



BETTER HOLES FASTER



HOLEMAKING CATALOGUE

2018/2019

ABOUT DOF TOOLS

DOF Tools develops, manufactures and sell cutting tools made from solid carbide. The company and our innovations are sprung from several years of research and practical experiences in machining and heat generation.

We want to be an active part of the environment we live in, that is why we have introduced management for quality and environment. Since October 12th 2012 we are certified according to ISO 9001 and ISO 14001.



QUALITY

For us it is a requirement that we in all situations supply high quality solutions. This is something we are well known for. As a step in our expansion there are always higher requirements for monitoring, availability and swift service. In the dialogue with our customers we find ways to constantly improve us and our subcontractors.

ENVIRONMENT

In the industrial sector we are working in, environment is a general matter. The environment is in focus in a natural way in every bussiness we do. To stay competetive in an industry where environment is an important aspect, we need to continuously find solutions for ineffective processes. In our business it is a direct link between effectivity and less environmental impact. The durability of our products is world class, which results in less use of raw materials.

Our customers does not accept anything else than environmentally approved technology which follows the directives set up to follow. We continuously monitor and improve our environmental work by setting up goals which are all-embracing based on our customers requirements and the environmental aspects. The commitment to comply with laws and other requirements is a natural part of our everyday work.

DOF TOOLS AB

Mattias Svensson, CEO

+46 (0)707 366 077

mattias.svensson@doftools.se

PRODUCT OVERVIEW

DRILLING

- DOF K+** Drill for specific material groups (see next page).
- DOF P+** Drill for specific material groups (see next page).
- DOF A+** Drill for specific material groups (see next page).

DRILL-REAMING

- DOF A+S** Drill reamer for specific material groups (see next page).
- DOF DR** Drill reamer for specific material groups (see next page).
- DOF DRP** Drill reamer for specific material groups (see next page).
- DOF BRBS** Drill reamer for specific material groups (see next page).

TOOLS FOR SPECIAL APPLICATIONS

- SEMISTANDARD** Adaption for specific diameter.
- STEP TOOLS** Based on optional base geometry.
- DOF CB** Guiding tool, predrilling for long drills etc.

CONTENT

ABOUT DOF TOOLS	2	DOF A+S/DR/DRP	24
PRODUCT OVERVIEW	3	DOF BRBS	25
GEOMETRY SELECTION	4	DOF CB	26
DOF P+	5	MATERIAL GROUPS ISO	27
DOF K+	12	CUTTING PARAMETERS	28
DOF A+	19	CROSS REFERENCE LIST	31

GEOMETRY SELECTION

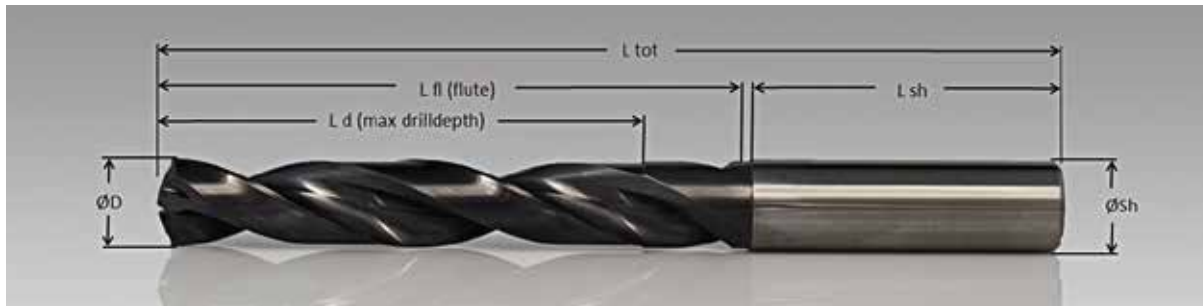
This is an overview of which geometries that are suited for which materials.

Grp	Description	Condition	drilling			drill-reaming			
			p+	a+	k+	dr	drp	a+s	brbs
1	Easy cutting steel	Rm 350-700	█				█		
2	Low carbon steel	Rm 350-1200	█				█		
3			█				█		
4			█					█	
5	Alloyed steel	Rm 550-1200	█				█		█
6			█				█		█
7			█					█	
8	Pearlitic/Martensite stainless	Rm 420-1200	█				█		█
9	Tool steel / HSS	Rm 420-1200	█			█	█		█
10	Easy cutting stainless steel		█				█		
11	Low alloy austenite stainless		█				█		
12	Alloyed Austenite stainless		█				█		
13	High alloy and duplex		█				█		
14	Difficult high alloy stainless		█				█		
15	Grey cast iron		█		█		█		█
16	Compact graphite iron "CGI"		█		█	█	█		█
17	Ductile cast iron		█		█	█	█		█
18	Nodular cast iron		█		█	█	█		█
19	Austempered ductile iron "ADI"		█		█	█	█		█
20	Austenitic cast iron		█		█	█	█		█
21	Low Si Aluminium alloys			█				█	█
22	Medium Si Aluminium alloys			█				█	█
23	High Si Aluminium alloys			█				█	█
24	Copper alloys		█	█				█	█
25	Iron base super alloys		█				█		█
26	Co-base super alloys		█				█		█
27	Ni-base super alloys		█				█		█
28	Low alloy Titanium		█				█		█
29	Alloyed Titanium		█				█		█
30	High alloy Titanium		█				█		█
31	Case hardened steel	55-65 HRC	█			█	█		█
32	Hardened and annealed steel	38-56 HRC	█			█	█		█
33	Hardened bearing steel	55-65 HRC	█			█	█		█
34	Hardened tool steel / HSS	38-54HRC	█			█	█		█
		55-65HRC	█			█	█		█
35	Martensite stainless	38-48 HRC	█			█	█		█
36	Age hardened stainless	30-50 HRC	█			█	█		█
37	Manganese steel	30-60 HRC	█			█	█		█
38	White cast iron	50-65 HRC	█			█	█		█

Not recommended
 Recommended in some applications
 Recommended

DOF p+ geometry has been optimized for chip breaking and chip formation in ductile materials. Four land margins ensures high hole quality even in these materials.

Art.	Denomination	ØD	Internal coolant supply				ØSh	Lsh	Lfl	Ld	Ltot
			no	yes	yes	yes					
		length	2.5xd	3xd	5xd	7xd					
185100	p+0250i-15-6c	2,5			x		6	36	19	15	62
182001p	p+0300-9-6c	3,0	x				6	36	15	9	58
183001p	p+0300i-11-6c	3,0		x			6	36	18	11	58
185001p	p+0300i-18-6c	3,0			x		6	36	23	18	62
182002p	p+0310-9-6c	3,1	x				6	36	15	9	58
183002p	p+0310i-11-6c	3,1		x			6	36	18	11	58
185002p	p+0310i-18-6c	3,1			x		6	36	23	18	62
182003p	p+0320-9-6c	3,2	x				6	36	15	9	58
183003p	p+0320i-11-6c	3,2		x			6	36	18	11	58
185003p	p+0320i-18-6c	3,2			x		6	36	23	18	62
182004p	p+0330-9-6c	3,3	x				6	36	15	9	58
183004p	p+0330i-11-6c	3,3		x			6	36	18	11	58
185004p	p+0330i-18-6c	3,3			x		6	36	23	18	62
182005p	p+0340-9-6c	3,4	x				6	36	15	9	58
183005p	p+0340i-11-6c	3,4		x			6	36	18	11	58
185005p	p+0340i-18-6c	3,4			x		6	36	23	18	62
182006p	p+0350-9-6c	3,5					6	36	15	9	58
183006p	p+0350i-11-6c	3,5		x			6	36	18	11	58
185006p	p+0350i-18-6c	3,5			x		6	36	23	18	62
187039p	p+0350i-26-6c	3,5				x	6	36	15	26	72
182007p	p+0360-9-6c	3,6	x				6	36	18	9	58
183007p	p+0360i-11-6c	3,6		x			6	36	23	11	58
185007p	p+0360i-18-6c	3,6			x		6	36	23	18	62
182008p	p+0370-9-6c	3,7	x				6	36	15	9	58
183008p	p+0370i-11-6c	3,7		x			6	36	18	11	58
185008p	p+0370i-18-6c	3,7			x		6	36	23	18	62
182009p	p+0380-11-6c	3,8	x				6	36	18	11	58
183009p	p+0380i-14-6c	3,8		x			6	36	21	14	58
185009p	p+0380i-21-6c	3,8			x		6	36	33	21	70
187001p	p+0380i-33-6c	3,8				x	6	36	40	33	77
182010p	p+0390-11-6c	3,9	x				6	36	18	11	58
185092	p+0390i-21-6c	3,9			x		6	36	33	21	70
182011p	p+0400-11-6c	4,0	x				6	36	18	11	58
183010p	p+0400i-14-6c	4,0		x			6	36	21	14	58
185010p	p+0400i-21-6c	4,0			x		6	36	33	21	70
187002p	p+0400i-33-6c	4,0				x	6	36	40	33	77
182012p	p+0410-11-6c	4,1	x				6	36	21	11	58
183058p	p+0410i-14-6c	4,1		x			6	36	21	14	58



Art.	Denomination	Internal coolant supply	length	no	yes	yes	yes	$\varnothing Sh$	Lsh	Lfl	Ld	Ltot
				2.5xd	3xd	5xd	7xd					
		$\varnothing D$										
187042	p+0410i-33-6c	4,1				x		6	36	40	33	77
182013p	p+0420-12-6c	4,2	x					6	36	21	12	58
183011p	p+0420i-14-6c	4,2		x				6	36	21	14	58
185011p	p+0420i-23-6c	4,2			x			6	36	33	23	70
187003p	p+0420i-33-6c	4,2				x		6	36	40	33	77
183085	p+0430i-14-6c	4,3		x				6	36	21	14	58
185089	p+0430i-23-6c	4,3			x			6	36	33	23	70
182014p	p+0450-12-6c	4,5	x					6	36	21	12	58
183012p	p+0450i-14-6c	4,5		x				6	36	21	14	58
185012p	p+0450i-23-6c	4,5			x			6	36	33	23	70
187004p	p+0450i-33-6c	4,5				x		6	36	40	33	77
183090	p+0460i-18-6c	4,6		x				6	36	27	18	64
182061	p+0470-15-6c	4,7	x					6	36	25	15	62
183093	p+0470i-18-6c	4,7		x				6	36	27	18	64
185094p	p+0470i-30-6c	4,7			x			6	36	38	30	75
182015p	p+0480-15-6c	4,8	x					6	36	25	15	62
183013p	p+0480i-18-6c	4,8		x				6	36	27	18	64
185013p	p+0480i-25-6c	4,8			x			6	36	33	25	70
182016p	p+0500-15-6c	5,0	x					6	36	25	15	62
183014p	p+0500i-18-6c	5,0		x				6	36	27	18	64
185014p	p+0500i-30-6c	5,0			x			6	36	38	30	75
187005p	p+0500i-42-6c	5,0				x		6	36	51	42	88
182017p	p+0510-15-6c	5,1	x					6	36	25	15	62
183015p	p+0510i-18-6c	5,1		x				6	36	27	18	64
185015p	p+0510i-30-6c	5,1			x			6	36	38	30	75
187006p	p+0510i-42-6c	5,1				x		6	36	51	42	88
182018p	p+0520-15-6c	5,2	x					6	36	25	15	62
183016p	p+0520i-18-6c	5,2		x				6	36	27	18	64
185016p	p+0520i-30-6c	5,2			x			6	36	38	30	75
187007p	p+0520i-42-6c	5,2				x		6	36	51	42	88
182019p	p+0550-15-6c	5,5	x					6	36	25	15	62
183017p	p+0550i-18-6c	5,5		x				6	36	27	18	64
185017p	p+0550i-30-6c	5,5			x			6	36	38	30	75
187008p	p+0550i-42-6c	5,5				x		6	36	51	42	88

Art.	Denomination	Internal coolant supply	length				ØSh	Lsh	Lfl	Ld	Ltot
			no	yes	yes	yes					
		length	2.5xd	3xd	5xd	7xd					
183092	p+0560i-18-6c	5,6		x			6	36	27	18	64
185095p	p+0560i-30-6c	5,6			x		6	36	38	30	75
187073	p+0560i-42-6c	5,6				x	6	36	51	42	88
185093	p+0570i-30-6c	5,7			x		6	36	38	30	75
182020p	p+0580-15-6c	5,8	x				6	36	25	15	62
183018p	p+0580i-18-6c	5,8		x			6	36	27	18	64
185018p	p+0580i-30-6c	5,8			x		6	36	38	30	75
187009p	p+0580i-42-6c	5,8				x	6	36	51	42	88
185070	p+0590i-30-6c	5,9			x		6	36	38	30	75
182021p	p+0600-15-6c	6,0	x				6	36	25	15	62
183019p	p+0600i-18-6c	6,0		x			6	36	27	18	64
185019p	p+0600i-30-6c	6,0			x		6	36	38	30	75
187010p	p+0600i-42-6c	6,0				x	6	36	51	42	88
182060	p+0620-20-8c	6,2	x				8	36	33	20	70
183089	p+0630i-24-8c	6,3		x			8	36	36	24	73
182022p	p+0650-20-8c	6,5	x				8	36	33	20	70
183020p	p+0650i-24-8c	6,5		x			8	36	36	24	73
185020p	p+0650i-40-8c	6,5			x		8	36	52	40	89
187011p	p+0650i-56-8c	6,5				x	8	36	68	56	105
185101	p+0670i-40-8c	6,7			x		8	36	52	40	89
182023p	p+0680-20-8c	6,8	x				8	36	33	20	70
183021p	p+0680i-24-8c	6,8		x			8	36	36	24	73
185053p	p+0680i-40-8c	6,8			x		8	36	52	40	89
187012p	p+0680i-56-8c	6,8				x	8	36	68	56	105
182024p	p+0690-20-8c	6,9	x				8	36	33	20	70
183022p	p+0690i-24-8c	6,9		x			8	36	36	24	73
185022p	p+0690i-40-8c	6,9			x		8	36	52	40	89
187013p	p+0690i-56-8c	6,9				x	8	36	68	56	105
182025p	p+0700-20-8c	7,0	x				8	36	33	20	70
183023p	p+0700i-24-8c	7,0		x			8	36	36	24	73
185023p	p+0700i-40-8c	7,0			x		8	36	52	40	89
187014p	p+0700i-56-8c	7,0				x	8	36	68	56	105
183072	p+0720i-24-8c	7,2		x			8	36	36	24	73
183094	p+0740i-24-8c	7,4		x			8	36	36	24	73
185091	p+0740i-40-8c	7,4			x		8	36	52	40	89
182026p	p+0750-20-8c	7,5	x				8	36	33	20	70
183024p	p+0750i-24-8c	7,5		x			8	36	36	24	73
185024p	p+0750i-40-8c	7,5			x		8	36	52	40	89
187015p	p+0750i-56-8c	7,5				x	8	36	68	56	105
183067	p+0760i-24-8c	7,6		x			8	36	36	24	73
185069	p+0760i-40-8c	7,6			x		8	36	52	40	89
187044	p+0760i-56-8c	7,6				x	8	36	68	56	105

Art.	Denomination	Internal coolant supply	length	no	yes	yes	yes	ØSh	Lsh	Lfl	Ld	Ltot
				2.5xd	3xd	5xd	7xd					
183087	p+0770i-24-8c		7,7		x			8	36	36	24	73
182027p	p+0780-20-8c		7,8	x				8	36	33	20	70
183025p	p+0780i-24-8c		7,8		x			8	36	36	24	73
185025p	p+0780i-40-8c		7,8			x		8	36	52	40	89
187016p	p+0780i-56-8c		7,8				x	8	36	68	56	105
182028p	p+0800-20-8c		8,0	x				8	36	33	20	70
183026p	p+0800i-24-8c		8,0		x			8	36	36	24	73
185026p	p+0800i-40-8c		8,0			x		8	36	52	40	89
187017p	p+0800i-56-8c		8,0				x	8	36	68	56	105
183062	p+0810i-30-10c		8,1		x			10	40	45	30	86
183091	p+0830i-30-10c		8,3		x			10	40	45	30	86
185090	p+0830i-50-10c		8,3			x		10	40	62	50	103
183066	p+0840i-30-10c		8,4		x			10	40	45	30	86
185080	p+0840i-50-10c		8,4			x		10	40	62	50	103
182029p	p+0850-25-10c		8,5	x				10	40	41	25	82
183027p	p+0850i-30-10c		8,5		x			10	40	45	30	86
185027p	p+0850i-50-10c		8,5			x		10	40	62	50	103
187018p	p+0850i-70-10c		8,5				x	10	40	85	70	126
182056p	p+0860-25-10c		8,6	x				10	40	41	25	82
183088	p+0860i-30-10c		8,6		x			10	40	45	30	86
182059	p+0870-25-10c		8,7	x				10	40	41	25	82
185066	p+0870i-50-10c		8,7			x		10	40	62	50	103
187048	p+0870i-70-10c		8,7				x	10	40	85	70	126
182030p	p+0880-25-10c		8,8	x				10	40	41	25	82
183056p	p+0880i-30-10c		8,8		x			10	40	45	30	86
185028p	p+0880i-50-10c		8,8			x		10	40	62	50	103
187019p	p+0880i-70-10c		8,8				x	10	40	85	70	126
182031p	p+0900-25-10c		9,0	x				10	40	41	25	82
183029p	p+0900i-30-10c		9,0		x			10	40	45	30	86
185029p	p+0900i-50-10c		9,0			x		10	40	62	50	103
187020p	p+0900i-70-10c		9,0				x	10	40	85	70	126
183095	p+0930i-30-10c		9,3		x			10	40	45	30	86
183101	p+0940i-30-10c		9,4		x			10	40	45	30	86
185076	p+0940i-50-10c		9,4			x		10	40	62	50	103
182032p	p+0950-25-10c		9,5	x				10	40	41	25	82
183030p	p+0950i-30-10c		9,5		x			10	40	45	30	86
185021p	p+0950i-50-10c		9,5			x		10	40	62	50	103
187021p	p+0950i-70-10c		9,5				x	10	40	85	70	126
182033p	p+0980-25-10c		9,8	x				10	40	41	25	82
183031p	p+0980i-30-10c		9,8		x			10	40	45	30	86
185031p	p+0980i-50-10c		9,8			x		10	40	62	50	103
187022p	p+0980i-70-10c		9,8				x	10	40	85	70	126

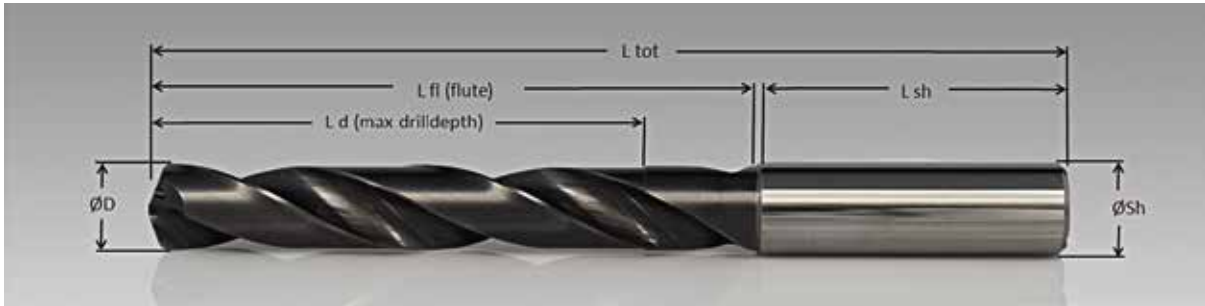
Art.	Denomination	Internal coolant supply	length				ØSh	Lsh	Lfl	Ld	Ltot
			no	yes	yes	yes					
			2.5xd	3xd	5xd	7xd					
182034p	p+1000-25-10c	10,0	x				10	40	41	25	82
183032p	p+1000i-30-10c	10,0		x			10	40	45	30	86
185032p	p+1000i-50-10c	10,0			x		10	40	62	50	103
187023p	p+1000i-70-10c	10,0				x	10	40	85	70	126
183063	p+1010i-36-12c	10,1		x			12	45	52	36	98
185059	p+1010i-60-12c	10,1			x		12	45	78	60	124
182035p	p+1020-30-12c	10,2	x				12	45	49	30	95
183033p	p+1020i-36-12c	10,2		x			12	45	52	36	98
185033p	p+1020i-60-12c	10,2			x		12	45	78	60	124
187024p	p+1020i-84-12c	10,2				x	12	45	102	84	148
183060p	p+1030i-36-12c	10,3		x			12	45	52	36	98
185082	p+1030i-60-12c	10,3			x		12	45	78	60	124
183086	p+1040i-36-12c	10,4		x			12	45	52	36	98
185058	p+1040i-60-12c	10,4			x		12	45	78	60	124
187074	p+1040i-84-12c	10,4				x	12	45	102	84	148
182036p	p+1050-30-12c	10,5	x				12	45	49	30	95
183034p	p+1050i-36-12c	10,5		x			12	45	52	36	98
185034p	p+1050i-60-12c	10,5			x		12	45	78	60	124
187025p	p+1050i-84-12c	10,5				x	12	45	102	84	148
183080	p+1060i-36-12c	10,6		x			12	45	52	36	98
182037p	p+1080-30-12c	10,8	x				12	45	49	30	95
183035p	p+1080i-36-12c	10,8		x			12	45	52	36	98
185035p	p+1080i-60-12c	10,8			x		12	45	78	60	124
182038p	p+1100-30-12c	11,0	x				12	45	49	30	95
183036p	p+1100i-36-12c	11,0		x			12	45	52	36	98
185036p	p+1100i-60-12c	11,0			x		12	45	78	60	124
187026p	p+1100i-84-12c	11,0				x	12	45	102	84	148
183096	p+1120i-36-12c	11,2		x			12	45	52	36	98
185084	p+1120i-60-12c	11,2			x		12	45	78	60	124
182039p	p+1150-30-12c	11,5	x				12	45	49	30	95
183037p	p+1150i-36-12c	11,5		x			12	45	52	36	98
185037p	p+1150i-60-12c	11,5			x		12	45	78	60	124
187027p	p+1150i-84-12c	11,5				x	12	45	102	84	148
182040p	p+1180-30-12c	11,8	x				12	45	49	30	95
183038p	p+1180i-36-12c	11,8		x			12	45	52	36	98
185038p	p+1180i-60-12c	11,8			x		12	45	78	60	124
182041p	p+1200-30-12c	12,0	x				12	45	49	30	95
183039p	p+1200i-36-12c	12,0		x			12	45	52	36	98
185039p	p+1200i-60-12c	12,0			x		12	45	78	60	124
187028p	p+1200i-84-12c	12,0				x	12	45	102	84	148
185060	p+1210i-70-14c	12,1			x		14	45	91	70	137
182042p	p+1250-35-14c	12,5	x				14	45	56	35	102

Art.	Denomination	Internal coolant supply	length	no	yes	yes	yes	ØSh	Lsh	Lfl	Ld	Ltot
				2.5xd	3xd	5xd	7xd					
183040p	p+1250i-42-14c		12,5		x			14	45	61	42	107
185040p	p+1250i-70-14c		12,5			x		14	45	91	70	137
187029p	p+1250i-98-14c		12,5				x	14	45	118	98	164
182043p	p+1270-35-14c		12,7	x				14	45	56	35	102
183041p	p+1270i-42-14c		12,7		x			14	45	61	42	107
185041p	p+1270i-70-14c		12,7			x		14	45	91	70	137
182044p	p+1300-35-14c		13,0	x				14	45	56	35	102
183042p	p+1300i-42-14c		13,0		x			14	45	61	42	107
185054p	p+1300i-70-14c		13,0			x		14	45	91	70	137
187030p	p+1300i-98-14c		13,0				x	14	45	119	98	165
183102p	p+1320i-42-14c		13,2		x			14	45	61	42	107
185099	p+1320i-70-14c		13,2			x		14	45	91	70	137
183078	p+1340i-42-14c		13,4		x			14	45	61	42	107
182045p	p+1350-35-14c		13,5	x				14	45	56	35	102
183057p	p+1350i-42-14c		13,5		x			14	45	61	42	107
185043p	p+1350i-70-14c		13,5			x		14	45	91	70	137
187031p	p+1350i-98-14c		13,5				x	14	45	119	98	165
183075	p+1380i-42-14c		13,8		x			14	45	61	42	107
182046p	p+1400-35-14c		14,0	x				14	45	56	35	102
183044p	p+1400i-42-14c		14,0		x			14	45	61	42	107
185044p	p+1400i-70-14c		14,0			x		14	45	91	70	137
187032p	p+1400i-98-14c		14,0				x	14	45	119	98	165
183081	p+1420i-48-16c		14,2		x			16	48	69	48	118
182047p	p+1450-40-16c		14,5	x				16	48	61	40	110
183045p	p+1450i-48-16c		14,5		x			16	48	69	48	118
185045p	p+1450i-80-16c		14,5			x		16	48	104	80	153
187033p	p+1450i-112-16c		14,5				x	16	48	136	112	185
182048p	p+1500-40-16c		15,0	x				16	48	61	40	110
183046p	p+1500i-48-16c		15,0		x			16	48	69	48	118
185046p	p+1500i-80-16c		15,0			x		16	48	104	80	153
187034p	p+1500i-112-16c		15,0				x	16	48	136	112	185
183098	p+1510i-48-16c		15,1		x			16	48	69	48	118
183100	p+1530i-48-16c		15,3		x			16	48	69	48	118
185047p	p+1550i-80-16c		15,5			x		16	48	104	80	153
182058	p+1580-40-16c		15,8	x				16	48	61	40	110
182050p	p+1600-40-16c		16,0	x				16	48	61	40	110
183048p	p+1600i-48-16c		16,0		x			16	48	69	48	118
185048p	p+1600i-80-16c		16,0			x		16	48	104	80	153
187036p	p+1600i-112-16c		16,0				x	16	48	136	112	185
182052p	p+1700-45-18c		17,0	x				18	48	71	45	120
183052p	p+1700i-54-18c		17,0		x			18	48	79	54	128
185050p	p+1700i-90-18c		17,0			x		18	48	116	90	165

		Internal coolant supply	no	yes	yes	yes					
		length	2.5xd	3xd	5xd	7xd					
Art.	Denomination	∅D					∅Sh	Lsh	Lfl	Ld	Ltot
187037p	p+1700i-126-18c	17,0				x	18	48	151	126	200
183053p	p+1750i-54-18c	17,5		x			18	48	79	54	128
182054p	p+1800-45-18c	18,0	x				18	48	71	45	120
183054p	p+1800i-54-18c	18,0					18	48	79	54	128
185042p	p+1800i-90-18c	18,0			x		18	48	116	90	165
187038p	p+1800i-126-18c	18,0				x	18	48	151	126	200

To increase heat transfer and thereby increase tool life, DOF k+ has a unique corner geometry. The centre is designed to reduce axial force.

Art.	Denomination	Internal coolant supply	length					ØSh	Lsh	Lfl	Ld	Ltot
			no	yes	yes	yes	yes					
		length	2.5xd	3xd	5xd	7xd	10xd					
12001	k+0300-9-6c	3,0	x					6	36	15	9	58
15069	k+0300i-18-6c	3,0			x			6	36	23	18	62
12002	k+0310-9-6c	3,1	x					6	36	15	9	58
15070	k+0310i-18-6c	3,1			x			6	36	23	18	62
15065	k+0320i-18-6c	3,2			x			6	36	23	18	62
12004	k+0330-9-6c	3,3	x					6	36	15	9	58
15071	k+0330i-18-6c	3,3			x			6	36	23	18	62
17060	k+0330i-25-6c	3,3				x		6	36	33	25	72
15072	k+0340i-18-6c	3,4			x			6	36	23	18	62
17057	k+0340i-26-6c	3,4				x		6	36	33	26	72
12006	k+0350-9-6c	3,5	x					6	36	15	9	58
15061	k+0350i-18-6c	3,5			x			6	36	23	18	62
17061	k+0350i-26-6c	3,5				x		6	36	23	26	72
15073	k+0360i-18-6c	3,6			x			6	36	23	18	62
15074	k+0370i-18-6c	3,7			x			6	36	23	18	62
15001	k+0380i-21-6c	3,8			x			6	36	33	21	70
17001	k+0380i-33-6c	3,8				x		6	36	40	33	77
12011	k+0400-11-6c	4,0	x					6	36	18	11	58
13002	k+0400i-14-6c	4,0		x				6	36	21	14	58
15002	k+0400i-21-6c	4,0			x			6	36	33	21	70
17002	k+0400i-33-6c	4,0				x		6	36	40	33	77
11033	k+0420i-45-6c	4,2					x	6	36	53	45	90
12013	k+0420-12-6c	4,2	x					6	36	18	12	58
13003	k+0420i-14-6c	4,2		x				6	36	21	14	58
15003	k+0420i-23-6c	4,2			x			6	36	33	23	70
17003	k+0420i-33-6c	4,2				x		6	36	40	33	77
15055P	k+0430i-23-6c	4,3			x			6	36	33	23	70
12014	k+0450-12-6c	4,5	x					6	36	18	12	58
13004	k+0450i-14-6c	4,5		x				6	36	21	14	58
15004	k+0450i-23-6c	4,5			x			6	36	33	23	70
17004	k+0450i-33-6c	4,5				x		6	36	40	33	77
15075	k+0460i-23-6c	4,6			x			6	36	33	23	70
12015	k+0480-15-6c	4,8	x					6	36	25	15	62
15066	k+0480i-25-6c	4,8			x			6	36	38	25	75



Art.	Denomination	ØD	Internal coolant supply					ØSh	Lsh	Lfl	Ld	Ltot
			no	yes	yes	yes	yes					
		length	2.5xd	3xd	5xd	7xd	10xd					
13065	k+0490i-15-6c	4,9		x				6	36	25	15	62
11001	k+0500i-60-6c	5,0					x	6	36	68	60	105
12016	k+0500-15-6c	5,0	x					6	36	25	15	62
13005	k+0500i-18-6c	5,0		x				6	36	27	18	64
15005	k+0500i-30-6c	5,0			x			6	36	38	30	75
17005	k+0500i-42-6c	5,0				x		6	36	51	42	88
12017	k+0510-15-6c	5,1	x					6	36	25	15	62
13006	k+0510i-18-6c	5,1		x				6	36	27	18	64
15006	k+0510i-30-6c	5,1			x			6	36	38	30	75
17006	k+0510i-42-6c	5,1				x		6	36	51	42	88
11003	k+0520i-60-6c	5,2					x	6	36	68	60	105
12018	k+0520-15-6c	5,2	x					6	36	25	15	62
15007	k+0520i-30-6c	5,2			x			6	36	38	30	75
17007	k+0520i-42-6c	5,2				x		6	36	51	42	88
15068	k+0540i-30-6c	5,4			x			6	36	38	30	75
12019	k+0550-15-6c	5,5	x					6	36	25	15	62
13008	k+0550i-18-6c	5,5		x				6	36	27	18	64
15008	k+0550i-30-6c	5,5			x			6	36	38	30	75
17008	k+0550i-42-6c	5,5				x		6	36	51	42	88
15081	k+0560i-30-6c	5,6			x			6	36	38	30	75
17059	k+0560i-42-6c	5,6				x		6	36	51	42	88
11005	k+0580i-60-6c	5,8					x	6	36	68	60	105
12020	k+0580-15-6c	5,8	x					6	36	25	15	62
13009	k+0580i-18-6c	5,8		x				6	36	27	18	64
15009	k+0580i-30-6c	5,8			x			6	36	38	30	75
17009	k+0580i-42-6c	5,8				x		6	36	51	42	88
13088	k+0590i-18-6c	5,9		x				6	36	27	18	64
11006	k+0600i-60-6c	6,0					x	6	36	68	60	105
12021	k+0600-15-6c	6,0	x					6	36	25	15	62
13010	k+0600i-18-6c	6,0		x				6	36	27	18	64
15010	k+0600i-30-6c	6,0			x			6	36	38	30	75
17010	k+0600i-42-6c	6,0				x		6	36	51	42	88
15063	k+0620i-40-8c	6,2			x			8	36	52	40	89
17062	k+0620i-56-8c	6,2				x		8	36	68	56	105

Art.	Denomination	Internal coolant supply	length	no	yes	yes	yes	yes	ØSh	Lsh	Lfl	Ld	Ltot
				2.5xd	3xd	5xd	7xd	10xd					
15077	k+0630i-40-8c	6,3			x				8	36	52	40	89
12056	k+0635-20-8c	6,35	x						8	36	68	20	105
15082	k+0640i-40-8c	6,4			x				8	36	52	40	89
11007	k+0650i-80-8c	6,5						x	8	36	91	80	128
12022	k+0650-20-8c	6,5	x						8	36	33	20	70
13011	k+0650i-24-8c	6,5		x					8	36	36	24	73
15011	k+0650i-40-8c	6,5			x				8	36	52	40	89
17011	k+0650i-56-8c	6,5					x		8	36	68	56	105
11008	k+0680i-80-8c	6,8						x	8	36	91	80	128
12023	k+0680-20-8c	6,8	x						8	36	33	20	70
13012	k+0680i-24-8c	6,8		x					8	36	36	24	73
15012	k+0680i-40-8c	6,8			x				8	36	52	40	89
17012	k+0680i-56-8c	6,8					x		8	36	68	56	105
12024	k+0690-20-8c	6,9	x						8	36	33	20	70
13013	k+0690i-24-8c	6,9		x					8	36	36	24	73
15013	k+0690i-40-8c	6,9			x				8	36	52	40	89
17013	k+0690i-56-8c	6,9					x		8	36	68	56	105
11010	k+0700i-80-8c	7,0						x	8	36	91	80	128
12025	k+0700-20-8c	7,0	x						8	36	33	20	70
13014	k+0700i-24-8c	7,0		x					8	36	36	24	73
15014	k+0700i-40-8c	7,0			x				8	36	52	40	89
17014	k+0700i-56-8c	7,0					x		8	36	68	56	105
15092	k+0720i-40-8c	7,2			x				8	36	52	40	89
12055	k+0740-20-8c	7,4	x						8	36	33	20	70
13093	k+0740i-24-8c	7,4		x					8	36	36	24	73
15051	k+0740i-40-8c	7,4			x				8	36	52	40	89
17049	k+0740i-56-8c	7,4					x		8	36	68	56	105
11011	k+0750i-80-8c	7,5						x	8	36	91	80	128
12026	k+0750-20-8c	7,5	x						8	36	33	20	70
13015	k+0750i-24-8c	7,5		x					8	36	36	24	73
15015	k+0750i-40-8c	7,5			x				8	36	52	40	89
17015	k+0750i-56-8c	7,5					x		8	36	68	56	105
15090	k+0760i-40-8c	7,6			x				8	36	52	40	89
17040	k+0770i-56-8c	7,7					x		8	36	68	56	105
12027	k+0780-20-8c	7,8	x						8	36	33	20	70
13016	k+0780i-24-8c	7,8		x					8	36	36	24	73
15016	k+0780i-40-8c	7,8			x				8	36	52	40	89
17016	k+0780i-56-8c	7,8					x		8	36	68	56	105
11013	k+0800i-80-8c	8,0						x	8	36	91	80	128
12028	k+0800-20-8c	8,0	x						8	36	33	20	70
13017	k+0800i-24-8c	8,0		x					8	36	36	24	73
15017	k+0800i-40-8c	8,0			x				8	36	52	40	89

		Internal coolant supply		no	yes	yes	yes	yes					
		length	2.5xd	3xd	5xd	7xd	10xd						
Art.	Denomination	ØD						ØSh	Lsh	Lfl	Ld	Ltot	
17017	k+0800i-56-8c	8,0				x		8	36	68	56	105	
15067	k+0810i-50-10c	8,1			x			10	40	62	50	103	
13043	k+0820i-30-10c	8,2		x				10	40	45	30	86	
17063	k+0820i-70-10c	8,2				x		10	40	85	70	126	
13052	k+0830i-30-10c	8,3						10	40	45	30	86	
15089	k+0830i-50-10c	8,3			x			10	40	62	50	103	
17039	k+0830i-70-10c	8,3				x		10	40	85	70	126	
15078	k+0840i-50-10c	8,4			x			10	40	62	50	103	
11014	k+0850i-100-10c	8,5					x	10	40	113	100	154	
12029	k+0850-25-10c	8,5	x					10	40	41	25	82	
13018	k+0850i-30-10c	8,5		x				10	40	45	30	86	
15018	k+0850i-50-10c	8,5			x			10	40	62	50	103	
17018	k+0850i-70-10c	8,5				x		10	40	85	70	126	
13094	k+0860i-30-10c	8,6		x				10	40	45	30	86	
15045	k+0860i-50-10c	8,6			x			10	40	62	50	103	
13063	k+0870i-30-10c	8,7						10	40	45	30	86	
15046	k+0870i-50-10c	8,7			x			10	40	62	50	103	
17045	k+0870i-70-10c	8,7				x		10	40	85	70	126	
11015	k+0880i-100-10c	8,8					x	10	40	113	100	154	
12030	k+0880-25-10c	8,8	x					10	40	41	25	82	
13019	k+0880i-30-10c	8,8		x				10	40	45	30	86	
15019	k+0880i-50-10c	8,8			x			10	40	62	50	103	
17019	k+0880i-70-10c	8,8				x		10	40	85	70	126	
11016	k+0900i-100-10c	9,0					x	10	40	114	100	155	
12031	k+0900-25-10c	9,0	x					10	40	41	25	82	
13020	k+0900i-30-10c	9,0		x				10	40	45	30	86	
15020	k+0900i-50-10c	9,0			x			10	40	62	50	103	
17020	k+0900i-70-10c	9,0				x		10	40	85	70	126	
15087	k+0920i-50-10c	9,2			x			10	40	62	50	103	
15049	k+0930i-50-10c	9,3			x			10	40	62	50	103	
17042	k+0930i-70-10c	9,3				x		10	40	85	70	126	
15052	k+0940i-50-10c	9,4			x			10	40	62	50	103	
11017	k+0950i-100-10c	9,5					x	10	40	115	100	156	
12032	k+0950-25-10c	9,5	x					10	40	41	25	82	
13021	k+0950i-30-10c	9,5		x				10	40	45	30	86	
15021	k+0950i-50-10c	9,5			x			10	40	62	50	103	
17021	k+0950i-70-10c	9,5				x		10	40	85	70	126	
15043	k+0960i-50-10c	9,6			x			10	40	62	50	103	
11018	k+0980i-100-10c	9,8					x	10	40	115	100	156	
12033	k+0980-25-10c	9,8	x					10	40	41	25	82	
13022	k+0980i-30-10c	9,8		x				10	40	45	30	86	
15022	k+0980i-50-10c	9,8			x			10	40	62	50	103	

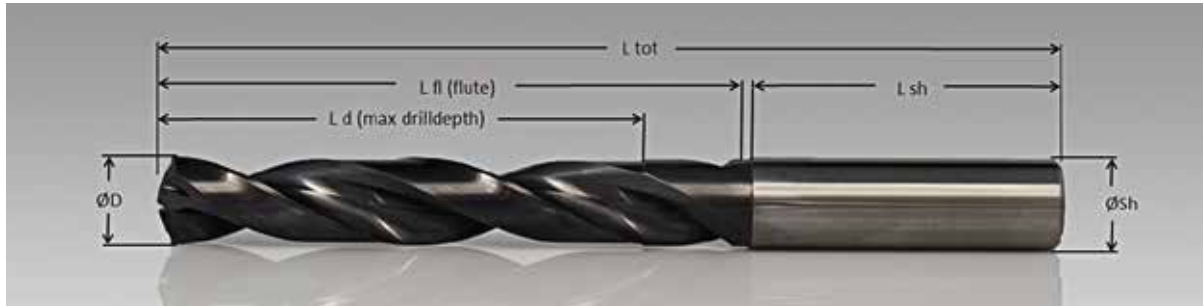
Art.	Denomination	Internal coolant supply	length	no	yes	yes	yes	yes	ØSh	Lsh	Lfl	Ld	Ltot
				2.5xd	3xd	5xd	7xd	10xd					
Art.	Denomination	ØD											
17022	k+0980i-70-10c	9,8					x		10	40	85	70	126
13046	k+0990i-30-10c	9,9			x				10	40	45	30	86
11019	k+1000i-100-10c	10,0						x	10	40	115	100	156
12034	k+1000-25-10c	10,0	x						10	40	41	25	82
13023	k+1000i-30-10c	10,0			x				10	40	45	30	86
15023	k+1000i-50-10c	10,0				x			10	40	62	50	103
17023	k+1000i-70-10c	10,0					x		10	40	85	70	126
11020	k+1020i-120-12c	10,2						x	12	45	135	120	181
12035	k+1020-30-12c	10,2	x						12	45	49	30	95
13024	k+1020i-36-12c	10,2			x				12	45	52	36	98
15024	k+1020i-60-12c	10,2				x			12	45	78	60	124
17024	k+1020i-84-12c	10,2					x		12	45	102	84	148
12061	k+1030-30-12c	10,3	x						12	45	49	30	95
13055	k+1030i-36-12c	10,3			x				12	45	52	36	98
15056	k+1030i-60-12c	10,3				x			12	45	78	60	124
17055	k+1040i-84-12c	10,4					x		12	45	102	84	148
12036	k+1050-30-12c	10,5	x						12	45	49	30	95
13025	k+1050i-36-12c	10,5			x				12	45	52	36	98
15025	k+1050i-60-12c	10,5				x			12	45	78	60	124
17025	k+1050i-84-12c	10,5					x		12	45	102	84	148
12037	k+1080-30-12c	10,8	x						12	45	49	30	95
13039	k+1080i-36-12c	10,8			x				12	45	52	36	98
11022	k+1100i-120-12c	11,0						x	12	45	137	120	183
12038	k+1100-30-12c	11,0	x						12	45	49	30	95
13026	k+1100i-36-12c	11,0			x				12	45	52	36	98
15026	k+1100i-60-12c	11,0				x			12	45	78	60	124
17026	k+1100i-84-12c	11,0					x		12	45	102	84	148
11034	k+1120i-120-12c	11,2						x	12	45	137	120	183
13069	k+1120i-36-12c	11,2			x				12	45	52	36	98
15048	k+1120i-60-12c	11,2				x			12	45	78	60	124
12039	k+1150-30-12c	11,5	x						12	45	49	30	95
13027	k+1150i-36-12c	11,5			x				12	45	52	36	98
15027	k+1150i-60-12c	11,5				x			12	45	78	60	124
17027	k+1150i-84-12c	11,5					x		12	45	102	84	148
17058	k+1160i-84-12c	11,6					x		12	45	102	84	148
11030	k+1180i-120-12c	11,8						x	12	45	137	120	183
12040	k+1180-30-12c	11,8	x						12	45	49	30	95
13040	k+1180i-36-12c	11,8			x				12	45	52	36	98
15028	k+1180i-60-12c	11,8				x			12	45	78	60	124
17041	k+1180i-84-12c	11,8					x		12	45	102	84	148
11024	k+1200i-120-12c	12,0						x	12	45	138	120	184
12041	k+1200-30-12c	12,0	x						12	45	49	30	95

Art.	Denomination	Internal coolant supply	length	Internal coolant supply					ØSh	Lsh	Lfl	Ld	Ltot
				no	yes	yes	yes	yes					
		ØD	2.5xd	3xd	5xd	7xd	10xd						
13028	k+1200i-36-12c	12,0		x				12	45	52	36	98	
15029	k+1200i-60-12c	12,0			x			12	45	78	60	124	
17028	k+1200i-84-12c	12,0				x		12	45	102	84	148	
12060	k+1220-35-14c	12,2	x					14	45	56	35	102	
13049	k+1220i-42-14c	12,2		x				14	45	61	42	107	
11032	k+1230i-140-14c	12,3					x	14	45	157	140	203	
12042	k+1250-35-14c	12,5	x					14	45	56	35	102	
13029	k+1250i-42-14c	12,5		x				14	45	61	42	107	
15030	k+1250i-70-14c	12,5			x			14	45	91	70	137	
17029	k+1250i-98-14c	12,5				x		14	45	119	98	165	
12043	k+1270-35-14c	12,7	x					14	45	56	35	102	
15031	k+1270i-70-14c	12,7			x			14	45	91	70	137	
13047	k+1280i-42-14c	12,8		x				14	45	61	42	107	
11026	k+1300i-140-14c	13,0					x	14	45	157	140	203	
12044	k+1300-35-14c	13,0	x					14	45	56	35	102	
13030	k+1300i-42-14c	13,0		x				14	45	61	42	107	
15032	k+1300i-70-14c	13,0			x			14	45	91	70	137	
17030	k+1300i-98-14c	13,0				x		14	45	119	98	165	
15044	k+1320i-70-14c	13,2			x			14	45	91	70	137	
11027	k+1350i-140-14c	13,5					x	14	45	157	140	203	
12045	k+1350-35-14c	13,5	x					14	45	56	35	102	
13031	k+1350i-42-14c	13,5		x				14	45	61	42	107	
15033	k+1350i-70-14c	13,5			x			14	45	91	70	137	
17031	k+1350i-98-14c	13,5				x		14	45	119	98	165	
11028	k+1400i-140-14c	14,0					x	14	45	157	140	203	
12046	k+1400-35-14c	14,0	x					14	45	56	35	102	
13032	k+1400i-42-14c	14,0		x				14	45	61	42	107	
15034	k+1400i-70-14c	14,0			x			14	45	91	70	137	
17032	k+1400i-98-14c	14,0				x		14	45	119	98	165	
15050P	k+1410i-80-16c	14,1			x			16	48	104	80	153	
12047	k+1450-40-16c	14,5	x					16	48	61	40	110	
13033	k+1450i-48-16c	14,5		x				16	48	69	48	118	
15035	k+1450i-80-16c	14,5			x			16	48	104	80	153	
17033	k+1450i-112-16c	14,5				x		16	48	136	112	185	
12048	k+1500-40-16c	15,0	x					16	48	61	40	110	
13034	k+1500i-48-16c	15,0		x				16	48	69	48	118	
15036	k+1500i-80-16c	15,0			x			16	48	104	80	153	
17034	k+1500i-112-16c	15,0				x		16	48	136	112	185	
13073	k+1510i-48-16c	15,1		x				16	48	69	48	118	
13072	k+1520i-48-16c	15,2		x				16	48	69	48	118	
15076	k+1530i-80-16c	15,3			x			16	48	104	80	153	
12049	k+1550-40-16c	15,5	x					16	48	61	40	110	

		Internal coolant supply		no	yes	yes	yes	yes					
		length		2.5xd	3xd	5xd	7xd	10xd					
Art.	Denomination	ØD							ØSh	Lsh	Lfl	Ld	Ltot
13035	k+1550i-48-16c	15,5			x				16	48	69	48	118
15037	k+1550i-80-16c	15,5				x			16	48	104	80	153
17035	k+1550i-112-16c	15,5					x		16	48	136	112	185
13048	k+1580i-48-16c	15,8			x				16	48	69	48	118
12050	k+1600-40-16c	16,0	x						16	48	61	40	110
13036	k+1600i-48-16c	16,0			x				16	48	69	48	118
15038	k+1600i-80-16c	16,0				x			16	48	104	80	153
17036	k+1600i-112-16c	16,0					x		16	48	136	112	185
12051	k+1650-45-18c	16,5	x						18	48	71	45	120
13051	k+1650i-54-18c	16,5			x				18	48	79	54	128
15039	k+1650i-90-18c	16,5				x			18	48	116	90	165
12052	k+1700-45-18c	17,0	x						18	48	71	45	120
13037	k+1700i-54-18c	17,0			x				18	48	79	54	128
15040	k+1700i-90-18c	17,0				x			18	48	116	90	165
17037	k+1700i-126-18c	17,0					x		18	48	151	126	200
12053	k+1750-45-18c	17,5	x						18	48	71	45	120
13050	k+1750i-54-18c	17,5			x				18	48	79	54	128
15041	k+1750i-90-18c	17,5				x			18	48	116	90	165
12054	k+1800-45-18c	18,0	x						18	48	71	45	120
13038	k+1800i-54-18c	18,0			x				18	48	79	54	128
15042	k+1800i-90-18c	18,0				x			18	48	116	90	165
17038	k+1800i-126-18c	18,0					x		18	48	151	126	200

DOF a+ geometry has been optimized for chip breaking and chip formation in aluminium and enables exceptional feed. A concave corner geometry reduces exit burrs.

Art.	Denomination	ØD	Internal coolant supply				ØSh	Lsh	Lfl	Ld	Ltot
			no	yes	yes	yes					
		length	2.5xd	3xd	5xd	7xd					
162078	a+0280-8-6c	2,8	x				6	36	13	8	52
162001p	a+0300-9-6c	3	x				6	36	15	9	58
163001p	a+0300i-11-6c	3		x			6	36	18	11	58
165001p	a+0300i-18-6c	3			x		6	36	23	18	62
165002p	a+0310i-18-6c	3,1			x		6	36	23	18	62
163003p	a+0320i-11-6c	3,2		x			6	36	18	11	58
162004p	a+0330-9-6c	3,3	x				6	36	15	9	58
163004p	a+0330i-11-6c	3,3		x			6	36	18	11	58
165004p	a+0330i-18-6c	3,3			x		6	36	23	18	62
165005p	a+0340i-18-6c	3,4			x		6	36	23	18	62
163006p	a+0350i-11-6c	3,5		x			6	36	18	11	58
165006p	a+0350i-18-6c	3,5			x		6	36	23	18	62
162008p	a+0370-9-6c	3,7	x				6	36	15	9	58
163008p	a+0370i-11-6c	3,7		x			6	36	18	11	58
165008p	a+0370i-18-6c	3,7			x		6	36	23	18	62
163009p	a+0380i-14-6c	3,8		x			6	36	21	14	58
165009p	a+0380i-21-6c	3,8			x		6	36	33	21	70
163060p	a+0390i-14-6c	3,9		x			6	36	21	14	58
167041p	a+0390i-33-6c	3,9				x	6	36	40	33	77
162011p	a+0400-11-6c	4	x				6	36	18	11	58
163010p	a+0400i-14-6c	4		x			6	36	21	14	58
165010p	a+0400i-21-6c	4			x		6	36	33	21	70
167002p	a+0400i-33-6c	4				x	6	36	40	33	77
163011p	a+0420i-14-6c	4,2		x			6	36	21	14	58
165011p	a+0420i-23-6c	4,2			x		6	36	33	23	70
167003p	a+0420i-33-6c	4,2				x	6	36	40	33	77
163065	a+0430i-14-6c	4,3		x			6	36	21	14	58
162014p	a+0450-12-6c	4,5	x				6	36	18	12	58
163012p	a+0450i-14-6c	4,5		x			6	36	21	14	58
167004p	a+0450i-33-6c	4,5				x	6	36	40	33	77
163063p	a+0460i-14-6c	4,6		x			6	36	21	14	58
165061	a+0460i-23-6c	4,6			x		6	36	33	23	70
162079	a+0470-15-6c	4,7	x				6	36	25	15	62
163078	a+0470i-18-6c	4,7		x			6	36	27	18	64
163013p	a+0480i-18-6c	4,8		x			6	36	27	18	64
165082	a+0490i-25-6c	4,9			x		6	36	38	25	75
162016p	a+0500-15-6c	5	x				6	36	25	15	62
163014p	a+0500i-18-6c	5		x			6	36	27	18	64



Art.	Denomination	Internal coolant supply	length	no	yes	yes	yes	$\varnothing Sh$	Lsh	Lfl	Ld	Ltot
				2.5xd	3xd	5xd	7xd					
165014p	a+0500i-30-6c		5			x		6	36	38	30	75
167005p	a+0500i-42-6c		5				x	6	36	51	42	88
162017p	a+0510-15-6c		5,1	x				6	36	25	15	62
163015p	a+0510i-18-6c		5,1		x			6	36	27	18	64
165015p	a+0510i-30-6c		5,1			x		6	36	38	30	75
162018p	a+0520-15-6c		5,2	x				6	36	25	15	62
163016p	a+0520i-18-6c		5,2		x			6	36	27	18	64
165016p	a+0520i-30-6c		5,2			x		6	36	38	30	75
167007p	a+0520i-42-6c		5,2				x	6	36	51	42	88
162019p	a+0550-15-6c		5,5	x				6	36	25	15	62
163017p	a+0550i-18-6c		5,5		x			6	36	27	18	64
165017p	a+0550i-30-6c		5,5			x		6	36	38	30	75
167008p	a+0550i-42-6c		5,5				x	6	36	51	42	88
165018p	a+0580i-30-6c		5,8			x		6	36	38	30	75
167009p	a+0580i-42-6c		5,8				x	6	36	51	42	88
165083	a+0590i-30-6c		5,9			x		6	36	38	30	75
162021p	a+0600-15-6c		6	x				6	36	25	15	62
163019p	a+0600i-18-6c		6		x			6	36	27	18	64
165019p	a+0600i-30-6c		6			x		6	36	38	30	75
167010p	a+0600i-42-6c		6				x	6	36	51	42	88
163069	a+0610i-24-8c		6,1		x			8	36	36	24	73
167050	a+0610i-56-8c		6,1				x	8	36	68	56	105
162022p	a+0650-20-8c		6,5	x				8	36	33	20	70
163020p	a+0650i-24-8c		6,5		x			8	36	36	24	73
165020p	a+0650i-40-8c		6,5			x		8	36	52	40	89
167011p	a+0650i-56-8c		6,5				x	8	36	68	56	105
163057p	a+0660i-24-8c		6,6		x			8	36	36	24	73
165079	a+0670i-40-8c		6,7			x		8	36	52	40	89
162023p	a+0680-20-8c		6,8	x				8	36	33	20	70
163021p	a+0680i-24-8c		6,8		x			8	36	36	24	73
165021p	a+0680i-40-8c		6,8			x		8	36	52	40	89
167012p	a+0680i-56-8c		6,8				x	8	36	68	56	105
163022p	a+0690i-24-8c		6,9		x			8	36	36	24	73
165022p	a+0690i-40-8c		6,9			x		8	36	52	40	89

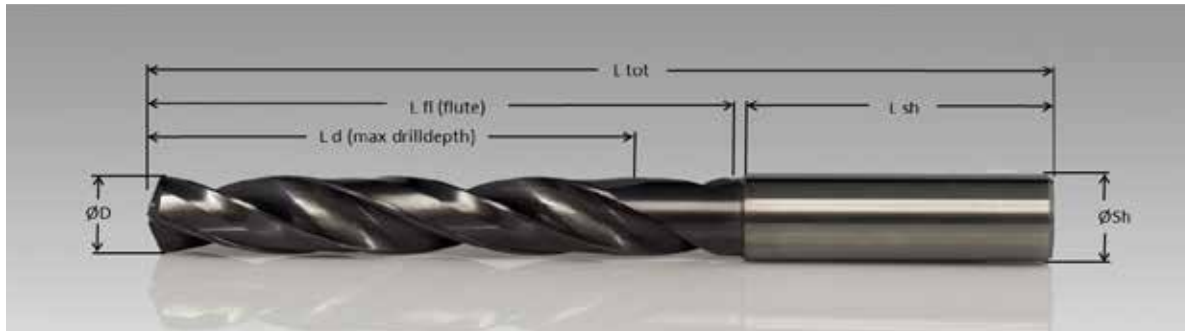
Art.	Denomination	Internal coolant supply	length	no	yes	yes	yes	ØSh	Lsh	Lfl	Ld	Ltot
				2.5xd	3xd	5xd	7xd					
162025p	a+0700-20-8c	7	x					8	36	33	20	70
163023p	a+0700i-24-8c	7		x				8	36	36	24	73
165023p	a+0700i-40-8c	7			x			8	36	52	40	89
162058p	a+0710-20-8c	7,1	x					8	36	33	20	70
163058p	a+0710i-24-8c	7,1		x				8	36	36	24	73
165072	a+0710i-40-8c	7,1			x			8	36	52	40	89
162063	a+0730-20-8c	7,3	x					8	36	33	20	70
165062	a+0740i-40-8c	7,4			x			8	36	52	40	89
163024p	a+0750i-24-8c	7,5		x				8	36	36	24	73
165024p	a+0750i-40-8c	7,5			x			8	36	52	40	89
167015p	a+0750i-56-8c	7,5				x		8	36	68	56	105
162027p	a+0780-20-8c	7,8	x					8	36	33	20	70
163025p	a+0780i-24-8c	7,8		x				8	36	36	24	73
165025p	a+0780i-40-8c	7,8			x			8	36	52	40	89
167016p	a+0780i-56-8c	7,8				x		8	36	68	56	105
165084	a+0790i-40-8c	7,9			x			8	36	52	40	89
162028p	a+0800-20-8c	8	x					8	36	33	20	70
163026p	a+0800i-24-8c	8		x				8	36	36	24	73
165026p	a+0800i-40-8c	8			x			8	36	52	40	89
167017p	a+0800i-56-8c	8				x		8	36	68	56	105
167051	a+0820i-70-10c	8,2				x		10	40	85	70	126
165053p	a+0830i-50-10c	8,3			x			10	40	62	50	103
165056p	a+0840i-50-10c	8,4			x			10	40	62	50	103
162029p	a+0850-25-10c	8,5	x					10	40	41	25	82
163027p	a+0850i-30-10c	8,5		x				10	40	45	30	86
165027p	a+0850i-50-10c	8,5			x			10	40	62	50	103
167018p	a+0850i-70-10c	8,5				x		10	40	85	70	126
165063	a+0860i-50-10c	8,6			x			10	40	62	50	103
163061p	a+0870i-30-10c	8,7		x				10	40	45	30	86
162030p	a+0880-25-10c	8,8	x					10	40	41	25	82
165028p	a+0880i-50-10c	8,8			x			10	40	62	50	103
167019p	a+0880i-70-10c	8,8				x		10	40	85	70	126
162031p	a+0900-25-10c	9	x					10	40	41	25	82
163029p	a+0900i-30-10c	9		x				10	40	45	30	86
165029p	a+0900i-50-10c	9			x			10	40	62	50	103
167020p	a+0900i-70-10c	9				x		10	40	85	70	126
165055p	a+0920i-50-10c	9,2			x			10	40	62	50	103
162032p	a+0950-25-10c	9,5	x					10	40	41	25	82
165030p	a+0950i-50-10c	9,5			x			10	40	62	50	103
167021p	a+0950i-70-10c	9,5				x		10	40	85	70	126
163031p	a+0980i-30-10c	9,8		x				10	40	45	30	86
165031p	a+0980i-50-10c	9,8			x			10	40	62	50	103

Art.	Denomination	Internal coolant supply	length	no	yes	yes	yes	ØSh	Lsh	Lfl	Ld	Ltot
				2.5xd	3xd	5xd	7xd					
167022p	a+0980i-70-10c		9,8				x	10	40	85	70	126
165057p	a+0990i-50-10c		9,9			x		10	40	62	50	103
163032p	a+1000i-30-10c		10		x			10	40	45	30	86
165032p	a+1000i-50-10c		10			x		10	40	62	50	103
167023p	a+1000i-70-10c		10				x	10	40	85	70	126
163055p	a+1010i-36-12c		10,1		x			12	45	52	36	98
165067	a+1010i-60-12c		10,1			x		12	45	78	60	124
162035p	a+1020-30-12c		10,2	x				12	45	49	30	95
163033p	a+1020i-36-12c		10,2		x			12	45	52	36	98
165033p	a+1020i-60-12c		10,2			x		12	45	78	60	124
167024p	a+1020i-84-12c		10,2				x	12	45	102	84	148
165054p	a+1030i-60-12c		10,3			x		12	45	78	60	124
162036p	a+1050-30-12c		10,5	x				12	45	49	30	95
163034p	a+1050i-36-12c		10,5		x			12	45	52	36	98
165034p	a+1050i-60-12c		10,5			x		12	45	78	60	124
167025p	a+1050i-84-12c		10,5				x	12	45	102	84	148
162037p	a+1080-30-12c		10,8	x				12	45	49	30	95
163035p	a+1080i-36-12c		10,8		x			12	45	52	36	98
165035p	a+1080i-60-12c		10,8			x		12	45	78	60	124
162038p	a+1100-30-12c		11	x				12	45	49	30	95
163036p	a+1100i-36-12c		11		x			12	45	52	36	98
165036p	a+1100i-60-12c		11			x		12	45	78	60	124
167026p	a+1100i-84-12c		11				x	12	45	102	84	148
163073	a+1130i-36-12c		11,3		x			12	45	52	36	98
162039p	a+1150-30-12c		11,5	x				12	45	49	30	95
163037p	a+1150i-36-12c		11,5		x			12	45	52	36	98
165037p	a+1150i-60-12c		11,5			x		12	45	78	60	124
163038p	a+1180i-36-12c		11,8		x			12	45	52	36	98
165038p	a+1180i-60-12c		11,8			x		12	45	78	60	124
162041p	a+1200-30-12c		12	x				12	45	49	30	95
163039p	a+1200i-36-12c		12		x			12	45	52	36	98
165039p	a+1200i-60-12c		12			x		12	45	78	60	124
167028p	a+1200i-84-12c		12				x	12	45	102	84	148
165040p	a+1250i-70-14c		12,5			x		14	45	91	70	137
167029p	a+1250i-98-14c		12,5				x	14	45	119	98	165
163042p	a+1300i-42-14c		13		x			14	45	61	42	107
165042p	a+1300i-70-14c		13			x		14	45	91	70	137
167030p	a+1300i-98-14c		13				x	14	45	119	98	165
162045p	a+1350-35-14c		13,5	x				14	45	61	35	107
165043p	a+1350i-70-14c		13,5			x		14	45	91	70	137
167031p	a+1350i-98-14c		13,5				x	14	45	119	98	165
163044p	a+1400i-42-14c		14		x			14	45	61	42	107

Art.	Denomination	Internal coolant supply	length	no	yes	yes	yes	ØSh	Lsh	Lfl	Ld	Ltot
				2.5xd	3xd	5xd	7xd					
165044p	a+1400i-70-14c	14				x		14	45	91	70	137
163045p	a+1450i-48-16c	14,5		x				16	48	69	48	118
163059p	a+1460i-48-16c	14,6		x				16	48	69	48	118
167034p	a+1500i-112-16c	15					x	16	48	136	112	185
163046p	a+1500i-48-16c	15		x				16	48	69	48	118
163074	a+1530i-48-16c	15,3		x				16	48	69	48	118
163049p	a+1650i-54-18c	16,5		x				18	48	79	54	128
163052p	a+1700i-54-18c	17		x				18	48	79	54	128
165050p	a+1700i-90-18c	17				x		18	48	116	90	165
165051p	a+1750i-90-18c	17,5				x		18	48	116	90	165

DOF A+S/DR/DRP

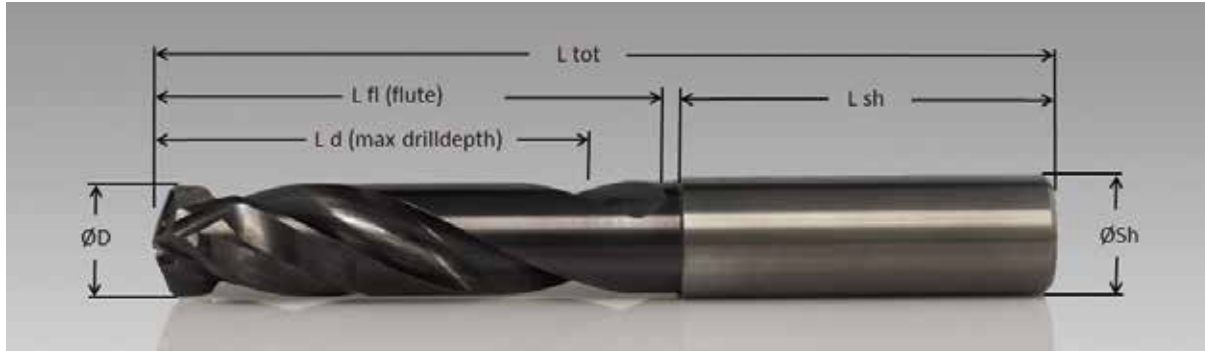
The latest expansions to our drill reamer family, are no less than three different geometries, which handles the different chip forming abilities of widely different material groups, without compromising in productivity.



Art.	Denomination	ØD	Internal coolant supply		yes 3xd	yes 5xd	ØSh	Lsh	Lfl	Ld	Ltot
			length	Min							
28305	dr-0501i-15-6c	5,01	5,006	5,014	x		6	36	23	15	60
24301	a+s-0601i-18-8c	6,01	6,006	6,014			Min	0	63	18	64
24501	a+s-0601i-30-8c	6,01	6,006	6,014		x	8	36	39	30	76
28307	dr-0601i-18-8c	6,01	6,006	6,014	x		8	36	27	18	64
28507	dr-0601i-30-8c	6,01	6,006	6,014		x	8	36	39	30	76
28338	drp-0601i-18-8c	6,01	6,006	6,014	x		8	36	27	18	64
28520	drp-0601i-30-8c	6,01	6,006	6,014		x	8	36	39	30	76
28308	dr-0602i-18-8c	6,02	6,016	6,024	x		8	36	27	18	64
28321	dr-0800i-24-8c	8,00	7,996	8,004	x		8	36	36	24	73
24302	a+s-0801i-24-10c	8,01	8,006	8,014	x		10	40	36	24	77
24502	a+s-0801i-40-10c	8,01	8,006	8,014		x	10	40	52	40	93
28310	dr-0801i-24-10c	8,01	8,006	8,014	x		10	40	36	24	77
28510	dr-0801i-40-10c	8,01	8,006	8,014		x	10	40	52	40	93
28336	drp-0801i-24-10c	8,01	8,006	8,014	x		10	40	36	24	77
28533	drp-0801i-40-10c	8,01	8,006	8,014		x	10	40	52	40	93
28311	dr-0802i-24-10c	8,02	8,016	8,024	x		10	40	36	24	77
24503	a+s-1001i-50-12c	10,01	10,005	10,015		x	12	45	65	50	111
24303	a+s-1001i-30-12c	10,01	10,005	10,015	x		12	45	45	30	91
28313	dr-1001i-30-12c	10,01	10,005	10,015	x		12	45	45	30	91
28513	dr-1001i-50-12c	10,01	10,005	10,015		x	12	45	65	50	111
28339	drp-1001i-30-12c	10,01	10,005	10,015	x		12	45	45	30	91
28518	drp-1001i-50-12c	10,01	10,005	10,015		x	12	45	65	50	111
24304	a+s-1201i-36-14c	12,01	12,005	12,015	x		14	45	52	36	98
24504	a+s-1201i-60-14c	12,01	12,005	12,015		x	14	45	77	60	123
28315	dr-1201i-36-14c	12,01	12,005	12,015	x		14	45	52	36	98
28515	dr-1201i-60-14c	12,01	12,005	12,015		x	14	45	77	60	123
28333	drp-1201i-36-14c	12,01	12,005	12,015	x		14	45	52	36	98
28519	drp-1201i-60-14c	12,01	12,005	12,015		x	14	45	77	60	123
28316	dr-1202i-36-14c	12,02	12,015	12,025	x		14	45	52	36	98
28326	dr-1203i-36-14c	12,03	12,025	12,035	x		14	45	52	36	98
28343	drp-1401i-42-16c	14,01	14,005	14,015	x		16	48	60	42	109

DOF BRBS

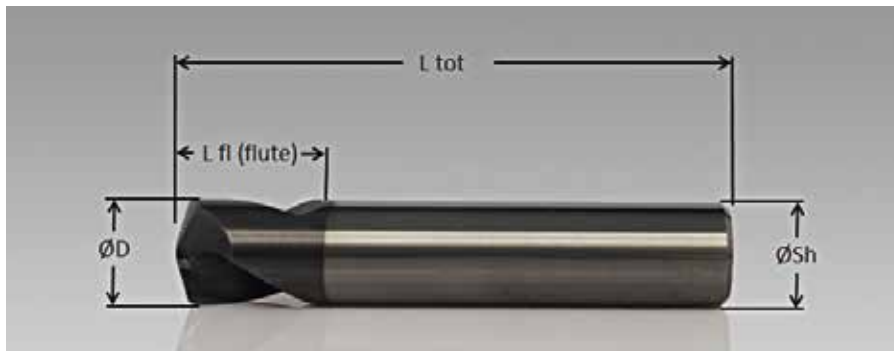
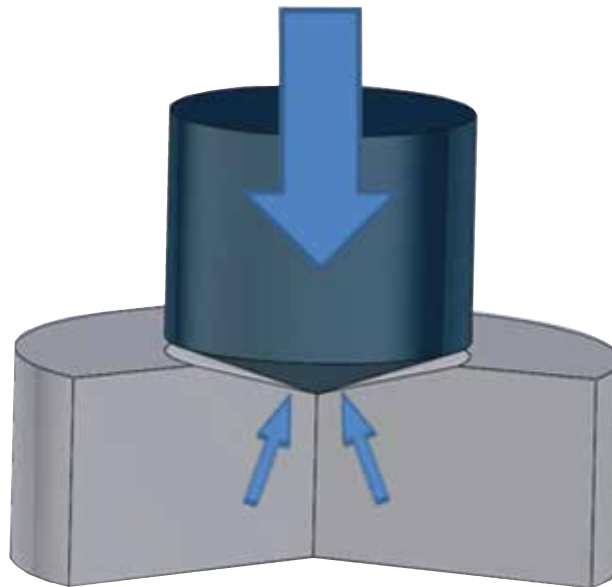
DOF brbs is a drill reamer with a negative helix ream cut. To ensure a robust process, extra support points and ground channels to guide the coolant flow are added. In most materials H7 tolerance is achieved.



Art.	Denomination	length	Internal coolant supply		$\varnothing Sh$	Lsh	Lfl	Ld	Ltot
			yes	yes					
			3xd	5xd					
23114	brbs-04004i-14-6c	4,004	x		6	36	20	14	58
25115	brbs-04004i-23-6c	4,004		x	6	36	29	23	70
23115	brbs-05004i-15-6c	5,004	x		6	36	23	15	60
25114	brbs-05004i-25-6c	5,004		x	6	36	33	25	70
23101	brbs-06004i-18-8c	6,004	x		8	36	27	18	64
25101	brbs-06004i-30-8c	6,004		x	8	36	39	30	76
25102	brbs-07004i-40-8c	7,004		x	8	36	52	40	89
23103	brbs-08004i-24-10c	8,004	x		10	40	36	24	77
25103	brbs-08004i-40-10c	8,004		x	10	40	52	40	93
23104	brbs-09004i-30-10c	9,004	x		10	40	45	30	86
25104	brbs-09004i-50-10c	9,004		x	10	40	65	50	106
23105	brbs-10004i-30-12c	10,004	x		12	45	45	30	91
25105	brbs-10004i-50-12c	10,004		x	12	45	65	50	111
23107	brbs-12004i-36-14c	12,004	x		14	45	52	36	98
25107	brbs-12004i-60-14c	12,004		x	14	45	76	60	122
25109	brbs-14004i-70-16c	14,004		x	16	48	89	70	138

DOF CB

DOF cb is a centre drill with 145 degrees point angle and thereby guiding the next drilling operation by the point.



Art.	Denomination	$\varnothing D$ k7	$\varnothing Sh$	Lsh	Lfl	Ltot
90602	cb-500-6c-v145	5	6	36	13	50
90615	cb-600-6c-v145	6	6	36	13	50
90616	cb-800-8c-v145	8	8	36	14	51
90617	cb-1000-10c-v145	10	10	40	14	55
90618	cb-1200-12c-v145	12	12	45	16	62

MATERIAL GROUPS ISO

Below there is a simplified description of material groups according to ISO.

Group	Description	Condition
1	Easy cutting steel	Rm 350-700Rm 350-700Rm 350-700
2	Low carbon steel	Rm 350-1200Rm 350-1200Rm 350-1200
3		
4		
5	Alloyed steel	Rm 550-1200Rm 550-1200Rm 550-1200
6		
7		
8	Pearlitic/Martensite stainless	Rm 420-1200Rm 420-1200Rm 420-1200
9	Tool steel / HSS	Rm 420-1200Rm 420-1200Rm 420-1200
10	Easy cutting stainless steel	
11	Low alloy austenite stainless	
12	Alloyed Austenite stainless	
13	High alloy and duplex	
14	Difficult high alloy stainless	
15	Grey cast iron	
16	Compact graphite iron "CGI"	
17	Ductile cast iron	
18	Nodular cast iron	
19	Austempered ductile iron "ADI"	
20	Austenitic cast iron	
21	Low Si Aluminium alloys	
22	Medium Si Aluminium alloys	
23	High Si Aluminium alloys	
24	Copper alloys	
25	Iron base super alloys	
26	Co-base super alloys	
27	Ni-base super alloys	
28	Low alloy Titanium	
29	Alloyed Titanium	
30	High alloy Titanium	
31	Case hardened steel	55-65 HRC
32	Hardened and annealed steel	38-56 HRC
33	Hardened bearing steel	55-65 HRC
34	Hardened tool steel / HSS	38-54HRC
		55-65HRC
35	Martensite stainless	38-48 HRC
36	Age hardened stainless	30-50 HRC
37	Manganese steel	30-60 HRC
38	White cast iron	50-65 HRC

CUTTING PARAMETERS

The recommendations in the table below is to be considered as starting values in machines with good production parameters such as:

INTERNAL COOLANT

Cutting fluid good lubrication (conc. 5-10 %) approximately 20-40bar pressure. If the pressure is higher, both speed and feed can be increased. If the pressure is lower, both speed and feed should be decreased. If the concentration is lower, decrease the feed and maintain the speed.

EXTERNAL COOLANT

Cutting fluid for good lubrication (conc. 5-10 %) with accurate and rich flow. If the concentration is lower, decrease the feed and maintain the speed.

STABILITY

Work part firmly clamped. Tool holding with shrink fit or hydraulic attachment. If vibration occurs, a range of cutting values should be tested to find a minimum. If the breakout of the drill point causes noise, the feed should be reduced by 50 % during breakout. Of roundness or positioning of the hole is bad, pre-drill with 145-150 degrees drill point.

CUTTING PARAMETERS DRILL-REAMERS A+S/DRBS/DR/DRP

As clearly demonstrated in the chart below, DOF Tools can withstand high productivity in form of increased feed.

Grp	Description	Condition	Vc (m/min)		Feedrate mm/rev					
			int. coolant	ext. coolant	Ø4	Ø6	Ø8	Ø10	Ø12	Ø16
1	Easy cutting steel	Rm 350-700 Rm 350-700 Rm 350-700	200	150	0,2	0,25	0,28	0,3	0,3	0,3
2	Low carbon steel	Rm 350-1200 Rm 350-1200 Rm 350-1200	180	120	0,2	0,25	0,3	0,3	0,3	0,3
3										
4										
5	Alloyed steel	Rm 550-1200 Rm 550-1200 Rm 550-1200	140	100	0,22	0,25	0,32	0,35	0,38	0,4
6										
7										
8	Pearlitic/Martensite stainless	Rm 420-1200 Rm 420-1200 Rm 420-1200	85	75	0,18	0,2	0,23	0,25	0,26	0,28
9	Tool steel / HSS	Rm 600-1200 Rm 600-1200 Rm 600-1200	75	65	0,2	0,23	0,25	0,3	0,35	0,4
10	Easy cutting stainless steel		80	60	0,2	0,23	0,25	0,28	0,3	0,3
11	Low alloy austenite stainless		60	50	0,18	0,2	0,22	0,24	0,26	0,28
12	Alloyed Austenite stainless		55	45	0,18	0,2	0,22	0,24	0,25	0,25
13	High alloy and duplex		45	40	0,15	0,18	0,19	0,2	0,2	0,2
14	Difficult high alloy stainless		40	35	0,14	0,16	0,18	0,2	0,2	0,2
15	Grey cast iron		110	90	0,3	0,35	0,4	0,45	0,5	0,5
16	Compact graphite iron "CGI"		120	90	0,3	0,35	0,4	0,45	0,5	0,5
17	Ductile cast iron		120	90	0,3	0,35	0,4	0,45	0,5	0,5
18	Nodular cast iron		100	80	0,3	0,35	0,4	0,45	0,5	0,5
19	Austempered ductile iron "ADI"		70	60	0,25	0,3	0,35	0,4	0,4	0,4
20	Austenitic cast iron		50	40	0,25	0,3	0,35	0,4	0,4	0,4
21	Low Si Aluminium alloys		400	250	0,35	0,4	0,5	0,5	0,5	0,5
22	Medium Si Aluminium alloys		300	160	0,35	0,4	0,5	0,5	0,5	0,5
23	High Si Aluminium alloys		250	140	0,35	0,4	0,5	0,5	0,5	0,5
24	Copper alloys		300	250	0,35	0,4	0,5	0,5	0,5	0,5
25	Iron base super alloys		35	30	0,1	0,12	0,14	0,15	0,15	0,15
26	Co-base super alloys		28	23	0,1	0,12	0,15	0,16	0,18	0,2
27	Ni-base super alloys		25	18	0,08	0,1	0,11	0,12	0,12	0,12
28	Low alloy Titanium		60	50	0,1	0,12	0,15	0,16	0,18	0,2
29	Alloyed Titanium		45	40	0,1	0,12	0,15	0,16	0,18	0,2
30	High alloy Titanium		35	30	0,09	0,1	0,12	0,14	0,16	0,18
31	Case hardened steel	55-65 HRC	40	30	0,1	0,12	0,13	0,14	0,15	0,15
32	Hardened and annealed steel	38-56 HRC	60	55	0,1	0,12	0,15	0,18	0,2	0,2
33	Hardened bearing steel	55-65 HRC	25	20	0,08	0,09	0,1	0,1	0,1	0,1
34	Hardened tool steel / HSS	38-54HRC	60	55	0,1	0,12	0,13	0,15	0,15	0,15
		55-65HRC	25	20	0,08	0,09	0,1	0,1	0,1	0,1
35	Martensite stainless	38-48 HRC	70	55	0,12	0,14	0,17	0,2	0,22	0,25
36	Age hardened stainless	30-50 HRC	90	80	0,12	0,14	0,17	0,2	0,22	0,25
37	Manganese steel	30-60 HRC	60	55	0,1	0,12	0,15	0,16	0,18	0,18
38	White cast iron	50-65 HRC	65	60	0,12	0,14	0,16	0,18	0,2	0,2

CUTTING PARAMETERS HPC DRILLS P+/K+/A+

As clearly demonstrated in the chart below, DOF Tools can withstand high productivity in form of increased feed.

Grp	Description	Condition	Vc (m/min)		Feedrate mm/rev					
			int. coolant	ext. coolant	Ø4	Ø6	Ø8	Ø10	Ø12	Ø16
1	Easy cutting steel	Rm 350-700 Rm 350-700 Rm 350-700	200	120	0,25	0,3	0,32	0,35	0,37	0,4
2	Low carbon steel	Rm 350-1200 Rm 350-1200 Rm 350-1200	160	100	0,25	0,28	0,3	0,33	0,35	0,37
3										
4										
5	Alloyed steel	Rm 550-1200 Rm 550-1200 Rm 550-1200	125	100	0,3	0,35	0,4	0,45	0,5	0,55
6										
7										
8	Pearlitic/Martensite stainless	Rm 420-1200 Rm 420-1200 Rm 420-1200	85	75	0,18	0,2	0,23	0,25	0,26	0,28
9	Tool steel / HSS	Rm 600-1200 Rm 600-1200 Rm 600-1200	75	65	0,2	0,23	0,25	0,3	0,35	0,4
10	Easy cutting stainless steel		80	60	0,2	0,23	0,25	0,28	0,3	0,3
11	Low alloy austenite stainless		60	50	0,18	0,2	0,22	0,24	0,26	0,28
12	Alloyed Austenite stainless		55	45	0,18	0,2	0,22	0,24	0,25	0,25
13	High alloy and duplex		45	40	0,15	0,18	0,19	0,2	0,2	0,2
14	Difficult high alloy stainless		40	35	0,14	0,16	0,18	0,2	0,2	0,2
15	Grey cast iron		110	90	0,4	0,5	0,6	0,7	0,75	0,8
16	Compact graphite iron "CGI"		120	90	0,35	0,45	0,55	0,65	0,7	0,75
17	Ductile cast iron		120	90	0,35	0,45	0,55	0,65	0,7	0,75
18	Nodular cast iron		100	80	0,32	0,38	0,48	0,57	0,65	0,7
19	Austempered ductile iron "ADI"		70	60	0,3	0,36	0,44	0,5	0,55	0,6
20	Austenitic cast iron		50	40	0,3	0,33	0,36	0,4	0,45	0,5
21	Low Si Aluminium alloys		400	250	0,4	0,55	0,7	0,9	1	1
22	Medium Si Aluminium alloys		300	160	0,4	0,55	0,7	0,9	1	1
23	High Si Aluminium alloys		250	140	0,4	0,55	0,7	0,9	1	1
24	Copper alloys		300	250	0,4	0,55	0,7	0,9	1	1
25	Iron base super alloys		35	30	0,1	0,12	0,14	0,15	0,15	0,15
26	Co-base super alloys		28	23	0,1	0,12	0,15	0,16	0,18	0,2
27	Ni-base super alloys		25	18	0,08	0,1	0,11	0,12	0,12	0,12
28	Low alloy Titanium		60	50	0,1	0,12	0,15	0,16	0,18	0,2
29	Alloyed Titanium		45	40	0,1	0,12	0,15	0,16	0,18	0,2
30	High alloy Titanium		35	30	0,09	0,1	0,12	0,14	0,16	0,18
31	Case hardened steel	55-65 HRC	40	30	0,1	0,12	0,13	0,14	0,15	0,15
32	Hardened and annealed steel	38-56 HRC	60	55	0,1	0,12	0,15	0,18	0,2	0,2
33	Hardened bearing steel	55-65 HRC	25	20	0,08	0,09	0,1	0,1	0,1	0,1
34	Hardened tool steel / HSS	38-54HRC	60	55	0,1	0,12	0,13	0,15	0,15	0,15
		55-65HRC	25	20	0,08	0,09	0,1	0,1	0,1	0,1
35	Martensite stainless	38-48 HRC	70	55	0,12	0,14	0,17	0,2	0,22	0,25
36	Age hardened stainless	30-50 HRC	90	80	0,12	0,14	0,17	0,2	0,22	0,25
37	Manganese steel	30-60 HRC	60	55	0,1	0,12	0,15	0,16	0,18	0,18
38	White cast iron	50-65 HRC	65	60	0,12	0,14	0,16	0,18	0,2	0,2

CROSS REFERENCE LIST

GRP	EN	EN-Nr	W-Nr	DIN	AFNOR	BS	UNI	JIS	SS	UNS	U.N.E/ I.H.A	AISI / ASTM	GOST	Other	
1	11 SMn30	1.0715	1.0715	9 SMn 28	S 250	230 M 07	CF 9 SMn 28	SUM 22	1912	G12130		1213			
	11 SMnPb3	1.0718	1.0718	9 SMnPb 28	S 250 Pb		CF 9 SMnPb 28	SUM 22 L	1914	G12134		12 L 13			
	10 S 20	1.0721	1.0721	10 S 20	10 F 1	210 M 15	CF 10 S 20					1108			
	15 SMn13	1.0722	1.0722	10 SPb 20	10 PbF 2		CF 10 SPb 20					11 L 08			
	35 S20	1.0725	1.0723	15 S 20		210 A 15		SUM 32	1922						
	46 S20	1.0726	1.0726	35 S 20	35 MF 4	212 M 36				G11400		1140	40		
	11 SMn37	1.0727	1.0727	46 S 20	45 MF 4	212 M 44			1973	G11460		1146			
	11 SMnPb 37	1.0736	1.0736	9 SMn 36	S 300	240 M 07	CF 9 SMn 36			G12150		1215			
	S235JR	1.0037	1.0037	St 37-2	E 24-2		Fe 360 B	STKM 12 C	1311					16D	
	S235JRG2	1.0038	1.0116	St 37-3	E 24-3, E 24-4	4360-40 C	Fe 360 D FF		1312			A 573 Gr. 58	18kp		
	S275J2G3	1.0144	1.0144	St 44-3 N	E 28-3, E 28-4	4360-43 C	Fe 430 D FF	SM 41 C	1313						
	C 10	1.0301	1.0301	C 10		045 M 10	C 10	S 10 C	1412						
	C 15R	1.1141	1.1141	C 15	AF 34 C 10, XC 10	080 M 15	C 15, C 16		1414			1010	10		
	C22+N	1.0402	1.0402	C 22	AF3 7 C 12, XC 18	050 A 20	C 20, C 21		1350	G10170		1015	15		
S355JR	1.0570	1.0570	St 52-3	C 20				1450	G10200		1023	20			
C 15R	1.1158	1.1158	Ck 25	E 36-3, E 36-4	4360-50 C	Fe 510 B	SM 50 YA	2132							
16 Mo 3	1.5415	1.5415	15 Mo 3	XC 15, XC 18	080 M 15	C 15, C 16	S 15 C, S 15 CK	2172	G10170		1015	15			
14 NiCr 14	1.5752	1.5752	14 NiCr 14	XC 25	060 A 25	C 25	S 25 C	1370	G10250		1025	25			
18 NiCrMo 7 6	1.6587	1.6587	18 NiCrMo 7 6	20 NC 5			SCR 420 H								
16 MnCr 5	1.7131	1.7131	16 MnCr 5	15 D 3	1501-240	16 Mo 3		2912			A 204 Gr. A				
20 MnCr 5	1.7139	1.7139	16 MnCr 5	16 Mo 5	1503-245-420	16 Mo 5	SB 450 M		G45200		4520				
20 MnCr 5	1.7147	1.7147	20 MnCr 5	12 NC 15	655 M 13		SNC 815 (H)		G33106		3310, 9314	20X2H4A			
20 MnCr 5	1.7149	1.7149	20 MnCr 5	16 NC 6	S 107	16 CrNi 4					4320				
13 CrMo 4 5	1.7335	1.7335	13 CrMo 4 4	18 NCD 6	820 A 16	18 NiCrMo 7							12KH2		
10 CrMo 9 10	1.7380	1.7380	10 CrMo 9 10	16 MCr 5	527 M 17	16 MnCr 5	SCR 415	2511	G51170		5115				
				20 MCr 5		20 MnCr 5	SMnCr 420 (H)		G51200		5120		18HG		
				20 MhCr 5			SmmC 21 H				5120 H		20KH		
				15 CD 3.5	1501-620 Gr. 27	14 CrMo 4 5		2216			A 182-F11, F12	12KHM			
				15 CD 4.5	1501-620 Gr. 27	14 CrMo 4 5		2216			A 387 Gr. 12 Cl. 2				
				10 CD 9.10	1501-622 Gr. 31	12 CrMo 9 10		2218	J21890		A 182-F22	12KH8			

CROSS REFERENCE LIST

GRP	EN	EN-Nr	W-Nr	DIN	AFNOR	BS	UNI	JIS	SS	UNS	U.N.E/ I.H.A	AISI / ASTM	GOST	Other	
4	C35+N		1.0501	C 35	AF 55 C 35	060 A 35	C 35		1550	G10350	F.1130	1035	35		
	E 335	1.0503	1.0503	C 45	AF 65 C 45	80 M 46	C 45	S 45 C	1650	G10430	F.5110	1045	45		
	C40+N		1.0511	C40	AF 60 C 40	080 M 40	C 40	S 40 C	1655		F.1150	1040	40		
	E 360	1.0070	1.0535	St 70-2	A 70-2		Fe 690					1055	55		
	C60+N	1.0601	1.0601	C 60	CC 55	080 A 62	C 60			G10600		1060	60		
			1.1157	40 Mn 4	35 M 5	150 M 36				G10390		1039	40G		
	G 28 Mn6	1.1165	1.1165	30 Mn 5		120 M 36		SMn 1 H, SCMn 2		G13300		1330	30G2		
	G 28 Mn6+QT	1.1165	1.1167	36 Mn 5	40 M 5	150 M 36		Smn 438 (H), SCMn 3	2120	G13350	F.411	1335	35G2		
	C 35E	1.1181	1.1181	Ck 35	XC 38 H1	080 M 36	C 35	S 35 C	1572	G10340	F.1135	1035	35		
	C 45E	1.1191	1.1191	Ck 45	XC 42	080 M 46	C 45	S 45 C	1672	G10420	F.1140	1045	45		
	C 60E	1.1221	1.1221	Ck 60	XC 60	080 A 62	C 60	S 58 C	1665	G10640	F.1150	1064	60		
									1678						
			1.1740	C 60 W	Y3 55			SK 7				1060		60	
	5	55SiCr7	1.7100	1.0904	55 Si 7	55 S 7	250 A 53	55 Si 8		2085		F.144	9255	55S2	
		42 CrMo	1.7225	1.1201	42 CrMo 4	42 CD 4	708 M 40	42 CrMo 4	SCM 440 (H)	2090					
		41.7225								2244	G41400	F.1252	4142, 4140	38HM	
		42 CrMo	1.7225	1.1201	42 CrMo 4	42 CD 4	708 M 40	42 CrMo 4	SCM 440 (H)	2244	G41400	F.1252	4142, 4140	38HM	
41.7225									2234	T51620	F.1250	4135	35KHM		
			1.2330	35 CrMo 4	34 CD 4	708 A 37	35 CrMo 4		2710	T41901	F.5241	S1	5KHV2S		
			1.2542	45 WCrV 7		BS 1	45 WCrV 8 KU			T61206		L6	5KHNv		
			1.2714	56 NiCrMoV 7		BH 224-5	56 NiCrMoV7-KU								
			1.5121	46 MnSi 4									5045		
			1.5710	36 NiCr 6		640 A 35			SNC 236				3135		
			1.5736	36 NiCr 10		35 NC 6			SNC 631 (H)				3435		
36CrNiMo4+TA			1.6511	36 CrNiMo 4	40 NCD 3	816 M 40	38 NiCrMo 4 (KB)				G98400		9840		
34 CrNiMo 6		1.6582	1.6582	34 CrNiMo 6	35 NCD 6	817 M 40	35 NiCrMo 6 (KW)		SNM 447	2541		F.1280	4340	38H2N- 2MA	
34 Cr 4		1.7033	1.7033	34 Cr 4	32 C 4	530 A 32	34 Cr 4 (KB)		SCR 430 (H)		G51320		5132	35KHM	
41 Cr 4		1.7035	1.7035	41 Cr 4	42 C 4	530 M 40	41 Cr 4		SCR 440 (H)		G51400		5140	40H	
25 CrMo 4		1.7218	1.7218	25 CrMo 4	25 CD 4 S	708 M 25	25 CrMo 4 (KB)		SCM 425	2225	G41300	F.1251	4130	20KHM	
			1.7361	32 CrMo 12	30 CD 12	722 M 24	32 CrMo 12			2240					
50 CrV 4	1.8159	1.8159	50 CrV 4	50 CV 4	735 A 50	51 CrV 4		SUP 10	2230	H61500	F.143	6150	50KHFA		
41 CrAlMo 7 7 10	1.8509	1.8509	41 CrAlMo 7	40 CAD 6.12	905 M 39	41 CrAlMo 7		SACM 645	2940	K24065	F.1740	A 355 Cl. A			

CROSS REFERENCE LIST

GRP	EN	EN-Nr	W-Nr	DIN	AFNOR	BS	UNI	JIS	SS	UNS	U.N.E/ I.H.A	AISI / ASTM	GOST	Other	
6	C 675	1.1231	1.1231	Ck 67	XC 68	060 A 67	C 70		1770	G10700	F.5103	1070	70		
	C 1005	1.1274	1.1274	Ck 101		060 A 96		SUP 4	1870	G10950	F.5117	1095			
	C 105U	1.1545	1.1545	C 105 W1	Y1 105		C 100 KU		1880		F.5118	W1	U10A		
			1.1645	C 105 W2	Y1 105		C 100 KU	Sk 3					U 10		
			1.1663	C 125 W	Y2 120		C 120 KU	Sk 2				W1	U 13		
			1.2210	115 CrV 3	100 C 3		107 CrV 3 KU				T61202	F.520L	L2	11KHf	
7	90 MnCrV 8	1.2842	1.2842	100 MnCrW 4	90 MWCV 5	BO 1	95 MnWCr 5 KU	SKS 3	2140	T31501	F.5220	O1	9KHVG		
	100 Cr 6	1.3505	1.3505	90 MnCrV 8	90 MV 8	BO 2	90 MnVCr 8 KU			T31502		O2	9G2F		
		1.4000	1.4000	100 Cr 6	100 C 6	53A A 99	100 Cr 6	SUJ 2	2258	G51986	F.5230	52100	SHKH15		
	X 6 Cr 13	1.4006	1.4006	X 6 Cr 13	Z 6 C 12	403 S 17	X 6 Cr 13	SUS 403	2301	S41008		403	08KH13		
	X 12 Cr 13	1.4016	1.4016	X 10 Cr 13	Z 10 C 13	410 S 21	X 12 Cr 13	SUS 410	2302	S41000	F.3401	410, CA-15	12KH13, 08KH13		
	X 6 Cr 17	1.4021	1.4021	X 6 Cr 17	Z 8 C 17	430 S 15	X 8 Cr 17	SUS 30	2320	S43000	F.3113	430	12KH17		
8	X 20 Cr 13	1.4031	1.4031	X 20 Cr 13	Z 20 C 13	420 S 37	X 20 Cr 13	SUS 420 J 1	2303	S42000	F.5261	420	20KH13		
	X 39 Cr 13	1.4031	1.4031	X 40 Cr 13	Z 40 C 14	420 S 45	X 40 Cr 14	SUS 420	2304	S40280	F.3404	420	40KH13		
	X 70 CrMo 15	1.4109	1.4109	X 65 CrMo 14	Z 70 D 14			SUS 440 A		S44002		440 A			
	X 90 CrMoV 18	1.4112	1.4112	X 90 CrMoV 18	Z 2 CND 18 05	409 S 19	X CrTi 12	SUS 440 B	2327	S44003		440 B	95KH18		
	X 105 CrMo 17	1.4125	1.4125	X 105 CrMo 17	Z 100 CD 17		X 105 CrMo 17	SUS 440 C		S44004		440 C	95KH18		
	X 3 CrNiMo 13 3	1.4313	1.4313	X 5 CrNi 13 4	Z 5 CN 13.4	425 C 11	X 6 CrNi 13 04	SCS 5	2385	J91540				F6NM	
	X 18 CrN 28	1.4749	1.4749	X 18 CrN 28	Z 18 C 25				2322	S44600		446	15KH28		
	X 210 Cr 12	1.2080	1.2080	X 210 Cr 12	Z 200 C 12	BD 3	X 210 Cr 13 KU	SKD 1		T30403	F.5212	D3	KH12		
			1.2343	X 38 CrMoV 5 1	Z 38 CDV 5	BH 11	X37 CrMoV51 KU	SKD 6		T20811		H11	4KH5MFS		
	X 40 CrMoV 5 1	1.2344	1.2344	X 40 CrMoV 5 1	Z 40 CDV 5	BH 13	X 40 CrMo 5 1 KU	SKD 61	2242	T20813	F.5318	H13	4KH5MF1S		
X 100 CrMoV 5	1.2363	1.2363	X 100 CrMoV 5 1	Z 100 CDV 5	BA 2	X 100 CrMoV 5 1 KU	SKD 12	2260	T30102	F.5227	A2	9KH5VF			
		1.2365	X 32 CrMoV 3 3	32 DCV 28	BH 10	30 CrMoV 12 27 KU	SKD 7		T20810		H10	3KH3M3F			
		1.2436	X 210 CrW 12			X 215 CrW 12 1 KU	SKD 2	2312		F.5213		KH12			
		1.2601	X 165 CrMoV 12			X 165 CrMoV 12 KU		2310				KH12MF			
		1.2713	55 NiCrMoV 6	55NCDV 7			SKT 4		T61206		L6	5KHNM			
HS 6-5-2-5	1.3243	1.3243	S 6-5-2-5	Z 85 WDKCV 06-05-05-04-02		HS 6-5-2-5	SKH 55	2723		F.5613	M35	R6M5K5			

CROSS REFERENCE LIST

GRP	EN	EN-Nr	W-Nr	DIN	AFNOR	BS	UNI	JIS	SS	UNS	U.N.E./I.H.A	AISI / ASTM	GOST	Other
10	HS 2-10-1-8	1.3247	1.3247	S 2-10-1-8	Z 110 DKCVV 09-08-04	BM 42	HS 2-9-1-8	SKH 51		T 11342		M42	R2AM9K5	
	HS 18-1-2-5	1.3255	1.3255	S 18-1-2-5	Z 80 WRCV 18-05-04-01	BT 4	HS 18-1-1-5	SKH 3		T 12044		T4	R18K5F2	
	HS 6-5-2	1.3343	1.3343	S 6-5-2	Z 85 WDCV 06-05-04-02	BM 2	HS 6-5-2	SKH 9, SKH 51	2722	T 11302	F.5603	M2	R6M5	
	HS 2-9-2	1.3348	1.3348	S 2-9-2	Z 100 DCWV 09-04-02-02		HS 2-9-2	SKH 58	2782	T 11307		M7		
	HS 18-0-1	1.3355	1.3355	S 18-0-1	Z 80 WCV 18-04-01	BT 1	HS 18-0-1	SKH 2		T 12001		T1	R18	
	X 10 CrNiS 18 9	1.4305	1.4305	X 10 CrNiS 18 9	Z 10 CNF 18.09	303 S 31	X 10 CrNi 18 09	SUS 303	2346	S30300	F.3508	303	12KH19N9	
11	X 12 CrNi 18 8	1.4300	1.4300	X 12 CrNi 18 8	Z 12 CN 18	302 S 25		SUS 302	2331	S30200		302	12KH18N9	
	X 5 CrNi 18 9	1.4301	1.4301	X 6 CrNi 18 10	Z 6 CN 18.09	304 S 31	X 5 CrNi 18 11	SUS 304	2333	S30400	F.3504	304, 304 H	08KH18N10	
	X 2 CrNi 19 11	1.4306	1.4306	X 2 CrNi 19 11	Z 2 CN 18.10	304 S 12	X 3 CrNi 18 11	SUS 304 L	2352	S30403	F.3504	304 L	03KH18N11	
	X 9 CrNi 18 8	1.4310	1.4310	X 12 CrNi 17 7	Z 12 CN 17.07	301 S 21	X 12 CrNi 17 07	SUS 301	(2331)	S30100	F.3517	301	07KH16N6	
	X 5 CrNiMo 17 12 2	1.4401	1.4401	X 5 CrNiMo 17 12 2	Z 3 CND 17.11.1	316 S 31	X 5 CrNiMo 17 12 2	SUS 316	2347	S31600	F.3534	316	08KH17H-13M2T	
	X 6 CrNiMo 18 10	1.4550	1.4550	X 6 CrNiNb 18 10	Z 6 CNNb 18.10	347 S 31	X 6 CrNiNb 18 11	SUS 347	2338	S34700	F.3524	347	08KH18N12B	
	X 2 CrNiN 18 10	1.4311	1.4311	X 2 CrNiN 19 11	Z 2 CN 18.10.AZ	304 S 62	X 2 CrNiN 18 11	SUS 304 LN	2371	S30453	F.3541	304 LN	03KH18N11	
	X 12 CrNi 25 21	1.4335	1.4335	X 12 CrNi 25 21	Z 12 CN 25.20	310 S 24	X 6 CrNi 26 20	SUH 310, SUS 310 S	2361	S31008		310 S	12KH25N20	
	X 2 CrNiMoN 17 13 3	1.4429	1.4429	X 2 CrNiMoN 17 33 3	Z 2 CND 17.13.AZ	316 S 62	X 2 CrNiMoN 17 33 3	SUS 316 LN	2375	S31653		316 LN	03KH16N15M3	
	X 2 CrNiMo 18 14 3	1.4435	1.4435	X 2 CrNiMo 18 14 3	Z 2 CND 17.13.AZ	316 S 12	X 2 CrNiMo 17 13 2	SCS 16, SUS 316 L	2353	S31603	F.3533	316 L	03KH17N14M3	
12	X 3 CrNiMo18 12 3	1.4466	1.4466	X 5 CrNi 18 15		317 S 16	X 5 CrNi 18 15	SUS 317	2366	S31700		317	08KH17H-15M3T	253 MA
	X 9 CrNiSiNCE 21 11 2	1.4835	1.4893	X 9 CrNiSiNCE 21 11 2		310 S 31			2368	S30815				
	X 2 CrNiMoSi 19 5	1.4424	1.4417	X 2 CrNiMoSi 19 5	Z 2 CND 18.05.03				2376	S31500				3RE60
	X 3 CrNiMo 27 5 2	1.4460	1.4460	X 4 CrNiMo 27 5 2	Z 3 CND 25.7 Az		X 3 CrNiMo 27 5 2	SUS 329 J 1	2324	S32900		329		
	X 2 CrNiMoN 22 5 3	1.4462	1.4462	X 2 CrNiMoN 22 5	Z 2 CND 22.05 Az	332 S 15	X 2 CrNiMoN 22 5		2377	S31803		329 LN		SAF 2205
	X 2 NiCrMoCu 25 20 5	1.4539	1.4539	X 2 NiCrMoCu 25 20 5	Z 2 NCDU 25 20	904 S 13			2562	N08904		904L		

CROSS REFERENCE LIST

GRP	EN	EN-Nr	W-Nr	DIN	AFNOR	BS	UNI	JIS	SS	UNS	U.N.E/ I.H.A	AISI / ASTM	GOST	Other
14	X 2 CrNiMoN 25 7 4	1.4410	1.4410	X 2 CrNiMoN 25 7 4	Z 3 CND 25.07 Az		X 2 CrNiMoN 25 7 4			S32750		F 53		SAF 2507
	X 1 CrNiMoN 20 18 7	1.4529	1.4529	X 1 CrNiMoN 20 18 7	Z 1 CNDU 20.18.05 Az		X 1 CrNiMoN 20 18 7		2778	S31254				254 SMO
	X 6 NiCrTiMoV 25 15	1.4534	1.4534	X 3 CrNiMoAl 13 8 2						S13800		XM-13		PH13-8Mo
		1.4540	1.4540	X 4 CrNiCuNb 16 4	Z 4 CNUNb 16.4 M					S 15500		XM-12		15-5-PH
	X 3 CrNiMoAl 13 8 2	1.4568	1.4568	X 7 CrNiAl 17 7	Z 9 CAN 17.7	301 S 81	X 7 CrNiAl 17 7	SUS 631	2388	S17700		AMS 5528	09KH17N7YU1	17-7-PH
	X 1 CrNiMoN 25 22 8	1.4652	1.4652	X 2 CrNiMoN 25 22 7						S32654				654 SMO
	X 10 NiCrAlTi 32 20	1.4876	1.4876	X 10 NiCrAlTi 32 20	Z 10 NC 32.21			NCF 800		N08800				Alloy 800
	X 5 CrNiCuNb 16 4	1.4980	1.4943	X 4 NiCrTi 25 15	Z 6 NCTDV 25.15	HR 51		SUH 660	2570	S66286		660		A286
	EN-GJL-150	0.6150	0.6150	GG-15	Ft 15 D	Sort 150	G15	FC 150	01 15- 00	F11601		A48 25 B	Sc 15	
	EN-GJL-200	0.6200	0.6200	GG-20	Ft 20 D	Sort 220	G20	FC 200	01 20- 00	F12101		A48 30 B	Sc 20	
EN-GJL-215			GG-220 HB					02 19			G 3500			
EN-GJL-250	0.6250	0.6250	GG-25	Ft 25 D	Sort 260	G25	FC 250	01 25- 00	F12401		A48 35 B	Sc 25		
EN-GJL-300	0.6300	0.6300	GG-30	Ft 30 D	Sort 300	G30	FC 300	01 30- 00	F13101		A48 45 B	Sc 30		
EN-GJL-350	0.6350	0.6350	GG-35	Ft 35 D	Sort 350	G35	FC 350	01 35- 00	F13502		A48 50 B	Sc 35		
EN-GJV-300			GJV-300								Sort 350			
EN-GJV-350			GJV-350								Sort 400			
EN-GJV-400			GJV-400								Sort 400-15			
EN-GJV-450			GJV-450								Sort 450			
EN-GJV-500			GJV-500								Sort 500			
EN-GIMB- 550-4	0.8155	0.8155	GTS-55-04	P 540/5	P 540/5	P 55-04	PCMP55-04	08 54- 00	F24130		A220 60004			
EN-GJS-350-22	0.7033	0.7033	GGG-35.3	FGS 370-17	Sort 350/22		FCD 350-22L	07 17- 15						
EN-GJS-400-15	0.7040	0.7040	GGG-40	FGS 400-12	Sort 420/12	GS 400-12	FCD 400-18L	07 17- 02	F32800		60-40-18	Vc 42-12		

CROSS REFERENCE LIST

GRP	EN	EN-Nr	W.-Nr	DIN	AFNOR	BS	UNI	JIS	SS	UNS	U.N.E./I.H.A	AISI / ASTM	GOST	Other
19	EN-GJS-400-18	0.7043	0.7043	GGG-40.3	FGS-370-17	Sort 370/17	GSO 42/17		07 17-12	F32800		60-40-18	Vc 42-12	
	EN-GJS-500-7	0.7050	0.7050	GGG-50	FGS 500-7	Sort 500/7	GS 500-7	FCD 500-7	07 27-02	F33800	FGF 50-7	A536 80-55-6	Vc 50-2	
	EN-GJS 600-3	0.7060	0.7060	GGG-60	FGS 600-3	Sort 600/3	GS 600-3	FCD 600-3	07 32-03	F34100	FGF 60-2	A476 80-60-03	Vc 60-2	
	EN-GJS-700-2	0.7070	0.7070	GGG-70	FGS 700-2	Sort 700/2	GS 700-2	FCD 700-2	07 37-01	F34800	FGF 70-2	A536 100-10-03	Vc 70-2	
	EN-GJS-1000-5			GJS-1000-5						ADI grade 5		1600/1300/-		
EN-GJS-1200-2			GJS-1200-2						ADI grade 2		1050/700/7			
EN-GJS-1400-1			GJS-1400-1						ADI grade 3		1200/850/4			
EN-GJS-800-8			GJS-800-8						ADI grade 4		1400/1100/1			
EN-GJLA-XNiCr 20-2	0.6660	0.6660	0.6660	GGL-NiCr 20 2	FGL Ni20 Cr2	Sort F2			05 23-00	F41002		A436 Type 2		Ni-Resist 2
EN-GJLA-XNiCr 30-3	0.6676	0.6676	0.6676	GGL-NiCr 30 3	FGL Ni30 Cr3	Sort F3				F41004		A436 Type 3		Ni-Resist 3
EN-GJLA-XNi-CuCr15-6-2	0.6655	0.6655	0.6655	GGL-NiCuCr 15 6 2	FGL Ni15 Cu6 Cr2	Sort F1				F41000		A436 Type 1		Ni-Resist 1
EN-GJSA-XNi35	0.7683	0.7683	0.7683	GGG-Ni 35	FGS Ni 35					F43006		A439 Type D-5		Ni-Resist D-5
EN-GJSA-XNiCr20-2	0.7660	0.7660	0.7660	GGG-NiCr 20 2	FGS Ni20 Cr2	Sort S2				F43000		A436 Type D-2		Ni-Resist D-2
EN-GJSA-XNiCr30-3	0.7676	0.7676	0.7676	GGG-NiCr 30 3	FGS Ni30 Cr3	Sort S3				F43003		A436 Type D-3		Ni-Resist D-3
EN-GJSA-XNiMn13-7	0.7652	0.7652	0.7652	GGG-NiMn 13 7	FGS Ni 13 Mn7	Sort S6			07 72-00	-		-		Nodumag
EN-GJSA-XniMn23-4	0.7673	0.7673	0.7673	GGG-NiMn 23 4	FGS Ni23 Mn4	Sort S2M				F43010		A439 Type D-2M		Ni-Resist D-2M
21	AW-1050A	Al99.5	3.0255	Al99.5	A-5/1050A	1B		(A1050)	4007	AA1050A				
	AW-3103	AlMn1	3.0515	AlMn1		N3			4054	AA3103				
	AW-3003	AlMn1Cu	3.0517	AlMn1Cu	A-M1/3003			A3003		AA3003				
	AW-2014	AlCuSiMn	3.1255	AlCuSiMn	A-U4SG/2014	H15			4338	AA2014				
	AW-2011	AlCuBiPb	3.1655	AlCuBiPb	A-U5PbBi/2011	FC1		A2011	4355	AA2011				
	AC-46200	AlSi8Cu3(Si)	3.2161	AlSi8Cu3	G-AlSi8Cu3				4251	A13800		A380		
	AC-42000	AlMgSi0.5	3.2341	G-AlSi5Mg	A-S7G	LM25	3599	AC 4C	4244			B26		
	AW-6060	AlMgSi0.5	3.3206	AlMgSi0.5	A-GS/6060	(H9)			4103	AA6060				
	AW-6063	AlMgSi0.7	3.3210	AlMgSi0.7	A-GSUC/6061	(H10)		(A6063)	4104.4107	AA6005				
	AW-5005	AlMg1	3.3315	AlMg1	A-G0.6	N41			4106	AA5005				

CROSS REFERENCE LIST

GRP	EN	EN-Nr	W-Nr	DIN	AFNOR	BS	UNI	JIS	SS	UNS	U.N.E/ I.H.A	AISI / ASTM	GOST	Other	
22	AW-7020	AlZn4.5Mg1	3.4335	AlZn4.5Mg1	A-Z5G/7020	H17			4425	AA7020					
	AW-7075	AlZnMgCu1.5	3.4365	AlZnMgCu1.5	A-Z5GU/7075	ZL95/ZL96		A7075		AA7075					
	MN65120	MgSe3Zn2Zr1	3.5103	G-MgSe3Zn2Zr1	ZRE1	MAG6-TE				M12330		AMS 4442			
	MG-P-63	MgAl6Zn	3.5612	G-MgAl6Zn	G-A6-Z1	MAG-E-121				M111600		AZ61A			
	MG-P-61	MgAl8Zn	3.5812	G-MgAl8Zn	(G-A7-Z1)							AZ80A			
	AW-6082	AlMgSi1	3.2315	AlMgSi1	A-SGM0.7/6082	H30			4212	AA6082					
	AC-43400	AlSi10Mg- g(Fe)	3.2381	G-AlSi10Mg	A-S10G	LM9			4253	A13600		B85			
	AC-44200	AlSi12	3.2382	GD-AlSi12								A413.2			
	23		AlSi17Cu5						ADC14				B390.0		
		CC331G		2.0940.01	CuAl10Fe	CuAl10Fe	AB1			5710	C95200		CA952	BrA9ZH3L	
24	CC333G		2.0975.01	CuAl10Ni	CuAl10Ni5Fe5	AB2			5716	C95500		CA955	BrA10ZH4N4L		
	CW352H	CuNi- 10Fe1Mn	2.0872	CuNi10Fe1Mn	CuNi10Fe1Mn	CN102			5667	C70600					
	CC480K		2.1050.01	CuSn10	CuSn10	CT1			5443	C90700					
	CW452K	CuSn6	2.1020	CuSn6	CuSn6	PB103		CS191	5458	C90500					
	CW502L	CuZn15	2.0240	CuZn15	CuZn15	CZ102		C2300	5428	C51900			BrOF6.5-0.15		
	CW706R	CuZn28Sn1	2.0470	CuZn29Sn1					5112	C23000			L90		
	CW508L	CuZn37	2.0321	CuZn37	CuZn37	CZ108			5220	C44300			LOMsh70-1-0.05		
	CW717R	CuZn38Sn1	2.0530	CuZn38Sn1					5150	C27200			LO60-1		
	CW614N	CuZn39Pb3	2.0401	CuZn39Pb3	CuZn39Pb3	CZ121			5170	C46400					
	CW612N	CuZn40Pb2	2.0402	CuZn40Pb2	CuZn39Pb2	CZ120			5168	C38500					
CW622N	CuZn44Pb2	2.0410	CuZn44Pb2		CZ104			5272	C37800			LAMsh77-2-0.05			
25														Discalloy	
26														Haynes 25	
														Stellite 21	
														Stellite 31	

CROSS REFERENCE LIST

GRP	EN	EN-Nr	W.-Nr	DIN	AFNOR	BS	UNI	JIS	SS	UNS	U.N.E/ I.H.A	AISI / ASTM	GOST	Other	
27	NiMo30		2.4810							N10002				Hastelloy C	
	NiMo16Cr15W		2.4819							N10276			KHN65MV	Hastelloy C-276	
	NiCr19Fe19Nb-5Mo3		2.4668							N07718				IN 100	
	NiCr20TiAl		2.4669							N07750				Inconel 718	
	NiCr20TiAl		2.4631							N07080				Inconel X-750	
	NiCr19Co18Mo-4Ti3Al3		2.4654							N07500				Nimonic 80A	
	NiCr20Co13Mo-4Ti3Al		2.4654							N07001				René 41	
				3.7024											Udimet 500
															Waspalloy
															Ti
28										R54620		AMS 4919		Ti 6-2-4-2	
29										R56320		AMS 4943		Ti 3Al-2.5V (grd 9)	
	TiAl6V4		3.7164							R56400		AMS 4920, Grd 5	VT6	Ti 6Al-4V	
30															
31	16 MnCr 5	1.7131	1.7131	16 MnCr 5	16 MC 5	527 M 17	16 Mn Cr 5	SCR 415	2511	G51170	F.1516	5115	12KHN2		
	42 CrMo 4	1.7225	1.1201	42 CrMo 4	42 CD 4	708 M40	42 CrMo 4	SCM 440 (H)	2244	G41400	F.1252	4142, 4140	38HM		
	C 675	1.1231	1.1231	Ck 67	XC 68	060 A 67	C 70		1770	G 10700	F.5103	1070	70		
	C 755	1.1248	1.1248	Ck 75	XC 75	060 A 78	C 75		1774, 1778	G10780	F.5107	1078, 1080	75		
	C 1005	1.1274	1.1274	Ck 101		060 A 96		SUP 4	1870	G10950	F.5117	1095			
	C 105U	1.1545	1.1545	C 105 W1	Y1 105		C 100 KU		1880		F.5118	W 1	U10A		
				1.2550	60 WCrV 7	55 WC 20		55 WCrV 8 KU				S1	5KHV2SF		
	55 Cr-3	1.7176	1.7176	55 Cr-3	55 C 3	527 A 60	55 Cr 3	SUP 9 (A)	2253	G51550		5155			
	107 CrV 3	1.2210	1.2210	115 CrV 3	100 C 3		107 CrV 3 KU			T61202	F.520L	L2	11KHF		
				1.2510	100 MnCrW 4	90 MWCV 5	BO 1	95 MnWCr 5 KU	SKS 3	2140	T31501	F.5220	O1	9KHVG	
32	90 MnCrV 8	1.2842	1.2842	90 MnCrV 8	90 MV 8	BO 2	90 MnVCr 8 KU			T31502		O2	9G2F		
	100 Cr 6	1.3505	1.3505	100 Cr 6	100 Cr 6	534 A 99	100 Cr 6	SUJ 2	2258	G51986	F.5230	52100	SHKH15		
33															

CROSS REFERENCE LIST

GRP	EN	EN-Nr	W-Nr	DIN	AFNOR	BS	UNI	JIS	SS	UNS	U.N.E/ I.H.A	AISI / ASTM	GOST	Other	
35	X 40 CrMoV 5 1	1.2344	1.2344	X 40 CrMoV 5 1	Z 40 CDV 5	BH 13	X 40 CrMo 5 1 1 KU	SKD 61	2242	T20813	F.5318	H13	4KH5MF1S		
	X 100 CrMoV 5	1.2363	1.2363	X 100 CrMoV 5 1	Z 100 CDV 5	BA 2	X 100 CrMoV 5 1 KU	SKD 12	2260	T30102	F.5227	A2	9KH5VF		
	X 155 CrVMo 12 1	1.2379	1.2379	X 155 CrVMo 12 1	Z 160 CDV 12	BD 2	X 155 CrVMo 12 1 KU	SKD 11		T30402	F.5211	D2	KH12MF		
		1.2436	1.2436	X 210 CrW 12			X 215 CrW 12 1 KU	SKD 2	2312			F.5213		KH12	
		1.2601	1.2601	X 165 CrMoV 12			X 165 CrMoV 12 KU		2310					KH12MF	
		1.2713	1.2713	55 NiCrMoV 6	55 NCDV 7			SKT 4			T61206	F.520.S	L6	5KHNM	
	HS 6-5-2-5	1.3243	1.3243	S 6-5-2-5	Z 85 WDKCV 06-05-05-04-02		HS 6-5-2-5	SKH 55	2723			F.5613	M35	R6M5K5	
	HS 2-10-1-8	1.3247	1.3247	S 2-10-1-8	Z 110 DKCWV 09-08-04	BM 42	HS 2-9-1-8	SKH 51			T11342		M42	R2AM9K5	
	HS 6-5-2	1.3343	1.3343	S 6-5-2	Z 85 WDCV 06-05-04-0	BM 2	HS 6-5-2	SKH 9, SKH 51	2722		T11302	F.5603	M2	R6M5	
	HS 18-0-1	1.3355	1.3355	S 18-0-1	Z 80 WCV 18-04-01	BT 1	HS 18-0-1	SKH 2			T12001		T1	R18	
		1.4021	1.4021	X 20 Cr 13	Z 20 C 13	420 S 37	X 20 Cr 13	SUS 420 J 1	2303		S42000	F.5261	420	20KH13	
	X 70 CrMo 15	1.4109	1.4109	X 65 CrMo 14	Z 70 D 14			SUS 440 A			S44002		440 A		
X 90 CrMoV 18	1.4112	1.4112	X 90 CrMoV 18	Z 2 CND 18 05	409 S 19	X CrTi 12	SUS 440 B	2327		S44003		440 B	95KH18		
X 105 CrMo 17	1.4125	1.4125	X 105 CrMo 17	Z 100 CD 17		X 105 CrMo 17	SUS 440 C			S44004		440 C	95KH18		
36	X 3 CrNiMoAl 13 8 2	1.4534	1.4534	X 3 CrNiMoAl 13 8 2						S13800		XM-13		PH13-8Mo	
	X 5 CrNiCuNb 16 4	1.4548	1.4542	X 5 CrNiCuNb 17 4	Z 6 CNU 17.4			SCS 24, SUS 630		S17400		630		17-4-PH	
	X 7 CrNiAl 17 7	1.4568	1.4568	X 7 CrNiAl 17 7	Z 9 CAN 17.7	301 S 81	X 7 CrNiAl 17 7	SUS 631	2388	S17700		AMS 5528	09KH17N7YU1	17-7-PH	
	X 6 NiCrTiMoV 25 15	1.4980	1.4943	X 4 NiCrTi 25 15	Z 6 NCTDV 25.15	HR 51		SUH 660	2570	S66286		660		A286	
37	X 120 Mn 12	1.3401	1.3401	X 120 Mn 12	Z 120 M 12	BW 10		SC MnH 1	2183			A128 Sort A			
38	EN-GJN-HV520	0.9620	G-X330 NiCr 4 2	FB Ni4 Cr2 BC	Grade 2 A	Grade 2 A			05 12-00	F45001		A532 IB (NiCr-LC)		Ni-Hard 2	
	EN-GJN-HV550	0.9625	G-X260 NiCr 4 2	FB Ni4 Cr2 HC	Grade 2 B	Grade 2 B			05 13-00	F45000		A532 IA (NiCr-HC)		Ni-Hard 1	
	EN-GJN-HV600(XCr11)	0.9630	G-X300 CrNiSi 9 5 2	FB Cr9 Ni5	Grade 2 C, D, E	Grade 2 C, D, E			04 57-00	F45003		A532 ID (Ni-HiCr)		Ni-Hard 4	

DOFTOOLS.SE

Telephone: +46 520 364 30

Fax: +46 520 364 31

Mail: info@doftools.se