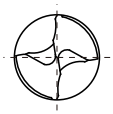
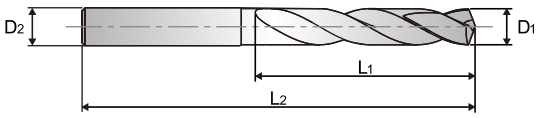
CARBIDE, DRILLS for GENERAL without COOLANT HOLES

- Drilling for Steel, Cast Steel, Cast Iron, Malleable Cast Iron.
- Self centering and chip breaking by special thinning.
- Wave shape and negative land on the cutting edge for low thrust, stable torque and long tool life.
- Optimized flute shape for strength of drilling and smooth chip evacuation.

5 × D







DIN 6537 | CARBIDE | 30° | h6 | m7 | 140° |

p. 89

DH224 SERIES

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH2240100	1.00	3	8	55
DH2240110	1.10	3	12	55
DH2240120	1.20	3	12	55
DH2240130	1.30	3	12	55
DH2240140	1.40	3	12	55
DH2240150	1.50	3	16	55
DH2240160	1.60	3	16	55
DH2240170	1.70	3	16	55
DH2240180	1.80	3	16	55
DH2240183	1.83	3	16	55
DH2240190	1.90	3	16	55
DH2240200	2.00	4	21	57
DH2240210	2.10	4	21	57
DH2240220	2.20	4	21	57
DH2240230	2.30	4	21	57
DH2240240	2.40	4	21	57
DH2240250	2.50	4	21	57
DH2240260	2.60	4	21	57
DH2240270	2.70	4	21	57
DH2240280	2.80	4	21	57
DH2240290	2.90	4	21	57
DH2240300	3.00	6	28	66
DH2240310	3.10	6	28	66
DH2240320	3.20	6	28	66
DH2240325	3.25	6	28	66
DH2240330	3.30	6	28	66
DH2240340	3.40	6	28	66
DH2240350	3.50	6	28	66
DH2240360	3.60	6	28	66
DH2240370	3.70	6	28	66
DH2240375	3.75	6	28	66
DH2240380	3.80	6	36	74
DH2240390	3.90	6	36	74
DH2240400	4.00	6	36	74
DH2240410	4.10	6	36	74
DH2240415	4.15	6	36	74
DH2240420	4.20	6	36	74
DH2240430	4.30	6	36	74
DH2240440	4.40	6	36	74

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D1	D2	L1	L2
DH2240450	4.50	6	36	74
DH2240460	4.60	6	36	74
DH2240465	4.65	6	36	74
DH2240470	4.70	6	36	74
DH2240475	4.75	6	36	74
DH2240480	4.80	6	44	82
DH2240490	4.90	6	44	82
DH2240500	5.00	6	44	82
DH2240510	5.10	6	44	82
DH2240520	5.20	6	44	82
DH2240530	5.30	6	44	82
DH2240540	5.40	6	44	82
DH2240550	5.50	6	44	82
DH2240555	5.55	6	44	82
DH2240560	5.60	6	44	82
DH2240565	5.65	6	44	82
DH2240570	5.70	6	44	82
DH2240575	5.75	6	44	82
DH2240580	5.80	6	44	82
DH2240590	5.90	6	44	82
DH2240600	6.00	6	44	82
DH2240610	6.10	8	53	91
DH2240620	6.20	8	53	91
DH2240630	6.30	8	53	91
DH2240640	6.40	8	53	91
DH2240650	6.50	8	53	91
DH2240655	6.55	8	53	91
DH2240660	6.60	8	53	91
DH2240665	6.65	8	53	91
DH2240670	6.70	8	53	91
DH2240680	6.80	8	53	91
DH2240690	6.90	8	53	91
DH2240700	7.00	8	53	91
DH2240710	7.10	8	53	91
DH2240720	7.20	8	53	91
DH2240730	7.30	8	53	91
DH2240740	7.40	8	53	91
DH2240750	7.50	8	53	91
DH2240760	7.60	8	53	91

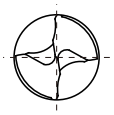
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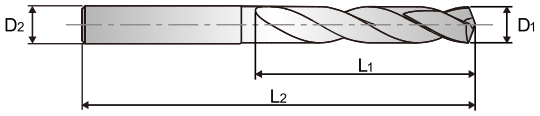
CARBIDE, DRILLS for GENERAL without COOLANT HOLES

5 × D

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DIN 6537 | CARBIDE | 30° | h6 | m7 | 140°

p. 89

DH224 SERIES

Unit : mm

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH2240765	7.65	8	53	91
DH2240770	7.70	8	53	91
DH2240780	7.80	8	53	91
DH2240790	7.90	8	53	91
DH2240800	8.00	8	53	91
DH2240810	8.10	10	61	103
DH2240820	8.20	10	61	103
DH2240830	8.30	10	61	103
DH2240840	8.40	10	61	103
DH2240850	8.50	10	61	103
DH2240860	8.60	10	61	103
DH2240870	8.70	10	61	103
DH2240880	8.80	10	61	103
DH2240890	8.90	10	61	103
DH2240900	9.00	10	61	103
DH2240910	9.10	10	61	103
DH2240920	9.20	10	61	103
DH2240930	9.30	10	61	103
DH2240940	9.40	10	61	103
DH2240950	9.50	10	61	103
DH2240960	9.60	10	61	103
DH2240965	9.65	10	61	103
DH2240970	9.70	10	61	103
DH2240980	9.80	10	61	103
DH2240990	9.90	10	61	103
DH2241000	10.00	10	61	103
DH2241010	10.10	12	71	118
DH2241020	10.20	12	71	118
DH2241030	10.30	12	71	118
DH2241040	10.40	12	71	118
DH2241050	10.50	12	71	118
DH2241060	10.60	12	71	118
DH2241070	10.70	12	71	118
DH2241080	10.80	12	71	118
DH2241090	10.90	12	71	118
DH2241100	11.00	12	71	118
DH2241110	11.10	12	71	118
DH2241120	11.20	12	71	118

EDP No.	Drill Diameter	Shank Diameter	Flute Length	Overall Length
TiAlN	D_1	D_2	L_1	L_2
DH2241125	11.25	12	71	118
DH2241130	11.30	12	71	118
DH2241140	11.40	12	71	118
DH2241150	11.50	12	71	118
DH2241160	11.60	12	71	118
DH2241170	11.70	12	71	118
DH2241180	11.80	12	71	118
DH2241190	11.90	12	71	118
DH2241200	12.00	12	71	118
DH2241210	12.10	14	77	124
DH2241230	12.30	14	77	124
DH2241250	12.50	14	77	124
DH2241280	12.80	14	77	124
DH2241300	13.00	14	77	124
DH2241325	13.25	14	77	124
DH2241350	13.50	14	77	124
DH2241400	14.00	14	77	124
DH2241410	14.10	16	83	133
DH2241450	14.50	16	83	133
DH2241500	15.00	16	83	133
DH2241525	15.25	16	83	133
DH2241550	15.50	16	83	133
DH2241560	15.60	16	83	133
DH2241600	16.00	16	83	133
DH2241650	16.50	18	93	143
DH2241680	16.80	18	93	143
DH2241700	17.00	18	93	143
DH2241725	17.25	18	93	143
DH2241750	17.50	18	93	143
DH2241760	17.60	18	93	143
DH2241800	18.00	18	93	143
DH2241850	18.50	20	101	153
DH2241880	18.80	20	101	153
DH2241900	19.00	20	101	153
DH2241925	19.25	20	101	153
DH2241950	19.50	20	101	153
DH2241960	19.60	20	101	153
DH2242000	20.00	20	101	153

▶ NEXT PAGE

RECOMMENDED CUTTING CONDITIONS

DH223, DH224 SERIES without COOLANT HOLES

RPM = (rev./min.)
FEED = (mm/rev.)

ISO	VDI 3323	Material Description	Vc (m/min)	Parameter	Drill Diameter (mm)		Vc (m/min)	Parameter	Drill Diameter (mm)										
			1.0~2.9		1.0	2.0	3.0~20.0		3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
P	2	Non-alloy steel	70	RPM	22,280	11,140	100	RPM	10,610	7,960	6,370	5,310	3,980	3,180	2,650	2,270	1,990	1,770	1,590
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	3		70	RPM	22,280	11,140	100	RPM	10,610	7,960	6,370	5,310	3,980	3,180	2,650	2,270	1,990	1,770	1,590
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	4		70	RPM	22,280	11,140	100	RPM	10,610	7,960	6,370	5,310	3,980	3,180	2,650	2,270	1,990	1,770	1,590
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	5		60	RPM	19,100	9,550	80	RPM	8,490	6,370	5,090	4,240	3,180	2,550	2,120	1,820	1,590	1,410	1,270
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	6	Low alloy steel	70	RPM	22,280	11,140	100	RPM	10,610	7,960	6,370	5,310	3,980	3,180	2,650	2,270	1,990	1,770	1,590
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	7		60	RPM	19,100	9,550	80	RPM	8,490	6,370	5,090	4,240	3,180	2,550	2,120	1,820	1,590	1,410	1,270
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	8		60	RPM	19,100	9,550	80	RPM	8,490	6,370	5,090	4,240	3,180	2,550	2,120	1,820	1,590	1,410	1,270
				FEED	0.02-0.04	0.03-0.05		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	8		30	RPM	9,550	4,770	40	RPM	4,240	3,180	2,550	2,120	1,590	1,270	1,060	910	800	710	640
				FEED	0.02-0.04	0.03-0.05		FEED	0.03-0.08	0.05-0.11	0.08-0.14	0.10-0.16	0.12-0.18	0.13-0.19	0.14-0.20	0.15-0.21	0.16-0.22	0.17-0.25	0.18-0.28
	10	High alloyed steel, and tool steel	50	RPM	15,920	7,960	70	RPM	7,430	5,570	4,460	3,710	2,790	2,230	1,860	1,590	1,390	1,240	1,110
				FEED	0.03-0.05	0.05-0.07		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
	11		30	RPM	9,550	4,770	40	RPM	4,240	3,180	2,550	2,120	1,590	1,270	1,060	910	800	710	640
				FEED	0.02-0.04	0.03-0.05		FEED	0.03-0.08	0.05-0.11	0.08-0.14	0.10-0.16	0.12-0.18	0.13-0.19	0.14-0.20	0.15-0.21	0.16-0.22	0.17-0.25	0.18-0.28
M	12	Stainless steel	50	RPM	15,920	7,960	70	RPM	7,430	5,570	4,460	3,710	2,790	2,230	1,860	1,590	1,390	1,240	1,110
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	13		35	RPM	11,140	5,570	45	RPM	4,770	3,580	2,860	2,390	1,790	1,430	1,190	1,020	900	800	720
				FEED	0.02-0.04	0.03-0.05		FEED	0.04-0.10	0.07-0.13	0.10-0.16	0.12-0.18	0.14-0.20	0.15-0.23	0.17-0.25	0.18-0.26	0.19-0.27	0.20-0.30	0.22-0.32
K	15	Grey cast iron	70	RPM	22,280	11,140	100	RPM	10,610	7,960	6,370	5,310	3,980	3,180	2,650	2,270	1,990	1,770	1,590
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	16		65	RPM	20,690	10,350	80	RPM	8,490	6,370	5,090	4,240	3,180	2,550	2,120	1,820	1,590	1,410	1,270
				FEED	0.04-0.06	0.04-0.06		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	17	Nodular cast iron	70	RPM	22,280	11,140	100	RPM	10,610	7,960	6,370	5,310	3,980	3,180	2,650	2,270	1,990	1,770	1,590
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	18		50	RPM	15,920	7,960	70	RPM	7,430	5,570	4,460	3,710	2,790	2,230	1,860	1,590	1,390	1,240	1,110
				FEED	0.04-0.06	0.04-0.06		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
	19	Malleable cast iron	60	RPM	19,100	9,550	80	RPM	8,490	6,370	5,090	4,240	3,180	2,550	2,120	1,820	1,590	1,410	1,270
				FEED	0.04-0.06	0.04-0.06		FEED	0.08-0.14	0.12-0.18	0.15-0.22	0.20-0.26	0.22-0.28	0.25-0.33	0.27-0.35	0.29-0.37	0.31-0.39	0.32-0.42	0.34-0.44
	20		50	RPM	15,920	7,960	70	RPM	7,430	5,570	4,460	3,710	2,790	2,230	1,860	1,590	1,390	1,240	1,110
				FEED	0.03-0.05	0.05-0.07		FEED	0.06-0.12	0.08-0.14	0.14-0.20	0.16-0.22	0.18-0.24	0.19-0.27	0.21-0.29	0.23-0.31	0.25-0.33	0.28-0.38	0.30-0.40
H	38	Hardened steel	20	RPM	6,370	3,180	25	RPM	2,650	1,990	1,590	1,330	990	800	660	570	500	440	400
				FEED	0.01-0.02	0.01-0.03		FEED	0.01-0.03	0.01-0.04	0.02-0.05	0.03-0.06	0.03-0.06	0.04-0.07	0.04-0.08	0.05-0.09	0.05-0.09	0.05-0.10	0.05-0.10

SOLID CARBIDE, DRILLS for GENERAL

Economical drill for general applications

◎ : Excellent ○ : Good

SERIES	DH223	DH224
DRILLING DEPTH	3XD	5XD
LENGTH	SHORT	LONG
SIZE MIN	D3.0	D1.0
SIZE MAX	D20.0	D20.0
PAGE	85	87
SURFACE TREATMENT	TiAlN	





ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRc	DH223	DH224
P	1	Non-alloy steel	About 0.15% C	Annealed	125			
	2		About 0.45% C	Annealed	190	13	◎	◎
	3		About 0.45% C	Quenched & Tempered	250	25	◎	◎
	4		About 0.75% C	Annealed	270	28	◎	◎
	5		About 0.75% C	Quenched & Tempered	300	32	○	○
	6	Low alloy steel		Annealed	180	10	◎	◎
	7			Quenched & Tempered	275	29	◎	◎
	8			Quenched & Tempered	300	32	○	○
	9			Quenched & Tempered	350	38	○	○
	10	High alloyed steel, and tool steel		Annealed	200	15	◎	◎
	11			Quenched & Tempered	325	35	○	○
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	○	○
	13		Martensitic	Quenched & Tempered	240	23	○	○
	14		Austenitic		180	10		
K	15	Grey cast iron	Pearlitic / ferritic		180	10	◎	◎
	16		Pearlitic (Martensitic)		260	26	○	○
	17	Nodular cast iron	Ferritic		160	3	◎	◎
	18		Pearlitic		250	25	○	○
	19	Malleable cast iron	Ferritic		130		◎	◎
	20		Pearlitic		230	21	○	○
N	21	Aluminum-wrought alloy	Not Curable		60			
	22		Curable	Hardened	100			
	23	Aluminum-cast, alloyed	≤ 12% Si, Not Curable		75			
	24		≤ 12% Si, Curable	Hardened	90			
	25		> 12% Si, Not Curable		130			
	26	Copper and Copper Alloys (Bronze / Brass)	Cutting Alloys, PB>1%		110			
	27		CuZn, CuSnZn (Brass)		90			
	28		CuSn, lead-free copper and electrolytic copper		100			
	29	Non Metallic Materials	Duroplastic, Fiber Reinforced Plastic					
	30		Rubber, Wood, etc.					
S	31	Heat Resistant Super Alloys	Fe Based	Annealed	200	15		
	32			Cured	280	30		
	33		Ni or Co Based	Annealed	250	25		
	34			Cured	350	38		
	35			Cast	320	34		
	36	Titanium Alloys	Pure Titanium		400 Rm			
	37		Alpha + Beta Alloys	Hardened	1050 Rm			
H	38	Hardened steel		Hardened	550	55	○	○
	39			Hardened	630	60		
	40	Chilled Cast Iron		Cast	400	42		
	41	Hardened Cast Iron		Hardened	550	55		

Recommended cutting conditions : p.89

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