280	190	A123300380000	35,86
3,9	280	190	A123300390000	49,32
4	280	190	A123300400000	19,84
4,2	280	190	A123300420000	34,85
4,5	295	200	A123300450000	26,97
5	315	210	A123300500000	25,40
5,2	315	210	A123300520000	63,76
5,5	330	225	A123300550000	26,73
5,8	330	225	A123300580000	41,35
5,9	330	225	A123300590000	45,34
6	330	225	A123300600000	29,65
6,1	350	235	A123300610000	54,77
6,2	350	235	A123300620000	50,79
6,4	350	235	A123300640000	56,77
6,5	350	235	A123300650000	34,13
6,7	350	235	A123300670000	67,74
6,8	370	250	A123300680000	58,76
7	370	250	A123300700000	44,26
7,5	370	250	A123300750000	50,14
7,8	390	265	A123300780000	78,68
8	390	265	A123300800000	51,12
8,5	390	265	A123300850000	65,70
8,7	410	280	A123300870000	121,54
9	410	280	A123300900000	71,75
9,5	410	280	A123300950000	80,23
9,8	430	295	A123300980000	111,58
10	430	295	A123301000000	78,23
10,5	430	295	A123301050000	109,59
11	455	310	A123301100000	92,54
11,5	455	330	A123301150000	131,50
12	480	330	A123301200000	101,97
12,5	480	330	A123301250000	155,41
13	480	330	A123301300000	146,43

Cutting conditions and recommended material

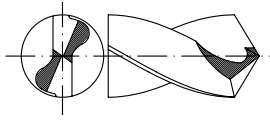
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	17,5	28	(A)	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,120	0,150	0,168	0,186
2	14	22	(A)	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,120	0,150	0,168	0,186
3	11	17,5	(A)	0,018	0,024	0,030	0,036	0,048	0,060	0,078	0,096	0,120	0,132	0,150	
4	8,75	14	(A)	0,018	0,024	0,030	0,036	0,048	0,060	0,060	0,078	0,096	0,120	0,132	0,150
13.1	17,5	24,5	(A) (B)	0,036	0,048	0,060	0,078	0,096	0,120	0,132	0,150	0,186	0,240	0,270	0,300
13.2	14	17,5	(A)	0,036	0,048	0,060	0,078	0,096	0,120	0,132	0,150	0,186	0,240	0,270	0,300

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = $V_c \times 1000 / (\pi \times D)$

124.30

DIN 1869/1



Classic series | Type NV HSS | 15 x D

Extra length drills. Worm pattern. Series 1

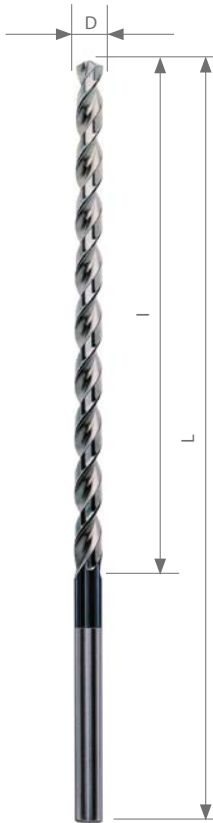
Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web thinned according to DIN 1412-C ("Split point")
Web thickness	Much heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated land, bright finish flutes

Details and applications

Drill for drilling deep holes. Requires a thorough study in order to determine workholding methods, feeds and speeds to avoid vibration. It is of vital importance to remove the drill frequently from the hole and to have a good supply of the correct coolant. For a high performance we suggest our Optimus family 124.40. Use to drill: Steel and cast steel, alloyed and non alloyed, up to 1000 N/mm²- Grey iron castings- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite-Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu). continuous swarf- Electrolytic cooper-Zinc castings- Not recommended for nickel-chrome steels or similar materials).



D	L	I	Code	Price
mm.	mm.	mm.		€
1,95	125	85	A124300195000	33,38
2	125	85	A124300200000	13,25
2,05	125	85	A124300205000	34,36
2,1	125	85	A124300210000	21,43
2,2	135	90	A124300220000	21,43
2,3	135	90	A124300230000	19,44
2,4	140	95	A124300240000	20,41
2,5	140	95	A124300250000	13,25
2,6	140	95	A124300260000	20,41
2,7	150	100	A124300270000	20,90
2,8	150	100	A124300280000	20,90
2,9	150	100	A124300290000	24,89
3	150	100	A124300300000	14,83
3,1	155	105	A124300310000	25,41
3,2	155	105	A124300320000	21,92
3,25	155	105	A124300325000	25,90
3,3	155	105	A124300330000	21,92
3,4	165	115	A124300340000	25,41
3,5	165	115	A124300350000	14,61
3,6	165	115	A124300360000	22,41
3,7	165	115	A124300370000	24,40
3,75	165	115	A124300375000	44,32
3,8	175	120	A124300380000	24,40
3,9	175	120	A124300390000	24,40
4	175	120	A124300400000	14,61
4,1	175	120	A124300410000	24,40
4,2	175	120	A124300420000	24,40
4,3	185	125	A124300430000	30,38
4,4	185	125	A124300440000	32,86
4,5	185	125	A124300450000	15,29
4,6	185	125	A124300460000	30,86
4,7	185	125	A124300470000	28,87
4,8	195	135	A124300480000	29,40
4,9	195	135	A124300490000	29,89
5	195	135	A124300500000	16,10
5,1	195	135	A124300510000	31,88
5,2	195	135	A124300520000	32,37
5,3	195	135	A124300530000	33,38
5,4	205	140	A124300540000	34,36
5,5	205	140	A124300550000	16,70
5,6	205	140	A124300560000	37,86
5,7	205	140	A124300570000	33,38

D	L	I	Code	Price
mm.	mm.	mm.		€
5,8	205	140	A124300580000	33,87
5,9	205	140	A124300590000	33,87
6	205	140	A124300600000	17,21
6,1	215	150	A124300610000	40,34
6,2	215	150	A124300620000	35,38
6,25	215	150	A124300625000	43,83
6,3	215	150	A124300630000	38,83
6,4	215	150	A124300640000	39,85
6,5	215	150	A124300650000	21,09
6,6	215	150	A124300660000	43,83
6,7	215	150	A124300670000	47,82
6,75	215	150	A124300675000	66,73
6,8	225	155	A124300680000	39,85
7	225	155	A124300700000	25,26
7,2	225	155	A124300720000	53,80
7,5	225	155	A124300750000	28,03
7,7	240	165	A124300770000	59,77
7,8	240	165	A124300780000	59,77
7,9	240	165	A124300790000	56,77
8	240	165	A124300800000	32,04
8,1	240	165	A124300810000	71,73
8,2	240	165	A124300820000	62,74
8,3	240	165	A124300830000	61,77
8,4	240	165	A124300840000	76,69
8,5	240	165	A124300850000	44,26
8,7	250	175	A124300870000	75,71
8,8	250	175	A124300880000	75,71
9	250	175	A124300900000	47,46
9,5	250	175	A124300950000	57,22
9,6	265	185	A124300960000	106,58
9,7	265	185	A124300970000	106,58
9,8	265	185	A124300980000	96,62
9,9	265	185	A124300990000	109,59
10	265	185	A124301000000	50,14
10,2	265	185	A124301020000	101,62
10,5	265	185	A124301050000	82,32
11	280	195	A124301100000	69,12
11,5	280	195	A124301150000	93,65
11,8	280	195	A124301180000	148,42
12	295	205	A124301200000	83,89
12,5	295	205	A124301250000	111,58
12,7	295	205	A124301270000	141,47
13	295	205	A124301300000	110,56

Cutting conditions and recommended material

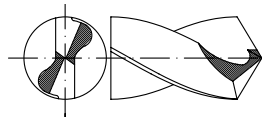
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill							
	From	To		10	12,5	16	20	25	30	40	50
1	17,5	28	(A)	0,112	0,140	0,175	0,196	0,217	0,245	0,280	0,350
2	14	22	(A)	0,112	0,140	0,175	0,196	0,217	0,245	0,280	0,350
3	11	17,5	(A)	0,091	0,112	0,140	0,154	0,175	0,196	0,217	0,280
4	8,75	14	(A)	0,091	0,112	0,140	0,154	0,175	0,196	0,217	0,280
13.1	17,5	24,5	(A) (B)	0,175	0,217	0,280	0,315	0,350	0,392	0,441	0,560
13.2	14	17,5	(A)	0,175	0,217	0,280	0,315	0,350	0,392	0,441	0,560

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000 / (π x D)

125.30

DIN 1869/2



Classic series | Type NV HSS | 20 x D

Extra length drills. Worm pattern. Series 2

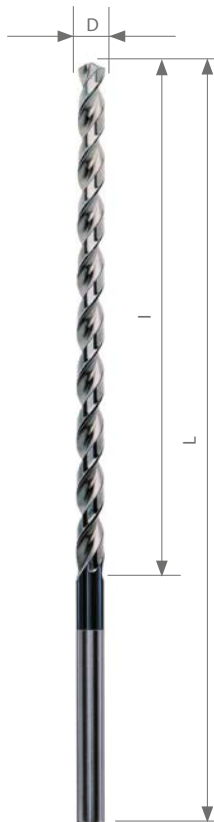
Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web thinned according to DIN 1412-C ("Split point")
Web thickness	Much heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated land, bright finish flutes

Details and applications

Drill for drilling deep holes. Requires a thorough study in order to determine workholding methods, feeds and speeds to avoid vibration. It is of vital importance to remove the drill frequently from the hole and to have a good supply of the correct coolant. For a high performance we suggest our Optimus family 125.40. Use to drill: Steel and cast steel, alloyed and non-alloyed steel, up to up to 1000 N/mm². Grey iron castings- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite-Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu). continuous swarf- Electrolytic cooper-Zinc castings.



D	L	I	Code	Price
mm.	mm.	mm.		€
2	160	110	A125300200000	32,37
2,2	170	115	A125300220000	37,86
2,3	170	115	A125300230000	36,84
2,5	180	120	A125300250000	32,37
2,8	190	130	A125300280000	32,37
3	190	130	A125300300000	18,40
3,1	200	135	A125300310000	37,86
3,2	200	135	A125300320000	25,90
3,3	200	135	A125300330000	28,38
3,4	210	145	A125300340000	46,32
3,5	210	145	A125300350000	18,62
3,6	210	145	A125300360000	57,78
3,7	210	145	A125300370000	51,80
3,8	220	150	A125300380000	55,79
3,9	220	150	A125300390000	55,79
4	220	150	A125300400000	18,62
4,1	220	150	A125300410000	56,77
4,2	220	150	A125300420000	47,33
4,3	235	160	A125300430000	56,77
4,4	235	160	A125300440000	56,77
4,5	235	160	A125300450000	22,20
4,8	245	170	A125300480000	60,75
4,9	245	170	A125300490000	68,72
5	245	170	A125300500000	21,25
5,1	245	170	A125300510000	59,77
5,2	245	170	A125300520000	63,76
5,3	245	170	A125300530000	59,77
5,4	260	180	A125300540000	67,74
5,5	260	180	A125300550000	27,48
5,7	260	180	A125300570000	64,74
5,8	260	180	A125300580000	64,74
5,9	260	180	A125300590000	68,72

D	L	I	Code	Price
mm.	mm.	mm.		€
6	260	180	A125300600000	28,30
6,1	275	190	A125300610000	68,72
6,2	275	190	A125300620000	68,72
6,4	275	190	A125300640000	80,68
6,5	275	190	A125300650000	31,74
6,6	275	190	A125300660000	112,56
6,7	275	190	A125300670000	112,56
6,75	290	200	A125300675000	104,59
6,8	290	200	A125300680000	99,62
7	290	200	A125300700000	34,94
7,2	290	200	A125300720000	112,56
7,5	290	200	A125300750000	38,14
7,8	305	210	A125300780000	102,59
8	305	210	A125300800000	41,06
8,2	305	210	A125300820000	119,55
8,5	305	210	A125300850000	63,32
8,8	320	220	A125300880000	119,55
9	320	220	A125300900000	61,69
9,5	320	220	A125300950000	73,46
9,7	340	235	A125300970000	170,34
9,8	340	235	A125300980000	175,34
10	340	235	A125301000000	66,81
10,2	340	235	A125301020000	119,55
10,5	340	235	A125301050000	91,86
11	365	250	A125301100000	89,47
11,5	365	250	A125301150000	130,49
12	375	260	A125301200000	102,43
12,3	375	260	A125301230000	185,30
12,5	375	260	A125301250000	133,5
12,7	375	260	A125301270000	183,31
13	375	260	A125301300000	136,47

Cutting conditions and recommended material

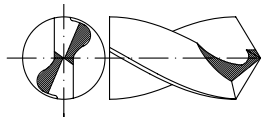
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	17,5	28	(A)	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,140	0,175	0,196	0,217
2	14	22	(A)	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,140	0,175	0,196	0,217
3	11	17,5	(A)	0,021	0,028	0,035	0,042	0,056	0,070	0,070	0,091	0,112	0,140	0,154	0,175
4	8,75	14	(A)	0,021	0,028	0,035	0,042	0,056	0,070	0,070	0,091	0,112	0,140	0,154	0,175
5	5,5	8,75	(B)	0,014	0,021	0,021	0,028	0,035	0,042	0,042	0,056	0,070	0,084	0,098	0,112
13.1	17,5	24,5	(C)	0,042	0,056	0,070	0,091	0,112	0,140	0,154	0,175	0,217	0,280	0,315	0,350
13.2	14	17,5	(A)	0,042	0,056	0,070	0,091	0,112	0,140	0,154	0,175	0,217	0,280	0,315	0,350
23	44	70	(A)	0,035	0,042	0,056	0,070	0,091	0,112	0,126	0,140	0,175	0,217	0,245	0,280
25	17,5	28	(A)	0,028	0,035	0,042	0,056	0,070	0,084	0,098	0,112	0,140	0,175	0,196	0,217

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000 / (π x D)

126.30

DIN 1869/3



Classic series | Type NV HSS | 30 x D

Extra length drills. Worm pattern. Series 3

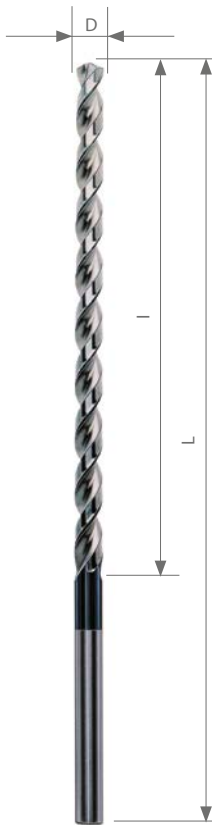
Straight shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web thinned according to DIN 1412-C ("Split point")
Web thickness	Much heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated land, bright finish flutes

Details and applications

Drill for drilling deep holes. Requires a thorough study in order to determine workholding methods, feeds and speeds to avoid vibration. It is of vital importance to remove the drill frequently from the hole and to have a good supply of the correct coolant. For a high performance we suggest our Optimus family 126.40. Use to drill: Steel and cast steel, alloyed and non-alloyed steel, up to up to 1000 N/mm²- Grey iron castings- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite-Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu). continuous swarf- Electrolytic cooper-Zinc castings.



D	L	I	Code	Price
mm.	mm.	mm.		€
2,5	225	150	A126300250000	42,33
3	240	160	A126300300000	42,33
3,1	250	170	A126300310000	50,79
3,2	250	170	A126300320000	37,86
3,3	250	170	A126300330000	54,77
3,4	265	180	A126300340000	59,77
3,5	265	180	A126300350000	23,53
3,6	265	180	A126300360000	68,72
3,7	265	180	A126300370000	66,73
3,8	280	190	A126300380000	68,72
3,9	280	190	A126300390000	68,72
4	280	190	A126300400000	23,66
4,1	280	190	A126300410000	65,75
4,2	280	190	A126300420000	57,78
4,3	295	200	A126300430000	63,76
4,4	295	200	A126300440000	65,75
4,5	295	200	A126300450000	28,84
4,6	295	200	A126300460000	94,62
4,8	315	210	A126300480000	94,62
4,9	315	210	A126300490000	97,63
5	315	210	A126300500000	28,08
5,1	315	210	A126300510000	94,62
5,2	315	210	A126300520000	94,62
5,4	330	225	A126300540000	97,63
5,5	330	225	A126300550000	31,77
5,8	330	225	A126300580000	101,62
6	330	225	A126300600000	32,31
6,1	350	235	A126300610000	101,62
6,2	350	235	A126300620000	97,63
6,3	350	235	A126300630000	111,58
6,4	350	235	A126300640000	131,5
6,5	350	235	A126300650000	36,94
6,6	350	235	A126300660000	122,52
6,7	350	235	A126300670000	123,53
6,75	370	250	A126300675000	133,5
6,8	370	250	A126300680000	114,55

D	L	I	Code	Price
mm.	mm.	mm.		€
7	370	250	A126300700000	47,38
7,2	370	250	A126300720000	145,45
7,5	370	250	A126300750000	51,36
7,8	390	265	A126300780000	153,42
8	390	265	A126300800000	55,51
8,2	390	265	A126300820000	159,40
8,5	390	265	A126300850000	68,79
8,8	410	265	A126300880000	189,29
8,9	410	265	A126300890000	223,16
9	410	280	A126300900000	73,70
9,5	410	280	A126300950000	88,44
10	430	295	A126301000000	85,82
10,5	430	295	A126301050000	91,72
11	455	310	A126301100000	96,47
11,5	455	330	A126301150000	147,44
12	480	330	A126301200000	114,03
12,5	480	330	A126301250000	154,40
13	480	330	A126301300000	157,41

Cutting conditions and recommended material

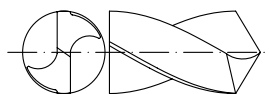
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill											
	From	To		2	2,5	3	4	5	6	8	10	12,5	16	20	25
1	17,5	28	(A)	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,120	0,150	0,168	0,186
2	14	22	(A)	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,120	0,150	0,168	0,186
3	11	17,5	(A)	0,018	0,024	0,030	0,036	0,048	0,060	0,060	0,078	0,096	0,120	0,132	0,150
4	8,75	14	(A)	0,018	0,024	0,030	0,036	0,048	0,060	0,060	0,078	0,096	0,120	0,132	0,150
5	5,5	8,75	(B)	0,012	0,018	0,018	0,024	0,030	0,036	0,036	0,048	0,060	0,072	0,084	0,096
13.1	17,5	24,5	(C)	0,036	0,048	0,060	0,078	0,096	0,120	0,132	0,150	0,186	0,240	0,270	0,300
13.2	14	17,5	(A)	0,036	0,048	0,060	0,078	0,096	0,120	0,132	0,150	0,186	0,240	0,270	0,300
23	44	70	(A)	0,030	0,036	0,048	0,060	0,078	0,096	0,108	0,120	0,150	0,186	0,210	0,240
25	17,5	28	(A)	0,024	0,030	0,036	0,048	0,060	0,072	0,084	0,096	0,120	0,150	0,168	0,186

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000 / (π x D)

130.30

DIN 345



Classic series | Type N HSS | 5 x D

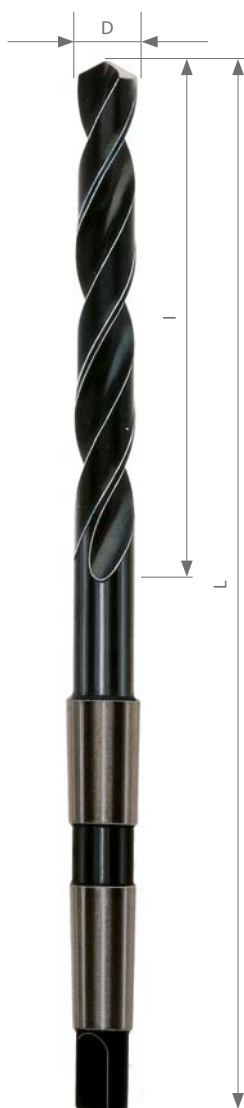
Standard series drills Taper shank drills

Design and technical specifications

Helix angle	Standard (DIN 1414 type N)
Point angle	118°
Point grinding	Relieved cone
Web thickness	Normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated

Details and applications

The slender geometry and the strength of this tool, the surface treatment and its dimensional characteristics make this drill "the standard taper shank drill". It can be used in a wide range of applications. In this range of sizes it is our most economic family. Use to drill: Steel and cast steel, alloyed and non-alloyed, up to 900 N/mm². Grey cast iron- Malleable cast iron- Spheroidal cast iron-Pressure casting- Sintered iron-German silver-Graphite- Phosphor bronze for bearings-Bronze alloys of aluminium, lead, manganese or silicon - Soft brass (≥60% Cu), continuous swarf- Electrolytic copper-Zinc.



D	L	I	HM	Code	Price
mm.	mm.	mm.			€
3	114	33	1	A130300300000	28,82
3,25	117	36	1	A130300325000	50,53
3,5	120	39	1	A130300350000	31,18
3,75	120	39	1	A130300375000	21,26
4	124	43	1	A130300400000	25,66
4,25	124	43	1	A130300425000	40,26
4,5	128	47	1	A130300450000	26,45
4,75	128	47	1	A130300475000	58,42
5	133	52	1	A130300500000	21,71
5,25	133	52	1	A130300525000	20,24
5,5	138	57	1	A130300550000	22,50
5,75	138	57	1	A130300575000	56,05
6	138	57	1	A130300600000	23,29
6,25	144	63	1	A130300625000	23,05
6,5	144	63	1	A130300650000	22,89
6,75	150	69	1	A130300675000	24,87
7	150	69	1	A130300700000	22,89
7,25	150	69	1	A130300725000	59,21
7,5	150	69	1	A130300750000	26,45
7,75	156	75	1	A130300775000	56,84
8	156	75	1	A130300800000	20,92
8,25	156	75	1	A130300825000	45,00
8,5	156	75	1	A130300850000	22,89
8,75	162	81	1	A130300875000	37,89
9	162	81	1	A130300900000	22,50
9,25	162	81	1	A130300925000	56,84
9,5	162	81	1	A130300950000	26,84
9,75	168	87	1	A130300975000	51,32
10	168	87	1	A130301000000	22,89
10,25	168	87	1	A130301025000	37,89
10,5	168	87	1	A130301050000	24,08
10,75	175	94	1	A130301075000	37,50
11	175	94	1	A130301100000	24,87
11,25	175	94	1	A130301125000	44,21
11,5	175	94	1	A130301150000	28,42
11,75	175	94	1	A130301175000	36,32
12	182	101	1	A130301200000	25,66
12,25	182	101	1	A130301225000	39,47
12,5	182	101	1	A130301250000	27,24
12,75	182	101	1	A130301275000	38,68
13	182	101	1	A130301300000	28,03
13,25	189	108	1	A130301325000	40,26
13,5	189	108	1	A130301350000	31,58
13,75	189	108	1	A130301375000	40,26
14	189	108	1	A130301400000	29,21
14,25	212	114	2	A130301425000	48,16
14,5	212	114	2	A130301450000	32,92
14,75	212	114	2	A130301475000	52,89
15	212	114	2	A130301500000	32,92
15,25	218	120	2	A130301525000	48,16
15,5	218	120	2	A130301550000	35,53
15,75	218	120	2	A130301575000	46,58

D	L	I	HM	Code	Price
mm.	mm.	mm.			€
16	218	120	2	A130301600000	35,53
16,25	223	125	2	A130301625000	56,05
16,5	223	125	2	A130301650000	38,29
16,75	223	125	2	A130301675000	51,32
17	223	125	2	A130301700000	40,26
17,25	228	130	2	A130301725000	55,26
17,5	228	130	2	A130301750000	41,72
17,75	228	130	2	A130301775000	52,89
18	228	130	2	A130301800000	42,63
18,25	233	135	2	A130301825000	60,79
18,5	233	135	2	A130301850000	45,79
18,75	233	135	2	A130301875000	58,42
19	233	135	2	A130301900000	45,79
19,25	238	140	2	A130301925000	67,89
19,5	238	140	2	A130301950000	52,89
19,75	238	140	2	A130301975000	65,53
20	238	140	2	A130302000000	49,91
20,25	243	145	2	A130302025000	76,58
20,5	243	145	2	A130302050000	52,11
20,75	243	145	2	A130302075000	73,42
21	243	145	2	A130302100000	55,26
21,25	248	150	2	A130302125000	79,74
21,5	248	150	2	A130302150000	63,16
21,75	248	150	2	A130302175000	75,79
22	248	150	2	A130302200000	61,58
22,25	248	150	2	A130302225000	79,74
22,5	253	155	2	A130302250000	66,32
22,75	253	155	2	A130302275000	79,74
23	253	155	2	A130302300000	71,84
23,25	276	155	3	A130302325000	99,47
23,5	276	155	3	A130302350000	71,05
23,75	281	160	3	A130302375000	105,00
24	281	160	3	A130302400000	75,00
24,25	281	160	3	A130302425000	112,89
24,5	281	160	3	A130302450000	77,37
24,75	281	160	3	A130302475000	114,47
25	281	160	3	A130302500000	83,68
25,25	286	165	3	A130302525000	116,05
25,5	286	165	3	A130302550000	85,26
25,75	286	165	3	A130302575000	118,42
26	286	165	3	A130302600000	94,74
26,25	286	165	3	A130302625000	138,95
26,5	286	165	3	A130302650000	92,37
26,75	291	170	3	A130302675000	159,47
27	291	170	3	A130302700000	94,74
27,25	291	170	3	A130302725000	145,89
27,5	291	170	3	A130302750000	97,89
27,75	291	170	3	A130302775000	155,53
28	291	170	3	A130302800000	103,42
28,25	296	175	3	A130302825000	151,58
28,5	296	175	3	A130302850000	128,68
28,75	296	175	3	A130302875000	194,21

130.30
 DIN 345

 Classic series
 HSS

 Type N
 5 x D

 Standard series drills
 Taper shank drills

D	L	I	HM	Code	Price
mm.	mm.	mm.			€
29	296	175	3	A130302900000	112,89
29,25	296	175	3	A130302925000	187,89
29,5	296	175	3	A130302950000	116,84
29,75	296	175	3	A130302975000	157,11
30	296	175	3	A130303000000	112,89
30,25	301	180	3	A130303025000	159,47
30,5	301	180	3	A130303050000	138,16
30,75	301	180	3	A130303075000	161,05
31	301	180	3	A130303100000	135,00
31,25	301	180	3	A130303125000	221,05
31,5	301	180	3	A130303150000	153,16
31,75	306	185	3	A130303175000	159,47
32	334	185	4	A130303200000	141,32
32,5	334	185	4	A130303250000	172,11
33	334	185	4	A130303300000	152,37
33,5	334	185	4	A130303350000	178,42
34	339	190	4	A130303400000	176,84
34,5	339	190	4	A130303450000	206,84
35	339	190	4	A130303500000	181,58
35,5	339	190	4	A130303550000	224,21
36	344	195	4	A130303600000	195,79
36,5	344	195	4	A130303650000	230,53
37	344	195	4	A130303700000	213,16
37,5	344	195	4	A130303750000	240,00
38	349	200	4	A130303800000	225,79
38,5	349	200	4	A130303850000	284,21
39	349	200	4	A130303900000	249,47
39,5	349	200	4	A130303950000	311,05
40	349	200	4	A130304000000	257,37
40,5	354	205	4	A130304050000	333,16
41	354	205	4	A130304100000	274,74
41,5	354	205	4	A130304150000	339,47
42	354	205	4	A130304200000	303,16
42,5	354	205	4	A130304250000	402,63
43	359	210	4	A130304300000	317,37
43,5	359	210	4	A130304350000	383,68

D	L	I	HM	Code	Price
mm.	mm.	mm.			€
44	359	210	4	A130304400000	334,74
44,5	359	210	4	A130304450000	383,68
45	359	210	4	A130304500000	347,37
45,5	364	215	4	A130304550000	426,32
46	364	215	4	A130304600000	361,58
46,5	364	215	4	A130304650000	473,68
47	364	215	4	A130304700000	388,42
47,5	364	215	4	A130304750000	536,84
48	369	220	4	A130304800000	394,74
48,5	369	220	4	A130304850000	497,37
49	369	220	4	A130304900000	434,21
49,5	369	220	4	A130304950000	521,05
50	369	220	4	A130305000000	426,32
50,5	374	225	4	A130305050000	473,68
51	412	225	5	A130305100000	536,84
52	412	225	5	A130305200000	552,63
53	412	225	5	A130305300000	623,68
54	417	230	5	A130305400000	600,00
55	417	230	5	A130305500000	615,79
56	417	230	5	A130305600000	663,16
57	422	235	5	A130305700000	693,98
58	422	235	5	A130305800000	702,63
59	422	235	5	A130305900000	773,68
60	422	235	5	A130306000000	750,00
61	427	240	5	A130306100000	852,63
62	427	240	5	A130306200000	884,21
63	427	240	5	A130306300000	1010,53
64	432	245	5	A130306400000	932,90
65	432	245	5	A130306500000	963,16
66	432	245	5	A130306600000	1007,45
67	432	245	5	A130306700000	1038,59
68	437	250	5	A130306800000	1184,21
69	437	250	5	A130306900000	1100,70
70	437	250	5	A130307000000	1200,00

Cutting conditions and recommended material

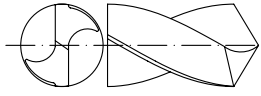
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill															
	From	To		3	4	5	6	8	10	12,5	16	20	25	30	40	50	60	70	
1	25	40	(A)	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310	0,350	0,400	0,500	0,630	0,800	
2	20	31,5	(A)	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310	0,350	0,400	0,500	0,630	0,800	
3	16	25	(A)	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250	0,280	0,310	0,400	0,500	0,630	
4	12,5	20	(A)	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250	0,280	0,310	0,400	0,500	0,630	
13.1	25	35	(A) (B)	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500	0,560	0,630	0,800	1,000	1,250	
13.2	20	25		0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500	0,560	0,630	0,800	1,000	1,250	
26	16	25		0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310	0,350	0,400	0,500	0,630	0,800	

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000/ (π x D)

130.34

DIN 345



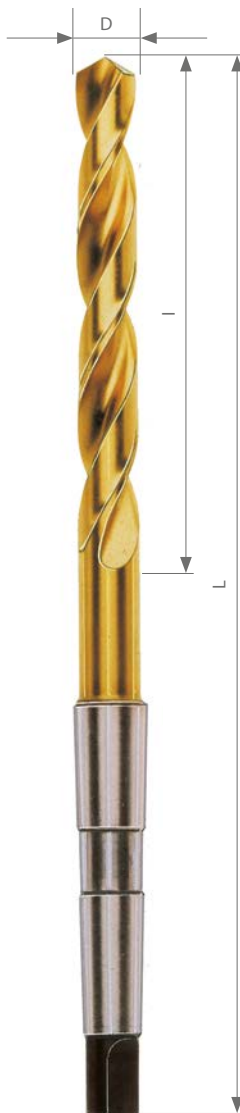
Classic series | **Type N** | **TiN**
HSS | **5 x D**

Standard series drills

Taper shank drills

Design and technical specifications

Helix angle	Standard (DIN1414 type N)
Point angle	118°
Point grinding	Relieved cone
Web thickness	Normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Coated
Coating	TiN



Details and applications

Thanks to its Titanium coating, this drill offers a higher performance than our family 130.30 and it also allows an increase of the cutting conditions. Use to drill: Steel and cast steel, alloyed and non-alloyed, up to 900 N/mm². Grey cast iron- Malleable cast iron-Pressure casting- German silver- Graphite- phosphor bronze for bearings- Bronze alloys of aluminium, lead, magnesium or silicon-Soft brass (≥60% Cu) continuous swarf- Electrolytic copper-Zinc alloys with thin broken swarf (alloys of silicon).

D	L	I	HM	Code	Price
mm.	mm.	mm.			€
3	114	33	1	A130340300000	61,77
3,25	117	36	1	A130340325000	72,75
3,5	120	39	1	A130340350000	62,74
3,75	120	39	1	A130340375000	79,46
4	124	43	1	A130340400000	60,75
4,25	124	43	1	A130340425000	75,71
4,5	128	47	1	A130340450000	55,79
4,75	128	47	1	A130340475000	38,26
5	133	52	1	A130340500000	47,33
5,25	133	52	1	A130340525000	36,44
5,5	138	57	1	A130340550000	31,25
5,75	138	57	1	A130340575000	35,98
6	138	57	1	A130340600000	55,79
6,25	144	63	1	A130340625000	41,49
6,5	144	63	1	A130340650000	54,77
6,75	150	69	1	A130340675000	55,79
7	150	69	1	A130340700000	52,78
7,25	150	69	1	A130340725000	87,67
7,5	150	69	1	A130340750000	36,25
7,75	156	75	1	A130340775000	44,58
8	156	75	1	A130340800000	45,34
8,25	156	75	1	A130340825000	52,32
8,5	156	75	1	A130340850000	49,81
8,75	162	81	1	A130340875000	47,77
9	162	81	1	A130340900000	48,80
9,25	162	81	1	A130340925000	52,29
9,5	162	81	1	A130340950000	37,58
9,75	168	87	1	A130340975000	81,69
10	168	87	1	A130341000000	48,80
10,25	168	87	1	A130341025000	65,75
10,5	168	87	1	A130341050000	50,79
10,75	175	94	1	A130341075000	62,74
11	175	94	1	A130341100000	51,80
11,25	175	94	1	A130341125000	68,72
11,5	175	94	1	A130341150000	55,79
11,75	175	94	1	A130341175000	63,76
12	182	101	1	A130341200000	52,78
12,25	182	101	1	A130341225000	57,79
12,5	182	101	1	A130341250000	53,80
12,75	182	101	1	A130341275000	73,72
13	182	101	1	A130341300000	55,79
13,25	189	108	1	A130341325000	63,26
13,5	189	108	1	A130341350000	60,75
13,75	189	108	1	A130341375000	63,26
14	189	108	1	A130341400000	57,78
14,25	212	114	2	A130341425000	78,68
14,5	212	114	2	A130341450000	59,77
14,75	212	114	2	A130341475000	96,62
15	212	114	2	A130341500000	60,75
15,25	218	120	2	A130341525000	87,67
15,5	218	120	2	A130341550000	64,74
15,75	218	120	2	A130341575000	84,66
16	218	120	2	A130341600000	64,74
16,25	223	125	2	A130341625000	111,58

D	L	I	HM	Code	Price
mm.	mm.	mm.			€
16,5	223	125	2	A130341650000	88,65
16,75	223	125	2	A130341675000	80,23
17	223	125	2	A130341700000	89,66
17,25	228	130	2	A130341725000	121,54
17,5	228	130	2	A130341750000	90,64
17,75	228	130	2	A130341775000	107,59
18	228	130	2	A130341800000	93,65
18,25	233	135	2	A130341825000	132,48
18,5	233	135	2	A130341850000	97,63
18,75	233	135	2	A130341875000	97,66
19	233	135	2	A130341900000	97,63
19,25	238	140	2	A130341925000	106,33
19,5	238	140	2	A130341950000	107,59
19,75	238	140	2	A130341975000	119,55
20	238	140	2	A130342000000	100,60
20,25	243	145	2	A130342025000	134,47
20,5	243	145	2	A130342050000	106,58
20,75	243	145	2	A130342075000	162,37
21	243	145	2	A130342100000	108,57
21,25	248	150	2	A130342125000	168,35
21,5	248	150	2	A130342150000	120,53
21,75	248	150	2	A130342175000	148,42
22	248	150	2	A130342200000	116,54
22,25	248	150	2	A130342225000	132,79
22,5	253	155	2	A130342250000	124,51
22,75	253	155	2	A130342275000	132,79
23	253	155	2	A130342300000	151,43
23,25	276	155	3	A130342325000	146,49
23,5	276	155	3	A130342350000	156,39
23,75	281	160	3	A130342375000	223,16
24	281	160	3	A130342400000	154,40
24,25	281	160	3	A130342425000	156,85
24,5	281	160	3	A130342450000	163,38
24,75	281	160	3	A130342475000	259,02
25	281	160	3	A130342500000	164,36
25,25	286	165	3	A130342525000	174,03
25,5	286	165	3	A130342550000	203,23
25,75	286	165	3	A130342575000	173,82
26	286	165	3	A130342600000	181,32
26,25	286	165	3	A130342625000	188,23
26,5	286	165	3	A130342650000	182,29
26,75	291	170	3	A130342675000	188,23
27	291	170	3	A130342700000	182,29
27,25	291	170	3	A130342725000	201,45
27,5	291	170	3	A130342750000	170,57
27,75	291	170	3	A130342775000	201,45
28	291	170	3	A130342800000	193,27
28,25	296	175	3	A130342825000	214,25
28,5	296	175	3	A130342850000	233,12
28,75	296	175	3	A130342875000	216,10
29	296	175	3	A130342900000	235,11
29,25	296	175	3	A130342925000	237,59
29,5	296	175	3	A130342950000	215,19
29,75	296	175	3	A130342975000	304,85

130.34
DIN 345

 Classic series
 HSS

 Type N
 5 x D

TiN

 Standard series drills
 Taper shank drills

D	L	I	HM	Code	Price
mm.	mm.	mm.			€
30	296	175	3	A130343000000	203,23
30,25	301	180	3	A130343025000	270,48
30,5	301	180	3	A130343050000	247,07
30,75	301	180	3	A130343075000	268,07
31	301	180	3	A130343100000	239,10
31,25	301	180	3	A130343125000	283,88
31,5	301	180	3	A130343150000	241,80
31,75	306	185	3	A130343175000	283,88
32	334	185	4	A130343200000	237,03

Cutting conditions and recommended material

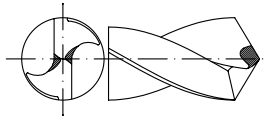
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill															
	From	To		3	4	5	6	8	10	12,5	16	20	25	30	40	50	60	70	
1	32	45	(A)	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400	0,450	0,500	0,630	0,800	1,000	
2	25	40	(A)	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400	0,450	0,500	0,630	0,800	1,000	
3	20	31,5	(A)	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310	0,350	0,400	0,500	0,630	0,800	
4	16	25	(A)	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310	0,350	0,400	0,500	0,630	0,800	
5	10	14	(A)	0,050	0,060	0,080	0,100	0,100	0,130	0,160	0,200	0,220	0,250	0,280	0,310	0,400	0,500	0,630	
13.1	31,5	40	(C)	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500	0,560	0,630	0,800	1,000	1,250	
13.2	25	31,5	(A)	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500	0,560	0,630	0,800	1,000	1,250	
16	40	63	(A)	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500	0,560	0,630	0,800	1,000	1,250	
17	32	50	(A)	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400	0,450	0,500	0,630	0,800	1,000	
19	25	40	(A)	0,080	0,100	0,130	0,160	0,180	0,200	0,250	0,310	0,350	0,400	0,450	0,500	0,630	0,800	1,000	
20	16	30	(B)	0,060	0,080	0,100	0,120	0,140	0,160	0,200	0,250	0,280	0,310	0,350	0,400	0,500	0,630	0,800	
26	20	31,5	(D)	0,100	0,130	0,160	0,200	0,220	0,250	0,310	0,400	0,450	0,500	0,560	0,630	0,800	1,000	1,250	
30	3	6,25	(D)	MANUAL															

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

 $r.p.m. = Vc \times 1000 / (\pi \times D)$

192.40

DIN 345



Classic series | Type NF

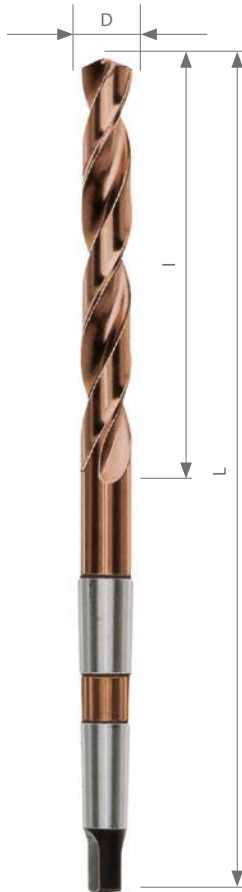
HSSCo 5% | 5 x D

Standard series drills

Taper shank drills

Design and technical specifications

Helix angle	Standard (DIN1414 type N)
Point angle	130°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated, golden-brown



Details and applications

The high strength at elevated temperatures of the cobalt high speed steel HSSCo and the design of the reinforced web in the whole length of the drill are the characteristics which give to this drill its capacity for use in working with materials which are hard, strong and difficult to machine. Use to drill: Steel and cast steel, alloyed and non alloyed over 900 N/mm² to 1200 N/mm²-Some nickel-chrome steels-Ferritic and martensitic stainless steels-Acid resistant steels-Spring steels-Tough grey cast iron, malleable cast iron-Spheroidal cast iron.

D	L	I	HM	Code	Price
mm.	mm.	mm.			€
3	114	33	1	A192400300000	78,20
4	124	43	1	A192400400000	69,92
5	133	52	1	A192400500000	54,89
5,5	138	57	1	A192400550000	60,15
6	138	57	1	A192400600000	49,62
6,5	144	63	1	A192400650000	50,38
6,75	150	69	1	A192400675000	78,95
7	150	69	1	A192400700000	47,37
7,5	150	69	1	A192400750000	55,64
7,75	156	75	1	A192400775000	70,68
8	156	75	1	A192400800000	47,37
8,5	156	75	1	A192400850000	46,62
9	162	81	1	A192400900000	46,62
9,5	162	81	1	A192400950000	52,63
9,75	168	87	1	A192400975000	110,53
10	168	87	1	A192401000000	56,71
10,25	168	87	1	A192401025000	75,94
10,5	168	87	1	A192401050000	59,06
10,75	175	94	1	A192401075000	88,72
11	175	94	1	A192401100000	61,98
11,5	175	94	1	A192401150000	70,46
11,75	175	94	1	A192401175000	84,21
12	182	101	1	A192401200000	65,32
12,25	182	101	1	A192401225000	100,00
12,5	182	101	1	A192401250000	67,20
12,75	182	101	1	A192401275000	99,25
13	182	101	1	A192401300000	69,40
13,25	189	108	1	A192401325000	117,29
13,5	189	108	1	A192401350000	87,66
13,75	189	108	1	A192401375000	89,47
14	189	108	1	A192401400000	77,77
14,25	212	114	2	A192401425000	102,26
14,5	212	114	2	A192401450000	87,23
14,75	212	114	2	A192401475000	106,02
15	212	114	2	A192401500000	90,05
15,25	218	120	2	A192401525000	100,75
15,5	218	120	2	A192401550000	90,41
15,75	218	120	2	A192401575000	87,22
16	218	120	2	A192401600000	94,71
16,25	223	125	2	A192401625000	102,26
16,5	223	125	2	A192401650000	99,61
16,75	223	125	2	A192401675000	97,74
17	223	125	2	A192401700000	99,16
17,5	228	130	2	A192401750000	95,39
17,75	228	130	2	A192401775000	95,49
18	228	130	2	A192401800000	101,38
18,25	233	135	2	A192401825000	114,29
18,5	233	135	2	A192401850000	109,36
18,75	233	135	2	A192401875000	122,56

D	L	I	HM	Code	Price
mm.	mm.	mm.			€
19	233	135	2	A192401900000	109,25
19,25	238	140	2	A192401925000	136,84
19,5	238	140	2	A192401950000	132,55
19,75	238	140	2	A192401975000	130,08
20	238	140	2	A192402000000	116,03
20,25	243	145	2	A192402025000	151,88
20,5	243	145	2	A192402050000	141,55
20,75	243	145	2	A192402075000	178,95
21	243	145	2	A192402100000	139,57
21,25	248	150	2	A192402125000	183,46
21,5	248	150	2	A192402150000	182,68
22	248	150	2	A192402200000	160,77
22,25	248	150	2	A192402225000	195,49
22,5	253	155	2	A192402250000	195,60
23	253	155	2	A192402300000	181,69
23,5	276	155	3	A192402350000	192,53
24	281	160	3	A192402400000	208,77
24,5	281	160	3	A192402450000	221,71
25	281	160	3	A192402500000	208,96
25,25	286	165	3	A192402525000	308,27
25,5	286	165	3	A192402550000	267,52
26	286	165	3	A192402600000	245,07
26,5	286	165	3	A192402650000	285,62
27	291	170	3	A192402700000	267,21
27,5	291	170	3	A192402750000	300,66
28	291	170	3	A192402800000	306,15
28,5	296	175	3	A192402850000	347,29
29	296	175	3	A192402900000	317,21
29,5	296	175	3	A192402950000	317,98
30	296	175	3	A192403000000	297,56
30,5	301	180	3	A192403050000	357,89
31	301	180	3	A192403100000	278,20
31,5	301	180	3	A192403150000	347,37
31,75	306	185	3	A192403175000	398,50
32	334	185	4	A192403200000	366,45
32,5	334	185	4	A192403250000	556,39
33	334	185	4	A192403300000	311,28
34	339	190	4	A192403400000	414,36
35	339	190	4	A192403500000	344,36
36	344	195	4	A192403600000	493,11
37	344	195	4	A192403700000	428,57
38	349	200	4	A192403800000	569,09
39	349	200	4	A192403900000	503,76
40	349	200	4	A192404000000	699,36
42	354	205	4	A192404200000	736,84
43	359	210	4	A192404300000	796,99
45	359	210	4	A192404500000	706,77
50	369	220	4	A192405000000	842,11

Cutting conditions and recommended material

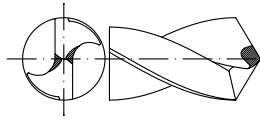
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill							
	From	To		10	12,5	16	20	25	30	40	50
3	25	30	(A)	0,160	0,200	0,250	0,280	0,310	0,350	0,400	0,500
4	15	20	(A)	0,160	0,200	0,250	0,280	0,310	0,350	0,400	0,500
5	10	16	(A)	0,100	0,130	0,160	0,180	0,200	0,220	0,250	0,310
6	14	14	(A)	0,130	0,160	0,200	0,220	0,250	0,280	0,310	0,400
7	8	12,5	(A) (B)	0,130	0,160	0,200	0,220	0,250	0,280	0,310	0,400
8	6,3	10		0,100	0,130	0,160	0,180	0,200	0,220	0,250	0,310
10	4	6,3		0,100	0,130	0,160	0,180	0,200	0,220	0,250	0,310
13.1	30	35		0,200	0,250	0,310	0,350	0,400	0,450	0,500	0,630
13.2	22	32	(B) (A)	0,250	0,310	0,400	0,450	0,500	0,560	0,630	0,800

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000 / (π x D)

136.30

DIN 341



Classic series | Type N HSS | 8 x D

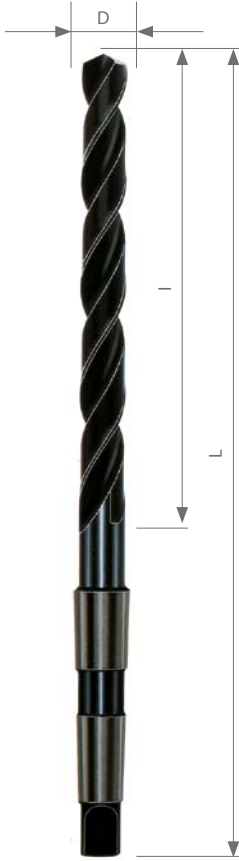
Taper length drills Taper shank drills

Design and technical specifications

Helix angle	Standard (DIN 1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Normal
Web taper	Normal
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated

Details and applications

This drill responds to the demand for long series drills for deep hole drilling in a wide range of applications and in work requiring the use of a guide bush. Use to drill: Steel and cast steel, alloyed and non-alloyed steel, up to 900 N/mm²- Grey iron castings- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite-Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu). continuous swarf- Electrolytic cooper-Zinc castings.



D	L	l	HM	Code	Price
mm.	mm.	mm.			€
4	145	64	1	A136300400000	38,83
4,5	150	69	1	A136300450000	48,31
5	155	74	1	A136300500000	29,89
5,25	155	74	1	A136300525000	55,79
5,5	161	80	1	A136300550000	45,34
6	161	80	1	A136300600000	31,88
6,5	167	86	1	A136300650000	37,37
7	174	93	1	A136300700000	39,85
7,5	174	93	1	A136300750000	40,83
8	181	100	1	A136300800000	35,86
8,25	181	100	1	A136300825000	68,72
8,5	181	100	1	A136300850000	36,35
8,75	188	107	1	A136300875000	70,71
9	188	107	1	A136300900000	28,53
9,5	188	107	1	A136300950000	43,35
9,75	197	116	1	A136300975000	84,66
10	197	116	1	A136301000000	41,84
10,25	197	116	1	A136301025000	68,72
10,5	197	116	1	A136301050000	43,35
10,75	206	125	1	A136301075000	71,73
11	206	125	1	A136301100000	43,83
11,25	206	125	1	A136301125000	70,71
11,5	206	125	1	A136301150000	43,83
11,75	206	125	1	A136301175000	64,74
12	215	134	1	A136301200000	43,83
12,25	215	134	1	A136301225000	71,73
12,5	215	134	1	A136301250000	44,32
13	215	134	1	A136301300000	44,32
13,5	223	142	1	A136301350000	49,32
13,75	223	142	1	A136301375000	93,65
14	223	142	1	A136301400000	49,81
14,25	245	147	2	A136301425000	81,69
14,5	245	147	2	A136301450000	63,76
14,75	245	147	2	A136301475000	97,63
15	245	147	2	A136301500000	61,77
15,25	251	153	2	A136301525000	89,66
15,5	251	153	2	A136301550000	60,75
15,75	251	153	2	A136301575000	78,68
16	251	153	2	A136301600000	65,75
16,25	257	159	2	A136301625000	97,63
16,5	257	159	2	A136301650000	69,74
16,75	257	159	2	A136301675000	100,60
17	257	159	2	A136301700000	68,72
17,25	263	165	2	A136301725000	116,54
17,5	263	165	2	A136301750000	77,71
17,75	263	165	2	A136301775000	110,56
18	263	165	2	A136301800000	77,71
18,25	269	171	2	A136301825000	119,55
18,5	269	171	2	A136301850000	86,65
18,75	269	171	2	A136301875000	132,48
19	269	171	2	A136301900000	84,66
19,5	275	177	2	A136301950000	98,61
19,75	275	177	2	A136301975000	134,47
20	275	177	2	A136302000000	92,63

D	L	l	HM	Code	Price
mm.	mm.	mm.			€
20,25	282	184	2	A136302025000	172,33
20,5	282	184	2	A136302050000	117,56
21	282	184	2	A136302100000	106,58
21,5	289	191	2	A136302150000	127,52
21,75	289	191	2	A136302175000	178,31
22	289	191	2	A136302200000	116,54
22,25	289	191	2	A136302225000	219,17
22,5	296	198	2	A136302250000	128,50
23	296	198	2	A136302300000	120,53
23,5	319	198	3	A136302350000	171,35
23,75	319	198	3	A136302375000	233,12
24	327	206	3	A136302400000	147,44
24,25	327	206	3	A136302425000	231,13
24,5	327	206	3	A136302450000	160,38
25	327	206	3	A136302500000	148,42
25,25	335	214	3	A136302525000	229,14
25,5	335	214	3	A136302550000	180,30
26	335	214	3	A136302600000	171,35
26,5	335	214	3	A136302650000	183,31
26,75	343	222	3	A136302675000	270,98
27	343	222	3	A136302700000	183,31
27,25	343	222	3	A136302725000	237,11
27,5	343	222	3	A136302750000	253,05
28	343	222	3	A136302800000	205,23
28,5	351	230	3	A136302850000	274,96
29	351	230	3	A136302900000	237,11
29,25	351	230	3	A136302925000	276,95
29,5	351	230	3	A136302950000	268,98
30	351	230	3	A136303000000	235,11
30,5	360	239	3	A136303050000	304,85
31	360	239	3	A136303100000	288,91
32	397	248	4	A136303200000	302,86
33	397	248	4	A136303300000	302,86
33,5	397	248	4	A136303350000	392,52
34	406	257	4	A136303400000	384,55
35	406	257	4	A136303500000	368,61
36	416	267	4	A136303600000	422,41
37	416	267	4	A136303700000	484,17
37,5	416	267	4	A136303750000	567,86
38	426	277	4	A136303800000	460,26
39	426	277	4	A136303900000	490,15
39,5	426	277	4	A136303950000	607,71
40	426	277	4	A136304000000	508,08
41	436	287	4	A136304100000	667,48
42	436	287	4	A136304200000	597,74
43	447	298	4	A136304300000	637,59
44	447	298	4	A136304400000	637,59
45	447	298	4	A136304500000	647,56
48	470	321	4	A136304800000	796,99
49	470	321	4	A136304900000	866,73
50	470	321	4	A136305000000	846,80

136.30
DIN 341

 Classic series
 HSS

 Type N
 8 x D

 Taper length drills
 Taper shank drills

Cutting conditions and recommended material

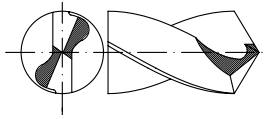
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill								
	From	To		8	10	12,5	16	20	25	30	40	50
1	20	32	(A)	0,126	0,144	0,180	0,225	0,252	0,279	0,315	0,360	0,450
2	16	25	(A)	0,126	0,144	0,180	0,225	0,252	0,279	0,315	0,360	0,450
3	12,75	20	(A)	0,090	0,117	0,144	0,180	0,198	0,225	0,252	0,279	0,360
4	10	16	(A)	0,090	0,117	0,144	0,180	0,198	0,225	0,252	0,279	0,360
13.1	20	28	(A) (B)	0,198	0,225	0,279	0,360	0,405	0,450	0,504	0,567	0,720
13.2	16	20	(A)	0,198	0,225	0,279	0,360	0,405	0,450	0,504	0,567	0,720
26	12,75	20	(D)	0,126	0,144	0,180	0,225	0,252	0,279	0,315	0,360	0,450

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

 $r.p.m. = V_c \times 1000 / (\pi \times D)$

138.30

DIN 341



Classic series | Type NV

HSS | 8 x D

Taper length drills. Worm pattern

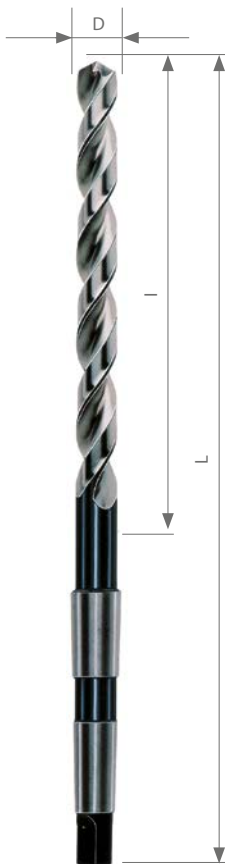
Taper shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web thinned according to DIN 1412-C ("Split point")
Web thickness	Much heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated land, bright finish flutes

Details and applications

This robust drill (with reinforced web and wide flutes) is specially appropriate for drilling deep holes in difficult conditions, where chip removal and lubrication of the edge make working difficult and preferably in work requiring the use of a guide bush. Use to drill: Steel and cast steel, alloyed and non alloyed, up to 1000 N/mm²- Grey iron castings- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite- Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu)- continuous swarf- Electrolytic cooper-Zinc castings-Not recommended for nickel-chrome steels or similar materials).



D	L	I	HM	Code	Price
mm.	mm.	mm.			€
5,5	161	80	1	A138300550000	65,75
6	161	80	1	A138300600000	58,76
6,5	167	86	1	A138300650000	67,74
7	174	93	1	A138300700000	60,75
7,5	174	93	1	A138300750000	63,76
8	181	100	1	A138300800000	57,78
8,5	181	100	1	A138300850000	61,77
8,75	188	107	1	A138300875000	116,54
9	188	107	1	A138300900000	63,76
9,5	188	107	1	A138300950000	78,68
10	197	116	1	A138301000000	70,71
10,25	197	116	1	A138301025000	82,67
10,5	197	116	1	A138301050000	74,70
10,75	206	125	1	A138301075000	81,69
11	206	125	1	A138301100000	70,71
11,25	206	125	1	A138301125000	109,59
11,5	206	125	1	A138301150000	87,67
11,75	206	125	1	A138301175000	113,57
12	215	134	1	A138301200000	78,68
12,5	215	134	1	A138301250000	77,71
13	215	134	1	A138301300000	79,70
13,5	223	142	1	A138301350000	92,63
14	223	142	1	A138301400000	78,68
14,25	245	147	2	A138301425000	139,47
14,5	245	147	2	A138301450000	102,59
14,75	245	147	2	A138301475000	137,48
15	245	147	2	A138301500000	89,66
15,25	251	153	2	A138301525000	141,47
15,5	251	153	2	A138301550000	73,73
15,75	251	153	2	A138301575000	137,48
16	251	153	2	A138301600000	109,59
16,25	257	159	2	A138301625000	96,81
16,5	257	159	2	A138301650000	124,51
16,75	257	159	2	A138301675000	99,15
17	257	159	2	A138301700000	116,54
17,25	263	165	2	A138301725000	101,50

D	L	I	HM	Code	Price
mm.	mm.	mm.			€
17,5	263	165	2	A138301750000	126,50
17,75	263	165	2	A138301775000	101,50
18	263	165	2	A138301800000	121,54
18,25	269	171	2	A138301825000	101,50
18,5	269	171	2	A138301850000	95,84
18,75	269	171	2	A138301875000	110,96
19	269	171	2	A138301900000	131,50
19,25	275	177	2	A138301925000	126,32
19,5	275	177	2	A138301950000	158,38
19,75	275	177	2	A138301975000	117,32
20	275	177	2	A138302000000	146,43
20,5	282	184	2	A138302050000	130,03
21	282	184	2	A138302100000	173,35
21,5	289	191	2	A138302150000	215,19
22	289	191	2	A138302200000	185,30
22,5	296	198	2	A138302250000	156,91
23	296	198	2	A138302300000	229,14
23,5	319	198	3	A138302350000	274,96
24	327	206	3	A138302400000	239,10
24,5	327	206	3	A138302450000	189,53
25	327	206	3	A138302500000	272,97
25,5	335	214	3	A138302550000	194,30
26	335	214	3	A138302600000	259,02
26,5	335	214	3	A138302650000	201,42
27	343	222	3	A138302700000	187,11
27,5	343	222	3	A138302750000	215,64
28	343	222	3	A138302800000	344,70
28,5	351	230	3	A138302850000	223,59
29	351	230	3	A138302900000	388,53
29,5	351	230	3	A138302950000	492,14
30	351	230	3	A138303000000	354,66
30,5	360	239	3	A138303050000	528,01
31	360	239	3	A138303100000	484,17
32	397	248	4	A138303200000	452,29

Cutting conditions and recommended material

Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill						
	From	To		10	12,5	16	20	25	30	40
1	25	40	(A)	0,160	0,200	0,250	0,280	0,310	0,350	0,400
2	20	31,5	(A)	0,160	0,200	0,250	0,280	0,310	0,350	0,400
3	16	25	(A)	0,130	0,160	0,200	0,220	0,250	0,280	0,310
4	12,5	20	(A)	0,130	0,160	0,200	0,220	0,250	0,280	0,310
5	8	12,5	(B)	0,080	0,100	0,120	0,140	0,160	0,180	0,200
13.1	25	35	(C)	0,250	0,310	0,400	0,450	0,500	0,560	0,630
13.2	20	25	(A)	0,250	0,310	0,400	0,450	0,500	0,560	0,630
23	63	100	(A)	0,200	0,250	0,310	0,350	0,400	0,450	0,500
25	25	40	(A)	0,160	0,200	0,250	0,280	0,310	0,350	0,400

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

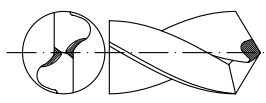
r.p.m. = Vc x 1000 / (π x D)

250.30

DIN 341/346

Classic series | Type NV

HSS | 8 x D



Taper length drills with internal cooling.

Taper shank drills

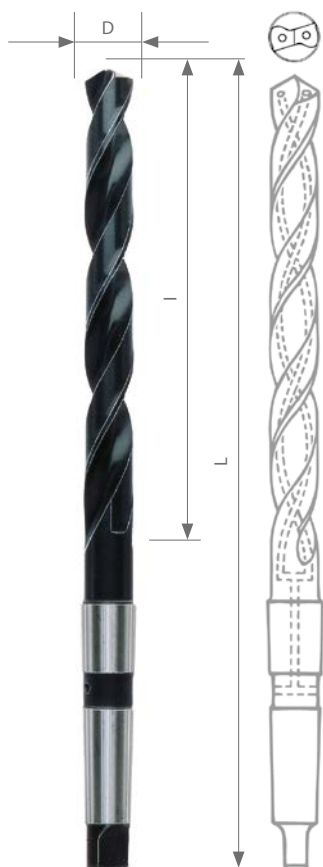
Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Much heavier than normal
Web taper	Light
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated

Details and applications

Oil hole drills carry interior ducts following the line of the helix and run the whole length of the drill. The coolant flows, under pressure, right to the point to lubricate and cool the cutting edges, thus reducing wear and assisting in the removal of swarf. These drills are especially recommended for deep hole drilling and when the material being machined demands good cooling and/or lubrication. Use to drill: Multiple layers of metal sheets, alloyed and non alloyed materials, malleable castings, Nodular and pressure casting-sintered iron, etc..

D	L	I	HM	Code	Price
mm.	mm.	mm.			€
12	232	134	2	A250301200000	212,33
13	232	134	2	A250301300000	198,13
14	240	142	2	A250301400000	212,33
15	245	147	2	A250301500000	218,10
16	251	153	2	A250301600000	229,68
17	257	159	2	A250301700000	229,68
18	263	165	2	A250301800000	245,31
19	292	171	3	A250301900000	249,66
20	298	177	3	A250302000000	267,47
21	305	184	3	A250302100000	282,36
22	312	191	3	A250302200000	295,06
23	319	198	3	A250302300000	297,45
24	327	206	3	A250302400000	282,36
25	327	206	3	A250302500000	295,66
26	335	214	3	A250302600000	321,49
27	371	222	4	A250302700000	329,99
28	371	222	4	A250302800000	366,04
29	379	230	4	A250302900000	387,46
30	379	230	4	A250303000000	416,16



Cutting conditions and recommended material

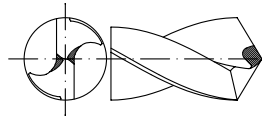
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill					
	From	To		10	12,5	16	20	25	30
1	50	60	(A) (B)	0,200	0,250	0,310	0,350	0,400	0,450
2	40	50	(A) (B)	0,200	0,250	0,310	0,350	0,400	0,450
3	25	35	(A) (B)	0,160	0,200	0,250	0,280	0,310	0,350
4	25	35	(A) (B)	0,160	0,200	0,250	0,280	0,310	0,350
5	16	25	(A) (B)	0,160	0,200	0,250	0,280	0,310	0,350
6	14	14	(A) (B)	0,130	0,160	0,200	0,220	0,250	0,280
7	12	12	(A) (B)	0,080	0,100	0,120	0,140	0,160	0,180
8	10	10	(A) (B)	0,080	0,100	0,120	0,140	0,160	0,180
13.1	45	56	(A) (B)	0,250	0,310	0,400	0,450	0,500	0,560

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = $V_c \times 1000 / (\pi \times D)$

141.30

DIN 1870/1



Classic series | Type N

HSS | 10 x D

Extra length drills. Series 1

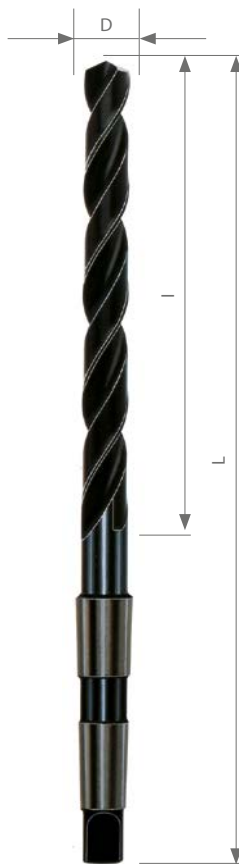
Taper shank drills

Design and technical specifications

Helix angle	Standard (DIN1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Normal
Web taper	Light
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated

Details and applications

Drill specially recommended to drill extremely deep holes. Its use requires a thorough study in order to determine workholding methods, feeds and speeds. It is of vital importance to remove the drill frequently from the hole and to have a good supply of the correct coolant. These drills are not recommended for drilling oil holes in crankshafts. Use to drill: Steel and cast steel, alloyed and non-alloyed steel, up to up to 700 N/mm². Grey iron castings- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite-Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu). continuous swarf- Electrolytic copper-Zinc castings.



D	L	I	HM	Code	Price
mm.	mm.	mm.			€
8	265	165	1	A141300800000	73,72
8,5	265	165	1	A141300850000	73,72
9	275	175	1	A141300900000	76,69
9,5	275	175	1	A141300950000	89,66
10	285	185	1	A141301000000	80,68
10,25	285	185	1	A141301025000	103,61
10,5	285	185	1	A141301050000	97,63
11	300	195	1	A141301100000	91,65
11,5	300	195	1	A141301150000	111,58
11,75	300	195	1	A141301175000	145,45
12	310	205	1	A141301200000	98,61
12,5	310	205	1	A141301250000	99,62
13	310	205	1	A141301300000	98,61
13,5	325	220	1	A141301350000	105,6
13,75	325	220	1	A141301375000	182,29
14	325	220	1	A141301400000	97,63
14,5	340	220	2	A141301450000	121,54
15	340	220	2	A141301500000	116,54
15,25	355	230	2	A141301525000	194,25
15,5	355	230	2	A141301550000	133,5
15,75	355	230	2	A141301575000	181,32
16	355	230	2	A141301600000	123,53
16,25	355	230	2	A141301625000	219,17
16,5	355	230	2	A141301650000	124,51
17	355	230	2	A141301700000	137,48
17,5	370	245	2	A141301750000	150,41
17,75	370	245	2	A141301775000	231,13
18	370	245	2	A141301800000	146,43
18,5	370	245	2	A141301850000	155,41
19	370	245	2	A141301900000	153,42
19,5	385	260	2	A141301950000	174,32
19,75	385	260	2	A141301975000	314,81

D	L	I	HM	Code	Price
mm.	mm.	mm.			€
20	385	260	2	A141302000000	172,33
20,5	385	260	2	A141302050000	237,11
21	385	260	2	A141302100000	213,20
21,5	405	270	2	A141302150000	261,02
22	405	270	2	A141302200000	225,15
22,5	405	270	2	A141302250000	282,93
23	405	270	2	A141302300000	265,00
23,5	425	270	3	A141302350000	318,80
24	440	290	3	A141302400000	278,95
24,5	440	290	3	A141302450000	328,76
25	440	290	3	A141302500000	292,89
25,5	440	290	3	A141302550000	418,42
26	440	290	3	A141302600000	324,77
26,5	440	290	3	A141302650000	406,47
27	460	305	3	A141302700000	360,64
28	460	305	3	A141302800000	360,64
29	460	305	3	A141302900000	323,98
30	460	305	3	A141303000000	438,35
30,5	480	320	3	A141303050000	537,97
31	480	320	3	A141303100000	484,17
32	505	320	4	A141303200000	498,12
33	505	320	4	A141303300000	508,08
34	530	340	4	A141303400000	567,86
35	530	340	4	A141303500000	557,89
36	530	340	4	A141303600000	597,74
38	555	340	4	A141303800000	667,48
39	555	360	4	A141303900000	687,41
40	555	360	4	A141304000000	717,29
42	555	360	4	A141304200000	787,03
45	585	385	4	A141304500000	876,69
48	605	405	4	A141304800000	1016,17
50	605	405	4	A141305000000	1056,02

Cutting conditions and recommended material

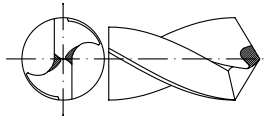
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill							
	From	To		10	12,5	16	20	25	30	40	50
1	17,5	28	(A)	0,128	0,160	0,200	0,224	0,248	0,280	0,320	0,400
2	14	22	(A)	0,128	0,160	0,200	0,224	0,248	0,280	0,320	0,400
3	11	17,5	(A)	0,104	0,128	0,160	0,176	0,200	0,224	0,248	0,320
4	8,75	14	(A)	0,104	0,128	0,160	0,176	0,200	0,224	0,248	0,320
13.1	17,5	24,5	(A) (B)	0,200	0,248	0,320	0,360	0,400	0,448	0,504	0,640
13.2	14	17,5	(A)	0,200	0,248	0,320	0,360	0,400	0,448	0,504	0,640

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000 / (π x D)

142.30

DIN 1870/2



Classic series | Type N HSS | 15 x D

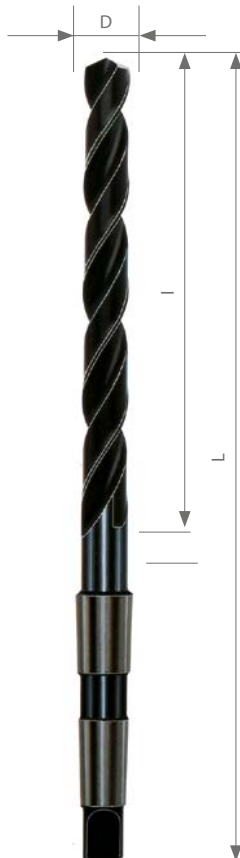
Extra length drills. Series 2 Taper shank drills

Design and technical specifications

Helix angle	Standard (DIN1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Normal
Web taper	Light
Flute form	Normal
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated

Details and applications

Drill specially recommended to drill extremely deep holes. Its use requires a thorough study in order to determine workholding methods, feeds and speeds. It is of vital importance to remove the drill frequently from the hole and to have a good supply of the correct coolant (these drills are not recommended for drilling oil holes in crankshafts). Use to drill: Steel and cast steel, alloyed and non-alloyed steel, up to up to 700 N/mm²- Grey iron castings- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite-Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu). continuous swarf- Electrolytic cooper-Zinc castings.



D	L	I	HM	Code	Price
mm.	mm.	mm.			€
8	330	210	1	A142300800000	113,57
8,5	330	210	1	A142300850000	118,53
9	345	220	1	A142300900000	144,44
9,5	345	220	1	A142300950000	160,38
10	360	235	1	A142301000000	135,49
10,5	360	235	1	A142301050000	159,40
11	375	250	1	A142301100000	146,43
11,5	375	250	1	A142301150000	151,43
11,75	375	250	1	A142301175000	259,02
12	395	260	1	A142301200000	155,41
12,5	395	260	1	A142301250000	189,29
13	395	260	1	A142301300000	162,37
13,5	410	275	1	A142301350000	169,36
14	410	275	1	A142301400000	163,38
14,5	425	275	2	A142301450000	178,31
15	425	275	2	A142301500000	174,32
15,5	445	295	2	A142301550000	190,26
16	445	295	2	A142301600000	181,32
16,5	445	295	2	A142301650000	207,22
17	445	295	2	A142301700000	207,22
17,5	465	310	2	A142301750000	213,20
18	465	310	2	A142301800000	211,20
18,5	465	310	2	A142301850000	243,08
19	465	310	2	A142301900000	229,14

D	L	I	HM	Code	Price
mm.	mm.	mm.			€
19,5	490	325	2	A142301950000	278,95
20	490	325	2	A142302000000	255,04
20,5	490	325	2	A142302050000	226,77
21	490	325	2	A142302100000	312,82
21,5	515	345	2	A142302150000	362,63
22	515	345	2	A142302200000	354,66
23	515	345	2	A142302300000	414,44
23,75	555	365	3	A142302375000	547,93
24	555	365	3	A142302400000	486,17
24,5	555	365	3	A142302450000	438,35
25	555	365	3	A142302500000	460,26
26	555	365	3	A142302600000	498,12
27	580	385	3	A142302700000	387,97
28	580	385	3	A142302800000	547,93
29	580	385	3	A142302900000	433,92
29,5	580	385	3	A142302950000	727,26
30	580	385	3	A142303000000	577,82
31	610	410	3	A142303100000	747,18
32	635	410	4	A142303200000	717,29
34	665	430	4	A142303400000	966,35
35	665	430	4	A142303500000	601,89
38	695	430	4	A142303800000	717,00
40	695	460	4	A142304000000	1036,09
42	695	460	4	A142304200000	840,20
45	735	490	4	A142304500000	1295,11

Cutting conditions and recommended material

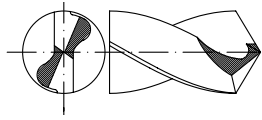
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill							
	From	To		10	12,5	16	20	25	30	40	50
1	17,5	28	(A)	0,112	0,140	0,175	0,196	0,217	0,245	0,280	0,350
2	14	22	(A)	0,112	0,140	0,175	0,196	0,217	0,245	0,280	0,350
3	11	17,5	(A)	0,091	0,112	0,140	0,154	0,175	0,196	0,217	0,280
4	8,75	14	(A)	0,091	0,112	0,140	0,154	0,175	0,196	0,217	0,280
13.1	17,5	24,5	(A) (B)	0,175	0,217	0,280	0,315	0,350	0,392	0,441	0,560
13.2	14	17,5	(A)	0,175	0,217	0,280	0,315	0,350	0,392	0,441	0,560

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = $V_c \times 1000 / (\pi \times D)$

143.30

DIN 1870/1



Classic series | Type NV

HSS | 10 x D

Extra length drills. Worm pattern. Series 1

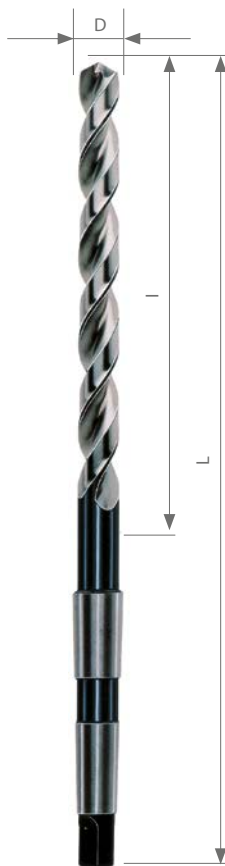
Taper shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web thinned according to DIN 1412-C ("Split point")
Web thickness	Much heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated land, bright finish flutes

Details and applications

A robust drill (reinforced web) with wide flutes. Thanks to its length, its geometry guarantees the drilling of extremely deep holes, where chip removal and lubrication of the edge make working difficult. Use to drill: Steel and cast steel, alloyed and non alloyed, up to 1000 N/mm²- Grey iron castings- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite-Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu). continuous swarf- Electrolytic cooper-Zinc castings- Not recommended for nickel-chrome steels or similar materials).



D	L	I	HM	Code	Price
mm.	mm.	mm.			€
8	265	165	1	A143300800000	71,73
8,5	265	165	1	A143300850000	87,67
9	275	175	1	A143300900000	82,67
9,5	275	175	1	A143300950000	103,61
10	285	185	1	A143301000000	94,62
10,5	285	185	1	A143301050000	118,53
11	300	195	1	A143301100000	97,63
11,5	300	195	1	A143301150000	115,56
11,75	300	195	1	A143301175000	190,26
12	310	205	1	A143301200000	101,62
12,5	310	205	1	A143301250000	109,59
13	310	205	1	A143301300000	110,56
13,5	325	220	1	A143301350000	124,51
14	325	220	1	A143301400000	119,55
14,5	340	220	2	A143301450000	126,50
15	340	220	2	A143301500000	130,49
15,5	355	230	2	A143301550000	163,38
16	355	230	2	A143301600000	136,47
16,5	355	230	2	A143301650000	138,46
17	355	230	2	A143301700000	141,47
17,5	370	245	2	A143301750000	152,41
18	370	245	2	A143301800000	152,41
18,5	370	245	2	A143301850000	175,34
19	370	245	2	A143301900000	172,33
19,5	385	260	2	A143301950000	219,17
20	385	260	2	A143302000000	197,26
20,5	385	260	2	A143302050000	294,89
21	385	260	2	A143302100000	233,12
21,5	405	270	2	A143302150000	288,91
22	405	270	2	A143302200000	237,11
23	405	270	2	A143302300000	290,90
24	440	290	3	A143302400000	326,77
25	440	290	3	A143302500000	320,79
26	440	290	3	A143302600000	342,71
26,5	440	290	3	A143302650000	452,29
27	460	305	3	A143302700000	293,17
28	460	305	3	A143302800000	410,45
29	460	305	3	A143302900000	438,35
30	460	305	3	A143303000000	456,28

Cutting conditions and recommended material

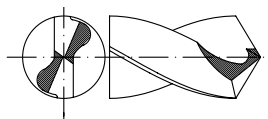
Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill						
	From	To		10	12,5	16	20	25	30	40
1	17,5	28	(A)	0,128	0,160	0,200	0,224	0,248	0,280	0,320
2	14	22	(A)	0,128	0,160	0,200	0,224	0,248	0,280	0,320
3	11	17,5	(A)	0,104	0,128	0,160	0,176	0,200	0,224	0,248
4	8,75	14	(A)	0,104	0,128	0,160	0,176	0,200	0,224	0,248
5	5,5	8,75	(B)	0,064	0,080	0,096	0,112	0,128	0,144	0,160
13.1	17,5	24,5	(C)	0,200	0,248	0,320	0,360	0,400	0,448	0,504
13.2	14	17,5	(A)	0,200	0,248	0,320	0,360	0,400	0,448	0,504
23	44	70	(A)	0,160	0,200	0,248	0,280	0,320	0,360	0,400
25	17,5	28	(A)	0,128	0,160	0,200	0,224	0,248	0,280	0,320

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = Vc x 1000 / (π x D)

144.30

DIN 1870/2



Classic series | Type NV HSS | 15 x D

Extra length drills. Worm pattern. Series 2

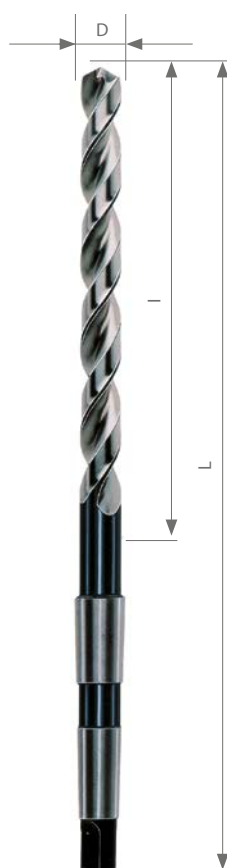
Taper shank drills

Design and technical specifications

Helix angle	Bigger than Standard
Point angle	130°
Point grinding	Relieved cone and web thinned according to DIN 1412-C ("Split point")
Web thickness	Much heavier than normal
Web taper	None
Flute form	Very wide with special rounded-off heel
Tolerance D	h8
Other specifications	DIN 1414
Finish	Surface treated land, bright finish flutes

Details and applications

A robust drill (reinforced web) with wide flutes. Thanks to its length, its geometry guarantees the drilling of extremely deep holes, where chip removal and lubrication of the edge make working difficult. Use to drill: Steel and cast steel, alloyed and non alloyed, up to 1000 N/mm²- Grey iron castings- Malleable cast iron- Spheroidal cast iron- Pressure castings- Sintered iron- German silver- Graphite-Phosphor bronze for bearings- Bronze alloys of aluminium, lead, manganese or silicon-Soft brass (≥60% Cu). continuous swarf- Electrolytic cooper-Zinc castings- Not recommended for nickel-chrome steels or similar materials).



D	L	I	HM	Code	Price
mm.	mm.	mm.			€
8	330	210	1	A144300800000	102,59
8,5	330	210	1	A144300850000	123,53
9	345	220	1	A144300900000	131,50
9,5	345	220	1	A144300950000	154,40
10	360	235	1	A144301000000	115,56
10,5	360	235	1	A144301050000	166,35
11	375	250	1	A144301100000	138,46
11,5	375	250	1	A144301150000	142,44
12	395	260	1	A144301200000	162,37
12,5	395	260	1	A144301250000	173,35
13	395	260	1	A144301300000	171,35
13,5	410	275	1	A144301350000	201,24
14	410	275	1	A144301400000	175,34
14,5	425	275	2	A144301450000	185,30
15	425	275	2	A144301500000	178,31
15,5	445	295	2	A144301550000	213,20
16	445	295	2	A144301600000	182,29
16,5	445	295	2	A144301650000	217,18
17	445	295	2	A144301700000	205,23
17,5	465	310	2	A144301750000	213,20
18	465	310	2	A144301800000	221,17
18,5	465	310	2	A144301850000	247,07
19	465	310	2	A144301900000	251,05
19,5	490	325	2	A144301950000	284,92
20	490	325	2	A144302000000	272,97
20,5	490	325	2	A144302050000	284,92
21	490	325	2	A144302100000	294,89
22	515	345	2	A144302200000	346,69
23	515	345	2	A144302300000	404,47
24	555	365	3	A144302400000	398,50
24,5	555	365	3	A144302450000	537,97
25	555	365	3	A144302500000	400,49
26	555	365	3	A144302600000	486,17
27	580	385	3	A144302700000	407,25
28	580	385	3	A144302800000	617,67
29	580	385	3	A144302900000	597,74
29	580	385	3	A144302900000	597,74
30	580	385	3	A144303000000	667,48

Cutting conditions and recommended material

Material group number	Cutting speed m/min		Coolant	Feed (mm/rev) based on diameter of the drill						
	From	To		10	12,5	16	20	25	30	40
1	17,5	28	(A)	0,112	0,140	0,175	0,196	0,217	0,245	0,280
2	14	22	(A)	0,112	0,140	0,175	0,196	0,217	0,245	0,280
3	11	17,5	(A)	0,091	0,112	0,140	0,154	0,175	0,196	0,217
4	8,75	14	(A)	0,091	0,112	0,140	0,154	0,175	0,196	0,217
5	5,5	8,75	(B)	0,056	0,070	0,084	0,098	0,112	0,126	0,140
13.1	17,5	24,5	(C)	0,175	0,217	0,280	0,315	0,350	0,392	0,441
13.2	14	17,5	(A)	0,175	0,217	0,280	0,315	0,350	0,392	0,441
23	44	70	(A)	0,140	0,175	0,217	0,245	0,280	0,315	0,350
25	17,5	28	(A)	0,112	0,140	0,175	0,196	0,217	0,245	0,280

Coolant: (A) Soluble oil / (B) Cutting oil / (C) Dry / (D) Compressed air / (E) Water

r.p.m. = $V_c \times 1000 / (\pi \times D)$

150.3B

DIN 333

Classic series | Type N

HSS

Radius form 60° R

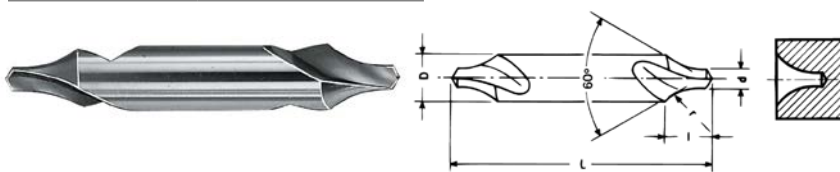
Centre drills

Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	Precise concentricity between point and body, high resistance to breakage. The radiused form provides a protected centre-hole.
Finish	No surface treatment, bright finish

Details and applications

The characteristics mentioned for this centre drill make it much better than the normal centre drill (without protected centre). This radius centre drill is used for the manufacturing of 60° centre-holes, according to DIN 332, page 1, form R.



d	D	L	l	Code	Price
mm.	mm.	mm.	mm.		€
0,5	3,15	20	2,12	A1503B0050000	7,90
0,8	3,15	20	2,65	A1503B0080000	7,76
1,0	3,15	31,5	3	A1503B0100000	6,80
1,25	3,15	31,5	3,35	A1503B0125000	6,80
1,6	4	35,5	4,25	A1503B0160000	6,32
2,0	5	40	5,3	A1503B0200000	7,00
2,5	6,3	45	6,7	A1503B0250000	7,62
3,15	8	50	8,5	A1503B0315000	9,03
4,0	10	56	10,6	A1503B0400000	12,33
5,0	12,5	63	13,2	A1503B0500000	17,27
6,3	16	71	17	A1503B0630000	27,74

150.3N

DIN 333

Classic series | Type N

HSS

Radius form 60° R

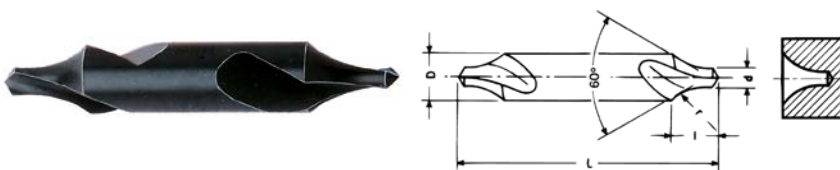
Centre drills

Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	Precise concentricity between point and body, high resistance to breakage. The radiused form provides a protected centre-hole.
Finish	Surface treated

Details and applications

The characteristics mentioned for this centre drill make it much better than the normal centre drill (without protected centre). This radius centre drill is used for the manufacturing of 60° centre-holes, according to DIN 332, page 1, form R.



d	D	L	l	Code	Price
mm.	mm.	mm.	mm.		€
0,5	3,15	20	2,12	A1503N0050000	7,90
0,8	3,15	20	2,65	A1503N0080000	7,76
1,0	3,15	31,5	3	A1503N0100000	6,80
1,25	3,15	31,5	3,35	A1503N0125000	6,80
1,6	4	35,5	4,25	A1503N0160000	6,32
2,0	5	40	5,3	A1503N0200000	7,00
2,5	6,3	45	6,7	A1503N0250000	7,62
3,15	8	50	8,5	A1503N0315000	9,03
4,0	10	56	10,6	A1503N0400000	12,33
5,0	12,5	63	13,2	A1503N0500000	17,27
6,3	16	71	17	A1503N0630000	27,74

150.34

DIN 333

Classic series | **Type N** | **TiN**
HSS

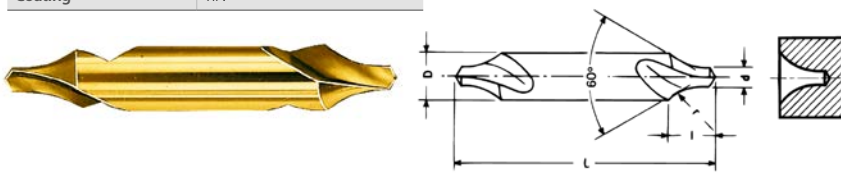
Radius form 60° R
 Centre drills

Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	Precise concentricity between point and body, high resistance to breakage. The radiused form provides a protected centre-hole.
Finish	Coated
Coating	TiN

Details and applications

The characteristics mentioned for this centre drill make it much better than the normal centre drill (without protected centre). This radius centre drill is used for the manufacturing of 60° centre-holes, according to DIN 332, page 1, form R.



d	D	L	l	Code	Price
mm.	mm.	mm.	mm.		€
0,5	3,15	20	2,12	A150340050000	22,49
0,8	3,15	20	2,65	A150340080000	22,01
1,0	3,15	31,5	3	A150340100000	19,06
1,25	3,15	31,5	3,35	A150340125000	19,06
1,6	4	35,5	4,25	A150340160000	17,85
2,0	5	40	5,3	A150340200000	19,50
2,5	6,3	45	6,7	A150340250000	21,42
3,15	8	50	8,5	A150340315000	25,27
4,0	10	56	10,6	A150340400000	34,64
5,0	12,5	63	13,2	A150340500000	48,93
6,3	16	71	17	A150340630000	78,18

151.3B

DIN 333

Classic series | **Type N**
HSS

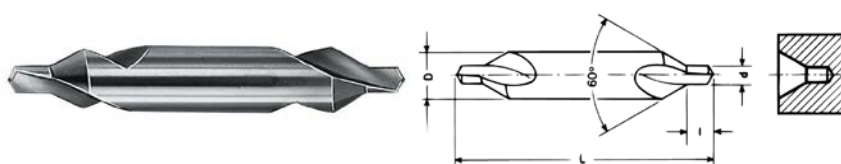
60° Form A
 Centre drills

Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	High metal removal rates are possible because of the strengthened form of the junction between pilot and body. This form cuts an annular groove which serves as a reservoir for coolant. The drill has a high resistance to breakage
Finish	No surface treatment, bright finish

Details and applications

This centre drill (DIN 333 Form A) is recommended for the production of 60° centre holes according to DIN 332, sheet 1, form A. It can also be used for the production of centre holes according to DIN332, page 1, form C, in which the interior part to be centred is equal in forms A, B and C.



d	D	L	l	Code	Price
mm.	mm.	mm.	mm.		€
0,5	3,15	20	0,8	A1513B0050000	7,76
0,8	3,15	20	1,1	A1513B0080000	7,62
1,0	3,15	31,5	1,3	A1513B0100000	6,80
1,25	3,15	31,5	1,6	A1513B0125000	6,80
1,6	4	35,5	2	A1513B0160000	6,32
2,0	5	40	2,5	A1513B0200000	7,00
2,5	6,3	45	3,1	A1513B0250000	7,62
3,15	8	50	3,9	A1513B0315000	9,03
4,0	10	56	5	A1513B0400000	12,33
5,0	12,5	63	6,3	A1513B0500000	17,27
6,3	16	71	8	A1513B0630000	27,74
8,0	20	80	10,1	A1513B0800000	48,89

151.3N

DIN 333

Classic series | Type N

HSS

60° Form A

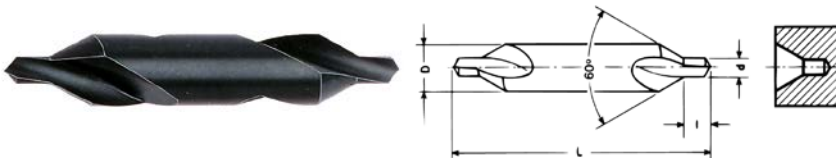
Centre drills

Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	High metal removal rates are possible because of the strengthened form of the junction between pilot and body. This form cuts an annular groove which serves as a reservoir for coolant. The drill has a high resistance to breakage
Finish	Surface treated

Details and applications

This centre drill (DIN 333 Form A) is recommended for the production of 60° centre holes according to DIN 332, sheet 1, form A. It can also be used for the production of centre holes according to DIN332, page 1, form C, in which the interior part to be centred is equal in forms A, B and C.



d	D	L	l	Code	Price
mm.	mm.	mm.	mm.		€
0,5	3,15	20	0,8	A1513N0050000	7,76
0,8	3,15	20	1,1	A1513N0080000	7,62
1,0	3,15	31,5	1,3	A1513N0100000	6,80
1,25	3,15	31,5	1,6	A1513N0125000	6,80
1,6	4	35,5	2	A1513N0160000	6,32
2,0	5	40	2,5	A1513N0200000	7,00
2,5	6,3	45	3,1	A1513N0250000	7,62
3,15	8	50	3,9	A1513N0315000	9,03
4,0	10	56	5	A1513N0400000	12,33
5,0	12,5	63	6,3	A1513N0500000	17,27
6,3	16	71	8	A1513N0630000	27,74
8,0	20	80	10,1	A1513N0800000	48,89

151.34

DIN 333

Classic series | Type N | TiN

HSS

60° Form A

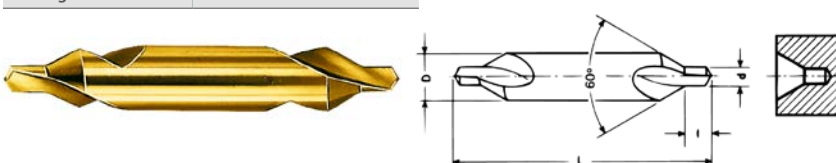
Centre drills

Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	High metal removal rates are possible because of the strengthened form of the junction between pilot and body. This form cuts an annular groove which serves as a reservoir for coolant. The drill has a high resistance to breakage
Finish	Coated
Coating	TiN

Details and applications

This centre drill (DIN 333 Form A) is recommended for the production of 60° centre holes according to DIN 332, sheet 1, form A. It can also be used for the production of centre holes according to DIN332, page 1, form C, in which the interior part to be centred is equal in forms A, B and C.



d	D	L	l	Code	Price
mm.	mm.	mm.	mm.		€
0,5	3,15	20	0,8	A151340050000	22,01
0,8	3,15	20	1,1	A151340080000	21,42
1,0	3,15	31,5	1,3	A151340100000	19,06
1,25	3,15	31,5	1,6	A151340125000	19,06
1,6	4	35,5	2	A151340160000	17,85
2,0	5	40	2,5	A151340200000	19,50
2,5	6,3	45	3,1	A151340250000	21,42
3,15	8	50	3,9	A151340315000	25,27
4,0	10	56	5	A151340400000	34,64
5,0	12,5	63	6,3	A151340500000	48,93
6,3	16	71	8	A151340630000	78,18
8,0	20	80	10,1	A151340800000	138,09

152.3B

DIN 333

Classic series | Type N HSS

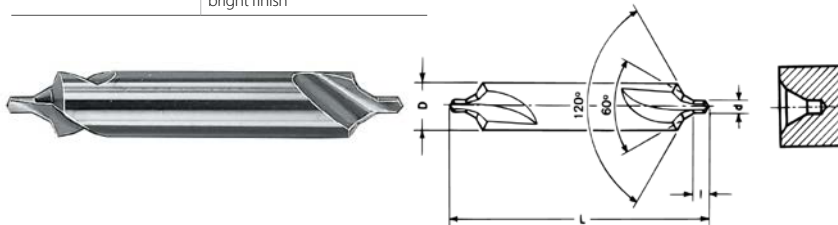
60/120° Form B Centre drills

Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	High metal removal rates are possible because of the strengthened form of the junction between pilot and body. This form cuts an annular groove which serves as a reservoir for coolant. The drill has a high resistance to breakage
Finish	No surface treatment, bright finish

Details and applications

This centre drill (DIN333 Form B) with protective chamfer of 120° is used for the production of centre holes according to DIN 332, form A. It can also be used for the production of centre holes according to DIN 332, page 1, form C, in which the interior part to be centred is equal in forms A,B and C.



d	D	L	I	Code	Price
mm.	mm.	mm.	mm.		€
1,0	4	35,5	1,3	A1523B0100000	11,16
1,25	5	40	1,6	A1523B0125000	11,43
1,6	6,3	45	2	A1523B0160000	11,64
2,0	8	50	2,5	A1523B0200000	12,98
2,5	10	56	3,1	A1523B0250000	13,66
3,15	11,2	60	3,9	A1523B0315000	16,55
4,0	14	67	5	A1523B0400000	23,07
5,0	18	75	6,3	A1523B0500000	34,47
6,3	20	80	8	A1523B0630000	50,26

152.3N

DIN 333

Classic series | Type N HSS

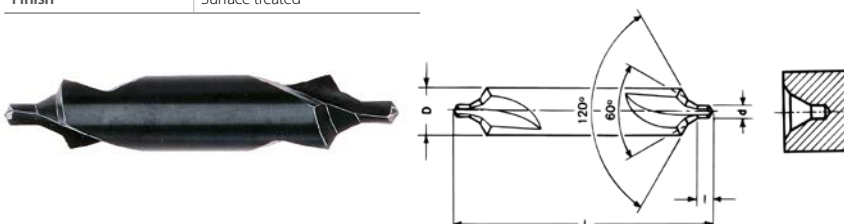
60/120° Form B Centre drills

Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	High metal removal rates are possible because of the strengthened form of the junction between pilot and body. This form cuts an annular groove which serves as a reservoir for coolant. The drill has a high resistance to breakage
Finish	Surface treated

Details and applications

This centre drill (DIN333 Form B) with protective chamfer of 120° is used for the production of centre holes according to DIN 332, form A. It can also be used for the production of centre holes according to DIN 332, page 1, form C, in which the interior part to be centred is equal in forms A,B and C.



d	D	L	I	Code	Price
mm.	mm.	mm.	mm.		€
1,0	4	35,5	1,3	A1523N0100000	11,16
1,25	5	40	1,6	A1523N0125000	11,43
1,6	6,3	45	2	A1523N0160000	11,64
2,0	8	50	2,5	A1523N0200000	12,98
2,5	10	56	3,1	A1523N0250000	13,66
3,15	11,2	60	3,9	A1523N0315000	16,55
4,0	14	67	5	A1523N0400000	23,07
5,0	18	75	6,3	A1523N0500000	34,47
6,3	20	80	8	A1523N0630000	50,26

152.34

DIN 333

Classic series | Type N | TiN

HSS

60/120° Form B

Centre drills

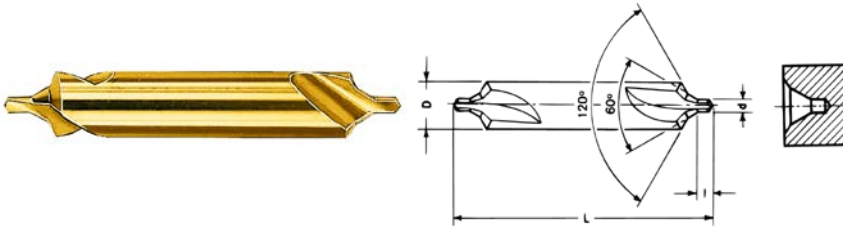
Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	High metal removal rates are possible because of the strengthened form of the junction between pilot and body. This form cuts an annular groove which serves as a reservoir for coolant. The drill has a high resistance to breakage
Finish	Coated
Coating	TiN

Details and applications

This centre drill (DIN333 Form B) with protective chamfer of 120° is used for the production of centre holes according to DIN 332, form A. It can also be used for the production of centre holes according to DIN 332, page 1, form C, in which the interior part to be centred is equal in forms A,B and C.

d	D	L	l	Code	Price
mm.	mm.	mm.	mm.		€
1,0	4	35,5	1,3	A152340100000	31,21
1,25	5	40	1,6	A152340125000	32,14
1,6	6,3	45	2	A152340160000	32,75
2,0	8	50	2,5	A152340200000	36,50
2,5	10	56	3,1	A152340250000	38,63
3,15	11,2	60	3,9	A152340315000	46,69
4,0	14	67	5	A152340400000	64,92
5,0	18	75	6,3	A152340500000	97,30
6,3	20	80	8	A152340630000	141,66



153.3B

DIN 333

Classic series | Type N

HSS

60° Form AR

Centre drills

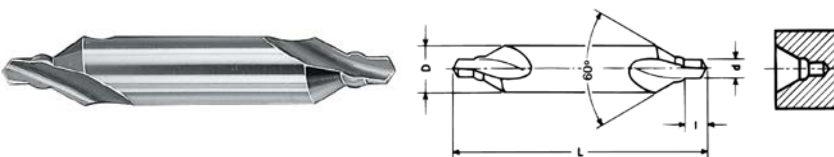
Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	High metal removal rates are possible because of the strengthened form of the junction between pilot and body. This form cuts an annular groove which serves as a reservoir for coolant. The drill has a high resistance to breakage
Finish	No surface treatment, bright finish

Details and applications

This special centre-drill is suitable for the production of 60° centre-holes, according to DIN 322, page 1, form AR, without protective chamfer. It is recommended for those cases where the pieces turn at high-speed and the centre drill remains fixed.

d	D	L	l	Code	Price
mm.	mm.	mm.	mm.		€
1,0	3,15	31,5	1,3	A1533B0100000	6,80
1,25	3,15	31,5	1,6	A1533B0125000	6,80
1,6	4	35,5	2	A1533B0160000	6,32
2,0	5	40	2,5	A1533B0200000	7,00
2,5	6,3	45	3,1	A1533B0250000	7,62
3,15	8	50	3,9	A1533B0315000	9,03
4,0	10	56	5	A1533B0400000	12,33
5,0	12,5	63	6,3	A1533B0500000	17,27
6,3	16	71	8	A1533B0630000	27,74



153.3N

DIN 333

Classic series | Type N HSS

60° Form AR Centre drills

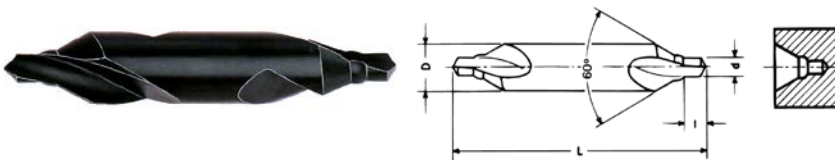
Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	High metal removal rates are possible because of the strengthened form of the junction between pilot and body. This form cuts an annular groove which serves as a reservoir for coolant. The drill has a high resistance to breakage
Finish	Surface treated

Details and applications

This special centre-drill is suitable for the production of 60° centre-holes, according to DIN 322, page 1, form AR, without protective chamfer. It is recommended for those cases where the pieces turn at high-speed and the centre drill remains fixed.

d	D	L	l	Code	Price
mm.	mm.	mm.	mm.		€
1,0	3,15	31,5	1,3	A1533N0100000	6,80
1,25	3,15	31,5	1,6	A1533N0125000	6,80
1,6	4	35,5	2	A1533N0160000	6,32
2,0	5	40	2,5	A1533N0200000	7,00
2,5	6,3	45	3,1	A1533N0250000	7,62
3,15	8	50	3,9	A1533N0315000	9,03
4,0	10	56	5	A1533N0400000	12,33
5,0	12,5	63	6,3	A1533N0500000	17,27
6,3	16	71	8	A1533N0630000	27,74



153.34

DIN 333

Classic series | Type N | TiN HSS

60° Form AR Centre drills

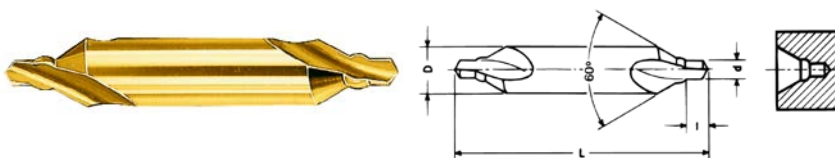
Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	High metal removal rates are possible because of the strengthened form of the junction between pilot and body. This form cuts an annular groove which serves as a reservoir for coolant. The drill has a high resistance to breakage
Finish	Coated
Coating	TiN

Details and applications

This special centre-drill is suitable for the production of 60° centre-holes, according to DIN 322, page 1, form AR, without protective chamfer. It is recommended for those cases where the pieces turn at high-speed and the centre drill remains fixed.

d	D	L	l	Code	Price
mm.	mm.	mm.	mm.		€
1,0	3,15	31,5	1,3	A153340100000	19,06
1,25	3,15	31,5	1,6	A153340125000	19,06
1,6	4	35,5	2	A153340160000	17,85
2,0	5	40	2,5	A153340200000	19,50
2,5	6,3	45	3,1	A153340250000	21,42
3,15	8	50	3,9	A153340315000	25,27
4,0	10	56	5	A153340400000	34,64
5,0	12,5	63	6,3	A153340500000	48,93
6,3	16	71	8	A153340630000	78,18



156.3B

DIN 333

Classic series | Type N

HSS

Radius form 60° R.
Left hand

Centre drills

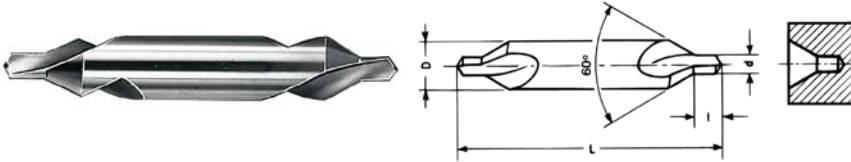
Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	High metal removal rates are possible because of the strengthened form of the junction between pilot and body. This form cuts an annular groove which serves as a reservoir for coolant. The drill has a high resistance to breakage
Finish	No surface treatment, bright finish

Details and applications

This centre drill (DIN 333 Form A) is suitable for the production of 60° centre holes according to DIN 332, page 1, form A. It can also be used for the production of centre holes DIN 332, page 1, form C, in which the interior part to be centred is equal in forms A,B and C.

d	D	L	l	Code	Price
mm.	mm.	mm.	mm.		€
0,8	3,15	20	1,1	A1563B0080000	10,33
1,0	3,15	31,5	1,3	A1563B0100000	9,58
1,25	3,15	31,5	1,6	A1563B0125000	10,06
1,6	4	35,5	2	A1563B0160000	9,85
2,0	5	40	2,5	A1563B0200000	11,16
2,5	6,3	45	3,1	A1563B0250000	11,85
3,15	8	50	3,9	A1563B0315000	13,66
4,0	10	56	5	A1563B0400000	20,15



156.3N

DIN 333

Classic series | Type N

HSS

Radius form 60° R.
Left hand

Centre drills

Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	High metal removal rates are possible because of the strengthened form of the junction between pilot and body. This form cuts an annular groove which serves as a reservoir for coolant. The drill has a high resistance to breakage
Finish	Surface treated

Details and applications

This centre drill (DIN 333 Form A) is suitable for the production of 60° centre holes according to DIN 332, page 1, form A. It can also be used for the production of centre holes DIN 332, page 1, form C, in which the interior part to be centred is equal in forms A,B and C.

d	D	L	l	Code	Price
mm.	mm.	mm.	mm.		€
0,8	3,15	20	1,1	A1563N0080000	10,33
1,0	3,15	31,5	1,3	A1563N0100000	9,58
1,25	3,15	31,5	1,6	A1563N0125000	10,06
1,6	4	35,5	2	A1563N0160000	9,85
2,0	5	40	2,5	A1563N0200000	11,16
2,5	6,3	45	3,1	A1563N0250000	11,85
3,15	8	50	3,9	A1563N0315000	13,66
4,0	10	56	5	A1563N0400000	20,15



156.34

DIN 333

Classic series | **Type N** | **TiN**
HSS

Radius form 60° R.
 Left hand

Centre drills

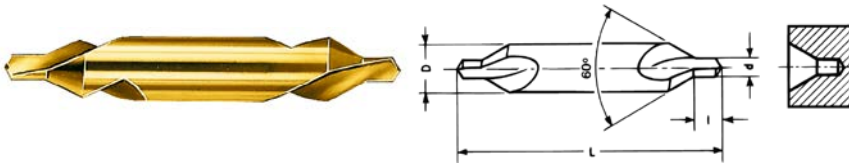
Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	High metal removal rates are possible because of the strengthened form of the junction between pilot and body. This form cuts an annular groove which serves as a reservoir for coolant. The drill has a high resistance to breakage
Finish	Coated
Coating	TiN

Details and applications

This centre drill (DIN 333 Form A) is suitable for the production of 60° centre holes according to DIN 332, page 1, form A. It can also be used for the production of centre holes DIN 332, page 1, form C, in which the interior part to be centred is equal in forms A,B and C.

d	D	L	I	Code	Price
mm.	mm.	mm.	mm.		€
0,8	3,15	20	1,1	A156340080000	29,15
1,0	3,15	61,5	1,3	A156340100000	27,05
1,25	3,15	31,5	1,6	A156340125000	28,57
1,6	4	35,5	2	A156340160000	27,84
2,0	5	40	2,5	A156340200000	31,21
2,5	6,3	45	3,1	A156340250000	33,37
3,15	8	50	3,9	A156340315000	38,42
4,0	10	56	5	A156340400000	56,86



151.60

DIN 333

Classic series | **Type N**
HM

60° Form A
 Centre drills

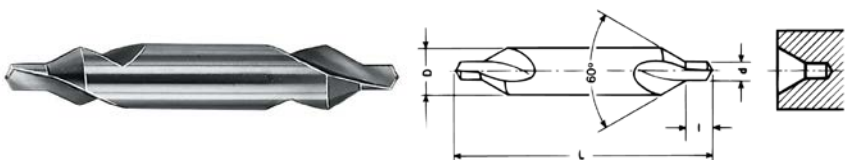
Design and technical specifications

Point angle	118°
Point grinding	Relieved cone
Tolerance d	k12
Other specifications	High metal removal rates are possible because of the strengthened form of the junction between pilot and body. This form cuts an annular groove which serves as a reservoir for coolant. The drill has a high resistance to breakage
Finish	No surface treatment, bright finish

Details and applications

This centre drill (DIN 333 Form A) is suitable for the production of 60° centre holes according to DIN 332, page 1, form A-up to d=12,5mm. x D=26,5mm. It can also be used for the production of centre holes DIN 332, page 1, form C, in which the interior part to be centred is equal in forms A, B and C.

d	D	L	I	Code	Price
mm.	mm.	mm.	mm.		€
0,5	3,15	20	0,8	A151600050000	51,53
0,8	3,15	20	1,1	A151600080000	49,92
1,0	3,15	31,5	1,3	A151600100000	54,62
1,25	3,15	31,5	1,6	A151600125000	52,91
1,6	4	35,5	2	A151600160000	55,55
2,0	5	40	2,5	A151600200000	64,65
2,5	6,3	45	3,1	A151600250000	76,29
3,15	8	50	3,9	A151600315000	88,03
4,0	10	56	5	A151600400000	117,39
5,0	12,5	63	6,3	A151600500000	205,45
6,3	16	71	8	A151600630000	322,84



160.30

DIN 8374 N

Classic series | Type N HSS

90° Conic step angle. Straight shank
Subland drills for housing screws

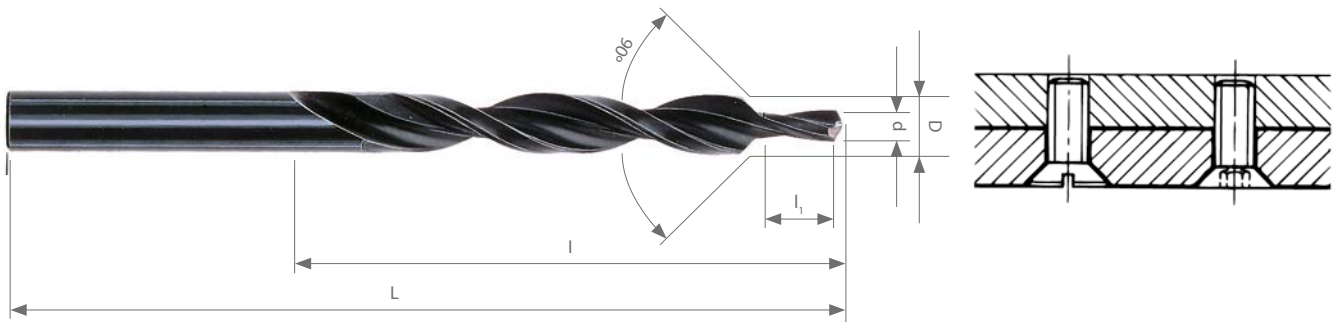
Design and technical specifications

Helix angle	Standard (DIN 1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Heavier than normal
Web taper	None
Flute form	Normal
Tolerance	h8 diameter D, h9 diameter d
Other specifications	DIN 1414
Finish	Surface treated

Details and applications

Drill used for drilling through holes for screws, according to DIN 69 and countersinks to 90° for seating of countersunk screw heads according to DIN 74, sheet 1, form A (fine Tolerance D) and forms A & B (intermediate Tolerance D). For screws according to DIN 963 and 964, cutting speeds should be selected according to the large diameter and feeds according to the small diameter.

D	d	L	l	l ₁	MT	Code	Price
mm.	mm.	mm.	mm.	mm.			€
6	3,2	93	57	9	M3	A160300600000	49,68
8	4,3	117	75	11	M4	A160300800000	56,79
10	5,3	133	87	13	M5	A160301000000	69,88
11,5	6,4	142	94	15	M6	A160301150000	90,61
15	8,4	169	114	19	M8	A160301500000	129,92
19	10,5	198	135	23	M10	A160301900000	189,98



162.30

DIN 8376 N

Classic series | Type N HSS

180° Straight step angle. Straight shank
Subland drills for housing screws

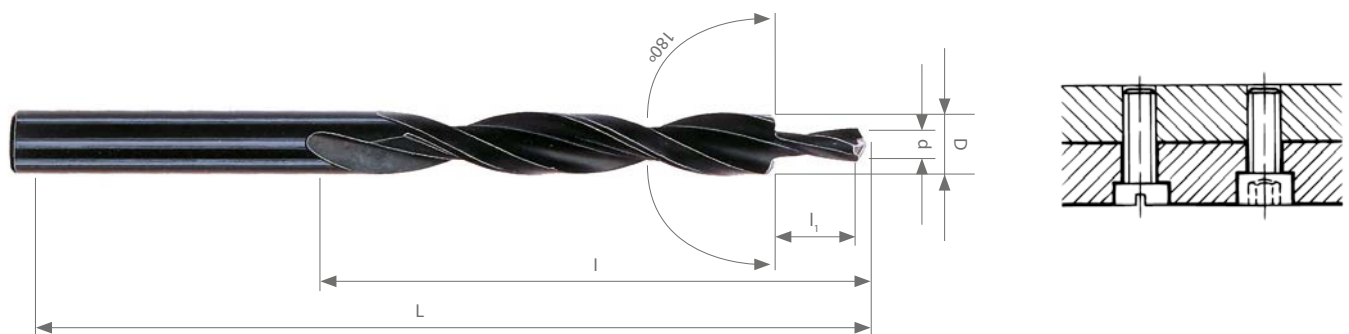
Design and technical specifications

Helix angle	Standard (DIN 1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Heavier than normal
Web taper	None
Flute form	Normal
Tolerance	h8 diameter D, h9 diameter d
Other specifications	DIN 1414
Finish	Surface treated

Details and applications

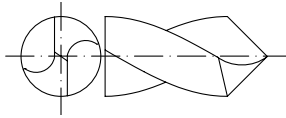
Drill used for drilling through holes for screws, according to DIN 69 and counterbores (180°) for cheese head screws according to DIN 74, sheet 2 forms, H, J, and K (intermediate Tolerance D). For Allen screws according to DIN 84, DIN 912, DIN 6912, DIN 7513 and DIN 7984, cutting speeds should be selected according to the large diameter and feeds according to the small diameter.

D	d	L	l	l ₁	MT	Code	Price
mm.	mm.	mm.	mm.	mm.			€
6	3,4	93	57	9	M3	A162300600000	39,30
8	4,5	117	75	11	M4	A162300800000	46,40
10	5,5	133	87	13	M5	A162301000000	55,67
11	6,6	142	94	15	M6	A162301100000	64,43
15	9,0	169	114	19	M8	A162301500000	80,80
18	11,0	191	130	23	M10	A162301800000	168,13



176.40

DIN 1897



Classic series | Type NC HSSCo 5%

N.C. Spotting drills 60°

Straight shank drills

Design and technical specifications	
Helix angle	Smaller than Standard
Point angle	90°
Point grinding	Relieved cone
Web thickness	Much smaller than normal
Web taper	Normal
Flute form	Uncleared wide flutes
Tolerance D	h6
Finish	No surface treatment, bright finish

Details and applications

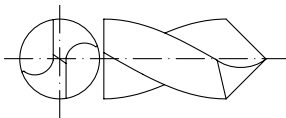
Drill bit designed with a thin core, cylindrical outer diameter without backing-off, a point angle of 90° and a lower-than-normal cutting lip height difference for fast dotting and exact positioning in jig borers, numerical control machines and machining centres. Also designed to carry out centring and bevelling of threaded holes in one single operation. Drilling a bigger depth than its diameter is not recommended.

D	L	I	Code	Price
mm.	mm.	mm.		€
3	46	12	A176400300000	26,26
4	55	16	A176400400000	22,59
5	62	18	A176400500000	22,88
6	66	20	A176400600000	23,55
8	79	26	A176400800000	29,78
10	89	30	A176401000000	32,80
12	102	35	A176401200000	38,15
16	115	40	A176401600000	54,69



176.44

DIN 1897



Classic series | Type NC | TiN HSSCo 5%

N.C. Spotting drills 60°

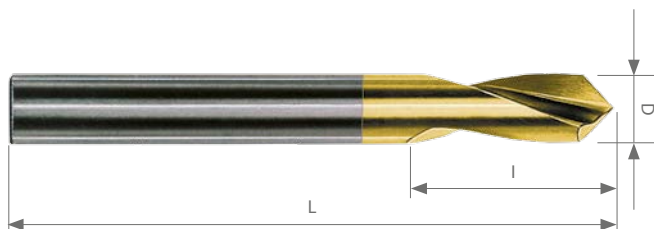
Straight shank drills

Design and technical specifications	
Helix angle	Smaller than Standard
Point angle	90°
Point grinding	Relieved cone
Web thickness	Much smaller than normal
Web taper	Normal
Flute form	Uncleared wide flutes
Tolerance D	h6
Finish	Coated
Coating	TiN

Details and applications

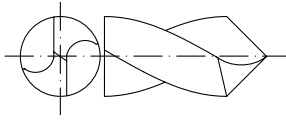
Drill bit designed with a thin core, cylindrical outer diameter without backing-off, a point angle of 90° and a lower-than-normal cutting lip height difference for fast dotting and exact positioning in jig borers, numerical control machines and machining centres. Also designed to carry out centring and bevelling of threaded holes in one single operation. Drilling a bigger depth than its diameter is not recommended.

D	L	I	Code	Price
mm.	mm.	mm.		€
3	46	12	A176440300000	35,00
4	55	16	A176440400000	37,63
5	62	18	A176440500000	38,11
6	66	20	A176440600000	39,08
8	79	26	A176440800000	48,25
10	89	30	A176441000000	54,30
12	102	35	A176441200000	57,89
16	115	40	A176441600000	74,44



177.40

DIN 1897



Classic series | Type NC HSSCo 5%

N.C. Spotting drills 120°

Straight shank drills

Design and technical specifications	
Helix angle	Smaller than Standard
Point angle	90°
Point grinding	Relieved cone
Web thickness	Much smaller than normal
Web taper	Normal
Flute form	Uncleared wide flutes
Tolerance D	h6
Finish	No surface treatment, bright finish

Details and applications

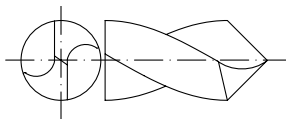
Drill bit designed with a thin core, cylindrical outer diameter without backing-off, a point angle of 90° and a lower-than-normal cutting lip height difference for fast dotting and exact positioning in jig borers, numerical control machines and machining centres. Also designed to carry out centring and bevelling of threaded holes in one single operation. Drilling a bigger depth than its diameter is not recommended.

D	L	I	Code	Price
mm.	mm.	mm.		€
2	40	8	A177400200000	12,21
3	46	12	A177400300000	8,16
4	55	16	A177400400000	7,98
5	62	18	A177400500000	7,98
6	66	20	A177400600000	8,43
8	79	26	A177400800000	12,21
10	89	30	A177401000000	14,87
12	102	35	A177401200000	19,89
16	115	40	A177401600000	53,16
20	131	47	A177402000000	115,79
25	151	53	A177402500000	159,21



177.44

DIN 1897



Classic series | Type NC | TiN HSSCo 5%

N.C. Spotting drills 120°

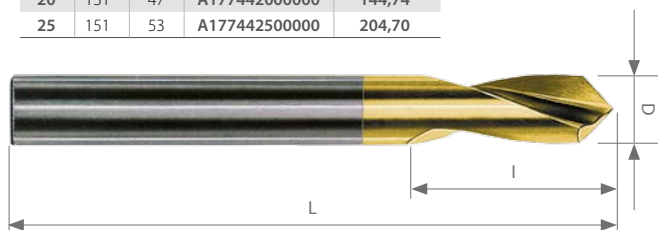
Straight shank drills

Design and technical specifications	
Helix angle	Smaller than Standard
Point angle	90°
Point grinding	Relieved cone
Web thickness	Much smaller than normal
Web taper	Normal
Flute form	Uncleared wide flutes
Tolerance D	h6
Finish	Coated
Coating	TiN

Details and applications

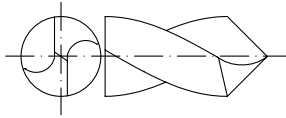
Drill bit designed with a thin core, cylindrical outer diameter without backing-off, a point angle of 90° and a lower-than-normal cutting lip height difference for fast dotting and exact positioning in jig borers, numerical control machines and machining centres. Also designed to carry out centring and bevelling of threaded holes in one single operation. Drilling a bigger depth than its diameter is not recommended.

D	L	I	Code	Price
mm.	mm.	mm.		€
2	40	8	A177440200000	15,70
3	46	12	A177440300000	10,88
4	55	16	A177440400000	13,29
5	62	18	A177440500000	13,29
6	66	20	A177440600000	13,99
8	79	26	A177440800000	19,78
10	89	30	A177441000000	24,61
12	102	35	A177441200000	30,18
16	115	40	A177441600000	72,37
20	131	47	A177442000000	144,74
25	151	53	A177442500000	204,70



178.40

DIN 1897



Classic series | Type NC HSSCo 5%

N.C. Spotting drills 90°

Straight shank drills

Design and technical specifications	
Helix angle	Smaller than Standard
Point angle	90°
Point grinding	Relieved cone
Web thickness	Much smaller than normal
Web taper	Normal
Flute form	Uncleared wide flutes
Tolerance D	h6
Finish	No surface treatment, bright finish

Details and applications

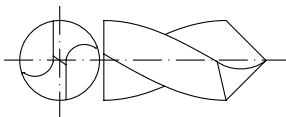
Drill bit designed with a thin core, cylindrical outer diameter without backing-off, a point angle of 90° and a lower-than-normal cutting lip height difference for fast dotting and exact positioning in jig borers, numerical control machines and machining centres. Also designed to carry out centring and bevelling of threaded holes in one single operation. Drilling a bigger depth than its diameter is not recommended.

D	L	I	Code	Price
mm.	mm.	mm.		€
3	46	12	A178400300000	7,24
4	55	16	A178400400000	7,24
5	62	18	A178400500000	7,24
6	66	20	A178400600000	7,72
8	79	26	A178400800000	10,88
10	89	30	A178401000000	13,99
12	102	35	A178401200000	19,08
16	115	40	A178401600000	48,61
20	131	47	A178402000000	99,25



178.44

DIN 1897



Classic series | Type NC | TiN HSSCo 5%

N.C. Spotting drills 90°

Straight shank drills

Design and technical specifications	
Helix angle	Smaller than Standard
Point angle	90°
Point grinding	Relieved cone
Web thickness	Much smaller than normal
Web taper	Normal
Flute form	Uncleared wide flutes
Tolerance D	h6
Finish	Coated
Coating	TiN

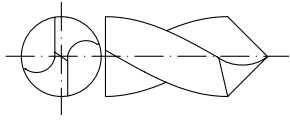
Details and applications

Drill bit designed with a thin core, cylindrical outer diameter without backing-off, a point angle of 90° and a lower-than-normal cutting lip height difference for fast dotting and exact positioning in jig borers, numerical control machines and machining centres. Also designed to carry out centring and bevelling of threaded holes in one single operation. Drilling a bigger depth than its diameter is not recommended.

D	L	I	Code	Price
mm.	mm.	mm.		€
2	40	8	A178440200000	13,99
3	46	12	A178440300000	9,65
4	55	16	A178440400000	12,06
5	62	18	A178440500000	12,06
6	66	20	A178440600000	12,81
8	79	26	A178440800000	17,63
10	89	30	A178441000000	23,16
12	102	35	A178441200000	28,95
16	115	40	A178441600000	66,17
20	131	47	A178442000000	124,06
25	151	53	A178442500000	186,09



178.60
LATZ NC



Classic series | **Type NC**
HM

N.C. Spotting drills 90°
Straight shank drills

Design and technical specifications

Helix angle	Smaller than Standard
Point angle	90°
Point grinding	Relieved cone
Web thickness	Much smaller than normal
Web taper	Normal
Flute form	Uncleared wide flutes
Tolerance D	h6
Finish	No surface treatment, bright finish

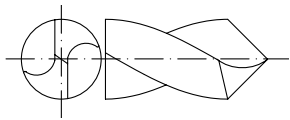
Details and applications

Drill bit designed with a thin core, cylindrical outer diameter without backing-off, a point angle of 90° and a lower-than-normal cutting lip height difference for fast dotting and exact positioning in jig borers, numerical control machines and machining centres. Also designed to carry out centring and bevelling of threaded holes in one single operation. Drilling a bigger depth than its diameter is not recommended.

D	L	I	Code	Price
mm.	mm.	mm.		€
3	45	12	A178600300000	20,26
4	50	16	A178600400000	20,26
5	50	18	A178600500000	20,26
6	50	20	A178600600000	20,26
8	60	26	A178600800000	43,42
10	70	30	A178601000000	60,79
12	70	35	A178601200000	80,64
16	80	40	A178601600000	137,93
20	100	47	A178602000000	298,16



179.40
DIN 1897



Classic series | **Type NC**
HSSCo 5%

N.C. Spotting drills 90°. Long
Straight shank drills

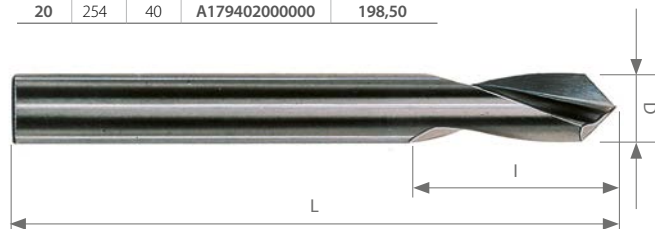
Design and technical specifications

Helix angle	Smaller than Standard
Point angle	90°
Point grinding	Relieved cone
Web thickness	Much smaller than normal
Web taper	Normal
Flute form	Uncleared wide flutes
Tolerance D	h6
Finish	No surface treatment, bright finish

Details and applications

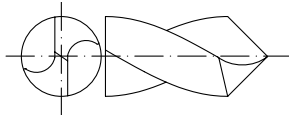
Drill bit designed with a thin core, cylindrical outer diameter without backing-off, a point angle of 90° and a lower-than-normal cutting lip height difference for fast dotting and exact positioning in jig borers, numerical control machines and machining centres. Also designed to carry out centring and bevelling of threaded holes in one single operation. Drilling a bigger depth than its diameter is not recommended.

D	L	I	Code	Price
mm.	mm.	mm.		€
3	100	6	A179400300000	25,34
4	100	6	A179400400000	20,27
5	132	10	A179400500000	21,72
6	139	15	A179400600000	30,53
8	165	17	A179400800000	37,22
10	184	20	A179401000000	46,63
12	205	25	A179401200000	60,42
16	227	35	A179401600000	121,51
20	254	40	A179402000000	198,50



179.44

DIN 1897



Classic series | Type NC | TiN HSSCo 5%

N.C. Spotting drills 90°. Long Straight shank drills

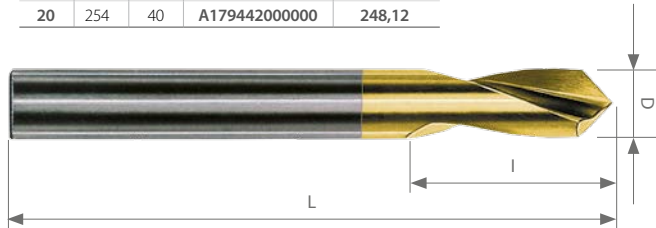
Design and technical specifications

Helix angle	Smaller than Standard
Point angle	90°
Point grinding	Relieved cone
Web thickness	Much smaller than normal
Web taper	Normal
Flute form	Uncleared wide flutes
Tolerance D	h6
Finish	Coated
Coating	TiN

Details and applications

Drill bit designed with a thin core, cylindrical outer diameter without backing-off, a point angle of 90° and a lower-than-normal cutting lip height difference for fast dotting and exact positioning in jig borers, numerical control machines and machining centres. Also designed to carry out centring and bevelling of threaded holes in one single operation. Drilling a bigger depth than its diameter is not recommended.

D	L	l	Code	Price
mm.	mm.	mm.		€
3	100	6	A179440300000	33,77
4	100	6	A179440400000	33,77
5	132	10	A179440500000	36,18
6	139	15	A179440600000	50,66
8	165	17	A179440800000	60,31
10	184	20	A179441000000	77,19
12	205	25	A179441200000	91,67
16	227	35	A179441600000	165,41
20	254	40	A179442000000	248,12



163.30

DIN 8377 N

Classic series | Type N HSS

180° Straight step angle. Taper shank Subland drills for housing screws

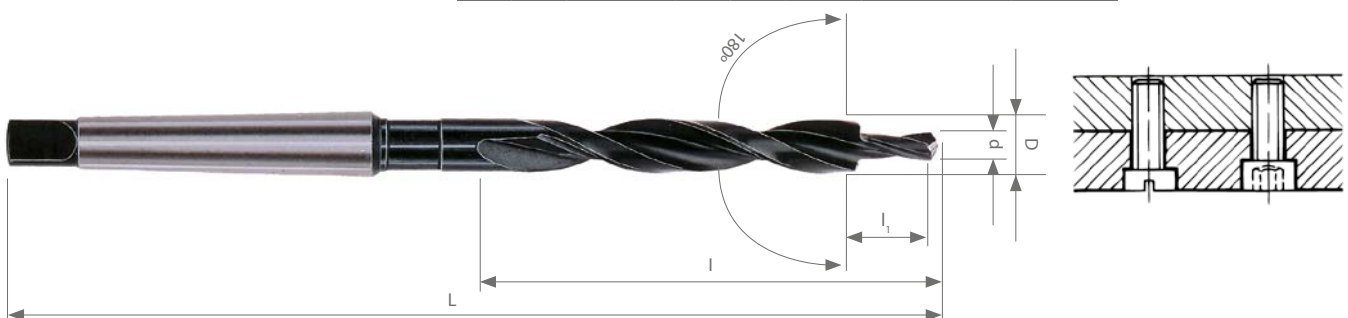
Design and technical specifications

Helix angle	Standard (DIN 1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Heavier than normal
Web taper	None
Flute form	Normal
Tolerance	h8 diameter D, h9 diameter d
Other specifications	DIN 1414
Finish	Surface treated

Details and applications

Drill used for drilling through holes for screws, according to DIN 69 and counterbores (180°) for cheese head screws according to DIN 74, sheet 2 forms, H, J, and K (intermediate Tolerance D). For Allen screws according to DIN 84, DIN 912, DIN 6912, DIN 7513 and DIN 7984. cutting speeds should be selected according to the large diameter and feeds according to the small diameter.

D	d	L	l	l ₁	MT	HM	Code	Price
mm.	mm.	mm.	mm.	mm.				€
10	5,5	168	87	13	M5	1	A163301000000	81,89
11	6,6	175	94	15	M6	1	A163301100000	80,80
15	9,0	212	114	19	M8	2	A163301500000	104,82
18	11,0	228	130	23	M10	2	A163301800000	143,03
20	13,5	238	140	27	M12	2	A163302000000	171,41
24	15,5	281	160	31	M14	3	A163302400000	222,72
26	17,5	286	165	35	M16	3	A163302600000	257,66
30	20,0	296	175	39	M18	3	A163303000000	340,63
33	22,0	334	185	43	M20	4	A163303300000	353,75



164.30

DIN 8378 N

Classic series | Type N HSS

90° Conic step angle. Tap blind holes.
Straight shank Subland drills for housing screws

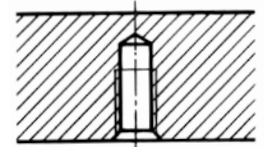
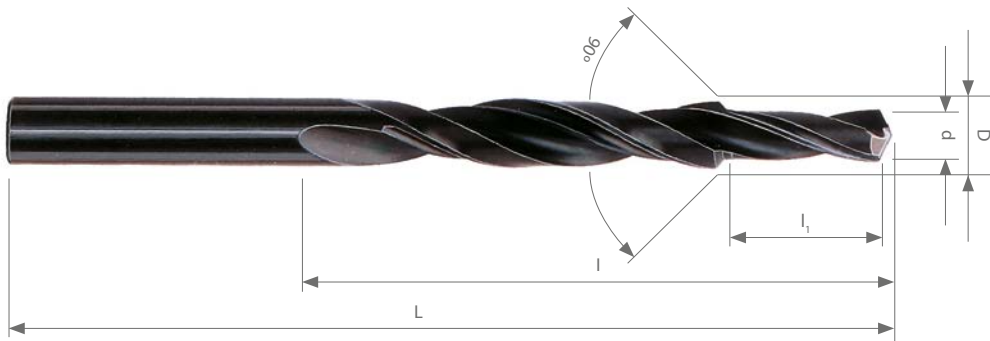
Design and technical specifications

Helix angle	Standard (DIN1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Heavier than normal
Web taper	None
Flute form	Normal
Tolerance	h8 diameter D, h9 diameter d
Other specifications	DIN 1414
Finish	Surface treated

Details and applications

Drill used for drilling tapping size holes according to DIN 336, sheet 1, and countersinks according to DIN 69 (intermediate performance). Cutting speeds should be selected according to the large diameter and feeds according to the small diameter.

D	d	L	l	l ₁	MT	Code	Price
mm.	mm.	mm.	mm.	mm.			€
3,4	2,5	70	39	8,8	M3	A164300340000	34,40
4,5	3,3	80	47	11,4	M4	A164300450000	37,13
5,5	4,2	93	57	13,6	M5	A164300550000	37,68
6,6	5,0	101	63	16,5	M6	A164300660000	43,12
9	6,8	125	81	21	M8	A164300900000	48,57
11	8,5	142	94	25,5	M10	A164301100000	61,15
13,5	10,2	160	108	30	M12	A164301350000	80,80



167.30

LATZ N

Classic series | Type N HSS

60° Form D
Step drills for centre holes

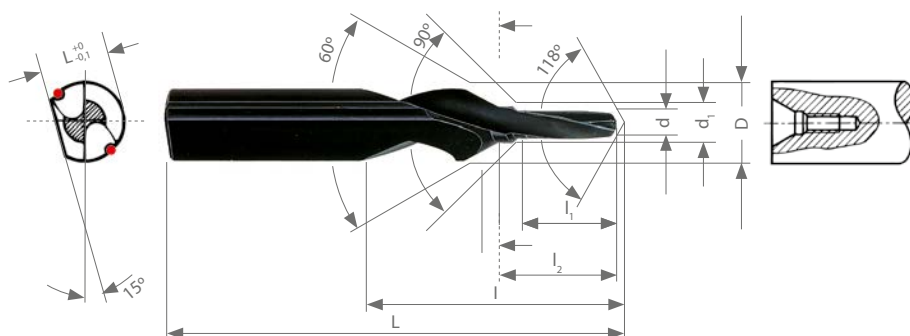
Design and technical specifications

Helix angle	Standard (DIN1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Normal
Web taper	Normal
Flute form	Normal
Tolerance	h7 diameter D, h8 diameter d
Other specifications	DIN 1414
Finish	Surface treated

Details and applications

Step drill for drilling and tapping 60° centre holes according to DIN 332, sheet 2, form D (direct, straight, face contact). Especially suitable for threading, centring and cutting of in machines where the work piece is simultaneously faced and centred in one operation.

D	d	d ₁	L	l	l ₁	l ₂	MT	Code	Price
mm.	mm.	mm.	mm.	mm.	mm.	mm.			€
8	3,3	4,3	63	23	11	12,6	M4	A167300800000	91,72
10	4,2	5,3	67	27	13	15,15	M5	A167301000000	103,73
12,5	5,0	6,4	71	33	16	18,9	M6	A167301250000	113,54
14	6,8	8,4	88	41	19,5	23	M8	A167301400000	108,10
16	8,5	10,5	94	47	23	27,7	M10	A167301600000	123,38
20	10,2	13	105	59	28	34,5	M12	A167302000000	161,57
25	14,0	17	132	67	33	41,3	M16	A167302500000	227,09



168.30

LATZ N

Classic series | Type N HSS

60° Form DR

Step drills for centre holes

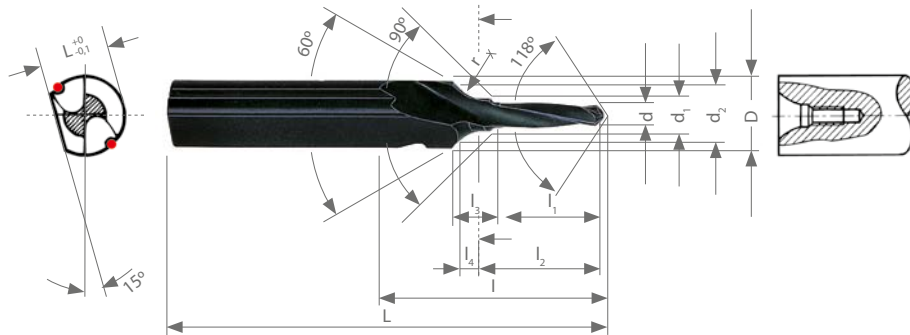
Design and technical specifications

Helix angle	Standard (DIN 1414 type N)
Point angle	118°
Point grinding	Relieved cone and web thinned according to DIN 1412-A
Web thickness	Normal
Web taper	Normal
Flute form	Normal
Tolerance	h7 diameter D, h8 diameter d
Other specifications	DIN 1414
Finish	Surface treated

Details and applications

Stepped drill for drilling and tapping 60° centre holes according to DIN 332, sheet 2, form DR (perfect circular contact, thanks to radiused form). Especially suitable for threading, centring and cutting off in machines where the work piece is simultaneously faced and centred in one operation.

D	d	d ₁	d ₂	s	L	l	l ₁	l ₂	l ₃	l ₄	r	MT	Code	Price
mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.	mm.			€
8	3,3	4,3	6,7	6,75	63	23	11	12,6	4,25	2,1	5	M4	A168300800000	97,17
10	4,2	5,3	8,1	8,45	67	27	13	15,15	5,38	2,4	6,3	M5	A168301000000	105,90
12,5	5	6,4	9,6	10,45	71	33	16	18,9	6,95	2,8	8	M6	A168301250000	116,82
14	6,8	8,4	12,2	12,5	88	41	19,5	23	7,7	3,3	10	M8	A168301400000	119,02
16	8,5	10,5	14,9	14,85	94	47	23	27,7	9,58	3,85	16	M10	A168301600000	137,56
20	10,2	13	18,1	18,45	105	59	28	34,5	12,06	4,4	20	M12	A168302000000	177,97
25	14	17	23	23,4	132	67	33	41,3	14,77	5,2	25	M16	A168302500000	246,74



664.63

DIN 8378 N

Optimus series | Type SN | TiAlN HM

90° Conic step angle. Tap blind holes. Straight shank

Subland drills for housing screws

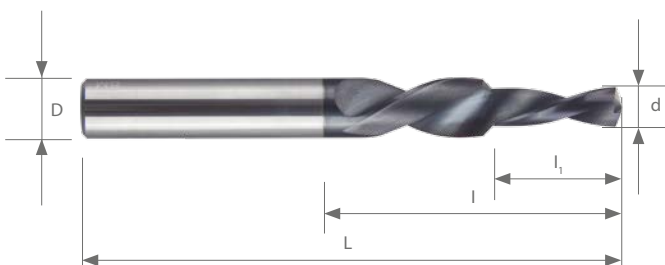
Design and technical specifications

Helix angle	30°
Point angle	140°
Point grinding	4 Lands with web thinning
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Super-N
Tolerance D	h6 diameter D, h8 diameter d
Other specifications	DIN 6535 HA
Finish	Coated
Coating	TiAlN

Details and applications

High production helicoidal drills, TiAlN coated, to reach optimal hole quality at economic cost. To drill castings, cast steel, Cr-Ni steels, alloyed steels (cementation steels, tools steels spring steels etc.). Titanium and its alloys, stainless steels (martensitic, austenitic) special alloys with Co-Ni-Fe base etc. Drill used for drilling tapping size holes according to DIN 336, sheet 1, and countersinks according to DIN 69 (intermediate performance). Cutting speeds should be selected according to the large diameter and feeds according to the small diameter.

D	d	L	l	l ₁	MT	Code	Price
mm.	mm.	mm.	mm.	mm.			€
4	2,35	60	16	10	M2,5	A664630250100	43,19
6	2,5	66	20	8,8	M3	A664630300000	43,19
6	2,8	62	20	12	M3	A664630300100	43,19
6	3,3	66	24	11,4	M4	A664630400000	50,15
6	3,7	64	27	14	M4	A664630400100	50,15
6	4,2	66	28	13,6	M5	A664630500000	57,12
6	4,65	80	27	20	M5	A664630500100	57,12
8	5	79	34	16,5	M6	A664630600000	71,05
8	5,55	80	35	24	M6	A664630600100	71,05
10	6,8	89	47	21	M8	A664630800000	91,95
10	7,45	80	45	30	M8	A664630800100	91,95
12	8,5	102	55	25,5	M10	A664631000000	128,17
12	9,3	90	50	40	M10	A664631000100	128,17
14	10,2	107	60	30	M12	A664631200000	169,97
14	11,2	100	55	45	M12	A664631200100	169,97
16	12	115	65	34,5	M14	A664631400000	215,94
16	14	123	73	38,5	M16	A664631600000	236,84



662.63

DIN 8376 N

Optimus series | Type SN | TiAlN HM

180° Straight step angle. Straight shank

Subland drills for housing screws

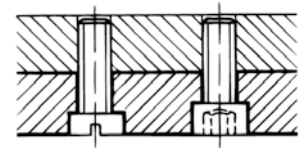
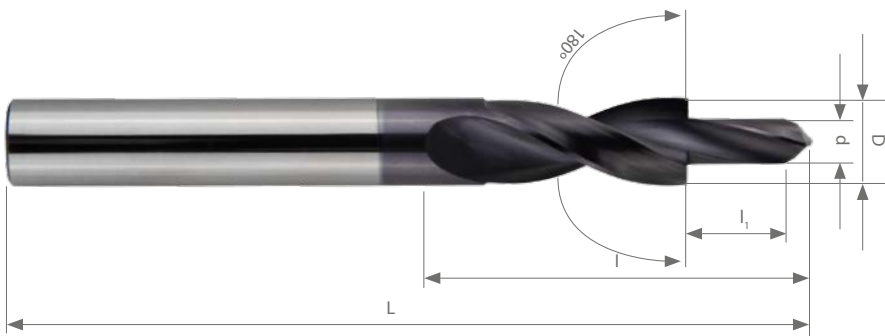
Design and technical specifications

Helix angle	30°
Point angle	140°
Point grinding	4 Lands with web thinning
Web thickness	Heavier than normal
Web taper	Normal
Flute form	Super-N
Tolerance D	h6 diameter D, h8 diameter d
Other specifications	DIN 6535 HA
Finish	Coated
Coating	TiAlN

Details and applications

Drill used for drilling through holes for screws, according to DIN 69 and counterbores (180°) for cheese head screws according to DIN 74, sheet 2 forms, H, J, and K (intermediate Tolerance D). For Allen screws according to DIN84, DIN912, DIN6912, DIN7513 and DIN 7984. cutting speeds should be selected according to the large diameter and feeds according to the small diameter.

D	d	L	l	l ₁	MT	Code	Price
mm.	mm.	mm.	mm.	mm.			€
6	3,4	64	28	9	M3	A662640300000	49,60
8	4,5	79	37	11	M4	A662640400000	83,59
10	5,5	89	43	13	M5	A662640500000	116,19
12	6,6	102	55	15	M6	A662640600000	168,58
16	9	115	65	19	M8	A662640800000	281,84
18	11	123	62	23	M10	A662641000000	324,33



129.00 | Boxed sets of straight shank drills



Family	Box type	Norm D	Material	Finish	Grinding	Family	Code	Price €
105.30	D 1 - 7 x 0,50	DIN 338	HSS		Type N	Classic series	A129301051300	57,22
105.30	D 1 - 10 x 0,50	DIN 338	HSS		Type N	Classic series	A129301051900	85,47
105.30	D 1 - 13 x 0,50	DIN 338	HSS		Type N	Classic series	A129301052500	152,73
105.30	D 6 - 10 x 0,10	DIN 338	HSS		Type N	Classic series	A129301054100	332,00
105.30	D 1 - 6 x 0,10	DIN 338	HSS		Type N	Classic series	A129301055000	162,88
105.34	D 1 - 7 x 0,50	DIN 338	HSS	TiN	Type N	Classic series	A129341051300	91,68
105.34	D 1 - 10 x 0,50	DIN 338	HSS	TiN	Type N	Classic series	A129341051900	164,55
105.34	D 1 - 13 x 0,50	DIN 338	HSS	TiN	Type N	Classic series	A129341052500	325,97
105.34	D 6 - 10 x 0,10	DIN 338	HSS	TiN	Type N	Classic series	A129341054100	705,49
105.34	D 1 - 6 x 0,10	DIN 338	HSS	TiN	Type N	Classic series	A129341055000	299,59
180.40	D 1 - 7 x 0,50	DIN 338	HSS-E 5 %		Type NF	Classic series	A129401801300	76,23
180.40	D 1 - 10 x 0,50	DIN 338	HSS-E 5 %		Type NF	Classic series	A129401801900	126,10
180.40	D 1 - 13 x 0,50	DIN 338	HSS-E 5 %		Type NF	Classic series	A129401802500	260,45
180.40	D 6 - 10 x 0,10	DIN 338	HSS-E 5 %		Type NF	Classic series	A129401804100	473,76
180.40	D 1 - 6 x 0,10	DIN 338	HSS-E 5 %		Type NF	Classic series	A129401805000	231,42
181.40	D 1 - 7 x 0,50	DIN 338	HSS-E 5 %		Type NG	Classic series	A129401811300	86,73
181.40	D 1 - 10 x 0,50	DIN 338	HSS-E 5 %		Type NG	Classic series	A129401811900	161,00
181.40	D 1 - 13 x 0,50	DIN 338	HSS-E 5 %		Type NG	Classic series	A129401812500	304,60
181.40	D 6 - 10 x 0,10	DIN 338	HSS-E 5 %		Type NG	Classic series	A129401814100	675,20
181.40	D 1 - 6 x 0,10	DIN 338	HSS-E 5 %		Type NG	Classic series	A129401815000	300,85
183.43	D 1 - 7 x 0,50	DIN 338	HSS-E 5 %	TiAlN	Type SLZ	Optimus series	A129431831300	228,06
183.43	D 1 - 10 x 0,50	DIN 338	HSS-E 5 %	TiAlN	Type SLZ	Optimus series	A129431831900	465,95
183.43	D 1 - 13 x 0,5	DIN 338	HSS-E 5 %	TiAlN	Type SLZ	Optimus series	A129431832500	1022,57
183.43	D 6 - 10 x 0,10	DIN 338	HSS-E 5 %	TiAlN	Type SLZ	Optimus series	A129431834100	1863,61
183.43	D 1 - 6 x 0,10	DIN 338	HSS-E 5 %	TiAlN	Type SLZ	Optimus series	A129431835000	814,58
183.44	D 1 - 7 x 0,50	DIN 338	HSS-E 5 %	TiN	Type SLZ	Optimus series	A129441831300	173,77
183.44	D 1 - 10 x 0,50	DIN 338	HSS-E 5 %	TiN	Type SLZ	Optimus series	A129441831900	355,28
183.44	D 1 - 13 x 0,50	DIN 338	HSS-E 5 %	TiN	Type SLZ	Optimus series	A129441832500	776,09
183.44	D 6 - 10 x 0,10	DIN 338	HSS-E 5 %	TiN	Type SLZ	Optimus series	A129441834100	1572,89
183.44	D 1 - 6 x 0,10	DIN 338	HSS-E 5 %	TiN	Type SLZ	Optimus series	A129441835000	616,88
620.63	D 3,3 - 4,2 - 5 - 6,8 - 8,5 - 10,2	DIN 6537 L 5 X D	HM	TiAlN	Type SN	Optimus series	A129636220600	193,00
640.63	D 3,3 - 4,2 - 5 - 6,8 - 8,5 - 10,2	DIN 6537 L 5 X D	HM	TiAlN	Type SN	Optimus series	A129636420600	308,00

Serie Optimus HM | cutting conditions

Work conditions									
Nº	Work material	Resistance N/mm ² – Mpa	Hardness	Internal cooling	from	to	Coolant	3	
1	Easy to machine mild steels (high sulphur carbon steels aphosphorus)	≤ 500		○	110	130	(A) (B)	0,100	
				⊗	120	145		0,100	
2	Non-alloyed carbon steels (≤0,4%C) (structural steels)	≤ 800		○	120	145	(A) (B)	0,080	
				⊗	140	170		0,080	
3	Non-alloyed carbon steels (≤0,4%C)	800-1.000		○	95	110	(A) (B)	0,130	
	Hardness of casehardened and bonified steels	≤ 700		⊗	110	130		0,130	
4	Non-alloyed fine steels, low-alloyed steels (nitrided)	800-1000		○	90	105	(A) (B)	0,080	
	Casehaedened and bonified alloyed structural steels	700-1000		⊗	100	120		0,100	
	Tool steels	≤ 850		○	60	70	(A) (B)	0,060	
		⊗	75	85	0,060				
5	Tool alloyed steels	800-1.000		○	50	60	(A) (B)	0,060	
				⊗	60	70		0,060	
	Bonified fine alloyed steels (undeformable, moldings)	1.000-1.200		○	85	100		0,080	
				⊗	85	105		0,100	
6	Austenitic sulphurated stainless steels easy to machine	≤ 850		○	50	55	(B)	0,050	
				⊗	55	60		0,060	
7	Cr-Mo ferritic and martensitic stainless steels	≤ 850		○	40	45	(B)	0,040	
				⊗	40	45		0,060	
8	Cr-Ni austenitic, stainless and highly heat-resistant steels (refractory)	≤ 850		○	40	45	(B)	0,050	
				⊗	50	55		0,060	
9	Martensitic stainless steels. Tempered steels		45-50 HRC	○	20	25	(B)	0,040	
				⊗	25	35		0,040	
				○	10	12		0,020	
				⊗	10	15		0,020	
10	Special alloys: Nimonic, Hastelloy, Inconel, K-Monel etc.	≤ 900		○	22	28	(B)	0,020	
				⊗	28	32,5		0,030	
		900 ÷ 1.200		○	13	15		0,020	
				⊗	18	22		0,020	
	≥ 1.200		○	11	12	0,020			
			⊗	12,5	14	0,020			
	Titanium and its alloys	≤ 750		○	40	45		0,050	
				⊗	45	50		0,050	
≥ 750			○	25	35	0,040			
			⊗	40	45	0,040			
11	Spring steel	>1.300		○	42	47	(B)	0,040	
				⊗	57	62		0,040	
12	Mangnese steels	>1.300		○	25	30	(B)	0,050	
				⊗	30	35		0,050	
13	Grey casting		< 250 HB	○	130	160	(A) (D)	0,130	
				⊗	150	200		0,130	
	Nodular casting and malleable casting			○	112,5	140	(A)	0,100	
				⊗	130	155		0,130	
	Grey casting			○	112,5	155	(A) (D)	0,100	
				⊗	127,5	160		0,130	
Nodular casting and malleable casting	○	105	125	(A)	0,080				
	⊗	115	130		0,100				
14	Hardened casting		> 350 HB	○	32	37	(A) (D)	0,040	
				⊗	37	42		0,040	

Coolant: (A) Soluble oil · (B) Cutting oil · (C) Dry · (D) Compressed air · (E) Water

Internal cooling: ○ No internal cooling · ⊗ With internal cooling

Feed (mm/rev) based on diameter of the drill

	4	5	6	8	10	12	16	20	25	30
	0,140	0,140	0,200	0,250	0,310	0,310	0,400	0,500	0,630	0,630
	0,140	0,140	0,200	0,250	0,310	0,310	0,400	0,500	0,630	0,630
	0,100	0,100	0,160	0,200	0,250	0,250	0,310	0,400	0,500	0,500
	0,100	0,100	0,160	0,200	0,250	0,250	0,310	0,400	0,500	0,500
	0,180	0,180	0,250	0,310	0,400	0,400	0,500	0,630	0,800	0,800
	0,180	0,180	0,250	0,310	0,400	0,400	0,500	0,630	0,800	0,800
	0,100	0,100	0,160	0,200	0,250	0,250	0,310	0,400	0,500	0,500
	0,140	0,140	0,200	0,250	0,310	0,310	0,400	0,500	0,630	0,630
	0,080	0,080	0,130	0,160	0,200	0,200	0,250	0,310	0,400	0,400
	0,080	0,080	0,130	0,160	0,200	0,200	0,250	0,310	0,400	0,400
	0,080	0,080	0,130	0,160	0,200	0,200	0,250	0,310	0,400	0,400
	0,080	0,080	0,130	0,160	0,200	0,200	0,250	0,310	0,400	0,400
	0,100	0,100	0,160	0,200	0,250	0,250	0,310	0,400	0,500	0,500
	0,140	0,140	0,200	0,250	0,310	0,310	0,400	0,500	0,630	0,630
	0,060	0,060	0,100	0,120	0,160	0,160	0,200	0,250	0,310	0,310
	0,080	0,080	0,130	0,160	0,200	0,200	0,250	0,310	0,400	0,400
	0,050	0,050	0,080	0,100	0,130	0,130	0,160	0,205	0,255	0,255
	0,080	0,080	0,130	0,160	0,200	0,200	0,250	0,310	0,400	0,400
	0,060	0,060	0,100	0,120	0,160	0,160	0,200	0,250	0,310	0,310
	0,080	0,080	0,130	0,160	0,200	0,200	0,250	0,310	0,400	0,400
	0,050	0,050	0,080	0,100	0,130	0,130	0,160	0,205	0,255	0,255
	0,050	0,050	0,080	0,100	0,130	0,130	0,160	0,205	0,255	0,255
	0,030	0,030	0,040	0,050	0,060	0,060	0,080	0,100	0,120	0,120
	0,030	0,030	0,040	0,050	0,060	0,060	0,080	0,100	0,120	0,120
	0,030	0,030	0,040	0,050	0,060	0,060	0,080	0,100	0,120	0,120
	0,030	0,030	0,040	0,050	0,060	0,060	0,080	0,100	0,120	0,120
	0,030	0,030	0,040	0,050	0,060	0,060	0,080	0,100	0,120	0,120
	0,030	0,030	0,040	0,050	0,060	0,060	0,080	0,100	0,120	0,120
	0,030	0,030	0,040	0,050	0,060	0,060	0,080	0,100	0,120	0,120
	0,030	0,030	0,040	0,050	0,060	0,060	0,080	0,100	0,120	0,120
	0,060	0,060	0,100	0,120	0,160	0,160	0,200	0,250	0,310	0,310
	0,060	0,060	0,100	0,120	0,160	0,160	0,200	0,250	0,310	0,310
	0,050	0,050	0,080	0,100	0,130	0,130	0,160	0,205	0,255	0,255
	0,050	0,050	0,080	0,100	0,130	0,130	0,160	0,205	0,255	0,255
	0,050	0,050	0,080	0,100	0,130	0,130	0,160	0,205	0,255	0,255
	0,050	0,050	0,080	0,100	0,130	0,130	0,160	0,205	0,255	0,255
	0,060	0,060	0,100	0,120	0,160	0,160	0,200	0,250	0,310	0,310
	0,060	0,060	0,100	0,120	0,160	0,160	0,200	0,250	0,310	0,310
	0,180	0,180	0,250	0,310	0,400	0,400	0,500	0,630	0,800	0,800
	0,180	0,180	0,250	0,310	0,400	0,400	0,500	0,630	0,800	0,800
	0,140	0,140	0,200	0,250	0,310	0,310	0,400	0,500	0,630	0,630
	0,180	0,180	0,250	0,310	0,400	0,400	0,500	0,630	0,800	0,800
	0,140	0,140	0,200	0,250	0,310	0,310	0,400	0,500	0,630	0,630
	0,180	0,180	0,250	0,310	0,400	0,400	0,500	0,630	0,800	0,800
	0,100	0,100	0,160	0,200	0,250	0,250	0,310	0,400	0,500	0,500
	0,140	0,140	0,200	0,250	0,310	0,310	0,400	0,500	0,630	0,630
	0,050	0,050	0,080	0,100	0,130	0,130	0,160	0,205	0,255	0,255
	0,050	0,050	0,080	0,100	0,130	0,130	0,160	0,205	0,255	0,255

Cutting speed must be multiplied by a correction factor based on the ratio between the hole depth and the drill diameter.

Hole Depth / drill diam. = 1	S = 1,15
Hole Depth / drill diam. = 3	S = 1,00
Hole Depth / drill diam. = 4	S = 0,90
Hole Depth / drill diam. = 5	S = 0,80
Hole Depth / drill diam. = 8	S = 0,70
Hole Depth / drill diam. = 12	S = 0,60
Hole Depth / drill diam. >= 15	S = 0,50

The cutting feed must be multiplied by a correction factor based on the ratio between the hole depth and the drill diameter.

Hole depth / drill diam. <= 3	f = 1,00
Hole depth / drill diam. > 3	f = 0,90
Hole depth / drill diam. > 5	f = 0,80
Hole depth / drill diam. > 8	f = 0,70
Hole depth / drill diam. > 12	f = 0,60

Example

Material: GG35

Grey Casting <300HB

Drill Diameter Ø 6

Hole Depth = 28

$28 / 6 = 4,66$ S = 0,80 f = 0,9

Drill with Futura Coating

Vc(s/table) = 130 m/min

Vc(to be used): $130 \times 0,80 = 104$ m/min

Av(s/table) = 0,25 mm/rev

Av(to be used): $0,30 \times 0,9 = 0,27$ mm/rev

These values are useful with enough coolant supply and high stability. Reduce values in case of different conditions.

Drilling diametres before threading

M		
M	P	Ø
1	0,25	0,75
1,1	0,25	0,85
1,2	0,25	0,95
1,4	0,30	1,10
1,6	0,35	1,25
1,7	0,35	1,30
1,8	0,35	1,45
2	0,40	1,60
2,2	0,45	1,75
2,3	0,40	1,90
2,5	0,45	2,05
2,6	0,45	2,10
3	0,50	2,50
3,5	0,60	2,90
4	0,70	3,30
4,5	0,75	3,70
5	0,80	4,20
6	1,00	5,00
7	1,00	6,00
8	1,25	6,80
9	1,25	7,80
10	1,50	8,50
11	1,50	9,50
12	1,75	10,20
14	2,00	12,00
16	2,00	14,00
18	2,50	15,50
20	2,50	17,50
22	2,50	19,50
24	3,00	21,00
27	3,00	24,00
30	3,50	26,50
33	3,50	29,50
36	4,00	32,00
39	4,00	35,00
42	4,50	37,50
45	4,50	40,50
48	5,00	43,00
52	5,00	47,00
56	5,50	50,50
60	5,50	54,50
64	6,00	58,00
68	6,00	62,00

MF		
M	P	Ø
2,5	0,35	2,15
3	0,35	2,65
3,5	0,35	3,15
4	0,35	3,65
4	0,50	3,50
4,5	0,50	4,00
5	0,50	4,50
5,5	0,50	5,00
6	0,50	5,50
6	0,75	5,20
7	0,75	6,20
8	0,50	7,50
8	0,75	7,20
8	1,00	7,00
9	0,75	8,20
9	1,00	8,00
10	0,50	9,50
10	0,75	9,20
10	1,00	9,00
10	1,25	8,80
11	0,75	10,20
11	1,00	10,00
12	0,75	11,25

MF		
M	P	Ø
12	1,00	11,00
12	1,25	10,80
12	1,50	10,50
13	1,00	12,00
13	1,50	11,50
13	1,75	11,25
14	1,00	13,00
14	1,25	12,80
14	1,50	12,50
15	1,00	14,00
15	2,00	13,00
16	1,00	15,00
16	1,50	14,50
17	1,00	16,00
17	1,50	15,50
18	1,00	17,00
18	1,50	16,50
18	2,00	16,00
20	1,00	19,00
20	1,50	18,50
20	2,00	18,00
22	1,00	21,00
22	1,50	20,50
22	2,00	20,00
24	1,00	23,00
24	1,50	22,50
24	2,00	22,00
25	1,00	24,00
25	1,50	23,50
25	2,00	23,00
26	1,00	25,00
26	1,50	24,50
27	1,00	26,00
27	1,50	25,50
27	2,00	25,00
28	1,00	27,00
28	1,50	26,50
28	2,00	26,00
30	1,00	29,00
30	1,50	28,50
30	2,00	28,00
30	3,00	27,00
32	1,50	30,50
32	2,00	30,00
33	1,50	31,50
33	2,00	31,00
33	3,00	30,00
34	1,50	32,50
35	1,50	33,50
36	1,50	34,50
36	2,00	34,00
36	3,00	33,00
38	1,50	36,50
39	1,50	37,50
39	2,00	37,00
39	3,00	36,00
40	1,50	38,50
40	2,00	38,00
40	3,00	37,00
42	1,50	40,50
42	2,00	40,00
42	3,00	39,00
45	1,50	43,50
45	2,00	43,00
45	3,00	42,00
48	1,50	46,50
48	2,00	46,00
48	3,00	45,00
50	1,50	48,50
50	2,00	48,00
50	3,00	47,00
52	1,50	50,50
52	2,00	50,00
52	3,00	49,00

COLD FORMING		
M	P	Ø
3	0,50	2,75
4	0,70	3,65
4,5	0,75	4,15
5	0,80	4,60
5	0,90	4,55
6	1,00	5,50
7	1,00	6,50
8	1,25	7,40
10	1,50	9,30
12	1,75	11,20
14	2,00	13,10
16	2,00	15,10
18	2,50	16,90
20	2,50	18,90
22	2,50	20,90
24	3,00	22,65

W		
W	Fils	Ø
3/32	48	1,80
1/8	40	2,50
5/32	32	3,10
3/16	24	3,60
7/32	24	4,40
1/4	20	5,10
5/16	18	6,50
3/8	16	7,90
7/16	14	9,30
1/2	12	10,50
9/16	12	12,00
5/8	11	13,50
3/4	10	16,50
7/8	9	19,25
1	8	22,00
1 1/8	7	24,75
1 1/4	7	27,75
1 3/8	6	30,50
1 1/2	6	33,50
1 5/8	5	35,50
1 3/4	5	39,00
1 7/8	4,5	41,50
2	4,5	44,50
2 1/4	4	50,00
2 1/2	4	56,00
2 3/4	3,5	62,00
3	3,5	68,50

UNC		
UNC	Fils	Ø
Nº 1	64	1,50
Nº 2	56	1,80
Nº 3	48	2,10
Nº 4	40	2,30
Nº 5	40	2,60
Nº 6	32	2,85
Nº 8	32	3,50
Nº 10	24	3,90
Nº 12	24	4,50
1/4	20	5,20
5/16	18	6,60
3/8	16	8,00
7/16	14	9,40
1/2	13	10,75
9/16	12	12,25
5/8	11	13,50
3/4	10	16,50
7/8	9	19,50
1	8	22,25
1 1/8	7	25,00
1 1/4	7	28,25
1 3/8	6	30,75
1 1/2	6	34,00
1 3/4	5	39,50
2	4,5	45,25
2 1/4	4,5	51,20
2 1/2	4	57,25
2 3/4	4	63,50
3	4	70,00

UNF-SAE		
UNF	Fils	Ø
Nº 0	80	1,30
Nº 1	72	1,60
Nº 2	64	1,90
Nº 3	56	2,10
Nº 4	48	2,40
Nº 5	44	2,70
Nº 6	40	3,00
Nº 8	36	3,50
Nº 10	32	4,10
Nº 12	28	4,70
1/4	28	5,50
5/16	24	6,90
3/8	24	8,50
7/16	20	9,90
1/2	20	11,50
9/16	18	12,90
5/8	18	14,50
3/4	16	17,50
7/8	14	20,40
1	12	23,30
1 1/8	12	26,50
1 1/4	12	29,50
1 3/8	12	32,70
1 1/2	12	36,50

GAS (BSP)		
GAS (BSP)	Fils	Ø
1/8	28	8,80
1/4	19	11,80
3/8	19	15,25
1/2	14	19,00
5/8	14	21,00
3/4	14	24,50
7/8	14	28,25
1	11	30,75
1 1/8	11	35,50
1 1/4	11	39,50
1 3/8	11	42,00
1 1/2	11	45,20
1 3/4	11	51,40
2	11	57,20
2 1/4	11	63,30
2 3/8	11	67,00
2 1/2	11	72,80
2 3/4	11	79,10
3	11	85,50

BSPT (RC)		
BSPT (RC)	Fils	Ø
1/16	28	
1/8	28	
1/4	19	
3/8	19	
1/2	14	
3/4	14	
1	11	
1 1/4	11	
1 1/2	11	
2	11	

UNEF		
UNEF	Fils	Ø
Nº 12	32	4,70
1/4	32	5,55
5/16	32	7,15
3/8	32	8,70
7/16	28	10,20
1/2	28	11,80
9/16	24	13,20
5/8	24	14,80
3/4	20	17,80
7/8	20	20,95
1	20	24,10
1 1/8	18	27,15
1 1/4	18	30,35
1 3/8	18	33,60
1 1/2	18	36,70

BA		
BA	Ø x P	Ø
8	2,20x0,43	1,80
7	2,50x0,48	2,00
6	2,80x0,53	2,30
5	3,20x0,59	2,60
4	3,60x0,66	3,00
3	4,10x0,73	3,40
2	4,70x0,81	4,00
1	5,30x0,90	4,50
0	6,00x1,00	5,10
7/8	20	20,95
1	20	24,10
1 1/8	18	27,15
1 1/4	18	30,35
1 3/8	18	33,60
1 1/2	18	36,70

PG		
PG	Hilos	Ø
07	20	11,40
09	18	14,00
11	18	17,25
13,5	18	19,00
16	18	21,25
21	16	26,75
29	16	35,50
36	16	45,50
42	16	52,50
48	16	58,00

NPT		
NPT	Fils	Ø
1/16	27	6,20
1/8	27	8,50
1/4	18	11,00
3/8	18	14,50
1/2	14	17,80
3/4	14	23,00
1	11,5	29,00
1 1/4	11,5	37,50
1 1/2	11,5	44,00
2	11,5	56,00

Materials and Coatings

HSS MATERIALS									
Description	Steel type	Material	AISI	Proportion					
				C	Cr	Mo	V	W	Co
HSS	S 6-5-2	1.3343	M2	0,9	4,15	4,95	1,85	6,35	-
HSS-Co	S 6-5-2-5	1.3243	M35	0,92	4,15	4,95	1,85	6,35	4,75

HARD METAL MATERIALS					
	Description	Composition		Hardness en HV	Stiffness (N/mm ²)
		Co (%)	WC (%)		
Standard	K10/20	8	92	1.710	3.200
Optimus	K30/40	10	90	1.610	3.600

Coating Material	Microhardness (HV 0.05)	Friction coefficient against steel (dry)	Max. service temperature	Coating colour
TiN	2,300	0,4	600	gold-yellow
TiAlN	3,300	0,30-0,35	900	violet-grey

Packing

Family	PACKING								Cat. Page
	< Ø	QTY.	< Ø	QTY.	< Ø	QTY.	< Ø	QTY.	
100.30	6,50	10	13,00	5	16,00	4			40
100.40	6,50	10	13,00	5	16,00	4			41
100.60		1							19
102.30	6,50	10	13,00	5	16,00	4			42
105.30	9,00	10	14,00	5	16,00	3	20,00	1	43
105.34	9,00	10	14,00	5	16,00	3	20,00	1	45
105.60		1							21
107.30	9,00	10	14,00	5	16,00	3	20,00	1	49
108.30	9,00	10	14,00	5	16,00	3	20,00	1	51
109.30	9,00	10	14,00	5	16,00	3	20,00	1	53
111.30	9,00	10	14,00	5	16,00	3	20,00	1	55
115.30	5,90	10	11,75	5	16,00	3			56
118.30	5,90	10	11,75	5	16,00	3			58
121.30	4,50	10	12,00	5					61
122.30	4,50	10	12,00	5					62
123.30	4,50	10	12,00	5					63
124.30	4,50	10	12,00	5					64
124.40		1							37
125.30	4,50	10	12,00	5					65
125.40		1							38
126.30	4,50	10	12,00	5					66
126.40		1							39
130.30	7,75	5	11,75	3	70,00	1			67
130.34	7,75	5	11,75	3	70,00	1			69
136.30	7,75	5	11,75	3	70,00	1			72
138.30	7,75	5	11,75	3	70,00	1			74
141.30		1							76
142.30		1							77
143.30		1							78
144.30		1							79
150.34		10							81
150.3B		10							80
150.3N		10							80
151.34		10							82
151.3B		10							81
151.3N		10							82
151.60		1							87
152.34		10							84

Family	PACKING								Cat. Page
	< Ø	QTY.	< Ø	QTY.	< Ø	QTY.	< Ø	QTY.	
152.3B		10							83
152.3N		10							83
153.34		10							85
153.3B		10							84
153.3N		10							85
156.34		10							87
156.3B		10							86
156.3N		10							86
160.30	M-4	5	M-6	3	M-10	1			88
162.30	M-4	5	M-6	3	M-10	1			88
163.30		1							93
164.30	M-8	5	M-12	3					94
167.30	M-8	5	M-12	3	M-16	1			94
168.30	M-8	5	M-12	3	M-16	1			95
178.40	6,50	10	13,00	5	16,00	4			91
178.60		1							92
180.40	9,00	10	14,00	5	16,00	3	20,00	1	47
181.40		1							31
182.40	5,90	10	11,75	5	16,00	3			60
183.43		1							27
183.44		1							29
184.43		1							27
184.44		1							35
185.43		1							23
185.44		1							25
192.40	7,75	5	11,75	3	70,00	1			71
250.30	7,75	5	11,75	3	70,00	1			75
610.63		1							10
620.63		1							12
630.63		1							11
640.63		1							13
650.63		1							14
660.63		1							15
664.63		1							95
670.63		1							16
680.63		1							17
690.63		1							18

DANOBATGROUP

LATZ S. COOP.

Avda. de los Gudaris, 23
P.O. Box 56
E-20140 ANDOAIN (Gipuzkoa) Spain

Tel.: +34 943 592 512
Fax: +34 943 591 391
latz@latzscoop.com
www.latzscoop.com

