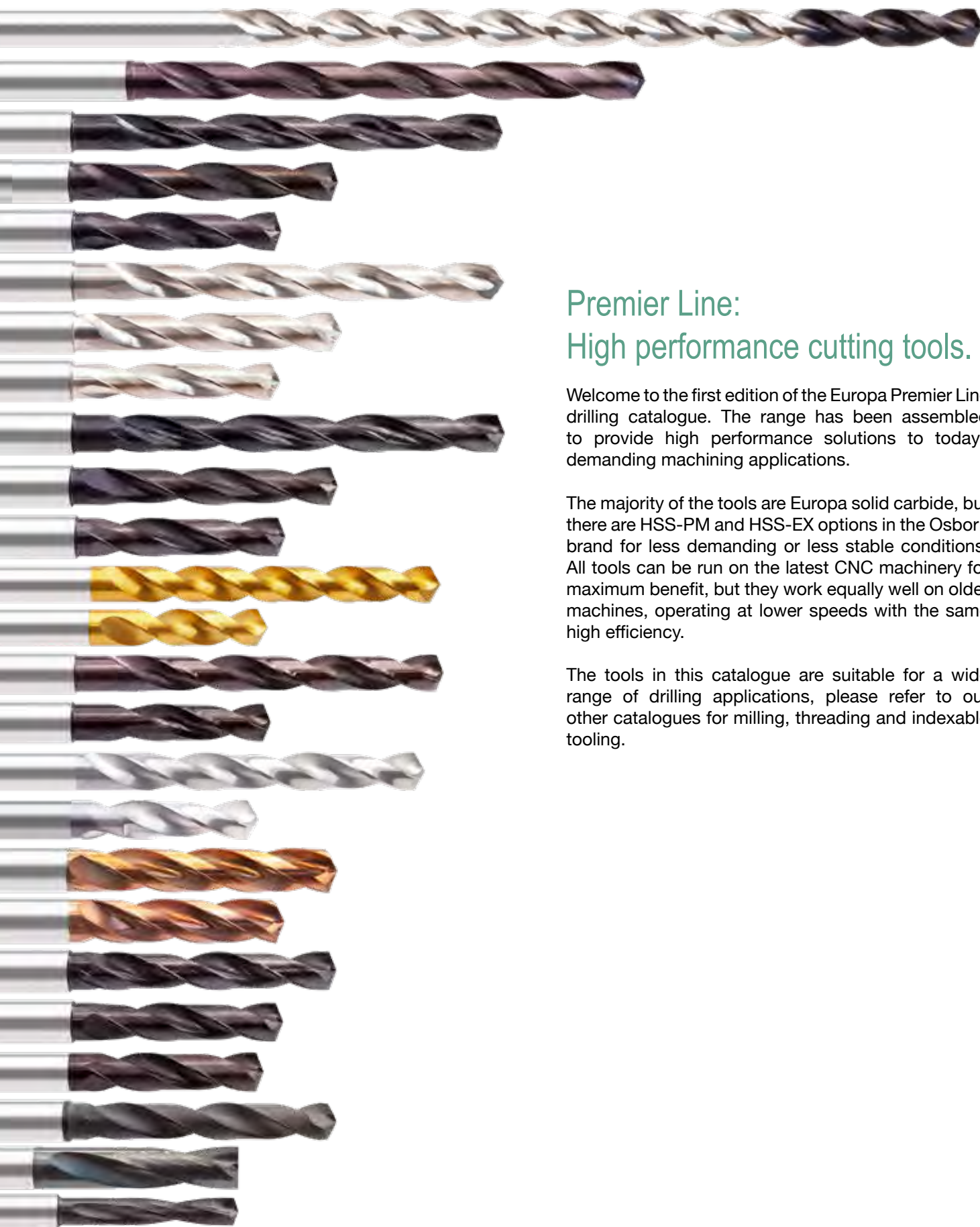


DRILLING

PREMIER LINE drilling tools.





Premier Line: High performance cutting tools.

Welcome to the first edition of the Europa Premier Line drilling catalogue. The range has been assembled to provide high performance solutions to today's demanding machining applications.

The majority of the tools are Europa solid carbide, but there are HSS-PM and HSS-EX options in the Osborn brand for less demanding or less stable conditions. All tools can be run on the latest CNC machinery for maximum benefit, but they work equally well on older machines, operating at lower speeds with the same high efficiency.

The tools in this catalogue are suitable for a wide range of drilling applications, please refer to our other catalogues for milling, threading and indexable tooling.



Material Group Examples

► VDI = VDI 3323 material group. EMG = Europa Material Group.

Steel	VDI	Non-alloy steel	1-5	Low alloy steel	6-9	High alloy steel	10-11		
	EMG		11-13		14		15		
P		EN3A, 4, 5, 6, 7, 8 040A10 230Mo7		EN9, 10 EN43 070M20 060A62 080M46		S95, 98, 99 D2 H13 EN24 B02			
Stainless Steel	VDI	Ferritic/Martensitic Annealed	12	Martensitic Quenched/Tempered	13	Austenitic	14		
	EMG		21		22		23		
M		403 410 430		410S 430F 321		304 316 15-5PH 17-4PH Duplex/Super Duplex			
Cast Iron	VDI	Grey cast iron	15, 16	Nodular cast iron	17, 18	Malleable cast iron	19, 20		
	EMG		31, 32		33		34		
K		GG10 GG20 GG30 GG40		GGG40 GGG50 Meehanite		GTS35 GTS45 GTS55			
Aluminium	VDI	Aluminium, not curable	21	Aluminium, curable, hardened	22	Aluminium, Si 0.5-12%	23, 24	Aluminium, Si >12%	25
	EMG		71		72		73		74
N		Al99 Al99.5 AlMg1		AlCuMg1 AlMgSi1 7050 7075		HE9, 30 LM6, 9, 20, 24, 25 5052 6063		G-AlSi10Mg G-AlSi12 G-MgAl6 LM5	
Copper	VDI	Copper, Bronze short chip alloys	26	Copper, Bronze long chip alloys	27	Copper, Bronze Cu - Al - Fe alloys	28		
	EMG		61, 62		63		64		
N		Commercially pure C101 CZ120 PB104		CZ106 CZ108 CuZn37		Ampco18 Ampco20 Ampco26			
Non metallic	VDI	Thermosetting plastics	29.1	Thermosetting and reinforced plastics	29.2	Non-metals	30		
	EMG		81, 82		83		84		
N		Acetal Nylon		CFRP, GFRP Circuit Board Kevlar Tufnol		Synthetic Graphite Hard rubber			
Nickel	VDI	HRSA, FE based aged or annealed	31, 32	HRSA, Ni/Co based aged or annealed	33	HRSA, Ni/Co based cast	34	HRSA, Ni/Co based cast	35
	EMG		51		52		52		53
S		NA15 NA17 GX40NiCrSi38-18		Nimonic 75 Hastelloy C-4 Inconel 625 Incoloy 825 Monel 400		Monel k-500 Inconel Inconel 718		Hastelloy b Hastelloy C Inconel X-750	
Titanium	VDI	Titanium unalloyed	36	Titanium alloys alpha + beta alloys	37				
	EMG		41		42, 43				
S		Pure Titanium Ti1 2TA1		TiAl6V4 TA10-13 TiAl3V2.5 TA45-51 TA11					
Hardened Material	VDI	Hardened steels	38	Hardened steels	39	Chilled Cast Iron	40	Hardened Cast Iron	41
	EMG		16		16		-		-
H		45- 55HRc Hardox400 Hardox500 P20		>55HRc Hardox 600		Ni-Hard 1 Ni-Hard 2		GX300CrMo15-3	

► For full material group tables, refer to pages 66-79



INOX DRILL

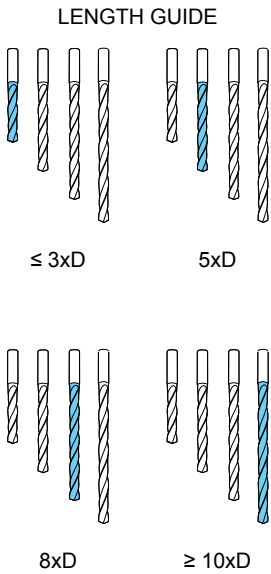
3xD - 5xD - 8xD



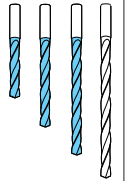
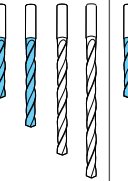
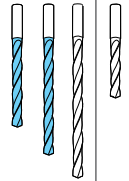
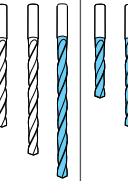
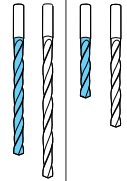
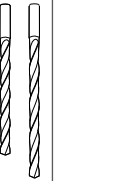
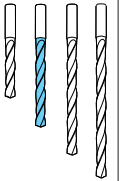
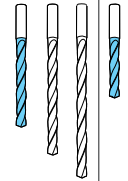
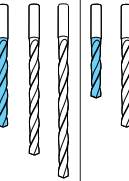
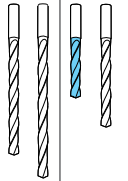
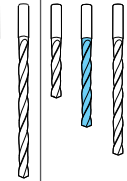
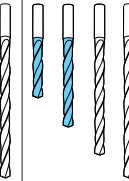
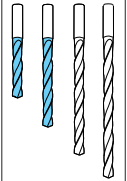
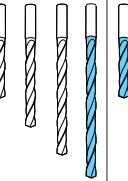
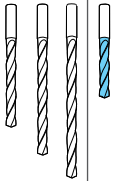
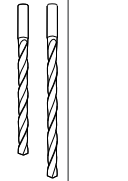
MG HM	HSS PM	HSS-EX	HSS-E	HSS Co8
Micro-grain Carbide	Powder metallurgy steel	5% Vanadium steel	5% Cobalt steel	8% Cobalt steel
		BSG DIN 6537	TCDMM h6	TCDC m7
Point angle	Helix angle	Standards	Shank tolerance	Diameter tolerance

INDEX

INDEX



 Cutting Data - P.55-62
General information - P.63-79

PRODUCT RANGE	INOX DRILL	HF DRILL	ALU-XP DRILL	MQL DRILL	GP T/C DRILL	BF DRILL		CF DRILL	PULSAR DRILL	GP SOLID DRILL	STUB TAIN DRILL	STUB DRILL	JOBBER DRILL	HPD-SUS DRILL	SABRE DRILL	WPX DRILL	SPOTTING DRILL 90°	SPOTTING DRILL 120°
TOOL TYPE																		
MATERIAL	MG HM	MG HM	MG HM	MG HM	MG HM	MG HM		MG HM	MG HM	MG HM	MG HM	MG HM	MG HM	HSS-EX	HSS-PM	HSS-E	MG HM HSS-E	MG-HM HSS-E
LENGTHS																		
SERIES NO.	823323 825323 828323	803366 805366	843303 845303 848303	810323 to 860323	803323 804323 805323	809323		850390	821223	807323 808323	802323	800303	801303	810434 820434	820422 821422	816327 817327 819327	806303 821402	806403 822402
PAGE NO.	6-11	12-15	16-21	22-23	24-29	30-31		32	33	34-37	38-39	40-41	42-43	46-49	50-53	54	44	45

ISO	MATERIAL	VDI	EMG	HARDNESS (HRc)	●: Primary application ○: Secondary application						●: Primary application ○: Secondary application									
P	Non-alloy steel	1-5	11-12	<25	●	●		●	●	●				●	●	●	●	●	●	●
	Low alloy steel	6-9	13-14	25-35	●	●		●	●	●				●	●	●	●	●	●	●
	High alloy steel	10-11	15	35-45	●			●	●	●			●	●	●	●	○	●	●	●
M	Ferritic / Martensitic Stainless steel	12, 13	21, 23		●									○	○	○	○	●	●	●
	Austenitic Stainless steel	14	22		●					●				○	○			●	○	○
K	Grey Cast iron	15-16	31-32			●		●	●	●				●	●	●	●		●	●
	Nodular & Malleable Cast iron	17-20	33-34			●		●	●	●				●	●	●	●		●	●
N	Aluminium (HSM)	21-25	71-74				●													
	Aluminium				○		●		●							○		○	○	○
	Copper Copper alloys	26-28	61-64													○			○	○
	Plastics/Acrylics	29.1	81-82													●				
	CFRP/GFRP	29.2	83								●									
	Synthetic Graphite	30	84																	
S	Heat Resistant and Super Alloys	31-35	51-53		○												●		○	○
	Titanium	36-37	41-43		●												●		○	○
H	Hardened steel	38	16	45-55								●								
		39.1		55-60								●								
		39.2		>60								●								

INOX DRILL 3xD



MG
HM

BSG
DIN
6537

FHA 30°

SIG 140°

CNSC 1

TCDDMM
h6

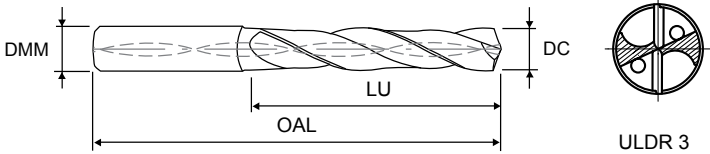
TCDC
m7

INOX
COATED



Series No. 823323

▶ cutting conditions : p.56



Application :
For drilling tough materials, stainless steels, nickel alloys, titanium up to HRc35 and aluminium.

Advantage :
Special flute shape and geometry highly suited to machining stainless steels.
Excellent chip evacuation due to better surface treatment.
Point R-thinning gives superior centering and chip curling.
Applied INOX coating achieves better surface finish and longer tool life.

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8233230300	3.0	6.0	20	62
8233230310	3.1	6.0	20	62
8233230320	3.2	6.0	20	62
8233230330	3.3	6.0	20	62
8233230340	3.4	6.0	20	62
8233230350	3.5	6.0	20	62
8233230360	3.6	6.0	20	62
8233230370	3.7	6.0	20	62
8233230380	3.8	6.0	24	66
8233230390	3.9	6.0	24	66
8233230400	4.0	6.0	24	66
8233230410	4.1	6.0	24	66
8233230420	4.2	6.0	24	66
8233230430	4.3	6.0	24	66
8233230440	4.4	6.0	24	66
8233230450	4.5	6.0	24	66
8233230460	4.6	6.0	24	66
8233230470	4.7	6.0	24	66
8233230480	4.8	6.0	28	66
8233230490	4.9	6.0	28	66
8233230500	5.0	6.0	28	66
8233230510	5.1	6.0	28	66
8233230520	5.2	6.0	28	66
8233230530	5.3	6.0	28	66
8233230540	5.4	6.0	28	66
8233230550	5.5	6.0	28	66
8233230560	5.6	6.0	28	66
8233230570	5.7	6.0	28	66
8233230580	5.8	6.0	28	66
8233230590	5.9	6.0	28	66
8233230600	6.0	6.0	28	66

ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good	●	●	●	●			○				○	●	

INOX DRILL 3xD



MG
HM

BSG
DIN
6537

FHA 30°

SIG 140°

CNSC 1

TCDDMM
h6

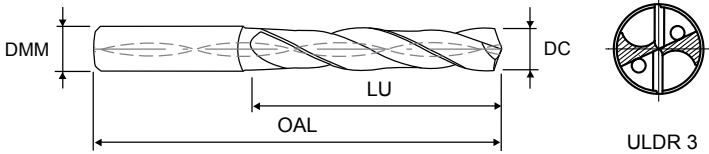
TCDC
m7

INOX
COATED



Series No. 823323

▶ cutting conditions : p.56



Application :
For drilling tough materials, stainless steels, nickel alloys, titanium up to HRc35 and aluminium.

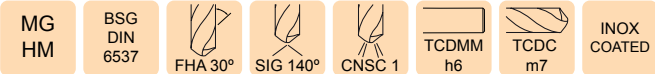
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EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
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8233230930	9.3	10.0	47	89
8233230940	9.4	10.0	47	89
8233230950	9.5	10.0	47	89
8233230960	9.6	10.0	47	89
8233230970	9.7	10.0	47	89
8233230980	9.8	10.0	47	89
8233230990	9.9	10.0	47	89
8233231000	10.0	10.0	47	89
8233231010	10.1	12.0	55	102
8233231020	10.2	12.0	55	102
8233231030	10.3	12.0	55	102
8233231040	10.4	12.0	55	102
8233231050	10.5	12.0	55	102
8233231060	10.6	12.0	55	102
8233231070	10.7	12.0	55	102
8233231080	10.8	12.0	55	102
8233231090	10.9	12.0	55	102
8233231100	11.0	12.0	55	102
8233231110	11.1	12.0	55	102
8233231120	11.2	12.0	55	102
8233231130	11.3	12.0	55	102
8233231140	11.4	12.0	55	102

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8233231150	11.5	12.0	55	102
8233231160	11.6	12.0	55	102
8233231170	11.7	12.0	55	102
8233231180	11.8	12.0	55	102
8233231190	11.9	12.0	55	102
8233231200	12.0	12.0	55	102
8233231250	12.5	14.0	60	107
8233231300	13.0	14.0	60	107
8233231350	13.5	14.0	60	107
8233231400	14.0	14.0	60	107
8233231450	14.5	16.0	65	115
8233231500	15.0	16.0	65	115
8233231550	15.5	16.0	65	115
8233231600	16.0	16.0	65	115
8233231650	16.5	18.0	73	123
8233231700	17.0	18.0	73	123
8233231750	17.5	18.0	73	123
8233231800	18.0	18.0	73	123
8233231850	18.5	20.0	79	131
8233231900	19.0	20.0	79	131
8233231950	19.5	20.0	79	131
8233232000	20.0	20.0	79	131

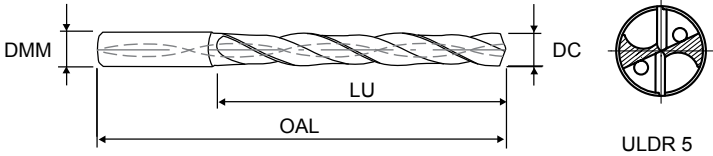
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good	●	●	●	●			○				○	●	

INOX DRILL 5xD



Series No. 825323

▶ cutting conditions : p.56



Application :
For drilling tough materials, stainless steels, nickel alloys, titanium up to HRc35 and aluminium.

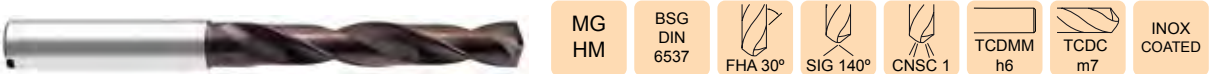
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8253230150	1.5	3.0	16	55
8253230160	1.6	3.0	16	55
8253230170	1.7	3.0	16	55
8253230180	1.8	3.0	16	55
8253230190	1.9	3.0	16	55
8253230200	2.0	4.0	21	57
8253230210	2.1	4.0	21	57
8253230220	2.2	4.0	21	57
8253230230	2.3	4.0	21	57
8253230240	2.4	4.0	21	57
8253230250	2.5	4.0	21	57
8253230260	2.6	4.0	21	57
8253230270	2.7	4.0	21	57
8253230280	2.8	4.0	21	57
8253230290	2.9	4.0	21	57
8253230300	3.0	6.0	28	66
8253230310	3.1	6.0	28	66
8253230320	3.2	6.0	28	66
8253230330	3.3	6.0	28	66
8253230340	3.4	6.0	28	66
8253230350	3.5	6.0	28	66
8253230360	3.6	6.0	28	66
8253230370	3.7	6.0	28	66
8253230380	3.8	6.0	36	74
8253230390	3.9	6.0	36	74
8253230400	4.0	6.0	36	74
8253230410	4.1	6.0	36	74
8253230420	4.2	6.0	36	74
8253230430	4.3	6.0	36	74
8253230440	4.4	6.0	36	74
8253230450	4.5	6.0	36	74

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
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8253230470	4.7	6.0	36	74
8253230480	4.8	6.0	44	82
8253230490	4.9	6.0	44	82
8253230500	5.0	6.0	44	82
8253230510	5.1	6.0	44	82
8253230520	5.2	6.0	44	82
8253230530	5.3	6.0	44	82
8253230540	5.4	6.0	44	82
8253230550	5.5	6.0	44	82
8253230560	5.6	6.0	44	82
8253230570	5.7	6.0	44	82
8253230580	5.8	6.0	44	82
8253230590	5.9	6.0	44	82
8253230600	6.0	6.0	44	82
8253230610	6.1	8.0	53	91
8253230620	6.2	8.0	53	91
8253230630	6.3	8.0	53	91
8253230640	6.4	8.0	53	91
8253230650	6.5	8.0	53	91
8253230660	6.6	8.0	53	91
8253230670	6.7	8.0	53	91
8253230680	6.8	8.0	53	91
8253230690	6.9	8.0	53	91
8253230700	7.0	8.0	53	91
8253230710	7.1	8.0	53	91
8253230720	7.2	8.0	53	91
8253230730	7.3	8.0	53	91
8253230740	7.4	8.0	53	91
8253230750	7.5	8.0	53	91
8253230760	7.6	8.0	53	91

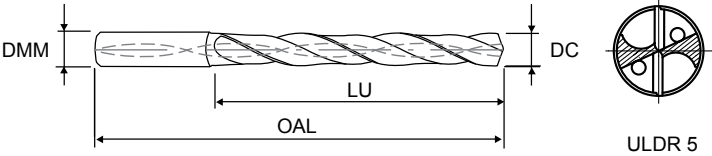
ISO		P			M		K		N				S		H
VDI		1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG		11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
●	○	●	●	●	●	●			○				○	●	
Excellent	Good														

INOX DRILL 5xD



Series No. 825323

▶ cutting conditions : p.56



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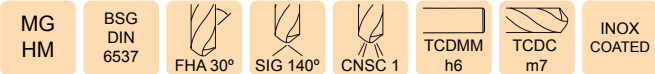
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EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8253230770	7.7	8.0	53	91
8253230780	7.8	8.0	53	91
8253230790	7.9	8.0	53	91
8253230800	8.0	8.0	53	91
8253230810	8.1	10.0	61	103
8253230820	8.2	10.0	61	103
8253230830	8.3	10.0	61	103
8253230840	8.4	10.0	61	103
8253230850	8.5	10.0	61	103
8253230860	8.6	10.0	61	103
8253230870	8.7	10.0	61	103
8253230880	8.8	10.0	61	103
8253230890	8.9	10.0	61	103
8253230900	9.0	10.0	61	103
8253230910	9.1	10.0	61	103
8253230920	9.2	10.0	61	103
8253230930	9.3	10.0	61	103
8253230940	9.4	10.0	61	103
8253230950	9.5	10.0	61	103
8253230960	9.6	10.0	61	103
8253230970	9.7	10.0	61	103
8253230980	9.8	10.0	61	103
8253230990	9.9	10.0	61	103
8253231000	10.0	10.0	61	103
8253231010	10.1	12.0	71	118
8253231020	10.2	12.0	71	118
8253231030	10.3	12.0	71	118
8253231040	10.4	12.0	71	118
8253231050	10.5	12.0	71	118
8253231060	10.6	12.0	71	118

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8253231070	10.7	12.0	71	118
8253231080	10.8	12.0	71	118
8253231090	10.9	12.0	71	118
8253231100	11.0	12.0	71	118
8253231110	11.1	12.0	71	118
8253231120	11.2	12.0	71	118
8253231130	11.3	12.0	71	118
8253231140	11.4	12.0	71	118
8253231150	11.5	12.0	71	118
8253231160	11.6	12.0	71	118
8253231170	11.7	12.0	71	118
8253231180	11.8	12.0	71	118
8253231190	11.9	12.0	71	118
8253231200	12.0	12.0	71	118
8253231250	12.5	14.0	77	124
8253231300	13.0	14.0	77	124
8253231350	13.5	14.0	77	124
8253231400	14.0	14.0	77	124
8253231450	14.5	16.0	83	133
8253231500	15.0	16.0	83	133
8253231550	15.5	16.0	83	133
8253231600	16.0	16.0	83	133
8253231650	16.5	18.0	93	143
8253231700	17.0	18.0	93	143
8253231750	17.5	18.0	93	143
8253231800	18.0	18.0	93	143
8253231850	18.5	20.0	101	153
8253231900	19.0	20.0	101	153
8253231950	19.5	20.0	101	153
8253232000	20.0	20.0	101	153

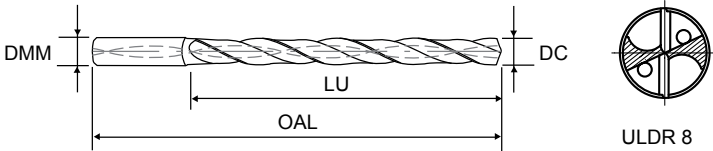
ISO		P			M		K		N				S		H
VDI		1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG		11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
●	○	●	●	●	●	●			○				○	●	
Excellent	Good														

INOX DRILL 8xD



Series No. 828323

► cutting conditions : p.56



Application :
For drilling tough materials, stainless steels, nickel alloys, titanium up to HRc35 and aluminium.

Advantage :
Special flute shape and geometry highly suited to machining stainless steels.
Excellent chip evacuation due to better surface treatment.
Point R-thinning gives superior centering and chip curling.
Applied INOX coating achieves better surface finish and longer tool life.

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8283230300	3.0	6.0	34	72
8283230310	3.1	6.0	34	72
8283230320	3.2	6.0	34	72
8283230330	3.3	6.0	34	72
8283230340	3.4	6.0	34	72
8283230350	3.5	6.0	34	72
8283230360	3.6	6.0	34	72
8283230370	3.7	6.0	34	72
8283230380	3.8	6.0	43	81
8283230390	3.9	6.0	43	81
8283230400	4.0	6.0	43	81
8283230410	4.1	6.0	43	81
8283230420	4.2	6.0	43	81
8283230430	4.3	6.0	43	81
8283230440	4.4	6.0	43	81
8283230450	4.5	6.0	43	81
8283230460	4.6	6.0	43	81
8283230470	4.7	6.0	43	81
8283230480	4.8	6.0	57	95
8283230490	4.9	6.0	57	95
8283230500	5.0	6.0	57	95
8283230510	5.1	6.0	57	95
8283230520	5.2	6.0	57	95
8283230530	5.3	6.0	57	95
8283230540	5.4	6.0	57	95
8283230550	5.5	6.0	57	95
8283230560	5.6	6.0	57	95
8283230570	5.7	6.0	57	95
8283230580	5.8	6.0	57	95
8283230590	5.9	6.0	57	95
8283230600	6.0	6.0	57	95

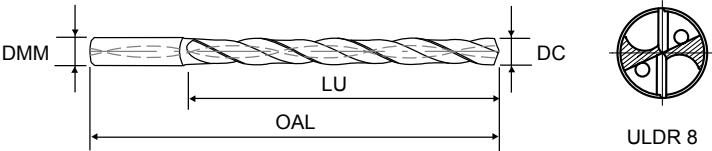
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent ○ Good	●	●	●	●	●			○				○	●	

INOX DRILL 8xD



Series No. 828323

► cutting conditions : p.56



Application :
For drilling tough materials, stainless steels, nickel alloys, titanium up to HRc35 and aluminium.

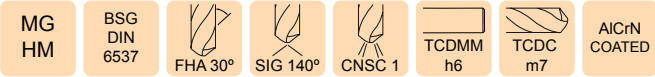
Advantage :
Special flute shape and geometry highly suited to machining stainless steels.
Excellent chip evacuation due to better surface treatment.
Point R-thinning gives superior centering and chip curling.
Applied INOX coating achieves better surface finish and longer tool life.

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8283230920	9.2	10.0	95	142
8283230930	9.3	10.0	95	142
8283230940	9.4	10.0	95	142
8283230950	9.5	10.0	95	142
8283230960	9.6	10.0	95	142
8283230970	9.7	10.0	95	142
8283230980	9.8	10.0	95	142
8283230990	9.9	10.0	95	142
8283231000	10.0	10.0	95	142
8283231010	10.1	12.0	114	162
8283231020	10.2	12.0	114	162
8283231030	10.3	12.0	114	162
8283231040	10.4	12.0	114	162
8283231050	10.5	12.0	114	162
8283231060	10.6	12.0	114	162
8283231070	10.7	12.0	114	162
8283231080	10.8	12.0	114	162

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8283231090	10.9	12.0	114	162
8283231100	11.0	12.0	114	162
8283231110	11.1	12.0	114	162
8283231120	11.2	12.0	114	162
8283231130	11.3	12.0	114	162
8283231140	11.4	12.0	114	162
8283231150	11.5	12.0	114	162
8283231160	11.6	12.0	114	162
8283231170	11.7	12.0	114	162
8283231180	11.8	12.0	114	162
8283231190	11.9	12.0	114	162
8283231200	12.0	12.0	114	162
8283231250	12.5	14.0	133	178
8283231300	13.0	14.0	133	178
8283231350	13.5	14.0	133	178
8283231400	14.0	14.0	133	178

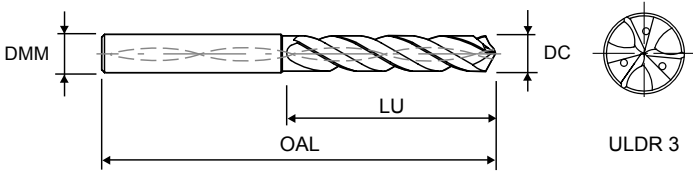
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent ○ Good	●	●	●	●	●			○				○	●	

HF DRILL 3xD



Series No. 803366

► cutting conditions : p.59



Application :
Carbon steels, Alloy steels ≤HRC35, Cast Iron
High feed applications

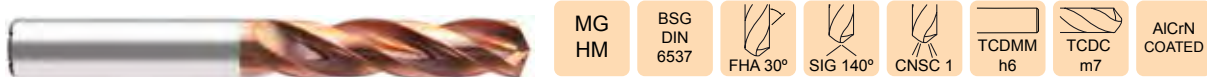
Advantage :
1.5 - 2.0 times higher feed rate than 2-Fl drill for increased productivity.
Multi layer coating for improved tool life
High process reliability

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8033660500	5.0	6.0	28	66
8033660510	5.1	6.0	28	66
8033660520	5.2	6.0	28	66
8033660530	5.3	6.0	28	66
8033660540	5.4	6.0	28	66
8033660550	5.5	6.0	28	66
8033660560	5.6	6.0	28	66
8033660570	5.7	6.0	28	66
8033660580	5.8	6.0	28	66
8033660590	5.9	6.0	28	66
8033660600	6.0	6.0	28	66
8033660610	6.1	8.0	34	79
8033660620	6.2	8.0	34	79
8033660630	6.3	8.0	34	79
8033660640	6.4	8.0	34	79
8033660650	6.5	8.0	34	79
8033660660	6.6	8.0	34	79
8033660670	6.7	8.0	34	79
8033660680	6.8	8.0	34	79
8033660690	6.9	8.0	34	79
8033660700	7.0	8.0	34	79
8033660710	7.1	8.0	41	79
8033660720	7.2	8.0	41	79
8033660730	7.3	8.0	41	79
8033660740	7.4	8.0	41	79

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8033660750	7.5	8.0	41	79
8033660760	7.6	8.0	41	79
8033660770	7.7	8.0	41	79
8033660780	7.8	8.0	41	79
8033660790	7.9	8.0	41	79
8033660800	8.0	8.0	41	79
8033660810	8.1	10.0	47	89
8033660820	8.2	10.0	47	89
8033660830	8.3	10.0	47	89
8033660840	8.4	10.0	47	89
8033660850	8.5	10.0	47	89
8033660860	8.6	10.0	47	89
8033660870	8.7	10.0	47	89
8033660880	8.8	10.0	47	89
8033660890	8.9	10.0	47	89
8033660900	9.0	10.0	47	89
8033660910	9.1	10.0	47	89
8033660920	9.2	10.0	47	89
8033660930	9.3	10.0	47	89
8033660940	9.4	10.0	47	89
8033660950	9.5	10.0	47	89
8033660960	9.6	10.0	47	89
8033660970	9.7	10.0	47	89
8033660980	9.8	10.0	47	89
8033660990	9.9	10.0	47	89

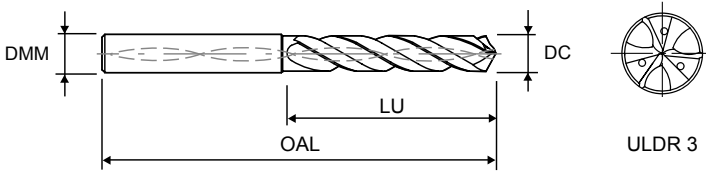
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●				●	●							
○ Good														

HF DRILL 3xD



Series No. 803366

► cutting conditions : p.59



Application :
Carbon steels, Alloy steels ≤HRC35, Cast Iron
High feed applications

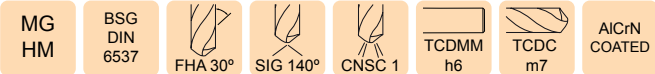
Advantage :
1.5 - 2.0 times higher feed rate than 2-Fl drill for increased productivity.
Multi layer coating for improved tool life
High process reliability

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8033661000	10.0	10.0	47	89
8033661010	10.1	12.0	55	102
8033661020	10.2	12.0	55	102
8033661030	10.3	12.0	55	102
8033661040	10.4	12.0	55	102
8033661050	10.5	12.0	55	102
8033661060	10.6	12.0	55	102
8033661070	10.7	12.0	55	102
8033661080	10.8	12.0	55	102
8033661090	10.9	12.0	55	102
8033661100	11.0	12.0	55	102
8033661110	11.1	12.0	55	102
8033661120	11.2	12.0	55	102
8033661130	11.3	12.0	55	102
8033661140	11.4	12.0	55	102
8033661150	11.5	12.0	55	102
8033661160	11.6	12.0	55	102
8033661170	11.7	12.0	55	102
8033661180	11.8	12.0	55	102
8033661190	11.9	12.0	55	102

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8033661200	12.0	12.0	55	102
8033661250	12.5	14.0	60	107
8033661300	13.0	14.0	60	107
8033661350	13.5	14.0	60	107
8033661400	14.0	14.0	60	107
8033661450	14.5	16.0	65	115
8033661500	15.0	16.0	65	115
8033661550	15.5	16.0	65	115
8033661600	16.0	16.0	65	115
8033661650	16.5	18.0	73	123
8033661700	17.0	18.0	73	123
8033661750	17.5	18.0	73	123
8033661800	18.0	18.0	73	123
8033661850	18.5	20.0	79	131
8033661900	19.0	20.0	79	131
8033661950	19.5	20.0	79	131
8033662000	20.0	20.0	79	131

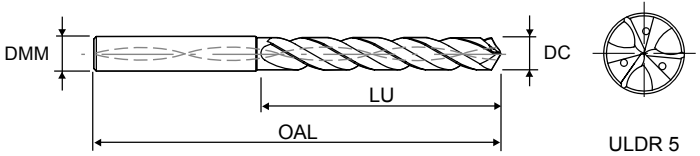
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●				●	●							
○ Good														

HF DRILL 5xD



Series No. 805366

► cutting conditions : p.59



Application :
Carbon steels, Alloy steels ≤HRC35, Cast Iron
High feed applications

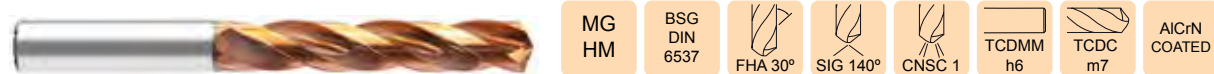
Advantage :
1.5 - 2.0 times higher feed rate than 2-Fl drill for increased productivity.
Multi layer coating for improved tool life
High process reliability

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8053660500	5.0	6.0	44	82
8053660510	5.1	6.0	44	82
8053660520	5.2	6.0	44	82
8053660530	5.3	6.0	44	82
8053660540	5.4	6.0	44	82
8053660550	5.5	6.0	44	82
8053660560	5.6	6.0	44	82
8053660570	5.7	6.0	44	82
8053660580	5.8	6.0	44	82
8053660590	5.9	6.0	44	82
8053660600	6.0	6.0	44	82
8053660610	6.1	8.0	53	91
8053660620	6.2	8.0	53	91
8053660630	6.3	8.0	53	91
8053660640	6.4	8.0	53	91
8053660650	6.5	8.0	53	91
8053660660	6.6	8.0	53	91
8053660670	6.7	8.0	53	91
8053660680	6.8	8.0	53	91
8053660690	6.9	8.0	53	91
8053660700	7.0	8.0	53	91
8053660710	7.1	8.0	53	91
8053660720	7.2	8.0	53	91
8053660730	7.3	8.0	53	91
8053660740	7.4	8.0	53	91

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8053660750	7.5	8.0	53	91
8053660760	7.6	8.0	53	91
8053660770	7.7	8.0	53	91
8053660780	7.8	8.0	53	91
8053660790	7.9	8.0	53	91
8053660800	8.0	8.0	53	91
8053660810	8.1	10.0	61	103
8053660820	8.2	10.0	61	103
8053660830	8.3	10.0	61	103
8053660840	8.4	10.0	61	103
8053660850	8.5	10.0	61	103
8053660860	8.6	10.0	61	103
8053660870	8.7	10.0	61	103
8053660880	8.8	10.0	61	103
8053660890	8.9	10.0	61	103
8053660900	9.0	10.0	61	103
8053660910	9.1	10.0	61	103
8053660920	9.2	10.0	61	103
8053660930	9.3	10.0	61	103
8053660940	9.4	10.0	61	103
8053660950	9.5	10.0	61	103
8053660960	9.6	10.0	61	103
8053660970	9.7	10.0	61	103
8053660980	9.8	10.0	61	103
8053660990	9.9	10.0	61	103

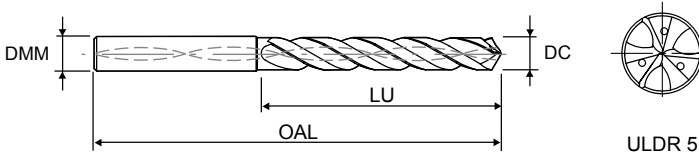
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●				●	●							
○ Good														

HF DRILL 5xD



Series No. 805366

► cutting conditions : p.59



Application :
Carbon steels, Alloy steels ≤HRC35, Cast Iron
High feed applications

Advantage :
1.5 - 2.0 times higher feed rate than 2-Fl drill for increased productivity.
Multi layer coating for improved tool life
High process reliability

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8053661000	10.0	10.0	61	103
8053661010	10.1	12.0	71	118
8053661020	10.2	12.0	71	118
8053661030	10.3	12.0	71	118
8053661040	10.4	12.0	71	118
8053661050	10.5	12.0	71	118
8053661060	10.6	12.0	71	118
8053661070	10.7	12.0	71	118
8053661080	10.8	12.0	71	118
8053661090	10.9	12.0	71	118
8053661100	11.0	12.0	71	118
8053661110	11.1	12.0	71	118
8053661120	11.2	12.0	71	118
8053661130	11.3	12.0	71	118
8053661140	11.4	12.0	71	118
8053661150	11.5	12.0	71	118
8053661160	11.6	12.0	71	118
8053661170	11.7	12.0	71	118
8053661180	11.8	12.0	71	118
8053661190	11.9	12.0	71	118

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8053661200	12.0	12.0	71	118
8053661250	12.5	14.0	77	124
8053661300	13.0	14.0	77	124
8053661350	13.5	14.0	77	124
8053661400	14.0	14.0	77	124
8053661450	14.5	16.0	83	133
8053661500	15.0	16.0	83	133
8053661550	15.5	16.0	83	133
8053661600	16.0	16.0	83	133
8053661650	16.5	18.0	93	143
8053661700	17.0	18.0	93	143
8053661750	17.5	18.0	93	143
8053661800	18.0	18.0	93	143
8053661850	18.5	20.0	101	153
8053661900	19.0	20.0	101	153
8053661950	19.5	20.0	101	153
8053662000	20.0	20.0	101	153

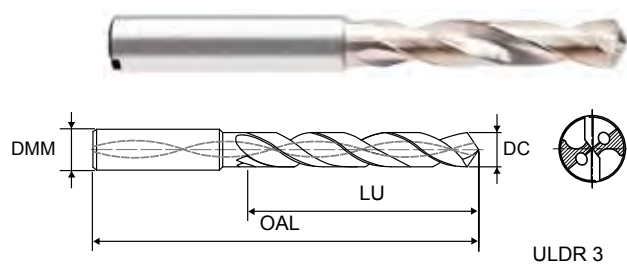
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●				●	●							
○ Good														

ALU-XP 3xD



Series No. 843303

► cutting conditions : p.58



Application :
For high performance drilling of aluminium and aluminium alloys

Advantage :
Good chip treatment due to special flute geometry and wide chip space.
Polished flute gives better surface finish and helps prevent built-up edge.

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8433030300	3.0	6.0	20	62
8433030310	3.1	6.0	20	62
8433030320	3.2	6.0	20	62
8433030330	3.3	6.0	20	62
8433030340	3.4	6.0	20	62
8433030350	3.5	6.0	20	62
8433030360	3.6	6.0	20	62
8433030370	3.7	6.0	20	62
8433030380	3.8	6.0	24	66
8433030390	3.9	6.0	24	66
8433030400	4.0	6.0	24	66
8433030410	4.1	6.0	24	66
8433030420	4.2	6.0	24	66
8433030430	4.3	6.0	24	66
8433030440	4.4	6.0	24	66
8433030450	4.5	6.0	24	66
8433030460	4.6	6.0	24	66
8433030470	4.7	6.0	24	66
8433030480	4.8	6.0	28	66
8433030490	4.9	6.0	28	66
8433030500	5.0	6.0	28	66
8433030510	5.1	6.0	28	66
8433030520	5.2	6.0	28	66
8433030530	5.3	6.0	28	66
8433030540	5.4	6.0	28	66
8433030550	5.5	6.0	28	66
8433030560	5.6	6.0	28	66
8433030570	5.7	6.0	28	66
8433030580	5.8	6.0	28	66
8433030590	5.9	6.0	28	66
8433030600	6.0	6.0	28	66

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8433030610	6.1	8.0	34	79
8433030620	6.2	8.0	34	79
8433030630	6.3	8.0	34	79
8433030640	6.4	8.0	34	79
8433030650	6.5	8.0	34	79
8433030660	6.6	8.0	34	79
8433030670	6.7	8.0	34	79
8433030680	6.8	8.0	34	79
8433030690	6.9	8.0	34	79
8433030700	7.0	8.0	34	79
8433030710	7.1	8.0	41	79
8433030720	7.2	8.0	41	79
8433030730	7.3	8.0	41	79
8433030740	7.4	8.0	41	79
8433030750	7.5	8.0	41	79
8433030760	7.6	8.0	41	79
8433030770	7.7	8.0	41	79
8433030780	7.8	8.0	41	79
8433030790	7.9	8.0	41	79
8433030800	8.0	8.0	41	79
8433030810	8.1	10.0	47	89
8433030820	8.2	10.0	47	89
8433030830	8.3	10.0	47	89
8433030840	8.4	10.0	47	89
8433030850	8.5	10.0	47	89
8433030860	8.6	10.0	47	89
8433030870	8.7	10.0	47	89
8433030880	8.8	10.0	47	89
8433030890	8.9	10.0	47	89
8433030900	9.0	10.0	47	89
8433030910	9.1	10.0	47	89

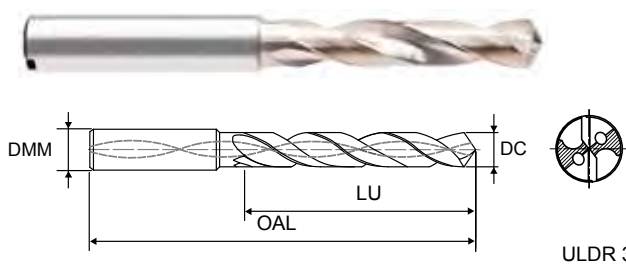
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good							●						

ALU-XP 3xD



Series No. 843303

► cutting conditions : p.58



Application :
For high performance drilling of aluminium and aluminium alloys

Advantage :
Good chip treatment due to special flute geometry and wide chip space.
Polished flute gives better surface finish and helps prevent built-up edge.

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8433030920	9.2	10.0	47	89
8433030930	9.3	10.0	47	89
8433030940	9.4	10.0	47	89
8433030950	9.5	10.0	47	89
8433030960	9.6	10.0	47	89
8433030970	9.7	10.0	47	89
8433030980	9.8	10.0	47	89
8433030990	9.9	10.0	47	89
8433031000	10.0	10.0	47	89
8433031010	10.1	12.0	55	102
8433031020	10.2	12.0	55	102
8433031030	10.3	12.0	55	102
8433031040	10.4	12.0	55	102
8433031050	10.5	12.0	55	102
8433031060	10.6	12.0	55	102
8433031070	10.7	12.0	55	102
8433031080	10.8	12.0	55	102
8433031090	10.9	12.0	55	102
8433031100	11.0	12.0	55	102
8433031110	11.1	12.0	55	102
8433031120	11.2	12.0	55	102
8433031130	11.3	12.0	55	102
8433031140	11.4	12.0	55	102

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8433031150	11.5	12.0	55	102
8433031160	11.6	12.0	55	102
8433031170	11.7	12.0	55	102
8433031180	11.8	12.0	55	102
8433031190	11.9	12.0	55	102
8433031200	12.0	12.0	55	102
8433031250	12.5	14.0	60	107
8433031300	13.0	14.0	60	107
8433031350	13.5	14.0	60	107
8433031400	14.0	14.0	60	107
8433031450	14.5	16.0	65	115
8433031500	15.0	16.0	65	115
8433031550	15.5	16.0	65	115
8433031600	16.0	16.0	65	115
8433031650	16.5	18.0	73	123
8433031700	17.0	18.0	73	123
8433031750	17.5	18.0	73	123
8433031800	18.0	18.0	73	123
8433031850	18.5	20.0	79	131
8433031900	19.0	20.0	79	131
8433031950	19.5	20.0	79	131
8433032000	20.0	20.0	79	131

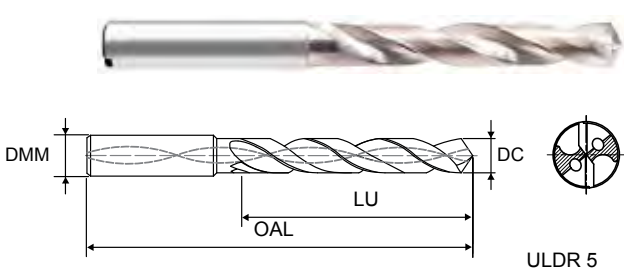
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good							●						

ALU-XP 5xD



Series No. 845303

▶ cutting conditions : p.58



Application :
For high performance drilling of aluminium and aluminium alloys

Advantage :
Good chip treatment due to special flute geometry and wide chip space.
Polished flute gives better surface finish and helps prevent built-up edge.

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8453030300	3.0	6.0	28	66
8453030310	3.1	6.0	28	66
8453030320	3.2	6.0	28	66
8453030330	3.3	6.0	28	66
8453030340	3.4	6.0	28	66
8453030350	3.5	6.0	28	66
8453030360	3.6	6.0	28	66
8453030370	3.7	6.0	28	66
8453030380	3.8	6.0	36	74
8453030390	3.9	6.0	36	74
8453030400	4.0	6.0	36	74
8453030410	4.1	6.0	36	74
8453030420	4.2	6.0	36	74
8453030430	4.3	6.0	36	74
8453030440	4.4	6.0	36	74
8453030450	4.5	6.0	36	74
8453030460	4.6	6.0	36	74
8453030470	4.7	6.0	36	74
8453030480	4.8	6.0	44	82
8453030490	4.9	6.0	44	82
8453030500	5.0	6.0	44	82
8453030510	5.1	6.0	44	82
8453030520	5.2	6.0	44	82
8453030530	5.3	6.0	44	82
8453030540	5.4	6.0	44	82
8453030550	5.5	6.0	44	82
8453030560	5.6	6.0	44	82
8453030570	5.7	6.0	44	82
8453030580	5.8	6.0	44	82
8453030590	5.9	6.0	44	82
8453030600	6.0	6.0	44	82

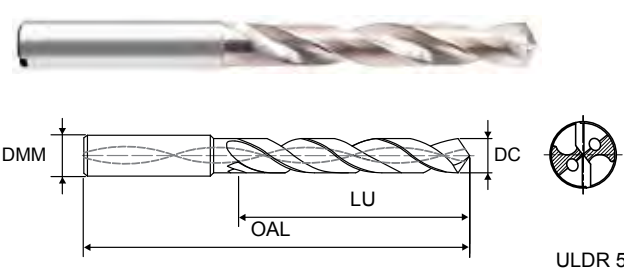
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent ○ Good								●						

ALU-XP 5xD



Series No. 845303

▶ cutting conditions : p.58



Application :
For high performance drilling of aluminium and aluminium alloys

Advantage :
Good chip treatment due to special flute geometry and wide chip space.
Polished flute gives better surface finish and helps prevent built-up edge.

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8453030920	9.2	10.0	61	103
8453030930	9.3	10.0	61	103
8453030940	9.4	10.0	61	103
8453030950	9.5	10.0	61	103
8453030960	9.6	10.0	61	103
8453030970	9.7	10.0	61	103
8453030980	9.8	10.0	61	103
8453030990	9.9	10.0	61	103
8453031000	10.0	10.0	61	103
8453031010	10.1	12.0	71	118
8453031020	10.2	12.0	71	118
8453031030	10.3	12.0	71	118
8453031040	10.4	12.0	71	118
8453031050	10.5	12.0	71	118
8453031060	10.6	12.0	71	118
8453031070	10.7	12.0	71	118
8453031080	10.8	12.0	71	118
8453031090	10.9	12.0	71	118
8453031100	11.0	12.0	71	118
8453031110	11.1	12.0	71	118
8453031120	11.2	12.0	71	118
8453031130	11.3	12.0	71	118
8453031140	11.4	12.0	71	118

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8453031150	11.5	12.0	71	118
8453031160	11.6	12.0	71	118
8453031170	11.7	12.0	71	118
8453031180	11.8	12.0	71	118
8453031190	11.9	12.0	71	118
8453031200	12.0	12.0	71	118
8453031250	12.5	14.0	77	124
8453031300	13.0	14.0	77	124
8453031350	13.5	14.0	77	124
8453031400	14.0	14.0	77	124
8453031450	14.5	16.0	83	133
8453031500	15.0	16.0	83	133
8453031550	15.5	16.0	83	133
8453031600	16.0	16.0	83	133
8453031650	16.5	18.0	93	143
8453031700	17.0	18.0	93	143
8453031750	17.5	18.0	93	143
8453031800	18.0	18.0	93	143
8453031850	18.5	20.0	101	153
8453031900	19.0	20.0	101	153
8453031950	19.5	20.0	101	153
8453032000	20.0	20.0	101	153

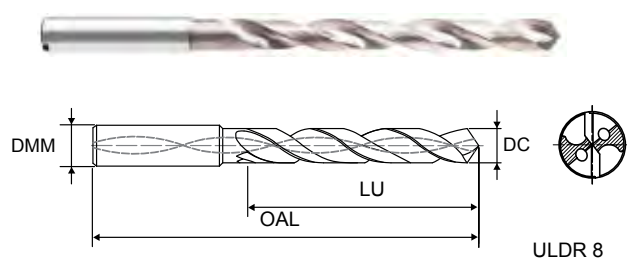
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent ○ Good								●						

ALU-XP 8xD



Series No. 848303

► cutting conditions : p.58



Application :
For high performance drilling of aluminium and aluminium alloys

Advantage :
Good chip treatment due to special flute geometry and wide chip space.
Polished flute gives better surface finish and helps prevent built-up edge.

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8483030300	3.0	6.0	34	72
8483030310	3.1	6.0	34	72
8483030320	3.2	6.0	34	72
8483030330	3.3	6.0	34	72
8483030340	3.4	6.0	34	72
8483030350	3.5	6.0	34	72
8483030360	3.6	6.0	34	72
8483030370	3.7	6.0	34	72
8483030380	3.8	6.0	43	81
8483030390	3.9	6.0	43	81
8483030400	4.0	6.0	43	81
8483030410	4.1	6.0	43	81
8483030420	4.2	6.0	43	81
8483030430	4.3	6.0	43	81
8483030440	4.4	6.0	43	81
8483030450	4.5	6.0	43	81
8483030460	4.6	6.0	43	81
8483030470	4.7	6.0	43	81
8483030480	4.8	6.0	57	95
8483030490	4.9	6.0	57	95
8483030500	5.0	6.0	57	95
8483030510	5.1	6.0	57	95
8483030520	5.2	6.0	57	95
8483030530	5.3	6.0	57	95
8483030540	5.4	6.0	57	95
8483030550	5.5	6.0	57	95
8483030560	5.6	6.0	57	95
8483030570	5.7	6.0	57	95
8483030580	5.8	6.0	57	95
8483030590	5.9	6.0	57	95
8483030600	6.0	6.0	57	95

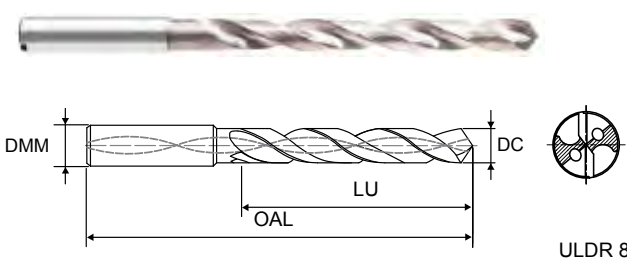
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good							●						

ALU-XP 8xD



Series No. 848303

► cutting conditions : p.58



Application :
For high performance drilling of aluminium and aluminium alloys

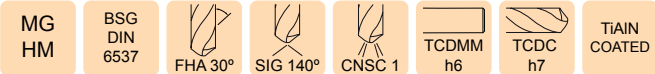
Advantage :
Good chip treatment due to special flute geometry and wide chip space.
Polished flute gives better surface finish and helps prevent built-up edge.

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8483030920	9.2	10.0	95	142
8483030930	9.3	10.0	95	142
8483030940	9.4	10.0	95	142
8483030950	9.5	10.0	95	142
8483030960	9.6	10.0	95	142
8483030970	9.7	10.0	95	142
8483030980	9.8	10.0	95	142
8483030990	9.9	10.0	95	142
8483031000	10.0	10.0	95	142
8483031010	10.1	12.0	114	162
8483031020	10.2	12.0	114	162
8483031030	10.3	12.0	114	162
8483031040	10.4	12.0	114	162
8483031050	10.5	12.0	114	162
8483031060	10.6	12.0	114	162
8483031070	10.7	12.0	114	162
8483031080	10.8	12.0	114	162

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8483031090	10.9	12.0	114	162
8483031100	11.0	12.0	114	162
8483031110	11.1	12.0	114	162
8483031120	11.2	12.0	114	162
8483031130	11.3	12.0	114	162
8483031140	11.4	12.0	114	162
8483031150	11.5	12.0	114	162
8483031160	11.6	12.0	114	162
8483031170	11.7	12.0	114	162
8483031180	11.8	12.0	114	162
8483031190	11.9	12.0	114	162
8483031200	12.0	12.0	114	162
8483031250	12.5	14.0	133	178
8483031300	13.0	14.0	133	178
8483031350	13.5	14.0	133	178
8483031400	14.0	14.0	133	178

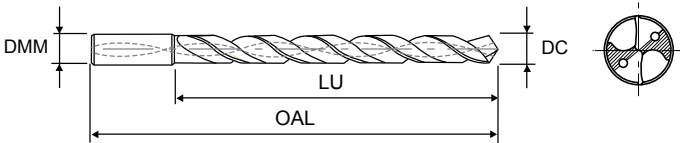
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good							●						

MQL DRILL 10xD, 15xD



Series No. 810323, 815323

► cutting conditions : p.57



Application :
Drilling into steel in general, cast steel, cast iron, chilled cast iron, malleable cast iron.

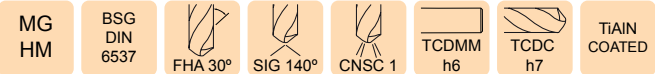
Advantage :
Non step drilling from 10 times to 15 times of drill diameter.
Available for processing MQL(Minimum Quantity Lubrication).
Excellent positioning - Bush is not necessary.
Special design - Good chip removal
Powerful drilling

10 x D ULDR 10

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8103230300	3.0	3.0	39	90
8103230330	3.3	4.0	46	97
8103230350	3.5	4.0	46	97
8103230400	4.0	4.0	52	103
8103230420	4.2	5.0	59	112
8103230450	4.5	5.0	59	112
8103230500	5.0	5.0	65	118
8103230550	5.5	6.0	72	127
8103230600	6.0	6.0	78	133
8103230650	6.5	7.0	85	141
8103230680	6.8	7.0	91	147
8103230700	7.0	7.0	91	147
8103230750	7.5	8.0	98	155
8103230800	8.0	8.0	104	161
8103230850	8.5	9.0	111	169
8103230900	9.0	9.0	117	175
8103230950	9.5	10.0	124	182
8103231000	10.0	10.0	130	188
8103231050	10.5	11.0	137	201
8103231100	11.0	11.0	143	207
8103231150	11.5	12.0	150	215
8103231200	12.0	12.0	156	221
8103231250	12.5	13.0	163	229
8103231300	13.0	13.0	169	235
8103231350	13.5	14.0	176	243
8103231400	14.0	14.0	182	249

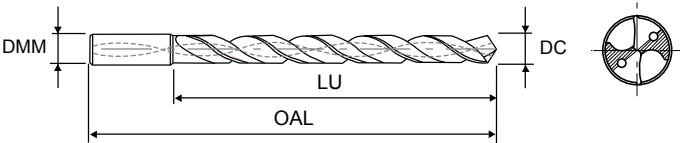
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●			●	●							

MQL DRILL 20xD, 25xD, 30xD



Series No. 820323, 826323, 860323

► cutting conditions : p.57



Application :
Drilling into steel in general, cast steel, cast iron, chilled cast iron, malleable cast iron.

Advantage :
Non step drilling from 10 times to 15 times of drill diameter.
Available for processing MQL(Minimum Quantity Lubrication).
Excellent positioning - Bush is not necessary.
Special design - Good chip removal
Powerful drilling

20 x D ULDR 20

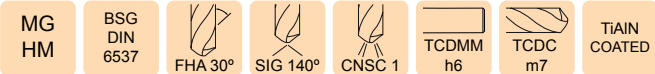
EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8203230300	3.0	3.0	69	120
8203230350	3.5	4.0	81	132
8203230400	4.0	4.0	92	143
8203230450	4.5	5.0	104	157
8203230500	5.0	5.0	115	168
8203230550	5.5	6.0	127	182
8203230600	6.0	6.0	138	193
8203230700	7.0	7.0	161	217
8203230800	8.0	8.0	184	241
8203230900	9.0	9.0	207	265
8203231000	10.0	10.0	230	288
8203231200	12.0	12.0	276	341

25 x D ULDR 25

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8263230300	3.0	6.0	85	125
8263230350	3.5	6.0	99	139
8263230400	4.0	6.0	113	153
8263230450	4.5	6.0	127	167
8263230500	5.0	6.0	141	181
8263230550	5.5	6.0	155	195
8263230600	6.0	6.0	169	209
8263230700	7.0	8.0	197	237
8263230800	8.0	8.0	225	265
8263230900	9.0	10.0	153	297
8263231000	10.0	10.0	282	326

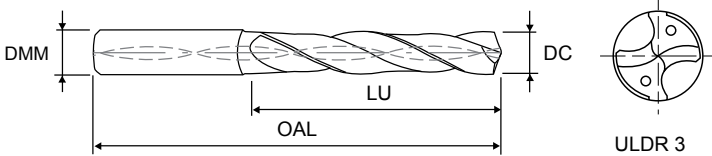
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●			●	●							

GP DRILL THROUGH COOLANT 3xD



Series No. 803323

▶ cutting conditions : p.56



Application :
Drilling into steel in general, cast steel, cast iron, chilled cast iron, malleable cast iron

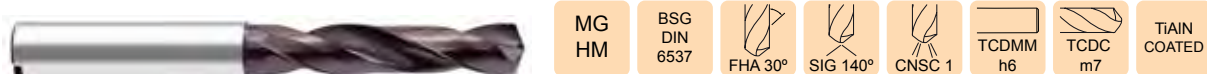
Advantage :
Self centering, centre drilling is not required
Excellent positioning, bush is not necessary
Special Design, reaming is not required
Good chip removal, powerful drilling

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8033230300	3.0	6.0	20	62
8033230310	3.1			
8033230320	3.2			
8033230330	3.3			
8033230340	3.4			
8033230350	3.5			
8033230360	3.6			
8033230370	3.7	6.0	24	66
8033230380	3.8			
8033230390	3.9			
8033230400	4.0			
8033230410	4.1			
8033230420	4.2			
8033230430	4.3			
8033230440	4.4			
8033230450	4.5			
8033230460	4.6			
8033230470	4.7	6.0	28	66
8033230480	4.8			
8033230490	4.9			
8033230500	5.0			
8033230510	5.1			
8033230520	5.2			
8033230530	5.3			
8033230540	5.4			
8033230550	5.5	6.0	28	66
8033230560	5.6			

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8033230570	5.7	6.0	28	66
8033230580	5.8			
8033230590	5.9			
8033230600	6.0			
8033230610	6.1	8.0	34	79
8033230620	6.2			
8033230630	6.3			
8033230640	6.4			
8033230650	6.5			
8033230660	6.6			
8033230670	6.7			
8033230680	6.8	8.0	41	79
8033230690	6.9			
8033230700	7.0			
8033230710	7.1			
8033230720	7.2			
8033230730	7.3			
8033230740	7.4			
8033230750	7.5	8.0	47	89
8033230760	7.6			
8033230770	7.7			
8033230780	7.8			
8033230790	7.9			
8033230800	8.0			
8033230810	8.1	10.0	47	89
8033230820	8.2			
8033230830	8.3			

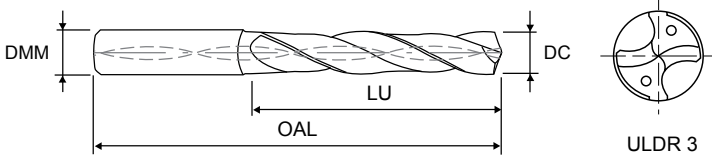
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●			●	●							
○ Good														

GP DRILL THROUGH COOLANT 3xD



Series No. 803323

▶ cutting conditions : p.56



Application :
Drilling into steel in general, cast steel, cast iron, chilled cast iron, malleable cast iron.

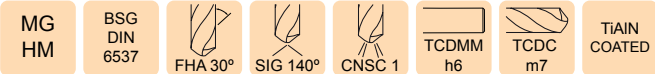
Advantage :
Self centering, centre drilling is not required
Excellent positioning, bush is not necessary
Special Design, reaming is not required
Good chip removal, powerful drilling

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8033230840	8.4	10.0	47	89
8033230850	8.5			
8033230860	8.6			
8033230870	8.7			
8033230880	8.8			
8033230890	8.9			
8033230900	9.0			
8033230910	9.1	12.0	55	102
8033230920	9.2			
8033230930	9.3			
8033230940	9.4			
8033230950	9.5			
8033230960	9.6			
8033230970	9.7			
8033230980	9.8	12.0	55	102
8033230990	9.9			
8033231000	10.0			
8033231010	10.1			
8033231020	10.2			
8033231030	10.3			
8033231040	10.4			
8033231050	10.5	20.0	79	131
8033231060	10.6			
8033231070	10.7			
8033231080	10.8			
8033231090	10.9			
8033231100	11.0			

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8033231110	11.1	12.0	55	102
8033231120	11.2			
8033231130	11.3			
8033231140	11.4			
8033231150	11.5			
8033231160	11.6			
8033231170	11.7			
8033231180	11.8	14.0	60	107
8033231190	11.9			
8033231200	12.0			
8033231250	12.5			
8033231300	13.0			
8033231350	13.5	16.0	65	115
8033231400	14.0			
8033231450	14.5			
8033231500	15.0			
8033231550	15.5			
8033231600	16.0			
8033231650	16.5	18.0	73	123
8033231700	17.0			
8033231750	17.5			
8033231800	18.0			
8033231850	18.5			
8033231900	19.0			
8033231950	19.5	20.0	79	131
8033232000	20.0			

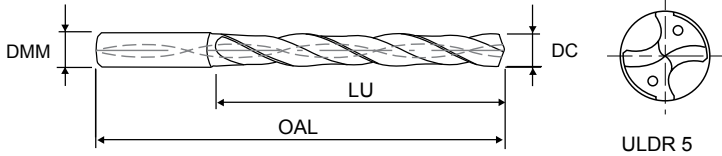
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●			●	●							
○ Good														

GP DRILL THROUGH COOLANT 5xD



Series No. 804323

▶ cutting conditions : p.56



Application :
Drilling into steel in general, cast steel, cast iron, chilled cast iron, malleable cast iron.

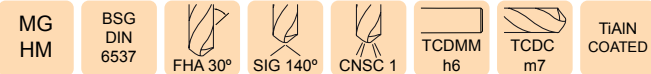
Advantage :
Self centering, centre drilling is not required
Excellent positioning, bush is not necessary
Special Design, reaming is not required
Good chip removal, powerful drilling

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8043230100	1.0	3.0	8	55
8043230110	1.1			
8043230120	1.2			
8043230130	1.3			
8043230140	1.4			
8043230150	1.5	3.0	12	55
8043230160	1.6			
8043230170	1.7			
8043230180	1.8			
8043230190	1.9			
8043230200	2.0	4.0	16	55
8043230210	2.1			
8043230220	2.2			
8043230230	2.3			
8043230240	2.4			
8043230250	2.5			
8043230260	2.6			
8043230270	2.7			
8043230280	2.8			
8043230290	2.9			
8043230300	3.0	6.0	21	57
8043230310	3.1			
8043230320	3.2			
8043230330	3.3			
8043230340	3.4			
8043230350	3.5			
8043230360	3.6			
8043230370	3.7			
8043230380	3.8			
8043230390	3.9			
8043230400	4.0	6.0	28	66
8043230410	4.1			

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8043230420	4.2	6.0	36	74
8043230430	4.3			
8043230440	4.4			
8043230450	4.5			
8043230460	4.6			
8043230470	4.7	6.0	44	82
8043230480	4.8			
8043230490	4.9			
8043230500	5.0			
8043230510	5.1			
8043230520	5.2			
8043230530	5.3			
8043230540	5.4			
8043230550	5.5			
8043230560	5.6			
8043230570	5.7	8.0	53	91
8043230580	5.8			
8043230590	5.9			
8043230600	6.0			
8043230610	6.1			
8043230620	6.2			
8043230630	6.3			
8043230640	6.4			
8043230650	6.5			
8043230660	6.6			
8043230670	6.7	8.0	53	91
8043230680	6.8			
8043230690	6.9			
8043230700	7.0			
8043230710	7.1			
8043230720	7.2			
8043230730	7.3			

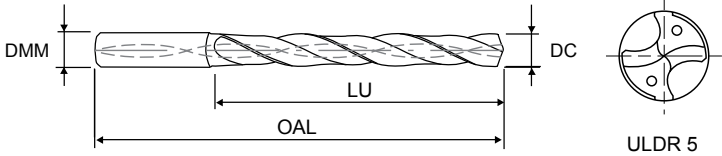
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good	●	●	●		●	●							

GP DRILL THROUGH COOLANT 5xD



Series No. 804323

▶ cutting conditions : p.56



Application :
Drilling into steel in general, cast steel, cast iron, chilled cast iron, malleable cast iron.

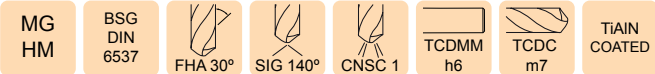
Advantage :
Self centering, centre drilling is not required
Excellent positioning, bush is not necessary
Special Design, reaming is not required
Good chip removal, powerful drilling

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8043230740	7.4	8.0	53	91
8043230750	7.5			
8043230760	7.6			
8043230770	7.7			
8043230780	7.8			
8043230790	7.9	10.0	61	103
8043230800	8.0			
8043230810	8.1			
8043230820	8.2			
8043230830	8.3			
8043230840	8.4			
8043230850	8.5			
8043230860	8.6			
8043230870	8.7			
8043230880	8.8			
8043230890	8.9	12.0	71	118
8043230900	9.0			
8043230910	9.1			
8043230920	9.2			
8043230930	9.3			
8043230940	9.4			
8043230950	9.5			
8043230960	9.6			
8043230970	9.7	12.0	71	118
8043230980	9.8			
8043230990	9.9			
8043231000	10.0			
8043231010	10.1			
8043231020	10.2			
8043231030	10.3	12.0	71	118
8043231040	10.4			
8043231050	10.5			

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8043231060	10.6	12.0	71	118
8043231070	10.7			
8043231080	10.8			
8043231090	10.9			
8043231100	11.0			
8043231110	11.1			
8043231120	11.2			
8043231130	11.3			
8043231140	11.4			
8043231150	11.5			
8043231160	11.6	14.0	77	124
8043231170	11.7			
8043231180	11.8			
8043231190	11.9			
8043231200	12.0			
8043231250	12.5	16.0	83	133
8043231300	13.0			
8043231350	13.5			
8043231400	14.0			
8043231450	14.5	18.0	93	143
8043231500	15.0			
8043231550	15.5			
8043231600	16.0			
8043231650	16.5	20.0	101	153
8043231700	17.0			
8043231750	17.5			
8043231800	18.0			
8043231850	18.5			
8043231900	19.0	20.0	101	153
8043231950	19.5			
8043232000	20.0			

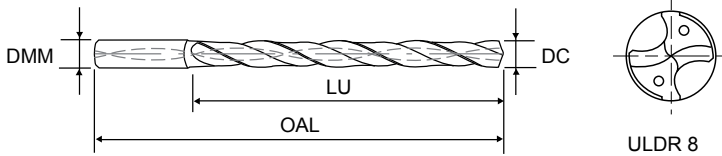
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good	●	●	●		●	●							

GP DRILL THROUGH COOLANT 8xD



Series No. 805323

► cutting conditions : p.56



Application :
Drilling into steel in general, cast steel, cast iron, chilled cast iron, malleable cast iron.

Advantage :
Self centering, centre drilling is not required
Excellent positioning, bush is not necessary
Special Design, reaming is not required
Good chip removal, powerful drilling

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8053230300	3.0	6.0	34	72
8053230310	3.1			
8053230320	3.2			
8053230330	3.3			
8053230340	3.4			
8053230350	3.5			
8053230360	3.6			
8053230370	3.7	6.0	43	81
8053230380	3.8			
8053230390	3.9			
8053230400	4.0			
8053230410	4.1			
8053230420	4.2			
8053230430	4.3			
8053230440	4.4			
8053230450	4.5			
8053230460	4.6			
8053230470	4.7			
8053230480	4.8	6.0	57	95
8053230490	4.9			
8053230500	5.0			
8053230510	5.1			
8053230520	5.2			

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8053230530	5.3	6.0	57	95
8053230540	5.4			
8053230550	5.5			
8053230560	5.6			
8053230570	5.7			
8053230580	5.8			
8053230590	5.9			
8053230600	6.0	8.0	76	114
8053230610	6.1			
8053230620	6.2			
8053230630	6.3			
8053230640	6.4			
8053230650	6.5			
8053230660	6.6			
8053230670	6.7			
8053230680	6.8			
8053230690	6.9			
8053230700	7.0			
8053230710	7.1			
8053230720	7.2			
8053230730	7.3			
8053230740	7.4			
8053230750	7.5			

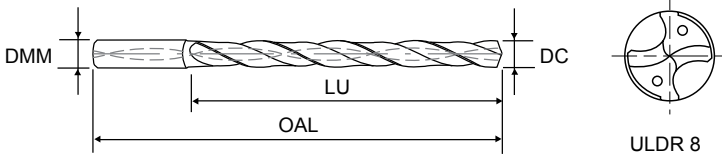
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●			●	●							

GP DRILL THROUGH COOLANT 8xD



Series No. 805323

► cutting conditions : p.56



Application :
Drilling into steel in general, cast steel, cast iron, chilled cast iron, malleable cast iron.

Advantage :
Self centering, centre drilling is not required
Excellent positioning, bush is not necessary
Special Design, reaming is not required
Good chip removal, powerful drilling

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8053230760	7.6	8.0	76	114
8053230770	7.7			
8053230780	7.8			
8053230790	7.9			
8053230800	8.0			
8053230810	8.1			
8053230820	8.2			
8053230830	8.3	10.0	95	142
8053230840	8.4			
8053230850	8.5			
8053230860	8.6			
8053230870	8.7			
8053230880	8.8			
8053230890	8.9			
8053230900	9.0			
8053230910	9.1			
8053230920	9.2			
8053230930	9.3			
8053230940	9.4			
8053230950	9.5			
8053230960	9.6			
8053230970	9.7			
8053230980	9.8			

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8053230990	9.9	10.0	95	142
8053231000	10.0			
8053231010	10.1			
8053231020	10.2	12.0	114	162
8053231030	10.3			
8053231040	10.4			
8053231050	10.5			
8053231060	10.6			
8053231070	10.7			
8053231080	10.8			
8053231090	10.9			
8053231100	11.0			
8053231110	11.1			
8053231120	11.2			
8053231130	11.3			
8053231140	11.4			
8053231150	11.5			
8053231160	11.6			
8053231170	11.7			
8053231180	11.8			
8053231190	11.9			
8053231200	12.0			

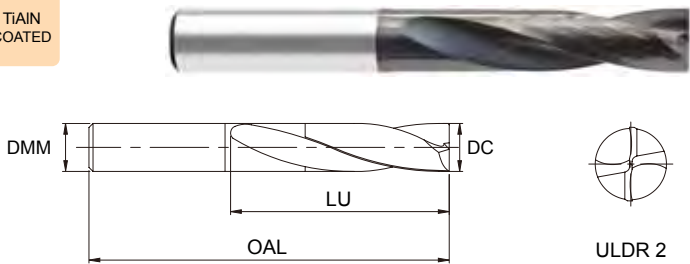
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●			●	●							

BF DRILL FLAT BOTTOM



Series No. 809323

► cutting conditions : p.59



Application :
Drilling into steel in general, cast steel, cast iron, stainless steel and non-ferrous materials.

Advantage :
180° point angle enables drilling of flat, inclined and curved surfaces.
Optimised flute design for excellent chip evacuation.
High strength cutting edge for improved tool life.
Minimised burrs at entrance and exit of thin plate.

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8093230300	3.0	6.0	16	50
8093230310	3.1			
8093230320	3.2			
8093230330	3.3			
8093230340	3.4	6.0	18	50
8093230350	3.5			
8093230360	3.6			
8093230370	3.7			
8093230380	3.8			
8093230390	3.9			
8093230400	4.0			
8093230410	4.1	6.0	20	60
8093230420	4.2			
8093230430	4.3			
8093230440	4.4			
8093230450	4.5			
8093230460	4.6	6.0	22	60
8093230470	4.7			
8093230480	4.8			
8093230490	4.9			
8093230500	5.0			
8093230510	5.1	6.0	24	60
8093230520	5.2			
8093230530	5.3			

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8093230540	5.4	6.0	24	60
8093230550	5.5			
8093230560	5.6			
8093230570	5.7	6.0	26	60
8093230580	5.8			
8093230590	5.9			
8093230600	6.0			
8093230610	6.1	8.0	28	70
8093230620	6.2			
8093230630	6.3			
8093230640	6.4	8.0	30	70
8093230650	6.5			
8093230660	6.6			
8093230670	6.7			
8093230680	6.8			
8093230690	6.9			
8093230700	7.0			
8093230710	7.1	8.0	34	70
8093230720	7.2			
8093230730	7.3			
8093230740	7.4			
8093230750	7.5			
8093230760	7.6			
8093230770	7.7			

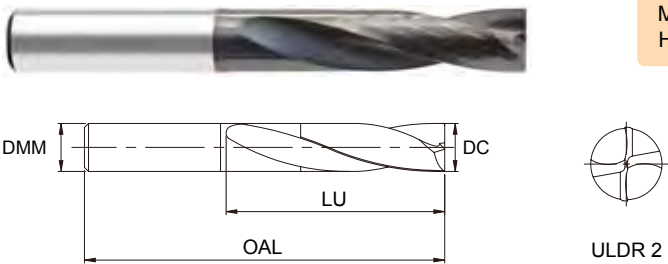
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●		●	●	●	●						
○ Good														

BF DRILL FLAT BOTTOM



Series No. 809323

► cutting conditions : p.59



Application :
Drilling into steel in general, cast steel, cast iron, stainless steel and non-ferrous materials.

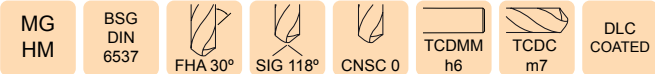
Advantage :
180° point angle enables drilling of flat, inclined and curved surfaces.
Optimised flute design for excellent chip evacuation.
High strength cutting edge for improved tool life.
Minimised burrs at entrance and exit of thin plate.

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8093230780	7.8	8.0	34	70
8093230790	7.9			
8093230800	8.0			
8093230810	8.1	10.0	38	80
8093230820	8.2			
8093230830	8.3			
8093230840	8.4			
8093230850	8.5			
8093230860	8.6			
8093230870	8.7	10.0	40	80
8093230880	8.8			
8093230890	8.9			
8093230900	9.0			
8093230910	9.1			
8093230920	9.2	10.0	42	80
8093230930	9.3			
8093230940	9.4			
8093230950	9.5			
8093230960	9.6			
8093230970	9.7	10.0	45	80
8093230980	9.8			
8093230990	9.9			
8093231000	10.0			
8093231020	10.2	12.0	46	90

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8093231050	10.5	12.0	48	90
8093231080	10.8			
8093231100	11.0			
8093231150	11.5	12.0	50	90
8093231180	11.8	12.0	52	90
8093231190	11.9			
8093231200	12.0			
8093231250	12.5			
8093231300	13.0	14.0	54	100
8093231350	13.5	14.0	56	100
8093231400	14.0	14.0	58	100
8093231450	14.5			
8093231500	15.0			
8093231550	15.5	16.0	62	105
8093231600	16.0			
8093231650	16.5			
8093231700	17.0	16.0	64	115
8093231750	17.5			
8093231800	18.0			
8093231850	18.5			
8093231900	19.0	18.0	70	125
8093231950	19.5			
8093232000	20.0			

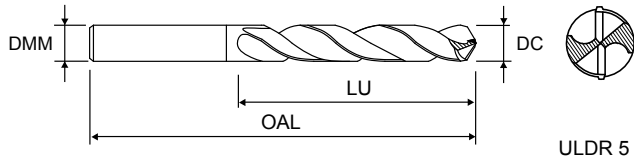
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●		●	●	●	●						
○ Good														

CF DRILL



Series No. 850390

► cutting conditions : p.58



Application :
For improved hole quality in composite materials.

Advantage :
Special point geometry for improved hole quality.
Minimal burr and delamination at entry/exit point.
Diamond coated for increased tool life.

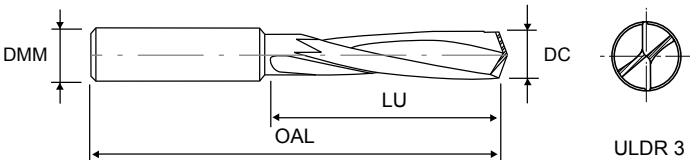
EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8503900250	2.5	6.0	24	66
8503900300	3.0	6.0	28	66
8503900400	4.0	6.0	36	74
8503900500	5.0	6.0	44	82
8503900600	6.0	6.0	44	82
8503900800	8.0	8.0	53	91
8503900900	9.0	10.0	61	103
8503901000	10.0	10.0	61	103
8503901100	11.0	12.0	71	118
8503901200	12.0	12.0	71	118

PULSAR DRILL



Series No. 821223

► cutting conditions : p.58



Application :
For drilling High Hardened Steels (Quenched Steels, Tempered Steels) Under HRC70

Advantage :
Special Design
Minimized cutting load through special point thinning
Good chip removal
Powerful Drilling

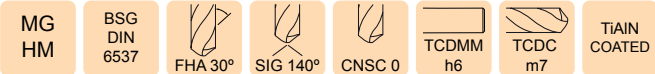
EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8212230300	3.0	3	16	46
8212230330	3.3	4	18	48
8212230340	3.4	4	20	50
8212230350	3.5	4	20	50
8212230400	4.0	4	22	52
8212230420	4.2	6	25	65
8212230430	4.3	6	28	68
8212230440	4.4	6	28	68
8212230450	4.5	6	28	68
8212230500	5.0	6	32	72
8212230510	5.1	6	32	72
8212230520	5.2	6	32	72
8212230550	5.5	6	35	75
8212230600	6.0	6	35	75
8212230650	6.5	8	40	80
8212230680	6.8	8	45	85
8212230690	6.9	8	45	85

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8212230700	7.0	8	45	85
8212230750	7.5	8	45	85
8212230800	8.0	8	50	98
8212230850	8.5	10	50	98
8212230860	8.6	10	57	105
8212230880	8.8	10	57	105
8212230900	9.0	10	57	105
8212230950	9.5	10	57	105
8212231000	10.0	10	63	111
8212231020	10.2	12	63	111
8212231030	10.3	12	63	111
8212231050	10.5	12	63	111
8212231080	10.8	12	71	119
8212231100	11.0	12	71	119
8212231150	11.5	12	71	119
8212231200	12.0	12	71	119
8212231400	14.0	14	77	125

ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good										●			

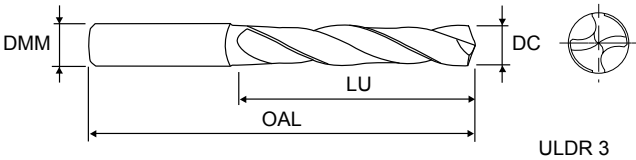
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good		●											●

GP DRILL 3xD



Series No. 807323

► cutting conditions : p.60



Application :
Drilling into steel in general, cast steel, cast iron,
chilled cast iron, malleable cast iron, stainless steel

Advantage :
Self centering, centre drilling is not required
Excellent positioning, bush is not necessary
Special Design, reaming is not required
Good chip removal, powerful drilling

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8073230300	3.0	6.0	20	62
8073230310	3.1	6.0	20	62
8073230320	3.2	6.0	20	62
8073230330	3.3	6.0	20	62
8073230340	3.4	6.0	20	62
8073230350	3.5	6.0	20	62
8073230360	3.6	6.0	20	62
8073230370	3.7	6.0	20	62
8073230380	3.8	6.0	24	66
8073230390	3.9	6.0	24	66
8073230400	4.0	6.0	24	66
8073230410	4.1	6.0	24	66
8073230420	4.2	6.0	24	66
8073230430	4.3	6.0	24	66
8073230440	4.4	6.0	24	66
8073230450	4.5	6.0	24	66
8073230460	4.6	6.0	24	66
8073230470	4.7	6.0	24	66
8073230480	4.8	6.0	28	66
8073230490	4.9	6.0	28	66
8073230500	5.0	6.0	28	66
8073230510	5.1	6.0	28	66
8073230520	5.2	6.0	28	66
8073230530	5.3	6.0	28	66
8073230540	5.4	6.0	28	66
8073230550	5.5	6.0	28	66
8073230560	5.6	6.0	28	66
8073230570	5.7	6.0	28	66
8073230580	5.8	6.0	28	66

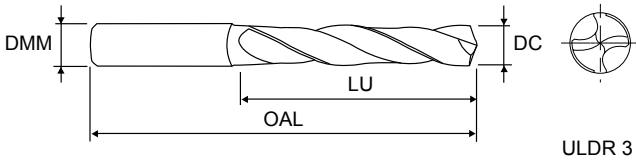
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●	○	○	●	●							
○ Good														

GP DRILL 3xD



Series No. 807323

► cutting conditions : p.60



Application :
Drilling into steel in general, cast steel, cast iron,
chilled cast iron, malleable cast iron, stainless steel

Advantage :
Self centering, centre drilling is not required
Excellent positioning, bush is not necessary
Special Design, reaming is not required
Good chip removal, powerful drilling

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8073230880	8.8	10.0	47	89
8073230890	8.9	10.0	47	89
8073230900	9.0	10.0	47	89
8073230910	9.1	10.0	47	89
8073230920	9.2	10.0	47	89
8073230930	9.3	10.0	47	89
8073230940	9.4	10.0	47	89
8073230950	9.5	10.0	47	89
8073230960	9.6	10.0	47	89
8073230970	9.7	10.0	47	89
8073230980	9.8	10.0	47	89
8073230990	9.9	10.0	47	89
8073231000	10.0	10.0	47	89
8073231010	10.1	12.0	55	102
8073231020	10.2	12.0	55	102
8073231030	10.3	12.0	55	102
8073231040	10.4	12.0	55	102
8073231050	10.5	12.0	55	102
8073231060	10.6	12.0	55	102
8073231070	10.7	12.0	55	102
8073231080	10.8	12.0	55	102
8073231090	10.9	12.0	55	102
8073231100	11.0	12.0	55	102
8073231110	11.1	12.0	55	102
8073231120	11.2	12.0	55	102
8073231130	11.3	12.0	55	102
8073231140	11.4	12.0	55	102
8073231150	11.5	12.0	55	102
8073231160	11.6	12.0	55	102

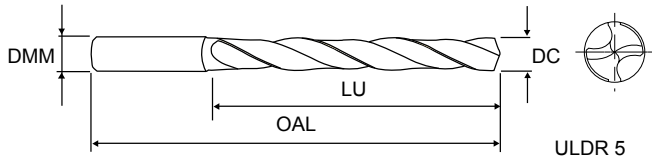
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●	○	○	●	●							
○ Good														

GP DRILL 5xD



Series No. 808323

► cutting conditions : p.60



Application :
Drilling into steel in general, cast steel, cast iron, chilled cast iron, malleable cast iron, stainless steel

Advantage :
Self centering, centre drilling is not required
Excellent positioning, bush is not necessary
Special Design, reaming is not required
Good chip removal, powerful drilling

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8083230100	1.0	3.0	8	55
8083230110	1.1	3.0	12	55
8083230120	1.2	3.0	12	55
8083230130	1.3	3.0	12	55
8083230140	1.4	3.0	12	55
8083230150	1.5	3.0	16	55
8083230160	1.6	3.0	16	55
8083230170	1.7	3.0	16	55
8083230180	1.8	3.0	16	55
8083230190	1.9	3.0	16	55
8083230200	2.0	4.0	21	57
8083230210	2.1	4.0	21	57
8083230220	2.2	4.0	21	57
8083230230	2.3	4.0	21	57
8083230240	2.4	4.0	21	57
8083230250	2.5	4.0	21	57
8083230260	2.6	4.0	21	57
8083230270	2.7	4.0	21	57
8083230280	2.8	4.0	21	57
8083230290	2.9	4.0	21	57
8083230300	3.0	6.0	28	66
8083230310	3.1	6.0	28	66
8083230320	3.2	6.0	28	66
8083230330	3.3	6.0	28	66
8083230340	3.4	6.0	28	66
8083230350	3.5	6.0	28	66
8083230360	3.6	6.0	28	66
8083230370	3.7	6.0	28	66
8083230380	3.8	6.0	36	74
8083230390	3.9	6.0	36	74
8083230400	4.0	6.0	36	74
8083230410	4.1	6.0	36	74
8083230420	4.2	6.0	36	74
8083230430	4.3	6.0	36	74

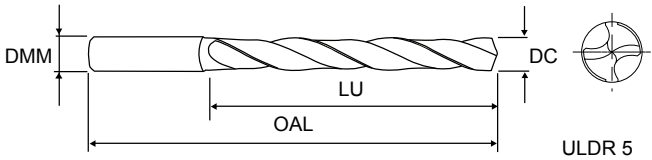
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●	○	○	●	●							

GP DRILL 5xD



Series No. 808323

► cutting conditions : p.60



Application :
Drilling into steel in general, cast steel, cast iron, chilled cast iron, malleable cast iron, stainless steel

Advantage :
Self centering, centre drilling is not required
Excellent positioning, bush is not necessary
Special Design, reaming is not required
Good chip removal, powerful drilling

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8083230780	7.8	8.0	53	91
8083230790	7.9	8.0	53	91
8083230800	8.0	8.0	53	91
8083230810	8.1	10.0	61	103
8083230820	8.2	10.0	61	103
8083230830	8.3	10.0	61	103
8083230840	8.4	10.0	61	103
8083230850	8.5	10.0	61	103
8083230860	8.6	10.0	61	103
8083230870	8.7	10.0	61	103
8083230880	8.8	10.0	61	103
8083230890	8.9	10.0	61	103
8083230900	9.0	10.0	61	103
8083230910	9.1	10.0	61	103
8083230920	9.2	10.0	61	103
8083230930	9.3	10.0	61	103
8083230940	9.4	10.0	61	103
8083230950	9.5	10.0	61	103
8083230960	9.6	10.0	61	103
8083230970	9.7	10.0	61	103
8083230980	9.8	10.0	61	103
8083230990	9.9	10.0	61	103
8083231000	10.0	10.0	61	103
8083231010	10.1	12.0	71	118
8083231020	10.2	12.0	71	118
8083231030	10.3	12.0	71	118
8083231040	10.4	12.0	71	118
8083231050	10.5	12.0	71	118
8083231060	10.6	12.0	71	118
8083231070	10.7	12.0	71	118
8083231080	10.8	12.0	71	118
8083231090	10.9	12.0	71	118
8083231100	11.0	12.0	71	118
8083231110	11.1	12.0	71	118

ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●	○	○	●	●							

STUB DRILL TiAIN



MG
HM

BSG
DIN
6539

FHA 30°

SIG 140°

CNSC 0

TCDMM
h6

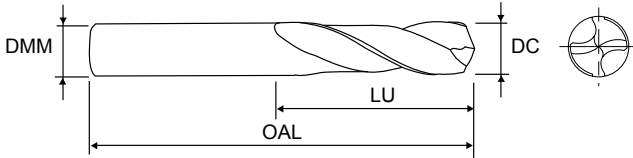
TCDC
m7

TiAIN
COATED



Series No. 802323

▶ cutting conditions : p.60



Application :
Drilling into steel in general, cast steel, cast iron,
chilled cast iron, malleable cast iron, stainless steel

Advantage :
Self centering, centre drilling is not required
Excellent positioning, bush is not necessary
Special Design, reaming is not required
Good chip removal, powerful drilling

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8023230300	3.0	16	46
8023230310	3.1	18	49
8023230320	3.2		
8023230330	3.3		
8023230340	3.4	20	52
8023230350	3.5		
8023230360	3.6		
8023230370	3.7		
8023230380	3.8	22	55
8023230390	3.9		
8023230400	4.0		
8023230410	4.1		
8023230420	4.2	24	58
8023230430	4.3		
8023230440	4.4		
8023230450	4.5		
8023230460	4.6	26	62
8023230470	4.7		
8023230480	4.8		
8023230490	4.9		
8023230500	5.0	26	62
8023230510	5.1		
8023230520	5.2		

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8023230530	5.3	26	62
8023230540	5.4	28	66
8023230550	5.5		
8023230560	5.6		
8023230570	5.7		
8023230580	5.8	31	70
8023230590	5.9		
8023230600	6.0		
8023230610	6.1		
8023230620	6.2	34	74
8023230630	6.3		
8023230640	6.4		
8023230650	6.5		
8023230660	6.6	34	74
8023230670	6.7		
8023230680	6.8		
8023230690	6.9		
8023230700	7.0	34	74
8023230710	7.1		
8023230720	7.2		
8023230730	7.3		
8023230740	7.4	34	74
8023230750	7.5		

ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●	○	○	●	●							
○ Good														

STUB DRILL TiAIN



MG
HM

BSG
DIN
6539

FHA 30°

SIG 140°

CNSC 0

TCDMM
h6

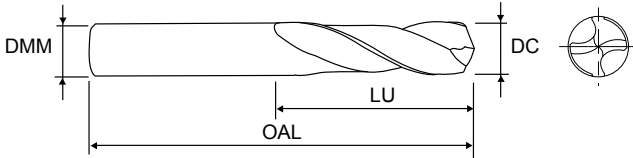
TCDC
m7

TiAIN
COATED



Series No. 802323

▶ cutting conditions : p.60



Application :
Drilling into steel in general, cast steel, cast iron,
chilled cast iron, malleable cast iron, stainless steel

Advantage :
Self centering, centre drilling is not required
Excellent positioning, bush is not necessary
Special Design, reaming is not required
Good chip removal, powerful drilling

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8023230760	7.6	37	79
8023230770	7.7		
8023230780	7.8		
8023230790	7.9		
8023230800	8.0		
8023230810	8.1		
8023230820	8.2		
8023230830	8.3		
8023230840	8.4	40	84
8023230850	8.5		
8023230860	8.6		
8023230870	8.7		
8023230880	8.8		
8023230890	8.9		
8023230900	9.0		
8023230910	9.1	43	89
8023230920	9.2		
8023230930	9.3		
8023230940	9.4		
8023230950	9.5		
8023230960	9.6		
8023230970	9.7		
8023230980	9.8		

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8023230990	9.9	43	89
8023231000	10.0		
8023231020	10.2		
8023231050	10.5	47	95
8023231100	11.0		
8023231150	11.5		
8023231200	12.0	51	102
8023231300	13.0		
8023231350	13.5		
8023231400	14.0	54	107
8023231450	14.5		
8023231500	15.0		
8023231550	15.5	58	115
8023231600	16.0		
8023231650	16.5		
8023231700	17.0	60	119
8023231750	17.5		
8023231800	18.0		
8023231850	18.5	64	127
8023231900	19.0		
8023231950	19.5		
8023232000	20.0	66	131

ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●	○	○	●	●							
○ Good														

STUB DRILL



MG
HM

BSG
DIN
6539

FHA 33°

SIG 118°

CNSC 0

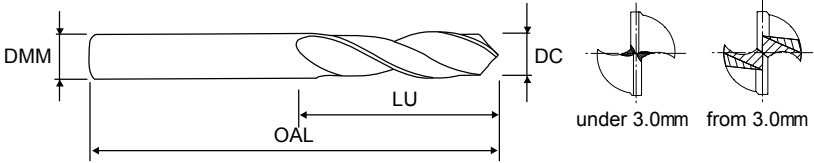
TCDMM
h6

TCDC
m7



Series No. 800303

▶ cutting conditions : p.60



Application :
Drilling into steel in general, cast steel, cast iron,
chilled cast iron, malleable cast iron, stainless steel

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8003030100	1.0	6	26
8003030110	1.1	7	28
8003030120	1.2	8	30
8003030130	1.3		
8003030140	1.4	9	32
8003030150	1.5		
8003030160	1.6	10	34
8003030170	1.7		
8003030180	1.8	11	36
8003030190	1.9		
8003030200	2.0	12	38
8003030210	2.1		
8003030220	2.2	13	40
8003030230	2.3		
8003030240	2.4	14	43
8003030250	2.5		
8003030260	2.6	16	46
8003030270	2.7		
8003030280	2.8		
8003030290	2.9		
8003030300	3.0	18	49
8003030310	3.1		
8003030320	3.2		
8003030330	3.3		
8003030340	3.4	20	52
8003030350	3.5		
8003030360	3.6		
8003030370	3.7		
8003030380	3.8	22	55
8003030390	3.9		
8003030400	4.0		

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8003030410	4.1	22	55
8003030420	4.2		
8003030430	4.3	24	58
8003030440	4.4		
8003030450	4.5		
8003030460	4.6		
8003030470	4.7	26	62
8003030480	4.8		
8003030490	4.9		
8003030500	5.0		
8003030510	5.1	28	66
8003030520	5.2		
8003030530	5.3		
8003030540	5.4		
8003030550	5.5	31	70
8003030560	5.6		
8003030570	5.7		
8003030580	5.8		
8003030590	5.9		
8003030600	6.0		
8003030610	6.1		
8003030620	6.2		
8003030630	6.3		
8003030640	6.4		
8003030650	6.5		
8003030660	6.6		
8003030670	6.7		

ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good	●	●	●	○	●	●							

STUB DRILL



MG
HM

BSG
DIN
6539

FHA 33°

SIG 118°

CNSC 0

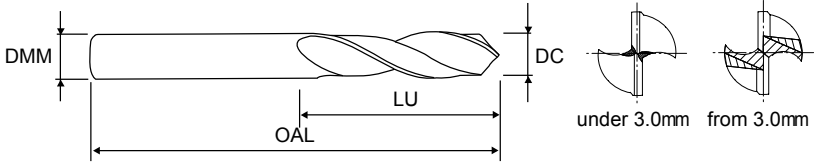
TCDMM
h6

TCDC
m7



Series No. 800303

▶ cutting conditions : p.60



Application :
Drilling into steel in general, cast steel, cast iron,
chilled cast iron, malleable cast iron, stainless steel

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8003030680	6.8	34	74
8003030690	6.9		
8003030700	7.0		
8003030710	7.1		
8003030720	7.2		
8003030730	7.3		
8003030740	7.4	37	79
8003030750	7.5		
8003030760	7.6		
8003030770	7.7		
8003030780	7.8		
8003030790	7.9		
8003030800	8.0		
8003030810	8.1		
8003030820	8.2		
8003030830	8.3		
8003030840	8.4	40	84
8003030850	8.5		
8003030860	8.6		
8003030870	8.7		

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8003030880	8.8	40	84
8003030890	8.9		
8003030900	9.0		
8003030910	9.1		
8003030920	9.2		
8003030930	9.3		
8003030940	9.4	43	89
8003030950	9.5		
8003030960	9.6		
8003030970	9.7		
8003030980	9.8		
8003030990	9.9		
8003031000	10.0		
8003031020	10.2	47	95
8003031050	10.5		
8003031100	11.0		
8003031150	11.5	51	102
8003031200	12.0		
8003031300	13.0		

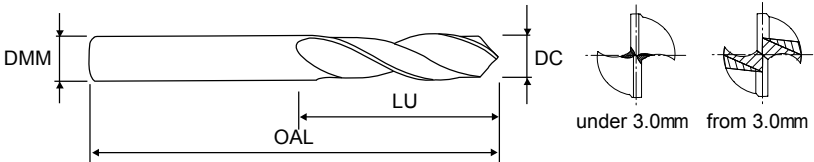
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good	●	●	●	○	●	●							

JOBBER DRILL



Series No. 801303

► cutting conditions : p.60



Application :
Drilling into steel in general, cast steel, cast iron,
chilled cast iron, malleable cast iron, stainless steel

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8013030100	1.0	12	34
8013030110	1.1	14	36
8013030120	1.2	16	38
8013030130	1.3		
8013030140	1.4	18	40
8013030150	1.5	20	43
8013030160	1.6		
8013030170	1.7	22	46
8013030180	1.8		
8013030190	1.9	24	49
8013030200	2.0		
8013030210	2.1	27	53
8013030220	2.2		
8013030230	2.3	30	57
8013030240	2.4		
8013030250	2.5		
8013030260	2.6		

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8013030270	2.7	33	61
8013030280	2.8		
8013030290	2.9		
8013030300	3.0		
8013030310	3.1	36	65
8013030320	3.2		
8013030330	3.3		
8013030340	3.4		
8013030350	3.5	39	70
8013030360	3.6		
8013030370	3.7		
8013030380	3.8		
8013030390	3.9	43	75
8013030400	4.0		
8013030410	4.1		
8013030420	4.2		
8013030430	4.3	47	80

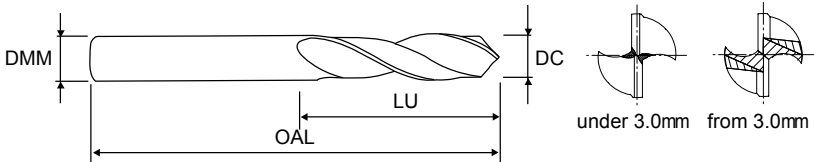
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●	○		●	●							
○ Good														

JOBBER DRILL



Series No. 801303

► cutting conditions : p.60



Application :
Drilling into steel in general, cast steel, cast iron,
chilled cast iron, malleable cast iron, stainless steel

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8013030440	4.4	47	80
8013030450	4.5		
8013030460	4.6		
8013030470	4.7		
8013030480	4.8	52	86
8013030490	4.9		
8013030500	5.0		
8013030510	5.1		
8013030520	5.2		
8013030530	5.3		
8013030540	5.4	57	93
8013030550	5.5		
8013030560	5.6		
8013030570	5.7		
8013030580	5.8		
8013030590	5.9		
8013030600	6.0		

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8013030610	6.1	63	101
8013030620	6.2		
8013030630	6.3		
8013030640	6.4		
8013030650	6.5	69	109
8013030680	6.8		
8013030700	7.0		
8013030800	8.0	75	117
8013030850	8.5		
8013031000	10.0	87	113
8013031020	10.2		
8013031050	10.5		
8013031100	11.0	94	142
8013031150	11.5		
8013031200	12.0	101	151
8013031300	13.0		

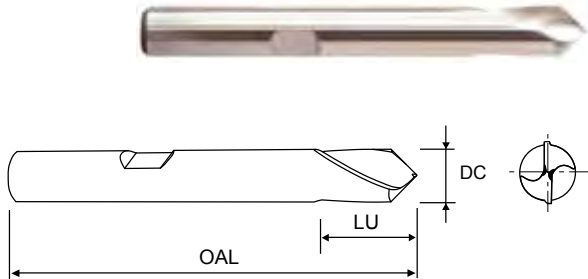
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	●	●	●	○		●	●							
○ Good														

SPOTTING DRILL 90°



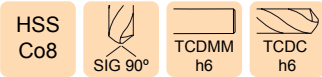
Series No. 806303

▶ cutting conditions : p.60



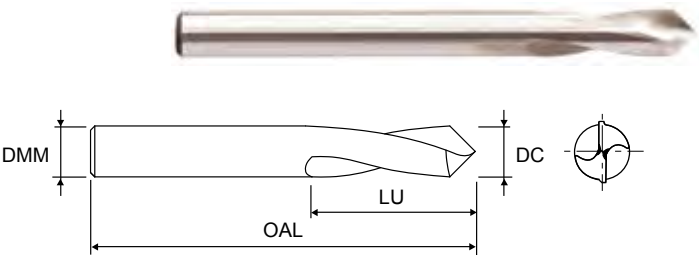
Application :
For more precise centering work on NC/CNC machine.
A larger diameter than the subsequent drilling tool allows for centering and chamfering simultaneously.
142° also available on request

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8063030600	6.0	6.0	13	50
8063030800	8.0	8.0	23	60
8063031000	10.0	10.0	24	70
8063031200	12.0	12.0		
8063031600	16.0	16.0	29	75
8063032000	20.0	20.0	35	100



Series No. 821402

▶ cutting conditions : p.62



EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8214020300	3.0	3.0	12	46
8214020400	4.0	4.0	12	55
8214020500	5.0	5.0	15	60
8214020600	6.0	6.0	20	66
8214020800	8.0	8.0	25	79
8214021000	10.0	10.0	25	89
8214021200	12.0	12.0	30	102
8214021600	16.0	16.0	35	115
8214022000	20.0	20.0	40	131

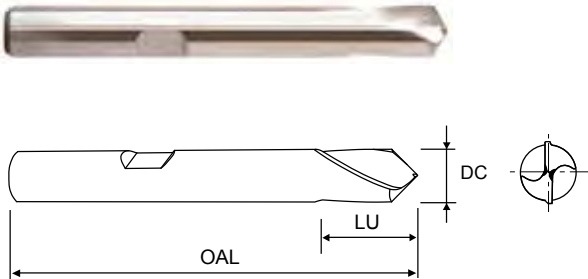
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good	●	●	●	○	○	●	●	○	○		○	○	

SPOTTING DRILL 120°



Series No. 806403

▶ cutting conditions : p.60



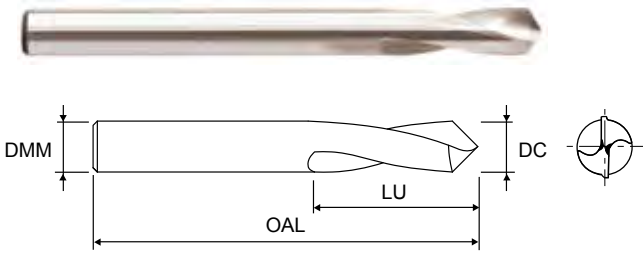
Application :
For more precise centering work on NC/CNC machine.
A larger diameter than the subsequent drilling tool allows for centering and chamfering simultaneously.
142° also available on request

EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8064030600	6.0	6.0	13	50
8064030800	8.0	8.0	23	60
8064031000	10.0	10.0	24	70
8064031200	12.0	12.0		
8064031600	16.0	16.0	29	75
8064032000	20.0	20.0	35	100



Series No. 822402

▶ cutting conditions : p.62



EUROPA CODE ORDCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8224020300	3.0	3.0	12	46
8224020400	4.0	4.0	12	55
8224020500	5.0	5.0	15	60
8224020600	6.0	6.0	20	66
8224020800	8.0	8.0	25	79
8224021000	10.0	10.0	25	89
8224021200	12.0	12.0	30	102
8224021600	16.0	16.0	35	115
8224022000	20.0	20.0	40	131

ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good	●	●	●	○	○	●	●	○	○		○	○	

HPD-SUS STUB DRILL



HSS-EX

BSG
DIN
6539

FHA 38°

SIG 130°
up to 4.0mm

SIG 120°
over 4.0mm

TCDMM
h7

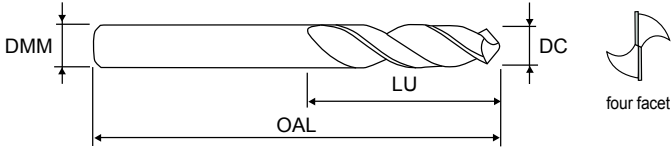
TCDC
h8

TIN
COATED



Series No. 820434

► cutting conditions : p.61



Application

Excellent performance in stainless steels, also for mild steels, aluminiums, coppers and plastics.

Advantage

High helix with sharp cutting edges - reduces built-up edge, suitable for high performance drilling.
Wide flute and stub length - increased chip removal, reduced vibration and deflection.
High vanadium HSS-EX material with superior TiN coating - higher speed and feed, longer tool life, high quality surface finish and high productivity.

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8204340200	2.0	12	44
8204340210	2.1	12	44
8204340220	2.2	13	45
8204340230	2.3	13	45
8204340240	2.4	14	46
8204340250	2.5	14	46
8204340260	2.6	14	46
8204340270	2.7	16	48
8204340280	2.8	16	48
8204340290	2.9	16	48
8204340300	3.0	16	48
8204340310	3.1	18	50
8204340320	3.2	18	50
8204340330	3.3	18	50
8204340340	3.4	20	52
8204340350	3.5	20	52
8204340360	3.6	20	52
8204340370	3.7	20	52
8204340380	3.8	22	54
8204340390	3.9	22	54
8204340400	4.0	22	54
8204340410	4.1	22	66
8204340420	4.2	22	66
8204340430	4.3	24	68
8204340440	4.4	24	68
8204340450	4.5	24	68
8204340460	4.6	24	68
8204340470	4.7	24	68

ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good	●	●	○	●	●		○	○	●				

HPD-SUS STUB DRILL



HSS-EX

BSG
DIN
6539

FHA 38°

SIG 130°

SIG 120°

TCDMM
h7

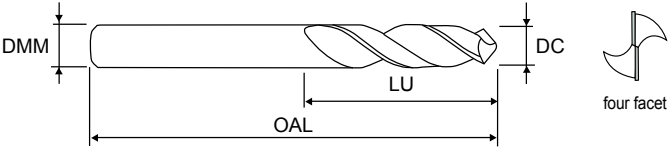
TCDC
h8

TIN
COATED



Series No. 820434

► cutting conditions : p.61



Application

Excellent performance in stainless steels, also for mild steels, aluminiums, coppers and plastics.

Advantage

High helix with sharp cutting edges - reduces built-up edge, suitable for high performance drilling.
Wide flute and stub length - increased chip removal, reduced vibration and deflection.
High vanadium HSS-EX material with superior TiN coating - higher speed and feed, longer tool life, high quality surface finish and high productivity.

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8204340760	7.6	37	81
8204340770	7.7	37	81
8204340780	7.8	37	81
8204340790	7.9	37	81
8204340800	8.0	37	81
8204340810	8.1	37	87
8204340820	8.2	37	87
8204340830	8.3	37	87
8204340840	8.4	37	87
8204340850	8.5	37	87
8204340860	8.6	40	90
8204340870	8.7	40	90
8204340880	8.8	40	90
8204340890	8.9	40	90
8204340900	9.0	40	90
8204340910	9.1	40	90
8204340920	9.2	40	90
8204340930	9.3	40	90
8204340940	9.4	40	90
8204340950	9.5	40	90
8204340960	9.6	43	93
8204340970	9.7	43	93
8204340980	9.8	43	93
8204340990	9.9	43	93
8204341000	10.0	43	93
8204341010	10.1	43	100
8204341020	10.2	43	100
8204341030	10.3	43	100

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8204341040	10.4	43	100
8204341050	10.5	43	100
8204341060	10.6	43	100
8204341070	10.7	47	104
8204341080	10.8	47	104
8204341090	10.9	47	104
8204341100	11.0	47	104
8204341110	11.1	47	104
8204341120	11.2	47	104
8204341130	11.3	47	104
8204341140	11.4	47	104
8204341150	11.5	47	104
8204341160	11.6	47	104
8204341170	11.7	47	104
8204341180	11.8	47	104
8204341190	11.9	51	108
8204341200	12.0	51	108
8204341210	12.1	51	108
8204341220	12.2	51	108
8204341230	12.3	51	108
8204341240	12.4	51	108
8204341250	12.5	51	108
8204341260	12.6	51	108
8204341270	12.7	51	108
8204341280	12.8	51	108
8204341290	12.9	51	108
8204341300	13.0	51	108

ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good	●	●	○	●	●		○	○	●				

HPD-SUS JOBBER DRILL



HSS-EX

BSG
DIN
338

FHA 38°

SIG 130°
up to 4.0mm

SIG 120°
over 4.0mm

TCDMM
h7

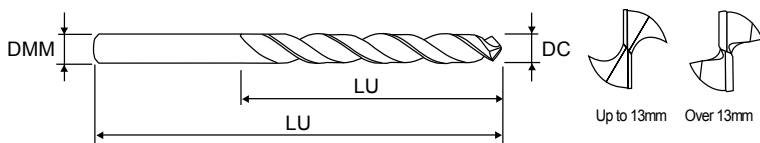
TCDC
h8

TIN
COATED



Series No. 810434

▶ cutting conditions : p.61



Application
Excellent performance in stainless steels, also for mild steels, aluminiums, coppers and plastics.

Advantage
High helix with sharp cutting edges - reduces built-up edge, suitable for high performance drilling.
Reinforced web and jobber length - increased rigidity and highly suited to 4D ~ 5D drilling.
High vanadium HSS-EX material with superior TiN coating - higher speed and feed, longer tool life, high quality surface finish and high productivity.

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8104340200	2.0	24	56
8104340210	2.1	24	56
8104340220	2.2	27	59
8104340230	2.3	27	59
8104340240	2.4	30	62
8104340250	2.5	30	62
8104340260	2.6	30	62
8104340270	2.7	33	65
8104340280	2.8	33	65
8104340290	2.9	33	65
8104340300	3.0	33	65
8104340310	3.1	36	68
8104340320	3.2	36	68
8104340330	3.3	36	68
8104340340	3.4	39	71
8104340350	3.5	39	71
8104340360	3.6	39	71
8104340370	3.7	39	71
8104340380	3.8	43	75
8104340390	3.9	43	75
8104340400	4.0	43	75
8104340410	4.1	43	87
8104340420	4.2	43	87
8104340430	4.3	47	91
8104340440	4.4	47	91
8104340450	4.5	47	91
8104340460	4.6	47	91
8104340470	4.7	47	91

ISO	P			M		K	N					S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good	●	●	○	●	●		○	○	●				

HPD-SUS JOBBER DRILL



HSS-EX

BSG
DIN
338

FHA 38°

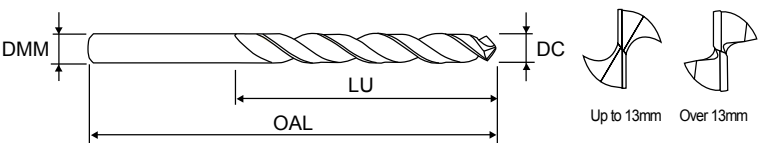
SIG 130°

SIG 120°

TCDMM
h7

TCDC
h8

TIN
COATED



Series No. 810434

▶ cutting conditions : p.61

Application
Excellent performance in stainless steels, also for mild steels, aluminiums, coppers and plastics.

Advantage
High helix with sharp cutting edges - reduces built-up edge, suitable for high performance drilling.
Reinforced web and jobber length - increased rigidity and highly suited to 4D ~ 5D drilling.
High vanadium HSS-EX material with superior TiN coating - higher speed and feed, longer tool life, high quality surface finish and high productivity.

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8104340760	7.6	75	119
8104340770	7.7	75	119
8104340780	7.8	75	119
8104340790	7.9	75	119
8104340800	8.0	75	119
8104340810	8.1	75	125
8104340820	8.2	75	125
8104340830	8.3	75	125
8104340840	8.4	75	125
8104340850	8.5	75	125
8104340860	8.6	81	131
8104340870	8.7	81	131
8104340880	8.8	81	131
8104340890	8.9	81	131
8104340900	9.0	81	131
8104340910	9.1	81	131
8104340920	9.2	81	131
8104340930	9.3	81	131
8104340940	9.4	81	131
8104340950	9.5	81	131
8104340960	9.6	87	137
8104340970	9.7	87	137
8104340980	9.8	87	137
8104340990	9.9	87	137
8104341000	10.0	87	137
8104341010	10.1	87	144
8104341020	10.2	87	144

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8104341030	10.3	87	144
8104341050	10.5	87	144
8104341100	11.0	94	151
8104341110	11.1	94	151
8104341120	11.2	94	151
8104341150	11.5	94	151
8104341180	11.8	94	151
8104341200	12.0	101	158
8104341250	12.5	101	158
8104341270	12.7	101	158
8104341280	12.8	101	158
8104341300	13.0	101	158
8104341350	13.5	106	166
8104341400	14.0	106	166
8104341410	14.1	109	169
8104341450	14.5	109	169
8104341500	15.0	109	169
8104341550	15.5	112	172
8104341600	16.0	112	172
8104341650	16.5	115	181
8104341700	17.0	115	181
8104341750	17.5	118	184
8104341800	18.0	118	184
8104341850	18.5	122	188
8104341900	19.0	122	188
8104341950	19.5	125	191
8104342000	20.0	125	191

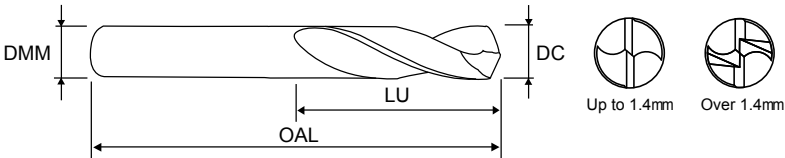
ISO	P			M		K	N					S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good	●	●	○	●	●		○	○	●				

SABRE STUB DRILL



Series No. 820422

► cutting conditions : p.61



Application
Steels, Pre-hardened steels, Hardened steels(HRc30~45), stainless steels, cast irons, titanium, nickel alloys and aluminums.

Advantage
Point designed to maximize Self-centering.
Wide flute design for good chip evacuation.
Premium powder base material for excellent toughness.
TiAlN coated for extended tool life.

EUROPA CODE ORCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8204220100	1.0	3.0	6	38
8204220110	1.1	3.0	7	39
8204220120	1.2	3.0	8	40
8204220130	1.3	3.0	8	40
8204220140	1.4	3.0	9	41
8204220150	1.5	3.0	9	41
8204220160	1.6	3.0	10	42
8204220170	1.7	3.0	10	42
8204220180	1.8	3.0	11	43
8204220190	1.9	3.0	11	43
8204220200	2.0	3.0	12	44
8204220210	2.1	3.0	12	44
8204220220	2.2	3.0	13	45
8204220230	2.3	3.0	13	45
8204220240	2.4	3.0	14	46
8204220250	2.5	3.0	14	46
8204220260	2.6	3.0	14	46
8204220270	2.7	3.0	16	48
8204220280	2.8	3.0	16	48
8204220290	2.9	3.0	16	48
8204220300	3.0	3.0	16	48
8204220310	3.1	4.0	18	50
8204220320	3.2	4.0	18	50
8204220330	3.3	4.0	18	50
8204220340	3.4	4.0	20	52
8204220350	3.5	4.0	20	52
8204220360	3.6	4.0	20	52
8204220370	3.7	4.0	20	52
8204220380	3.8	4.0	22	54
8204220390	3.9	4.0	22	54
8204220400	4.0	4.0	22	54

EUROPA CODE ORCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8204220410	4.1	6.0	22	66
8204220420	4.2	6.0	22	66
8204220430	4.3	6.0	24	68
8204220440	4.4	6.0	24	68
8204220450	4.5	6.0	24	68
8204220460	4.6	6.0	24	68
8204220470	4.7	6.0	24	68
8204220480	4.8	6.0	26	70
8204220490	4.9	6.0	26	70
8204220500	5.0	6.0	26	70
8204220510	5.1	6.0	26	70
8204220520	5.2	6.0	26	70
8204220530	5.3	6.0	26	70
8204220540	5.4	6.0	28	72
8204220550	5.5	6.0	28	72
8204220560	5.6	6.0	28	72
8204220570	5.7	6.0	28	72
8204220580	5.8	6.0	28	72
8204220590	5.9	6.0	28	72
8204220600	6.0	6.0	28	72
8204220610	6.1	8.0	31	75
8204220620	6.2	8.0	31	75
8204220630	6.3	8.0	31	75
8204220640	6.4	8.0	31	75
8204220650	6.5	8.0	31	75
8204220660	6.6	8.0	31	75
8204220670	6.7	8.0	31	75
8204220680	6.8	8.0	34	78
8204220690	6.9	8.0	34	78
8204220700	7.0	8.0	34	78
8204220710	7.1	8.0	34	78

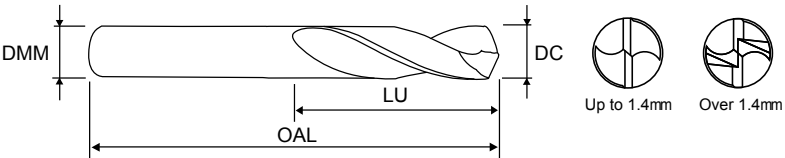
ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent ○ Good	●	●	●	●	○							●	●	

SABRE STUB DRILL



Series No. 820422

► cutting conditions : p.61



Application
Steels, Pre-hardened steels, Hardened steels(HRc30~45), stainless steels, cast irons, titanium, nickel alloys and aluminums.

Advantage
Point designed to maximize Self-centering.
Wide flute design for good chip evacuation.
Premium powder base material for excellent toughness.
TiAlN coated for extended tool life.

EUROPA CODE ORCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8204220720	7.2	8.0	34	78
8204220730	7.3	8.0	34	78
8204220740	7.4	8.0	34	78
8204220750	7.5	8.0	34	78
8204220760	7.6	8.0	37	81
8204220770	7.7	8.0	37	81
8204220780	7.8	8.0	37	81
8204220790	7.9	8.0	37	81
8204220800	8.0	8.0	37	81
8204220810	8.1	10	37	87
8204220820	8.2	10	37	87
8204220830	8.3	10	37	87
8204220840	8.4	10	37	87
8204220850	8.5	10	37	87
8204220860	8.6	10	40	90
8204220870	8.7	10	40	90
8204220880	8.8	10	40	90
8204220890	8.9	10	40	90
8204220900	9.0	10	40	90
8204220910	9.1	10	40	90
8204220920	9.2	10	40	90
8204220930	9.3	10	40	90
8204220940	9.4	10	40	90
8204220950	9.5	10	40	90
8204220960	9.6	10	43	93
8204220970	9.7	10	43	93
8204220980	9.8	10	43	93
8204220990	9.9	10	43	93
8204221000	10.0	10	43	93
8204221010	10.1	12	43	100

EUROPA CODE ORCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8204221020	10.2	12	43	100
8204221030	10.3	12	43	100
8204221040	10.4	12	43	100
8204221050	10.5	12	43	100
8204221060	10.6	12	43	100
8204221070	10.7	12	47	104
8204221080	10.8	12	47	104
8204221090	10.9	12	47	104
8204221100	11.0	12	47	104
8204221110	11.1	12	47	104
8204221120	11.2	12	47	104
8204221130	11.3	12	47	104
8204221140	11.4	12	47	104
8204221150	11.5	12	47	104
8204221160	11.6	12	47	104
8204221170	11.7	12	47	104
8204221180	11.8	12	47	104
8204221190	11.9	12	51	108
8204221200	12.0	12	51	108
8204221210	12.1	12	51	108
8204221220	12.2	12	51	108
8204221230	12.3	12	51	108
8204221240	12.4	12	51	108
8204221250	12.5	12	51	108
8204221260	12.6	12	51	108
8204221270	12.7	12	51	108
8204221280	12.8	12	51	108
8204221290	12.9	12	51	108
8204221300	13.0	12	51	108

ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent ○ Good	●	●	●	●	○							●	●	

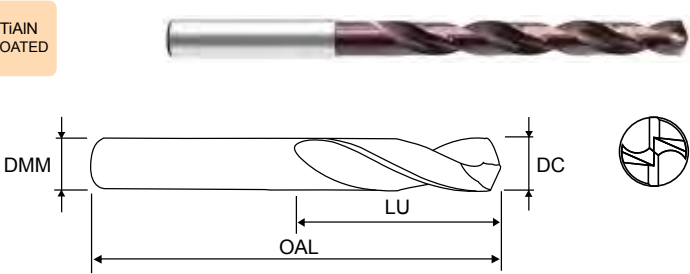
SABRE JOBBER DRILL

SABRE JOBBER DRILL



Series No. 821422

► cutting conditions : p.61



Application
Steels, Pre-hardened steels, Hardened steels(HRc30~45), stainless steels, cast irons, titanium, nickel alloys and aluminiums.

Advantage
Point designed to maximize Self-centering.
Wide flute design for good chip evacuation.
Premium powder base material for excellent toughness.
TiAIN coated for extended tool life.

EUROPA CODE ORCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8214220200	2.0	3.0	24	56
8214220210	2.1	3.0	24	56
8214220220	2.2	3.0	25	56
8214220230	2.3	3.0	25	56
8214220240	2.4	3.0	30	61
8214220250	2.5	3.0	30	61
8214220260	2.6	3.0	30	61
8214220270	2.7	3.0	33	64
8214220280	2.8	3.0	33	64
8214220290	2.9	3.0	33	64
8214220300	3.0	3.0	33	64
8214220310	3.1	4.0	36	68
8214220320	3.2	4.0	36	68
8214220330	3.3	4.0	36	68
8214220340	3.4	4.0	39	71
8214220350	3.5	4.0	39	71
8214220360	3.6	4.0	39	71
8214220370	3.7	4.0	39	71
8214220380	3.8	4.0	43	75
8214220390	3.9	4.0	43	75
8214220400	4.0	4.0	43	75
8214220410	4.1	6.0	43	85
8214220420	4.2	6.0	43	85
8214220430	4.3	6.0	47	89
8214220440	4.4	6.0	47	89
8214220450	4.5	6.0	47	89
8214220460	4.6	6.0	47	89
8214220470	4.7	6.0	47	89

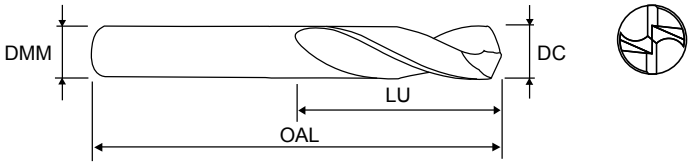
EUROPA CODE ORCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8214220480	4.8	6.0	52	94
8214220490	4.9	6.0	52	94
8214220500	5.0	6.0	52	94
8214220510	5.1	6.0	52	94
8214220520	5.2	6.0	52	94
8214220530	5.3	6.0	52	94
8214220540	5.4	6.0	57	99
8214220550	5.5	6.0	57	99
8214220560	5.6	6.0	57	99
8214220570	5.7	6.0	57	99
8214220580	5.8	6.0	57	99
8214220590	5.9	6.0	57	99
8214220600	6.0	6.0	57	99
8214220610	6.1	8.0	63	107
8214220620	6.2	8.0	63	107
8214220630	6.3	8.0	63	107
8214220640	6.4	8.0	63	107
8214220650	6.5	8.0	63	107
8214220660	6.6	8.0	63	107
8214220670	6.7	8.0	63	107
8214220680	6.8	8.0	69	113
8214220690	6.9	8.0	69	113
8214220700	7.0	8.0	69	113
8214220710	7.1	8.0	69	113
8214220720	7.2	8.0	69	113
8214220730	7.3	8.0	69	113
8214220740	7.4	8.0	69	113
8214220750	7.5	8.0	69	113

ISO		P			M		K		N					S		H
VDI		1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39	
EMG		11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16	
● Excellent	○ Good	●	●	●	●	○							●	●		



Series No. 821422

► cutting conditions : p.61



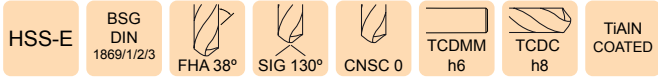
Application
Steels, Pre-hardened steels, Hardened steels(HRc30~45), stainless steels, cast irons, titanium, nickel alloys and aluminiums.

Advantage
Point designed to maximize Self-centering.
Wide flute design for good chip evacuation.
Premium powder base material for excellent toughness.
TiAIN coated for extended tool life.

EUROPA CODE ORCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8214220760	7.6	8.0	75	119
8214220770	7.7	8.0	75	119
8214220780	7.8	8.0	75	119
8214220790	7.9	8.0	75	119
8214220800	8.0	8.0	75	119
8214220810	8.1	10.0	75	125
8214220820	8.2	10.0	75	125
8214220830	8.3	10.0	75	125
8214220840	8.4	10.0	75	125
8214220850	8.5	10.0	75	125
8214220860	8.6	10.0	81	131
8214220870	8.7	10.0	81	131
8214220880	8.8	10.0	81	131
8214220890	8.9	10.0	81	131
8214220900	9.0	10.0	81	131
8214220910	9.1	10.0	81	131
8214220920	9.2	10.0	81	131
8214220930	9.3	10.0	81	131
8214220940	9.4	10.0	81	131
8214220950	9.5	10.0	81	131
8214220960	9.6	10.0	87	137
8214220970	9.7	10.0	87	137
8214220980	9.8	10.0	87	137
8214220990	9.9	10.0	87	137
8214221000	10.0	10.0	87	137
8214221010	10.1	12.0	87	144
8214221020	10.2	12.0	87	144
8214221030	10.3	12.0	87	144

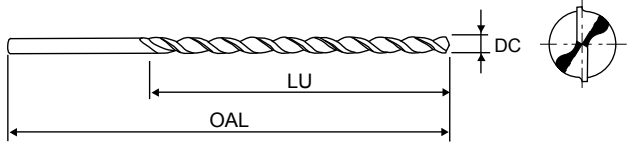
EUROPA CODE ORCODE	OD DC	SD DMM	FL.LTH LU	O/ALL OAL
8214221040	10.4	12.0	87	144
8214221050	10.5	12.0	87	144
8214221060	10.6	12.0	87	144
8214221070	10.7	12.0	94	151
8214221080	10.8	12.0	94	151
8214221090	10.9	12.0	94	151
8214221100	11.0	12.0	94	151
8214221110	11.1	12.0	94	151
8214221120	11.2	12.0	94	151
8214221130	11.3	12.0	94	151
8214221140	11.4	12.0	94	151
8214221150	11.5	12.0	94	151
8214221160	11.6	12.0	94	151
8214221170	11.7	12.0	94	151
8214221180	11.8	12.0	94	151
8214221190	11.9	12.0	101	158
8214221200	12.0	12.0	101	158
8214221210	12.1	12.0	101	158
8214221220	12.2	12.0	101	158
8214221230	12.3	12.0	101	158
8214221240	12.4	12.0	101	158
8214221250	12.5	12.0	101	158
8214221260	12.6	12.0	101	158
8214221270	12.7	12.0	101	158
8214221280	12.8	12.0	101	158
8214221290	12.9	12.0	101	158
8214221300	13.0	12.0	101	158

ISO		P			M		K		N					S		H
VDI		1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39	
EMG		11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16	
● Excellent	○ Good	●	●	●	●	○							●	●		



Series No. 816327, 817327, 819327

► cutting conditions : p.62



Application :
Drilling into steel in general, alloy steels, cast iron, aluminium and aluminium alloys

Advantage :
Coated tip gives extended tool life.
Special design - Good chip removal

DIN 1869/1

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8163270200	2.0	85	125
8163270250	2.5	95	140
8163270300	3.0	100	150
8163270350	3.5	115	165
8163270400	4.0	120	175
8163270450	4.5	125	185
8163270500	5.0	135	195
8163270550	5.5	140	205
8163270600	6.0	140	205
8163270650	6.5	150	215
8163270700	7.0	155	225
8163270750	7.5	155	225
8163270800	8.0	165	240
8163270850	8.5	165	240
8163270900	9.0	175	250
8163270950	9.5	175	250
8163271000	10.0	185	265
8163271050	10.5	185	265

DIN 1869/2

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8173270300	3.0	130	190
8173270350	3.5	145	210
8173270400	4.0	150	220
8173270450	4.5	160	235
8173270500	5.0	170	245
8173270550	5.5	180	260
8173270600	6.0	180	260
8173270650	6.5	190	275
8173270700	7.0	200	290
8173270750	7.5	200	290
8173270800	8.0	210	305
8173270850	8.5	210	305
8173270900	9.0	220	320
8173270950	9.5	220	320
8173271000	10.0	235	340
8173271020	10.2	235	340

DIN 1869/3

EUROPA CODE ORDCODE	OD = SD DC = DMM	FL.LTH LU	O/ALL OAL
8193270400	4.0	190	280
8193270500	5.0	210	315
8193270600	6.0	225	330
8193270800	8.0	265	390
8193271000	10.0	295	430

ISO	P			M		K		N				S		H
VDI	1-5	6-9	10-11	12, 13	14	15-16	17-20	21-25	26-28	29.1	29.2	31-35	36-37	38-39
EMG	11-12	13-14	15	21-22	23	31-32	33-34	71-74	61-64	81-82	83	51-53	41-43	16
● Excellent	○ Good	●	●	●		●	●	○						

i CUTTING DATA

CUTTING DATA



823323, 825323, 828323 (Inox)



ISO	VDI	v _c (m/min)	f _n (mm/rev)													
			ø1.0 -1.9	ø2.0 -2.9	ø3.0 -3.9	ø4.0 -4.9	ø5.0 -5.9	ø6.0 -6.9	ø7.0 -7.9	ø8.0 -9.9	ø10.0 -11.9	ø12.0 -13.5	ø14.0 -15.5	ø16.0 -17.5	ø18.0 -19.5	ø20.0
P	1-5	115 (105-125)	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10	0.12	0.15	0.20	0.22	0.24
	6-9	105 (95-115)	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10	0.12	0.15	0.20	0.22	0.24
	10-11	95 (85-105)	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10	0.12	0.15	0.20	0.22	0.24
M	12-13	65 (60-70)	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10	0.12	0.16	0.20	0.22	0.24
	14	40 (35-45)	0.02	0.03	0.03	0.03	0.03	0.04	0.05	0.06	0.08	0.10	0.12	0.15	0.17	0.19
S	31-32	30 (25-35)	0.05	0.05	0.06	0.08	0.08	0.10	0.10	0.11	0.12	0.14	0.14	0.15	0.15	0.15
	33-35	25 (20-30)	0.03	0.03	0.04	0.06	0.06	0.08	0.08	0.09	0.10	0.12	0.12	0.13	0.13	0.13
	36	45 (40-50)	0.01	0.02	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.10	0.12	0.14	0.16	0.18
	37	40 (35-45)	0.01	0.02	0.03	0.04	0.05	0.06	0.06	0.07	0.08	0.10	0.12	0.14	0.16	0.18
N	21-24	210 (200-220)	0.04	0.08	0.12	0.18	0.20	0.25	0.28	0.30	0.40	0.50	0.60	0.80	1.00	1.20
	25	165 (155-175)	0.03	0.06	0.10	0.15	0.18	0.25	0.28	0.30	0.35	0.40	0.50	0.60	0.70	0.80

- For 8xD drills reduce feed rate by 15%
- For recommended coolant pressure refer to p.64

803323, 804323, 805323 (T/Coolant)



ISO	VDI	v _c (m/min)	f _n (mm/rev)													
			ø1.0 -1.9	ø2.0 -2.9	ø3.0 -3.9	ø4.0 -4.9	ø5.0 -5.9	ø6.0 -6.9	ø7.0 -7.9	ø8.0 -9.9	ø10.0 -11.9	ø12.0 -13.5	ø14.0 -15.5	ø16.0 -17.5	ø18.0 -19.5	ø20.0
P	1-5	140 (130-150)	0.05	0.07	0.16	0.17	0.18	0.20	0.22	0.25	0.30	0.33	0.36	0.39	0.42	0.45
	6-9	125 (115-135)	0.05	0.07	0.16	0.17	0.18	0.20	0.22	0.25	0.30	0.33	0.36	0.39	0.42	0.45
	10-11	110 (100-120)	0.05	0.07	0.16	0.17	0.18	0.20	0.22	0.25	0.30	0.33	0.36	0.39	0.42	0.45
K	15-16	240 (230-250)	0.15	0.07	0.16	0.17	0.18	0.20	0.22	0.25	0.30	0.33	0.36	0.39	0.42	0.45
	17-20	150 (140-160)	0.15	0.07	0.16	0.17	0.18	0.20	0.22	0.25	0.30	0.33	0.36	0.39	0.42	0.45

- For 8xD drills reduce feed rate by 15%
- For diameters below 3.0mm reduce cutting speed by 40%
- For recommended coolant pressure refer to p.64

CUTTING DATA

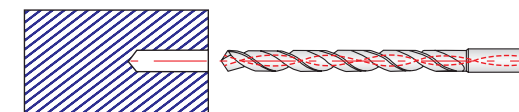


810323, 815323, 820323, 826323, 860323 (MQL)

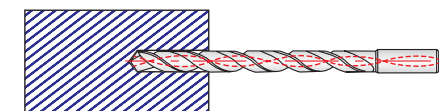


ISO	VDI	v _c (m/min)	f _n (mm/rev)													
			ø1.0 -1.9	ø2.0 -2.9	ø3.0 -3.9	ø4.0 -4.9	ø5.0 -5.9	ø6.0 -6.9	ø7.0 -7.9	ø8.0 -9.9	ø10.0 -11.9	ø12.0 -13.5	ø14.0 -15.5	ø16.0 -17.5	ø18.0 -19.5	ø20.0
P	1-5	95 (65-125)	-	-	0.09	0.12	0.15	0.18	-	0.22	0.28	0.33	0.37	-	-	-
	6-9	85 (60-115)	-	-	0.09	0.12	0.15	0.18	-	0.22	0.28	0.33	0.37	-	-	-
	10-11	75 (50-100)	-	-	0.09	0.12	0.15	0.18	-	0.22	0.28	0.33	0.37	-	-	-
K	15-16	95 (65-125)	-	-	0.09	0.12	0.15	0.18	-	0.22	0.28	0.33	0.37	-	-	-
	17-20	70 (60-80)	-	-	0.09	0.12	0.15	0.18	-	0.22	0.28	0.33	0.37	-	-	-

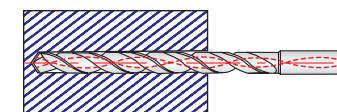
- For 25xD and 30xD drills reduce cutting speed by up to 25%
- For recommended coolant pressure refer to p.64



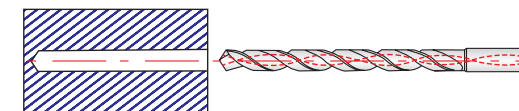
1. Guide drilling should be carried out with 5xD drill 0.1mm larger than finished hole diameter and drilled between 3xD and 5xD depth.



2. For main drilling, reduce to 300RPM and feed in at 400mm/min while entering pilot hole.



3. Just before the end of the pilot hole, reduce feed rate to zero and increase the RPM according to the recommended cutting condition shown in the chart above.



4. Increase feed rate and drill to depth without step drilling.

5. When extracting drill after drilling, reduce to 300RPM and feed rate of 1000mm/min when drill reaches pilot hole depth.

6. When exiting hole reduce feed by 50%.

v_c - cutting speed (m/min)
 n - RPM (rev/min)
 f_n - feed rate (mm/rev)
 ø - drill diameter (mm)

$$\text{To calculate RPM from cutting speed: } n = \frac{v_c \cdot 1000}{\pi \cdot \phi}$$

$$\text{To calculate cutting speed from RPM: } v_c = \frac{n \cdot \pi \cdot \phi}{1000}$$

All recommendations are based on ideal machining conditions. Adjustments may need to be made according to your set-up. The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.

CUTTING DATA



821223 (Pulsar HRC70)



ISO	VDI	Hardness HRc	v _c (m/min)	f _n (mm/rev)											
				ø3.0 -3.9	ø4.0 -4.9	ø5.0 -5.9	ø6.0 -6.9	ø7.0 -7.9	ø8.0 -9.9	ø10.0 -11.9	ø12.0 -13.5	ø14.0 -15.5	ø16.0 -17.5	ø18.0 -19.5	ø20.0
P	10-11	35-45	20 (16-24)	0.05	0.05	0.05	0.05	-	0.05	0.05	0.05	0.05	-	-	-
H	38-39	45-55	18 (14-22)	0.04	0.04	0.04	0.04	-	0.04	0.04	0.04	0.04	-	-	-
		55-65	13 (10-16)	0.04	0.04	0.04	0.04	-	0.04	0.04	0.04	0.04	-	-	-
		65-70	10 (8-13)	0.04	0.04	0.04	0.04	-	0.04	0.04	0.04	0.04	-	-	-

843303, 845303, 848303 (Alu-XP)



ISO	VDI	v _c (m/min)	f _n (mm/rev)													
			ø1.0 -1.9	ø2.0 -2.9	ø3.0 -3.9	ø4.0 -4.9	ø5.0 -5.9	ø6.0 -6.9	ø7.0 -7.9	ø8.0 -9.9	ø10.0 -11.9	ø12.0 -13.5	ø14.0 -15.5	ø16.0 -17.5	ø18.0 -19.5	ø20.0
N	21-24	140 (80-200)	-	-	0.20	0.30	0.40	0.50	0.50	0.60	0.60	0.70	0.70	0.80	0.90	1.00
	25	140 (80-200)	-	-	0.15	0.20	0.25	0.30	0.30	0.35	0.35	0.40	0.40	0.40	0.40	0.40

- For 8xD drills reduce feed rate by 15%
► For recommended coolant pressure refer to p.64

850390 (CFRP)



ISO	VDI	v _c (m/min)	f _n (mm/rev)													
			ø1.0 -1.9	ø2.0 -2.9	ø3.0 -3.9	ø4.0 -4.9	ø5.0 -5.9	ø6.0 -6.9	ø7.0 -7.9	ø8.0 -9.9	ø10.0 -11.9	ø12.0 -13.5	ø14.0 -15.5	ø16.0 -17.5	ø18.0 -19.5	ø20.0
N	29.2	125 (100-150)	-	0.03	0.04	0.04	0.05	0.05	0.06	0.06	0.07	0.07	-	-	-	-

v_c - cutting speed (m/min)
n - RPM (rev/min)
f_n - feed rate (mm/rev)
ø - drill diameter (mm)

To calculate RPM from cutting speed: $n = \frac{v_c \cdot 1000}{\pi \cdot \varnothing}$

To calculate cutting speed from RPM: $v_c = \frac{n \cdot \pi \cdot \varnothing}{1000}$

All recommendations are based on ideal machining conditions. Adjustments may need to be made according to your set-up.
The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.

CUTTING DATA



803366, 805366 (High Feed)



ISO	VDI	v _c (m/min)	f _n (mm/rev)											
			ø5.0 -5.9	ø6.0 -6.9	ø7.0 -7.9	ø8.0 -8.9	ø9.0 -9.9	ø10.0 -11.9	ø12.0 -13.5	ø14.0 -15.5	ø16.0 -17.5	ø18.0 -19.5	ø20.0	
P	1-5	100 (90-110)	0.22	0.27	0.31	0.36	0.40	0.45	0.54	0.63	0.64	0.72	0.79	
	6-9	75 (70-80)	0.22	0.27	0.31	0.36	0.40	0.45	0.51	0.59	0.60	0.67	0.74	
K	15-16	100 (90-110)	0.26	0.31	0.37	0.42	0.47	0.52	0.63	0.72	0.73	0.81	0.89	
	17-20	80 (70-90)	0.22	0.27	0.31	0.36	0.40	0.45	0.54	0.62	0.64	0.72	0.80	

- For recommended coolant pressure refer to p.64

809323 (Flat Bottom)



ISO	VDI	v _c (m/min)	f _n (mm/rev)											
			ø3.0 -3.9	ø4.0 -4.9	ø5.0 -5.9	ø6.0 -6.9	ø7.0 -7.9	ø8.0 -9.9	ø10.0 -11.9	ø12.0 -13.5	ø14.0 -15.5	ø16.0 -17.5	ø18.0 -19.5	ø20.0
P	1-5	70 (35-75)	0.05	0.07	0.08	0.09	0.10	0.12	0.17	0.21	0.24	0.28	0.31	0.34
	6-9	38 (35-40)	0.05	0.06	0.08	0.09	0.10	0.12	0.15	0.18	0.20	0.24	0.27	0.31
	10-11	25 (22-28)	0.03	0.04	0.05	0.06	0.07	0.08	0.10	0.12	0.14	0.16	0.18	0.20
M	14	30 (25-35)	0.02	0.03	0.04	0.05	0.05	0.06	0.08	0.10	0.11	0.12	0.13	0.15
K	15-20	68 (65-70)	0.04	0.06	0.07	0.09	0.10	0.12	0.15	0.18	0.20	0.24	0.27	0.30
N	21-24	165 (150-180)	0.06	0.08	0.10	0.12	0.14	0.16	0.20	0.24	0.28	0.32	0.36	0.40

809323 - Recommended cutting conditions for inclined surfaces

Surface angle	Cutting conditions	
	RPM	Feed
0° - 15°	100%	100%
15° - 30°	100%	50%
> 30°	70%	30%

CUTTING DATA



802323, 807323, 808323 (TiAlN)



ISO	VDI	v _c (m/min)	f _n (mm/rev)													
			ø1.0 -1.9	ø2.0 -2.9	ø3.0 -3.9	ø4.0 -4.9	ø5.0 -5.9	ø6.0 -6.9	ø7.0 -7.9	ø8.0 -9.9	ø10.0 -11.9	ø12.0 -13.5	ø14.0 -15.5	ø16.0 -17.5	ø18.0 -19.5	ø20.0
P	1-5	100 (100-120)	0.04	0.06	0.13	0.14	0.15	0.17	0.19	0.22	0.25	0.27	0.29	0.31	0.33	0.35
	6-9	95 (85-105)	0.04	0.06	0.13	0.14	0.15	0.17	0.19	0.22	0.25	0.27	0.29	0.31	0.33	0.35
	10-11	80 (70-90)	0.04	0.06	0.13	0.14	0.15	0.17	0.19	0.22	0.25	0.27	0.29	0.31	0.33	0.35
K	15-16	240 (180-200)	0.04	0.06	0.13	0.14	0.15	0.17	0.19	0.22	0.25	0.27	0.29	0.31	0.33	0.35
	17-20	120 (110-130)	0.04	0.16	0.13	0.14	0.15	0.17	0.19	0.22	0.25	0.27	0.29	0.31	0.33	0.35

► For 5xD drills reduce feed rate by 15%

► For diameters below 3.0mm reduce cutting speed by 40%

800303, 801303, 806303, 806403



ISO	VDI	v _c (m/min)	f _n (mm/rev)													
			ø1.0 -1.9	ø2.0 -2.9	ø3.0 -3.9	ø4.0 -4.9	ø5.0 -5.9	ø6.0 -6.9	ø7.0 -7.9	ø8.0 -9.9	ø10.0 -11.9	ø12.0 -13.5	ø14.0 -15.5	ø16.0 -17.5	ø18.0 -19.5	ø20.0
P	1-5	70 (65-75)	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.11	0.13	0.15	-	-	-	-
	6-9	50 (45-55)	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.11	0.13	0.15	-	-	-	-
	10-11	40 (35-45)	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.11	0.13	0.15	-	-	-	-
M	12-13	35 (30-40)	0.03	0.04	0.04	0.05	0.06	0.07	0.08	0.10	0.12	0.13	-	-	-	-
K	15-16	90 (80-100)	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.13	0.17	0.20	-	-	-	-
	17-20	60 (50-70)	0.04	0.05	0.06	0.07	0.08	0.09	0.10	0.13	0.17	0.20	-	-	-	-

v_c - cutting speed (m/min)

n - RPM (rev/min)

f_n - feed rate (mm/rev)

ø - drill diameter (mm)

$$\text{To calculate RPM from cutting speed: } n = \frac{v_c \cdot 1000}{\pi \cdot \phi}$$

$$\text{To calculate cutting speed from RPM: } v_c = \frac{n \cdot \pi \cdot \phi}{1000}$$

All recommendations are based on ideal machining conditions. Adjustments may need to be made according to your set-up.
The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.

CUTTING DATA



820434, 810434 (HPD-SUS)



ISO	VDI	v _c (m/min)	f _n (mm/rev)													
			ø1.0 -1.9	ø2.0 -2.9	ø3.0 -3.9	ø4.0 -4.9	ø5.0 -5.9	ø6.0 -6.9	ø7.0 -7.9	ø8.0 -9.9	ø10.0 -11.9	ø12.0 -13.5	ø14.0 -15.5	ø16.0 -17.5	ø18.0 -19.5	ø20.0
P	1-5	35 (30-40)	-	0.08	0.13	0.14	0.16	0.18	0.20	0.22	0.26	0.32	0.36	0.40	0.45	0.47
	6-9	30 (25-35)	-	0.08	0.13	0.14	0.16	0.18	0.20	0.22	0.26	0.32	0.36	0.40	0.45	0.47
	10-11	25 (20-30)	-	0.08	0.13	0.14	0.16	0.18	0.20	0.22	0.26	0.32	0.36	0.40	0.45	0.47
M	12-13	18 (15-20)	-	0.07	0.08	0.10	0.15	0.18	0.21	0.24	0.30	0.36	0.44	0.48	0.50	0.53
	14	15 (13-18)	-	0.03	0.04	0.06	0.08	0.09	0.10	0.12	0.15	0.18	0.23	0.26	0.29	0.33
N	21-24	80 (70-90)	-	0.09	0.13	0.18	0.22	0.26	0.30	0.34	0.40	0.50	0.55	0.62	0.70	0.75
	25	32 (30-35)	-	0.06	0.08	0.10	0.13	0.15	0.17	0.20	0.25	0.30	0.33	0.35	0.40	0.40
	29.1	32 (30-35)	-	0.06	0.08	0.10	0.13	0.15	0.17	0.20	0.25	0.30	0.33	0.35	0.40	0.40

► For 810434 drills reduce feed rate by 15%

820422, 821422 (SABRE)



ISO	VDI	v _c (m/min)	f _n (mm/rev)													
			ø1.0 -1.9	ø2.0 -2.9	ø3.0 -3.9	ø4.0 -4.9	ø5.0 -5.9	ø6.0 -6.9	ø7.0 -7.9	ø8.0 -9.9	ø10.0 -11.9	ø12.0 -13.5	ø14.0 -15.5	ø16.0 -17.5	ø18.0 -19.5	ø20.0
P	1-5	35 (30-40)	0.04	0.06	0.12	0.15	0.18	0.20	0.22	0.24	0.27	0.29	-	-	-	-
	6-9	30 (25-35)	0.03	0.05	0.09	0.13	0.16	0.18	0.19	0.20	0.24	0.26	-	-	-	-
	10-11	25 (20-30)	0.03	0.05	0.09	0.13	0.16	0.18	0.19	0.20	0.24	0.26	-	-	-	-
M	12-13	18 (15-20)	0.06	0.08	0.09	0.11	0.17	0.19	0.22	0.26	0.33	0.39	-	-	-	-
	14	15 (13-18)	0.03	0.04	0.05	0.07	0.09	0.10	0.12	0.14	0.17	0.20	-	-	-	-
S	31-35	4 (3-6)	0.01	0.03	0.05	0.07	0.09	0.10	0.11	0.13	0.16	0.19	-	-	-	-
	36-37	4 (3-6)	0.01	0.03	0.05	0.07	0.09	0.10	0.11	0.13	0.16	0.19	-	-	-	-

► For 821422 drills reduce feed rate by 15%

CUTTING DATA



816327, 817327, 819327 

ISO	VDI	v _c (m/min)	f _n (mm/rev)													
			ø1.0 -1.9	ø2.0 -2.9	ø3.0 -3.9	ø4.0 -4.9	ø5.0 -5.9	ø6.0 -6.9	ø7.0 -7.9	ø8.0 -9.9	ø10.0 -11.9	ø12.0 -13.5	ø14.0 -15.5	ø16.0 -17.5	ø18.0 -19.5	ø20.0
P	1-5	18 (15-20)	-	0.04	0.05	0.06	0.06	0.08	0.09	0.10	0.13	-	-	-	-	-
	6-9	13 (10-15)	-	0.04	0.05	0.06	0.06	0.08	0.09	0.10	0.13	-	-	-	-	-
	10-11	11 (8-13)	-	0.03	0.04	0.05	0.05	0.06	0.07	0.08	0.10	-	-	-	-	-
K	15-16	23 (20-25)	-	0.07	0.10	0.13	0.13	0.16	0.18	0.20	0.25	-	-	-	-	-
	17-20	10 (7-12)	-	0.06	0.08	0.10	0.10	0.13	0.15	0.17	0.21	-	-	-	-	-
N	21-24	33 (30-35)	-	0.06	0.07	0.08	0.09	0.10	0.11	0.13	0.16	-	-	-	-	-

821402, 822402 (Spotting Drills) 

ISO	VDI	v _c (m/min)	f _n (mm/rev)								
			ø3.0	ø4.0	ø5.0	ø6.0	ø8.0	ø10.0	ø12.0	ø16.0	ø20.0
P	1-5	20 (25-25)	0.050	0.055	0.063	0.080	0.130	0.145	0.160	0.200	0.240
	6-9	18 (15-20)	0.045	0.050	0.060	0.075	0.125	0.140	0.150	0.210	0.230
	10-11	15 (10-20)	0.045	0.050	0.060	0.075	0.125	0.140	0.150	0.210	0.230
M	12-14	8 (6-10)	0.050	0.055	0.063	0.080	0.130	0.145	0.160	0.200	0.240
K	15-20	8 (6-10)	0.050	0.055	0.063	0.080	0.130	0.145	0.160	0.200	0.240
S	31-35	5 (4-6)	0.025	0.031	0.038	0.045	0.075	0.090	0.100	0.120	0.140
	36-37	5 (4-6)	0.025	0.031	0.038	0.045	0.075	0.090	0.100	0.120	0.140
N	21-25	40 (40-45)	0.063	0.070	0.076	0.120	0.180	0.200	0.225	0.275	0.325
	26-27	30 (25-35)	0.063	0.070	0.076	0.120	0.180	0.200	0.225	0.275	0.325

v_c - cutting speed (m/min)
n - RPM (rev/min)
f_n - feed rate (mm/rev)
ø - drill diameter (mm)

To calculate RPM from cutting speed: $n = \frac{v_c \cdot 1000}{\pi \cdot \varnothing}$

To calculate cutting speed from RPM: $v_c = \frac{n \cdot \pi \cdot \varnothing}{1000}$

All recommendations are based on ideal machining conditions. Adjustments may need to be made according to your set-up. The recommendations for speeds, feeds and other parameters presented in this chart are nominal recommendations and should be considered only as good starting points.

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 INFORMATION

- TERMINOLOGY
- FORMULAE
- COOLANT GUIDE
- GENERAL DATA
- TROUBLESHOOTING
- MATERIAL CHARTS



Terminology

- n = Spindle speed in RPM

v_c = Cutting speed in m/min

f_n = Cutting feed in m/min

f_z = feed per tooth

v_f = Penetration rate in mm/min

z_n = Number of flutes

D_c = Drill diameter in mm
- k_c = Specific cutting force in N/mm²

P_c = Power consumption in kW

M_c = Torque in Nm

K_r = Drill point angle/2 in degrees

F_f = Feed force in Newtons

Drilling formulae

SPINDLE SPEED (n)	CUTTING SPEED (v _c)	PENETRATION RATE (v _f)
$n = \frac{v_c \times 1000}{\pi \times D_c} \text{ (rev/min)}$	$v_c = \frac{D_c \times \pi \times n}{1000} \text{ (m/min)}$	$v_f = f_n \times n \text{ (mm/min)}$
FEED FORCE (F _f)	POWER CONSUMPTION (P _c)	TORQUE (M _c)
$F_f \approx 0.5 \times k_c \times \frac{D_c}{2} \times f_n \times \sin K_r \text{ (N)}$	$P_c = \frac{f_n \times v_c \times D_c \times k_c}{240 \times 10^3} \text{ (kW)}$	$M_c = \frac{P_c \times 30 \times 10^3}{\pi \times n} \text{ (Nm)}$
FEED PER TOOTH (f _z)	TOOL FEED RATE (f _n)	
$f_z = \frac{v_f}{n \times z_n} \text{ (mm)}$	$f_n = f_z \times 2 \text{ (mm/rev)}$	

Coolant Pressure for carbide drills.
Recommended guidelines for through coolant carbide drills.

Type	Size					
Inox, HF, Alu-XP, GP Drill	<ø3.0	ø3.0 -5.0	ø5.0 -8.0	ø8.0 -12.0	ø12.0 -16.0	ø16.0 -20.0
3xD to 5xD	60 bar	50 bar	30 bar	25 bar	20 bar	15 bar
8xD	80 bar	60 bar	40 bar	30 bar	25 bar	20 bar

Coolant Pressure for minimum quantity lubrication.
Recommended guidelines for MQL type drills.

Type	Size					
MQL	<ø3.0	ø3.0 -5.0	ø5.0 -8.0	ø8.0 -12.0	ø12.0 -16.0	ø16.0 -20.0
10xD to 30xD	14 bar	12 bar	10 bar	9 bar	9 bar	8 bar

All recommendations are for guidance only. Adjustments may need to be made according to your set-up.



Troubleshooting - Drilling

Problem	Probable causes	Suggested actions
Drill will not enter work	Drill is dull	Regrind lip relief
	Lip relief too small	Regrind web thinning
	Web too thick	Select drill with narrow web
Cutting lip breaks	Lip relief too large	Regrind lip relief
	Feed too high	Choose correct data from cutting charts
Tang breaks	Bad fit in taper shank socket	Ensure socket is clean
	Burred or badly worn socket	Replace socket
Drill centre chipped	Lip relief too large	Regrind lip relief
	Feed too high	Choose correct data from cutting charts
Oversize hole	Unequal cutting edge length or angle	Resharpen drill point
	Tool not held tight	Tighten collet or chuck
Outer edges chipped	Cutting speed too high	Choose correct data from cutting charts
	Flutes clogged	Choose correct drill from application guide
	Drill worn	Replace or regrind drill
	Hard spots in work material	Choose correct drill from application guide
Poor surface finish	Incorrect grinding of drill point	Replace or regrind drill
	Insufficient coolant supply	Ensure coolant is targetted correctly
	Feed too high	Choose correct data from cutting charts
	Workpiece not held securely	Replace or tighten fixture or vice

Drilling guide.
Recommendations for use.
Ensure workpiece is firmly and securely fastened.
Avoid excess lateral loads.
Ensure collets and drill chucks are in good condition and will not allow drill slippage. Both drill and component damage can occur.
When using taper shank drills ensure all taper sleeves are clean and in good condition. Never allow the drill to drive off the tang. This is an indication that either the drill, the sleeve, or both are damaged. Use only soft faced hammers to drive the taper shank into the sleeve. Use a proper drift key to remove the shank from the sleeve.
Ensure drill is kept sharp, and sharpen before point of failure. If allowed to become blunt extra grinding will be needed to bring the drill back to optimum performance.
Keep the flutes free from swarf. Clogged flutes will hamper drill performance.
Use adequate coolant, particularly at the drill point.
Avoid excessive speed and feed rates. Use the charts in this catalogue. If unsure of the correct speed or feed rate to use, it is generally better to start at low speeds and feeds, and build up as appropriate.
When resharpening it is important that all wear is removed, and the correct point geometry is maintained. Do not overheat or burn the drill when grinding.
Ensure correct drill is chosen for application and material type, particularly with deeper holes to avoid pecking where possible.



P	VDI 3323 1		Non-alloyed steel		About 0.15% C, Annealed				≤125 HB	
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.0037	St 37-2		4360 40 B	S235JR	E24-2	1311	Fe 360 B		
	1.0038	St 37-3	A570.36	4360 40 C	S275J2G3	E28-3	1312	Fe 360 D FF		
	1.0045	S 355 JR			S 1207	E36-2		Fe 510 BFN		
	1.0050	St 50-2	A570 Gr. 50	4360 50 B	E 295	A50-2	2172	Fe 490		
	1.0060	St 60-2	A572 Gr. 65	4360 55 E		A60-2	1650	Fe 60-2		
	1.0114	S 235 J0		En 40C	S 235 J0	E24-3		Fe 360 CFN		
	1.0143	S 275 J0			S 275 J0	E28-3	1414	Fe 430 C		
	1.0144	St 44-3 N	A573 Gr. 81	4360 43C	S 275 J2 G3	E28-3	1412	Fe 430 D FF		
	1.0149	Ro St 44-2		43C	S 275 J0 H		1412	Fe430C		
	1.0301	C10	1010	045M10	C10	34C10, XC10		C10	F.1511	G10100
	1.0330	St 12		DC 01	Fe P01	DC 01/Fe P01	1142	Fe P01		
	1.0335	DD13 (StW 24)	A622(1008)	H S 3	D D 13	3C		FeP13		
	1.0338	St 4	A620(1008)	14491CR	Fe P04	Fe 14	1147	DC04/FeP04		
	1.0345	P235 GH	A516 Gr. 65	P 235 GH	P 235 GH	A 37 CP	1330	Fe E 235		K02503
	1.0401	C15	1015	080M15		C18RR, XC18	1350	C15, C16	F.1110	G10170
	1.0402	C22	1020	050 A 20	1 C 22	C20	1450	C 20	F.1120	G10200
	1.0425	P265GH/H11				A42CP	1430	Fe4101KW		K02801
	1.0443	GS-45	A2765-35	A1		E23-45M	1305			
	1.0539	S355NH				TSE355-4	2134	Fe510B		
	1.0545	S355N		4360-50E		E355R	2334	FeE355KG		
	1.0546	S355NL		4360-50EE		E355FP	2135	FeE355KT		
	1.0547	S355J0H		4360-50C		TSE355-3	2172	Fe510C		
	1.0549	S355NLH					2135	Fe510D		
	1.0533	St52-3U	A14880-10	4360-50C		320-560M	1606	Fe510C		
	1.0562	StE355	A633 Gr.C	P355N		FeE355KGN	2132	FeE355KG		K12000
	1.0565	WStE355		P355NH		P355NH	2106	FeE355KGW		K01600
	1.0566	T St E 355		P 355 NL1		P 355 NL1	2107	Fe E 355 KT		
	1.0570	St 52-3	1	4360-50 C	S355JR	E36-3	2172	Fe 510 B		
	1.0715	9SMn28	1213	230M07		S250	1912	CFSMn28	F.2111	G12130
	1.0718	9SMnPb28	12L13			S250Pb	1914	CF9SMnPb28	F.2112	G12134
	1.0721	10S20	1108	10S20		10S20		CF10S20	F.2121	G11080
	1.0722	10SPb20	11L08			10PbF2		CF10SPb20		G11084
	1.0736	9SMn36	1215			S300		CF9Mn36	F.2113	G12150
	1.0737	9SMnPb36	12L14			S300Pb	1926	CF9SMnPb36	F.2114	G12144
	1.0972	S315MC		1501-40F30		E315D				
	1.0976	S355MC		1501-43F35		E355D	2642	FeE355TM		
	1.0982	S460MC		1501-50F45						
	1.0984	S500MC				E490D	2662	FeE490TM		
	1.0986	S500MC		1501-60F55		E560D		FeE560TM		
	1.1121	Ck10	1010	040A10		XC10	1265	C10	F.1510	G10100
	1.1141	Ck15	1015	040A15	32C	XC15	1370	C15	F.1110	G10150
	1.1151	C22E	1020	055M15		2C22	1450	C20	F.1120	G10230
	1.8900	StE380	A572-60	436055E			2145	FeE390KG		
		St44-2	A36	436043A		NFA35-501E28	1411			
		StE320-3Z		1501160			1421			



P	VDI 3323 2		Non-alloyed steel		About 0.45% C, Annealed				≤13 HRc ≤190 HB	
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.0501	C35	1035	080A32		1C35	1572	C35	F.113	G10350
	1.0503	C45	1045	060A47		XC42H1TS	1672	C45	F.114	G10450
	1.0511	C40	1040	080M40		1C40		C40	F.114.A	G10400
	1.0540	C50					1674	C50		G10500
	1.0551	GS-52	A2770-36	A2		280-480M	1505			
	1.0553	St52-3U	A14880-40	4360-50C		320-560M	1606	Fe510C		
	1.0577	S 355 J 2 G 4	A738	Fe 510 D 2 FF		A52FP	2107			
	1.0726	35S20	1140	212M36	8M	35MF6	1957			G11400
	1.0727	45S20	1146			45MF4	1973			G11460
	1.1157	40Mn4	1039	150M36	15	40M5				G10390
	1.1158	C25E	1025	070M25		XC25		C25	F.1120	G10250
	1.1166	34Mn5	1536						TO.B	G15360
	1.1167	36Mn5	1335	150M36		40M5	2120	36Mn6	F.1203	G13350
	1.1170	28Mn6	1330	150M28	14A	20M5		C28Mn	28Mn6	G13300
	1.1178	C30E		080M30		XC32		C30	2C30	G10300
	1.1180	C35R	1035	080A35		3C35	1572		F.1135	G10350
	1.1181	C35E	1035	080A35		XC38	1572	C36	F.1130	G10340
	1.1191	Ck45	1045	080A46		XC45	1672	C45	F.1140	
	1.1206	C50E	1050	080M50		2C50	1674	C50		G10500
	1.1213	Cf53	1050	070M55		XC48HTS	1674	C53		G10500
P	VDI 3323 3		Non-alloyed steel		About 0.45% C, Annealed				≤25 HRc ≤250 HB	
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.0481	17 Mn 4/P 295 GH	A516 Gr. 70	224-460B	P 295 GH	A 48 CP	2102	Fe E 295	A47RCI	K03501
	1.0501	C35	1035	080A32		1C35	1572	C35	F.1130	G10350
	1.0503	C45	1045	060A47		XC42H1TS	1672	C45	F.1140	G10450
	1.0614	C76D	1074			XC75				G10750
	1.0616	C86D	1086			XC80		C85		G10860
	1.0618	C92D	1095			XC90				G10950
	1.0726	35S20	1140	212M36	8M	35MF6	1957			G11400
	1.1157	40Mn4	1039	150M36	15	40M5				G10390
	1.1165	30Mn5	1036	120M36		35M5		30Mn5	F.8211	K13300
	1.1167	36Mn5	1335	150M36		40M5	2120	36Mn6	F.1203	G13350
	1.1186	C40E	1040	060A40		2C40		C40		G10400
	1.1191	Ck45	1045	080M46		2C45	1672	C45	F.1140	
	1.1201	C45R	1049	080M46		3C45	1660	C45	F.1145	
	1.1213	Cf53	1050	070M55		XC48HTS	1674	C53		G10500
	1.7242	18CrMo4								
	1.7337	16CrMo4-4	A387 Gr.12					A18CrMo45KW		K11564
	1.7362	12CrMo195		3606-625		Z10CD5-05		16CrMo205		K41545
		17MnV6	A572-60	436055E		NFA35-501E36	2142			



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VDI 3323 4		Non-alloyed steel		About 0.75% C, Annealed				≤28 HRC ≤270 HB	
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.0603	C67	107	080A67		XC65		C67		G10700
1.0605	C75	1075	144980HS				C75		G10740
1.1203	Ck55	1055	060A57		2C55	1655	C55	F.1150	G10550
1.1209	C55R	1055	070M55		3C55		C55	F.1155	G10550
1.1221	Ck60	1060	060A62	43D	2C60	1678	C60	F.1150	G10640
1.1231	C67E	1070	060A67		XC68	1770	C70	F.5103	G10700
1.1248	C75E	1074	060A78		XC75	1774	C75	F.5107	G10800
1.1269	C85E	1086			XC90		C90		G10900
1.1274	Ck101	1095	060A96	C100S	XC100	1870	C100	F.5117	G10950
1.1545	C105W1	W1	BW2	C105U	Y1105	1880	C100KU	F.5118	
1.1663	C125W	W112			Y2120				

VDI 3323 5		Non-alloyed steel		About 0.75% C, Quenched & Tempered				≤32 HRC ≤300 HB	
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.0070	St70-2	1055	Fe690-2FN		A70-2	1655	Fe690	F.1150	
1.0535	C55	1055	070M55		1C55	1655	C55		J05000
1.0601	C60	1060	060A62	43D	1C60		C60		G10600
1.1203	Ck55	1055	060A57		2C55	1655	C55	F.1150	G10550
1.1221	Ck60	1060	060A62	43D	2C60	1678	C60	F.1150	G10640
1.1274	Ck101	1095	060A96	C100S	XC100	1870	C100	F.5117	G10950
1.1545	C105W1	W1	BW2	C105U	Y1105	1880	C100KU	F.5118	
1.1663	C125W	W112			Y2120				
1.5120	38MnSi4								
1.5710	26NiCr6	3135	640A35	111A	35NC6				
1.7701	51CrMoV4						51CrMoV4		

VDI 3323 6		Low-alloyed steel		Annealed				≤10 HRC ≤180 HB	
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.0116	St37-3	A570Gr.36	4360-40C	S235J2G3	E24-3	1312	Fe360D1(2)	AE235D	
1.0904	55Si7	9255	250A53	45	55S7	2085	55Si8	56Si7	G92550
1.0961	60SiCr7	9262			60SC6		60SiCr8	60SiCr8	G92620
1.2067	100Cr6	L3	BL3		Y100C6			100Cr6	
1.2108	90CrSi5	L1				2092	105WCR5		
1.2210	115CrV3	L2			100C3		107CrV3KU	F.250L	
1.2241	51CrV4								
1.2330	35CrMo4	4135	708A37		34CD4	2234	35CrMo4		
1.2419	105WCr6		105WC13		105WC13	2140	10WCr6		
1.2510	100MnCrW4	01	B01		90MWCV5	2140	95MnWCr5KU	F.5220	
1.2542	45WCrV7	S1	BS1			2710	45WCrV8KU		
1.2550	60WCrV7	S1			55WC20	2710	58WCr9KU		
1.2713	55NiCrMoV6	L6			55NCDV7			F.520S	
1.2721	50NiCr13	L6			55NCV6	2550		F.528	
1.2842	90MnCrV8	02	B02		90MV8				T31502
1.3501	100Cr2	E50100							
1.3505	100Cr6	52100	2S135	31	100C6	2258	100Cr6	F.1310	
1.5024	46Si7				45S7		46Si7	F.1451	

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VDI 3323 6		Low-alloyed steel		Annealed				≤10 HRC ≤180 HB	
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.5025	51Si7	9259H		50Si7	51S7	2090	50Si7	F.1450	
1.5026	55Si7			56Si7	55S7	2085	55Si7	F.1440	G92550
1.5027	60Si7	9260	251A60	60Si7	60S7		60Si7	F.1441	G92600
1.5028	65Si7	9260H							
1.5415	15Mo3	A204Gr.A	1503-243B		15D3	2912	16Mo3(KG)	F.2601	K11820
1.5419	20Mo4	4419	1503-243-430			2512	G20Mo5		G44190
1.5423	16Mo5	4520	1503-245-420				16Mo5(KG)	F.2602	K11522
1.5622	14Ni6	A350-LF5			16N6		14Ni6(KG)	F.2641	
1.5732	14NiCr10	3415			14NC11		16NiCr11		
1.5752	14NiCr14	3310	655M13	36A	12NC15				
1.6511	36NiCrMo4	9840	816M40	110	40NCD3		36NiCrMo4(KB)		
1.6523	21NiCrMo2	8620	805M20	362	20NCD2	2506	20NiCrMo2		
1.6546	40NiCrMo2-2	8740	311-Type7				40NiCrMo2(KB)		
1.6566	17NiCrMo6-4								
1.6587	17NiCrMo6		820A16		18NCD6		14NiCrMo13		
1.6657	10NiCrMo13-4						14NiCrMo131		
1.7015	10Cr3	5015	523M15		12C3				G50150
1.7033	34Cr4	5132	530A32	18B	32C4		34Cr4(KB)		G51300
1.7035	41Cr4	5140	530M40	18	42C4	2245	41Cr4		G51400
1.7131	16MnCr5	5115	527M17		16MC5	2511	16MnCr5		G51150
1.7139	16MnCrS5					2127			
1.7176	55Cr3	5155	527A60	48	55C3	2253	55Cr3		
1.7218	25CrMo4	4130	CDS110		25CD4	2225	25CrMo4(KB)		
1.7220	34CrMo4	4135	708A37		35CD4	2234	34CrMo4		
1.7223	41CrMo4	4142					41CrMo4		
1.7225	42CrMo4	4140	708M40	42CrMo4	42CD4	2244	42CrMo4	F.1252	
1.7228	55NiCrMoV6G		823M30	33		2512	655M31		
1.7262	15CrMo5				12CD4	2216	12CrMo4		
1.7321	20CrMo4					2625			
1.7335	13CrMo4-4	A182-F11	1501-620		15CD4-5	2216	14CrMo45		
1.7361	32CrMo12		722M24	40B	30CD12	2240	30CrMo12	F.124A	
1.7380	10CrMo9-10	A182-F22	1501-622		12CD9-10	2218	12CrMo9		
1.7715	14MoV6-3		1503-660-440				13MoCrV6		
1.8159	50CrV4	6150	735A50	47	50CrV4	2230	50CrV4		G61500
1.8161	58CrV4								
1.8509	41CrAlMo7	A355A	905M39	41B	40CAD6-12	2940	41CrAlMo7		
1.8523	39CrMoV13-9		897M39	40C			36CrMoV12		

VDI 3323 7		Low-alloyed steel		Quenched & Tempered				≤29 HRC ≤275 HB	
W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.5415	15Mo3	A204Gr.A	1503-243B		15D3	2912	16Mo3(KG)	F.2601	K11820
1.5423	16Mo5	4520	1503-245-420				16Mo5(KG)	F.2602	K11522
1.5622	14Ni6	A350-LF5			16N6		14Ni6(KG)	F.2641	
1.5732	14NiCr10	3415			14NC11		16NiCr11		
1.5752	14NiCr14	3310	655M13	36A	12NC15				
1.5755	31NiCr14		653M31		18NC13	2534		F.1270	

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P	VDI 3323 7		Low-alloyed steel			Quenched & Tempered			≤29 HRC ≤275 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.6565	40NiCrMo6	4340	817M40	24	35NCD6	2541	35NiCrMo6(KB)		
	1.6587	17NiCrMo6		820A16		18NCD6		14NiCrMo13		
	1.6657	10NiCrMo13-4						14NiCrMo131		
	1.6957	26NiCrMoV14-5								
	1.7015	10Cr3	5015	523M15		12C3				G50150
	1.7262	15CrMo5				12CD4	2216	12CrMo4		
	1.7335	13CrMo4-4	A182-F11	1501-620		15CD4-5	2216	14CrMo45		
	1.7380	10CrMo9-10	A182-F22	1501-622		12CD9-10	2218	12CrMo9		
	VDI 3323 8		Low-alloyed steel			Quenched & Tempered			≤32 HRC ≤300 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.1730	C45W3	C45W			XC48				
	1.2332	47CrMo4	4142	708M40	19A	42CD4	2244	42CrMo4		
	1.5736	36NiCr10	3435			30NC11				
	1.6523	21NiCrMo2	8620	805M20	362	20NCD2	2506	20NiCrMo2		
	1.7033	34Cr4	5132	530A32	18B	32C4		34Cr4(KB)		G51300
	1.7218	25CrMo4	4130	CDS110		25CD4	2225	25CrMo4(KB)		
	1.8515	32CrMo12		722M24	40B	30CD12	2240	32CrMo12	F.124A	
	VDI 3323 9		Low-alloyed steel			Quenched & Tempered			≤38 HRC ≤350 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.0904	55Si7	9255	250A3	45	55S7	2085	55Si8		G92550
	1.0961	60SiCr7	9262			60SC6		60SiCr8		G92620
	1.2067	100Cr6	L3	BL3		Y100C6		100Cr6		
	1.2419	105WCr6		105WC13		105WC13	2140	10WCr6		
	1.2542	45WCRV7	S1	BS1			2710	45WCrV8KU		
	1.2713	55NiCrMoV6	L6			55NCDV7			F.250S	
	1.4882	X50CrMnNiNbN219				Z50CMNNb21-09				
	1.5120	38MnSi4								
	VDI 3323 9		Low-alloyed steel			Quenched & Tempered			≤38 HRC ≤350 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.5710	36NiCr6	3135	640A35	111A	35NC6				
	1.5755	31NiCr14		830M31		18NC13	2534		F.1270	
	1.6511	36CrNiMo4	9840	816M40	110	40NCD3		36NiCrMo4(KB)		
	1.6546	40NiCrMo2-2	8740	311-Type7				40NiCrMo2(KB)		
	1.7035	41Cr4	5140	530M40	18	42C4	2245	41Cr4		G51400
	1.7176	55Cr3	5155	527A60	48	55C3	2253	55Cr3		
	1.7220	34CrMo4	4135	708A37		35CD4	2234	34CrMo4		
	1.7223	41CrMo4	4142					41CrMo4		
	VDI 3323 9		Low-alloyed steel			Quenched & Tempered			≤38 HRC ≤350 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.7225	42CrMo4	4140	708M40	42CrMo4	42CD4	2244	42CrMo4	F.1252	
	1.7361	32CrMo12		722M24	40B	30CD12	2240	30CrMo12	F.124A	

CONTINUED



P	VDI 3323 9		Low-alloyed steel			Quenched & Tempered			≤38 HRC ≤350 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.8159	50CrV4	6150	735A50	47	50CrV4	2230	50CrV4	51CrV4	G61500
	1.8161	58CrV4								
	1.8509	41CrAlMo7	A355A	905M39	41B	40CAD6-12	2940	41CrAlMo7		
	1.8523	39CrMoV13-9		897M39	40C			36CrMoV12		
	VDI 3323 10		High-alloyed steel, Tool steel			Annealed			≤15 HRC ≤200 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.0347	RRSt3	A619	CR3	FeP03	F13	1922	DC03/FeP03		
	VDI 3323 10		High-alloyed steel, Tool steel			Annealed			≤15 HRC ≤200 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.0723	15S22		210A15					F.210F	
	1.2080	X210Cr12	D3	BD3	X210Cr12	Z200C12		X205Cr12KU		T30403
	1.2162	21MnCr5				20MC5				
	1.2311	40CrMnMo7				40CMD8		35CrMo8KU		
	1.2312	40CrMnMoS8.6	P20+S			40CMD8S				
	1.2316	X36CrMo17			X38CrMo16					
	1.2343	X38CrMoV5-1	H11	BH11		Z38CDV5		X37CrMoV51KU		T20811
	1.2344	X40CrMoV5-1	H13	BH13		Z40CDV5	2242	X40CrMoV51KU	F.5318	T20813
	VDI 3323 11		High-alloyed steel, Tool steel			Quenched & Tempered			≤35 HRC ≤325 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.2363	X100CrMoV5-1	A2	BA2		Z100CDV5	2260	X100CrMoV51KU	F.5227	
	1.2436	X210CrW12	D4(D6)	BD6		Z200CD12	2312	X215CrW121KU	F.5213	
	1.2581	X30WCrV9-3	H21	BH21		Z30WCV9		X30WCrV93KU	F.526	T20821
	1.2601	X165CrMoV12					2310	X160CrMoV12		
	1.2714	55NiCrMoV7	6F3/L6			55NiCrMoV7			F.520S	
	1.3202	S12-1-4-5		BT15				HS12-1-5-5		

CONTINUED



P	VDI 3323 11		High-alloyed steel, Tool steel		Quenched & Tempered				≤35 HRC ≤325 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.3207	S10-4-3-10		BT42		Z130WKCDV				
	1.3243	S6-5-2-5	T15			KCV06-05-05-04-02	2723	HS6-5-2-5		
	1.3246	S7-4-2-5	M35			Z110WKCDV07-05-04		HS7-4-2-5		
	1.3247	S2-10-1-8	M42	BM42		Z110WKCDV09-08-04		HS2-9-1-8		
	1.3255	S18-1-2-5	T4	BT4		Z80WKC18-05-04				
	1.3343	S6-5-2	M2	BM2		Z85WDCV	2722	HS652	F.5604	
	1.3348	S2-9-2	M7			Z100DCWV09-04-02	2782	HS292	F.5607	
	1.3355	S18-0-1	T1	BT1		Z80WC18-4-01				
	1.4718	X45CrSi9-3	HNV3	401S45	52	Z45CS9		X45CrSi8	F.322	
	1.4935	X20CrMoWV121	422							S42200
	1.5680	12Ni19	2515	12Ni19		Z18N5				

M	VDI 3323 12		Stainless steel		Ferritic/Martensitic, Annealed				≤15 HRC ≤200 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.4000	X6Cr13	403	403S17		Z6C13	2301	X6Cr13	F.3110	S40300
	1.4001	X7Cr14	410S	403S7		Z8C13	2301		F.8401	
	1.4002	X6CrAl13	405	405S17		Z6CA13	2302	X6CrAl13		S40500
	1.4005	X12CrS13	416	416S21		Z11CF13	2380	X12CrS13	F.3411	S41600
	1.4006	X12Cr13	410	410S21	56A	Z10C13	2302	X12Cr13	F.3401	S41000
	1.4016	X6Cr17	430	430S15	X8Cr17	Z8C17	2320	X8Cr17	F.3113	S43000
	1.4027	GX20Cr14		420C29		Z20C13M				
	1.4028	X30Cr13	420	420S45		Z30C13	2304			S42020
	1.4034	X46Cr13		420S45		Z40C14		X40Cr14	F.3405	
	1.4057	X19CrNi17-2	431	431S29	57	Z15CN16-02	2321	X16CrNi16	F.3427	S43100
	1.4086	GX120Cr29		452C11						
	1.4104	X12CrMoS17	430F	420S37		Z10CF17	2383	X10CrS17	F.3117	S43020
	1.4112	X90CrMoV18	440B							S44003
	1.4113	X6CrMo17	434	434S17		Z8CD17-01	2325	X8CrMo17		S43400
	1.4313	X3CrNi13-4	CA6-NM	425C11		Z4CND13-04M	2385	(G)X6CrNi304		J91540
	1.4341	GX40CrNi274								J92615
	1.4417	X2CrNoMoSi195	S31500				2376			S39215
	1.4418	X4CrNiMo165				Z6CND16-04-01	2387			
	1.4510	X6CrTi17	XM8			Z4CT17		X6CrTi17	F.3115	S43035
	1.4511	X6CrNb17				Z4CNb17		X6CrNb17	F.3122	
	1.4512	X6CrTi12	409	LW19		Z3CT12		X6CrTi12		S40900
	1.4720	X20CrMo13								
	1.4724	X10CrA113	405	405S17		Z10C13		X10CrA112	F.311	
	1.4742	X10CrA118	430	439S15	60	Z10CAS18		X8Cr17	F.3113	S43000
	1.4747	X80CrNiSi20	HNV6	443S65	59	Z80CSN20-02		X80CrNiSi20	F.320B	S65006
	1.4749	X18CrNi28	446							
	1.4762	X10CrA124	446			Z10CAS24	2322	X16Cr26		S44600
	1.4871	X53CrMnNi21-9	EV8	349S54		Z52CMN21-09		X53CrMnNi219		S63008
		X10CrNi15	429							
		X12CrNi18-9	302	302S31		Z10CN18-09	2330			



M	VDI 3323 13		Stainless steel		Martensitic, Quenched & Tempered				≤23 HRC ≤240 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.4000	X6Cr13	403	403S17		Z6C13	2301	X6Cr13	F.3110	S40300
	1.4001	X7Cr14	410S	403S7		Z8C13	2301		F.8401	
	1.4006	X12Cr13	410	410S21	56A	Z10C13	2303	X12Cr13	F.3.401	S41000
	1.4016	X6Cr17	430	430S15	X8Cr17	Z8C17	2320	X8Cr17	F.3113	S43000
	1.4021	X20Cr13	420	420S37		Z20C13	2303	14210	F.5261	S42000
	1.4027	GX20Cr14		420C29		Z20C13M				
	1.4031	X40Cr13	420			Z40C14	2304		F.3404	S42080
	1.4034	X46Cr13		420S45		Z40C14		X40Cr14	F.3405	
	1.4057	X19CrNi17-2	431	431S29	57	Z15CN16-02	2321	X16CrNi16	F.3427	S43100
	1.4104	X12CrMoS17	430F	420S37		Z10CF17	2383	X10CrS17	F.3117	S43020
	1.4113	X6CrMo17	434	434S17		Z8CD17-01	2325	X8CrMo17		S43400
	1.4313	X3CrNi13-4	CA6-NM	425C11		Z4CND13-04M	2385	(G)X6CrNi304		J91540
	1.4544	A700	321	S.524		Z10CNT18-11		X6CrNiTi1811		J92630
	1.4546	X5CrNiNb18-10	348	347S31				X6CrNiNb1811		J92640
	1.4871	X53CrMnNi21-9	EV8	349S54		Z52CMN21-09		X53CrMnNi219		S63008
	1.4922	X20CrMoV12-1					2317	X20CrMoNi1201		
	1.4923	X22CrMoV12-1								

	VDI 3323 14		Stainless steel		Austenitic				≤10 HRC ≤180 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.4301	X5CrNi18-10	304	304S15		Z5CN18-09	2332		F.3551	S30409
	1.4305	X10CrNiS18-10	303	303S21	58M	Z8CNF18-09	2346	X10CrNiS1809	F.3508	S30300
	1.4306	X2CrNi1911	304L	304C12	X3CrNi1810KD	Z2CN18-09	2352	GX2CrNi1910	F.3503	S30403
	1.4308	GX6CrNi18-9	CF-8	304C15	58E	Z6CN18-10M	2333			
	1.4310	X10CrNi18-8	301	301S21		Z12CN17-07	2331	X2CrNi1807	F.3517	S30100
	1.4311	X2CrNiN1810	304LN	304S62		Z2CN18-10	2371	X2CrNiN1810	F.3541	S30453
	1.4312	GX10CrNi188	305	302C25		Z10CN18-9M				
	1.4350	X5CrNi18-9	304	304S15	58E	Z6CN18-09	2332	X5CrNi1810	F.3551	S30400
	1.4362	X2CrNiN234	S32304			Z2CN23-04AZ	2327			S32304
	1.4371	X3CrMnNiN18887	202	284S16		Z8CMN18-08-05				
	1.4401	X5CrNiMo17-12-2	316	316S13		Z3CND17-11-01	2347	X5CrNiMo17122	F.3534	S31600
	1.4414	X2CrNiMo17-13-2	316L	316S11		Z2CND17-12	2348	X2CrNiMo1712	F.3533	S31603
	1.4406	X2CrNiMo17-12-2	316LN	316S61		Z2CND17-12AZ		X2CrNiMoN1712	F.3542	S31653
	1.4408	GX6CrNiMo18-10	CF-8M	316C16			2343	X7CrNiMo2010	F.8414	J92900
	1.4410	GX10CrNiMo18-9	Super Duplex			Z5CND20-12M	2328			S32750
	1.4429	X2CrNiMoN17-13-3	316LN	316S62		Z2CND17-13AZ	2375	X2CrNiMoN17133	F.3543	
	1.4435	X2CrNiMo18-14-3	316L	316S11		Z3CND17-12-03	2375	X2CrNiMo17132	F.3533	S31603
	1.4436	X3CrNiMo17-13-3	316	316S19		Z6CND18-12-03	2343	X5CrNiMo17122	F.3543	S31600
	1.4438	X2CrNiMo18-16-4	317L	317S12		Z2CND19-15-04	2367	X2CrNiMo18164	F.3539	S31703
	1.4439	X2CrNiMoN17-13-5	S31726			Z3CND18-14-06AZ				
	1.4440	X2CrNiMo18-16								
	1.4449	X5CrNiMo17-13-3	317	317S16				X5CrNiMo1815		S31700
	1.4460	X8CrNiMo275	329				2324			S32900
	1.4462	X2CrNiMoN2253	Duplex	318S13		Z3CND22-05AZ	2377			S31803
	1.4500	X7NiCrMoCuNb25205				Z3NCUDU25-20M				J95150
	1.4521	X2CrMoTi18-2	443/444				2326	X2CrMoTiNb182	F.3123	

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M	VDI 3323 14		Stainless steel			Austenitic			≤10 HRc ≤180 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.4539	X1NiCrMoCuN25205				Z2NCDU25-20	2562			N08904
	1.4541	X14CrNiTi18-10	321	321S31		Z6CNT18-10	2337	X6CrNiTi1811	F.3523	S32100
	1.4542	X5CrNiCuNb174	17-4PH							
	1.4545	Z7CNU15.05	15-5PH			Z7CNU15-05				S15500
	1.4547	X1CrNiMoN20187	S31254				2378			S31254
	1.4550	X6CrNiNb18-10	347	347S31	58F	Z6CNNb18-10	2338	X6CrNiNb1811	F.3552	S34700
	1.4552	GX7CrNiNb18-9				Z4CNNb19-10M				J92710
	1.4568	X7CrNiAl177		316S111		Z9CAN17-7	2388	Z8CNA17-07		S17700
	1.4571	X6CrNiMoTi17-12-2	316Ti	320S31	58J	Z6NDT17-12	2350	X6CrNiMoTi1712	F.3535	
	1.4581	GX5CrNiMoNb18		318C17		Z4CNDNb18-12M				
	1.4583	X6CrNiMoNb18-12	318	303S21		Z15CNS20-12		X15CrNiSi212		
	1.4585	GX7CrNiMoCuNb1818						X6CrNiMoTi1712		J94651
	1.4821	X20CrNiSi254				Z20CNS25-04				S44635
	1.4823	GX40CrNiSi274								J92604
	1.4828	X15CrNiSi20-12	309	309S24	58C	Z15CNS20-12			F.8414	S30900
	1.4833	X6CrNi2213	309S	309S13		Z15CN24-13				J93400
	1.4845	X12CrNi25-21	310S	310S24		Z12CN25-20	2361	X6CrNi2520	F.331	S31008
	1.4878	X12CrNiTi18-9	321	321S20	58B	Z6CNT18-12(B)	2337	X6CrNiTi1811	F.3553	S32100
	1.4891	X5CrNiNb18-10	S30415				2372			
	1.4893	X8CrNiNb11	S30815				2368			
	1.4948	X6CrNi1811	304H	304S51		Z5CN18-09	2333			S30480
	1.4980	X5NiCrTi2515	660				2570			S33286
		X5NiCrN3525								
		X2CrNiMoN18134	S31753							
		X2CrNiMoN25227								
K	VDI 3323 15		Grey cast iron			Pearlitic/Ferritic			≤10 HRc ≤180 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	0.6010	GG10	A4820B	Grade 100	GJL-100	Ft10D	0100	G10	FG10	
	0.6015	GG15	A4825B	Grade150	GJL-150	Ft15D	0115	G15	FG15	W06020
	0.6020	GG20	A4830B	Grade 220	GJL-200	Ft20D	0120	G20	FG20	
	0.6025	GG25	A4840B	Grade 260	GJL-250	Ft25D	0125	G25	FG25	
	0.6660	GGL-NiCr202	1050/700/7	Grade F2	GJLA-XNiCr20-2	L-NC202	0523			F41002
	VDI 3323 16		Grey cast iron			Pearlitic (Martensitic)			≤26HRc ≤260HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	0.6025	GG25	A4840B	Grade 260	GJL-250	Ft25D	0125	G25	FG25	
	0.6030	GG30	A4845B	Grade 300	GJL-300	Ft30D	0130	G30	FG30	
	0.6035	GG35	A4850B	Grade 350	GJL-350	Ft35D	0135	G35	FG35	
	0.6040	GG40	A4860B	Grade 400	GJL-400	Ft40D	0140	G40	FG40	
	VDI 3323 17		Nodular cast iron			Ferritic			≤3 HRc ≤160 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	0.7033	GGG35.3		350-22L40	GJS-350-22-LT	FGS370-17	0717-15			
	0.7040	GGG40	60-40-18	SNG420-12	GJS-400-15	FGS400-12	0717-02	GS400-12	FGE38-17	F32800
	0.7042	GGG40.3	60-40-18	SNG370-17	GJS-400-18-LT	FGS370-17	0717-12	GSO42-17		
	VDI 3323 18		Nodular cast iron			Pearlitic			≤25HRc ≤250HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	0.7050	GGG50	80-55-06	SNG500-7	GJS-500-7	FGS500-7	0727-02	GS500-7	FGE50-7	F33100
	0.7060	GGG60	80-55-06	SNG600-3	GJS-600-3	FGS60-3	0732-03	GS600-3	FGE60-2	
	0.7070	GGG70	100-70-03	SNG700-2	GJS-700-2	FGS700-2	0737-01	GS700-2	FGE70-2	F34800
	0.7652	GGGNiMn13-7		Grade S6	GJSA-XNiMn13-7	FGSNI13Mn7	0772			
	0.7660	GGGNiCr20-2	A436D2	Grade S2	GJSA-XNiCr20-2	FGSNI20Cr2	0776			
	VDI 3323 19		Malleable cast iron			Ferritic			≤130 HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	0.8055	GTW55								
	0.8135	GTS-35	32510	B340-12	GJMB350-10	Mn35-10	0815	GMN35	GTS35	
	0.8145	GTS45	A220-40010	P440-7	GJMB450-6	Mn450-6	0815-00			
	VDI 3323 20		Malleable cast iron			Pearlitic			≤21HRc ≤230HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	0.8155	GTS-55	50005	P510-4	GJMB-550-4	MP50-5	0854	GMN55		
	0.8165	GTS-65	70003	P570-3	GJMB-650-2	MN650-3	0856	GMN65		
	0.8170	GTS-70	90001	P690-2	GJMB-700-2	MN700-2	0862	GMN70		
N	VDI 3323 21		Aluminium wrought, alloyed			Not curable			≤60HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	3.0205	Al99	Al99							
	3.0255	Al99.5	1000	L31		A59050C				
	3.3315	AlMg1								
	VDI 3323 22		Aluminium wrought, alloyed			Curable, hardened			≤100HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	3.1325	AlCuMg1								
	3.1655	AlCuSiPb								
	3.2314	AlMgSi1								
	3.4345	AlZnMgCu0.5	7050	L86		AZ4GU/9051		811-04		
	3.4365	AlZnMgCu1.5	7075	7075		7075		AlZn5.8MgCuCr		
	VDI 3323 23		Aluminium cast, alloyed			≤12% Si, Not curable			≤75HB	
	W. Nr	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	3.2163	G-AISi9Cu3								
	3.2382	GD-AISi10Mg								
	3.2383	G-AISi10Mg(Cu)	A360.2	LM9			4253			
	3.2581	G-AISi12								
	2.3561	G-AlMg5								
	3.5101	G-MgZn4sE1Zr1	ZE41	MAG5						
	3.5103	MgSE3Zn27r1	EZ33	MAG6		G-TR3Z2				
	3.5812	G-MgAl8Zn1	AZ81	NMAG1						
	3.5912	G-MgAl9Zn1	AZ91	MAG7						

CONTINUED





N

VDI 3323 23		Aluminium cast, alloyed		≤12% Si, Not curable				≤75HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
		A356-72	2789		NFA32-201				
		356.1	LM25			4244			
	G-AlSi12	A413.2	LM6			4261			
	G-AlSi12(Cu)	A413.1	LM20			4260			
	GD-AlSi12	A413.0				4247			
	GD-AlSi8Cu3	A380.1	LM24			4250			

VDI 3323 24		Aluminium cast, alloyed		≤12% Si, Curable, hardened				≤90HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
2.1871	G-AlCu4TiMg								
3.1754	G-AlCu5Ni1.5								
3.2371	G-AlSi7Mg	4218B							
3.2373	G-AlSi9MGWA	SC64D			A-S7G	4251			
3.2381	G-AlSi10Mg								
3.5106	G-MgAg3SE2Zr1	QE22	MAG12						
	G-ALMG5	GD-AlSi12	LM5		A-SU12	4252			

VDI 3323 25		Aluminium, alloyed		>12% Si & Li alloys				≤130HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
To this group belong all Aluminium alloys with >12% Si content and all Aluminium Lithium alloys									

VDI 3323 26		Copper & Cu alloys (Bronze/Brass)		Cutting alloys, >1% Pb				≤110HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
2.0375	CuZn36Pb3								
2.1090	G-CuSn75Pb	C93200			U-E7Z5Pb4				
2.1096	G-CuSn5ZnPb	C83600	LG2						
2.1098	G-CuSn2ZnPb	C83600							
2.1182	G-CuPb15Sn	C2300	LB1		U-Pb15E8				

VDI 3323 27		Copper & Cu alloys (Bronze/Brass)		CuZn, CuSnZn (Brass)				≤90HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
2.0240	CuZn15								
2.0321	CuZn37	C27200	CZ108		CuZn36, CuZn37		C2700		
2.0590	G-CuZn40Fe								
2.0592	G-CuZn35Al1	C86500	U-Z36N3		HTB1				
2.0596	G-CuZn34Al2	C86200	HTB1		U-Z36N3				
2.1293	CuCrZr	C18200	CC102		U-Cr0-8Zr				



N

VDI 3323 28		Copper & Cu alloys (Bronze/Brass)			CuSn, Lead free copper & Electrolytic copper			≤100HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
2.0060	E-Cu57								
2.0966	CuAl10Ni5Fe4	C63000	Ca104		U-A10N				
2.0975	G-CuAl10Ni	B-148-52							
2.1050	G-CuSn10	C90700	CT1						
2.1052	G-CuSn12	C90800	Pb2		UE12P				
2.1292	G-CuCrF35	C81500	CC1-FF						
VDI 3323 29		Thermosetting & reinforced plastics			Acrylics etc.				
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
To this group belong all Acrylics, Nylons, Carbon Fibre reinforced plastics, Glass fibre reinforced plastics									
VDI 3323 30		Non-metals			Hard rubber, Wood etc				
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
To this group belong all non-metal materials such as Graphite, Hard rubber, Wood etc.									

S

VDI 3323 31		Heat resistant super alloys			Fe based, annealed			≤15HRc ≤200HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.4558	X2NiCrAlTi3220	N08800	NA15						
1.4562	X1NiCrMoCu32287	N08031							
1.4563	X1NiCrMoCuN31274	N08028			Z1NCUDU31-27-03	2584			
1.4864	X12NiCrSi3616	330	NA17		Z12NCS3718				N08330
1.4865	GX40NiCrSi3818		330C40				XG50NiCr3919		J94605
1.4958	X5NiCrAlTi3120								
VDI 3323 32		Heat resistant super alloys			Fe based, aged			≤30HRc ≤280HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
1.4977	X40CoCrNi2020				Z42CNKDOWNb				
VDI 3323 33		Heat resistant super alloys			Ni or Co based, annealed			≤25HRc ≤250HB	
W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
2.4360	NiCu30Fe	Monel 400	NA13		NU30				N04400
2.4603	NiCr30FeMo	5390A			NC22FeD				
2.4610	NiMo16Cr16Ti	Hastelloy C-4							N26455
2.4630	NiCr20Ti	Nimonic 75	HR5, 203-4		NC20T				N06075
2.4631	NiCr20TiAl		HR40		NC20TA				N07080
2.4642	NiC29Fe	Inconel 690			Nnc30Fe				N06690
2.4856	NiCr22Mo9Nb	Inconel 625	NA21		NC22FeDNb				N06625
2.4858	NiCr21Mo	Inconel 825	NA16		NC21FeDU				N08825



S	VDI 3323 34		Heat resistant super alloys		Ni or Co based, aged				≤38HRc ≤350HB	
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	2.4375	NiCu30Al	Monel k-500	NA18		NU30AT				N05500
	2.4662	NiFe35Cr14MoTi	5660			Z5NCDT42				N09901
	2.4668	NiCr19Fe19NbMo	Inconel 718	HR8		NC19eNB				N07718
	2.4670	S-NiCr13A16MoNb	5391	MAR-46		NC12AD				
	2.4694	NiCr16Fe7TiAl	Inconel							N07751
	2.4955	NiFe25Cr20NbTi								
	2.4964	CoCr20W15Ni	5772			KC20WN				
		CoCr22W14Ni	AMS5772			KC22WN				
	VDI 3323 35		Heat resistant super alloys		Ni or Co based, cast				≤34HRc ≤320HB	
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	2.4669	NiCr15Fe7TiAl	Inconel X-750			NC15TNbA				N07750
	2.4685	G-NiMo28	Hastelloy b							N10665
	2.4810	G-NiMo30	Hastelloy C							
	2.4973	NiCr19Co11MoTi	AMS5399			NC19KDT				
	3.7115	TiAl5SN2								R54520
	VDI 3323 36		Titanium alloys		Pure Titanium				Tensile strength 400 Rm	
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	2.4674	NiCo15Cr10MoAlTi	AMS5397							N13100
	VDI 3323 37		Titanium alloys		Alpha + Beta alloys, hardened				Tensile strength 1050 Rm	
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	3.7124	TiCu2		2TA21-24						
	3.7145	TiAl6Sn2Zr4Mo2Si	R54620							R54620
	3.7165	TiAl6V4	AMSR56400	TA10-13		T-A6V				
	3.7185	TiAlMo4Sn2		TA45-51						
	3.7195	TiAl3V2.5								R56320
		TiAl4Mo4Sn4Si0.5								
		TiAl5Sn2.5	AMSR54520	TA14/17		T-A5E				
		Ti6Al4VELI	AMSR56401	TA11						



H	VDI 3323 38		Hardened steel		Hardened				≤55HRc ≤550HB	
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	1.1231	Ck67	1070	060A67	C67S	XC68	1770	C70	F.5103	
	1.1248	Ck75	1078, 1080	060A78	C75S	XC75	1774	C75	F.5107	
	1.1274	Ck101	1095	060A96	C100S	XC100	1870	C100	F.5117	
	1.1545	C105W1	W1	BW2	C105U	Y1105	1880	C100KU	F.5118	
	1.2762	75CrMoNiW67								
	1.3401	GX120Mn12	A128(A)			Z120M12	2183	GX120Mn12	F.8251	
	1.6746	32NiCrMo14-5		832M31	32NiCrMo145	35NCD14				
	1.7176	55Cr3	5155	527A60	48	55C3	2253	55Cr3		
	VDI 3323 39		Hardened steel		Hardened				>55HRc	
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	To this group belong all steels hardened higher than 55HRc									
	VDI 3323 40		Chilled cast iron		Cast				≤42HRc ≤400HB	
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	0.9620	GX260NiCr42	Ni-Hard 2	Grade 2A	GJN-HV250	FBNi4Cr2BC	0512			F45001
	0.9625	GX330NiCr42	Ni.Hard 1	Grade 2B	GJN-HV550	FBNi4Cr2HC	0513			F45000
	0.9630	GX300CrNiSi952	Ni-Hard 4	Grade 2C	GJN-HV600	FBCr9Ni5	0457			F45003
	09640	GX300CrMoNi1521								F45005
	0.9650	GX260Cr27		Grade 3D			0466			
	VDI 3323 41		Hardened cast iron		Hardened				≤55HRc ≤550HB	
	W. Nr	DIN	AISI/ASTM/SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS
	0.9635	GX300CrMo153								
	0.9645	GX260CrMoNi2021							107WCr5KU	F45007
	0.9655	GX300CrNM271								

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