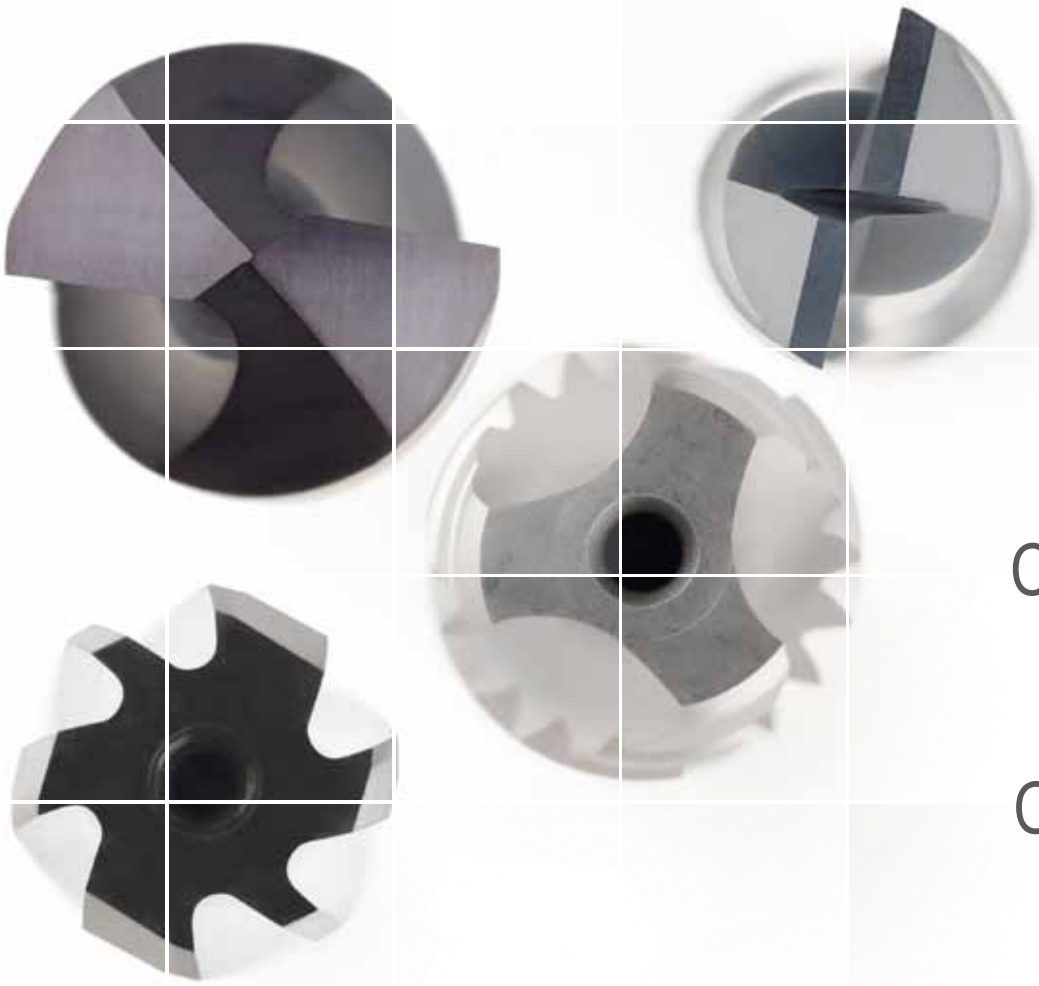
DORMER

The Right Tool at the Right Time



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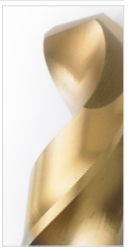

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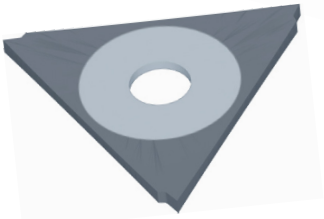

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A088	a 99	**A200**	a 95	**A553**	a 54	**R122**	a 8
A095	a 100	**A201**	a 97	**A554**	a 54	**R123**	a 8
A099	a 101	**A205**	a 95	**A720**	a 35	**R453**	a 22
A100	a 41	**A210**	a 96	**A730**	a 77	**R454**	a 22
A101	a 41	**A225**	a 98	**A777**	a 41	**R457**	a 14
A108	a 41	**A243**	a 61	**A900**	a 56	**R458**	a 14
A110	a 62	**A244**	a 61	**A901**	a 56	**R510**	a 20
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A122	a 26	**A345**	a 86	**A940**	a 66		
A124	a 34	**A350**	a 84	**A941**	a 66		
A125	a 70	**A400**	a 90	**A951**	a 88		
A130	a 77	**A402**	a 91	**A952**	a 88		
A160	a 50	**A405**	a 92	**A976**	a 74		
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	R122	R123	R120	R520	R458	R457	R100	R510	R454	R453	A122	A120	A022	A117	A520	A124	A720	A920
	HM	HM	HM	HM	HM	HM	HM	HM	HM	HM	HSS	HSS	HSS	HSS-E	HSS	HSS HM	HSS-E	HSS-E
	DORMER	DORMER	DIN 6539	DIN 6539	DIN 6537 K	DIN 6537 K	DIN 338	DIN 338	DIN 6537 L	DIN 6537 L	DIN 1897	DIN 1897	DIN ANSI	DIN 1897	DIN 1897	DIN 8037	DIN 1899	DIN ANSI
	1XD	1XD	2.5XD	2.5XD	3XD	3XD	4XD	4XD	5XD	5XD	1XD	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD	3XD
	120°	90°	120°	130°	140°	140°	120°	130°	140°	140°	118°	135°	135°	135°	130°	118°	118°	130°
				TiN	TiAlN	TiAlN		TiN	TiAlN	TiAlN		ST	TiN	Bronze	TiN	ST		
					DIN 6535HA	DIN 6535HA			DIN 6535HA	DIN 6535HA								
	N	N	N	N			N	N			N	N	N	N		H	N	W
	a 8	a 8	a 9	a 11	a 14	a 14	a 18	a 20	a 22	a 22	a 26	a 27	a 27	a 27	a 31	a 34	a 35	a 36
1.1	■85S	■85S	●85S	■100X	■125W	■125W	●85S	■100W	■125V	■125V	■35E	■35J	■35K	●38K	■57M		■35A	■40J
1.2	■75S	■75S	●75S	■90X	■110W	■115W	●75S	■90W	■110V	■115V	■30E	■30J	■32K	●33H	■47M		■30A	■34J
1.3	■75S	■75S	●75S	■90X	■90W	■110W	●75S	■90W	■90V	■110V	●27C	■27G	■25I	●30G	■40K		■27A	■32I
1.4	■70S	■70S	●70S	■80X	■80V	■95V	●70S	■80W	■80V	■95V	●21C	■21G	■23H	●27G	■32I		■23A	■32I
1.5	■45S	■45S	●45S	■55X	■60V	■75V	●45S	■55V	■60V	■75V	●14C	●14F	■16G	■18F	■21G	●40C	●17A	■23E
1.6	■45S	■45S	●45S	■45W	■50U	■65U	●45S	■45V	■50U	■65U	●10B	●10E	●10E	■11E	●11E	●37A	●10A	■19E
1.7	■30S	■30S	●30S	●35U	■30U	■30U	●30S	●35T	■30U	■30U								
1.8	■30S	■30S	●30S	●30T	■25U	■25U	●30S	●30S	■25U	■25U								
2.1	■53S	■53S		●50W	■45U	■55V		●50V	■45U	■55V	●16C	■16F	■15G	■22F	■30I		●22A	■15F
2.2	■45S	■45S			■40T	■35V			■40T	■35V	●9D	●9H	●8I	■11H	■16I	●35C	●10A	■7F
2.3					■35T	■30U			■35T	●30U	●10B	●10D	●9E	■15D	■20G	●35C	●15A	■9D
2.4					●35T				●35T	●30U								
3.1	■75T	■75T	●75U	■90Y	■90W	■110W	●75T	■90X	■90W	■110W	●32E	■32J	■32K	●34K	■48M	■55C	■30A	●34L
3.2	■75T	■75T	●75U	■90Y	■90W	■110W	●75T	■90X	■90W	■110W	●27C	■27G	■25I	●30F	■37K	■43C	■24A	●26L
3.3	■55T	■55T	●55U	■65X	■70V	■80V	●55T	■65W	■70V	■80V	●20C	■20F	■20G	●22F	■30J	■40C	●20A	●26L
3.4	■55T	■55T	●55U	■65X	■70V	■80V	●55T	■65W	■70V	■80V	●16B	●16F	●16G	■17F	■26F	■32A	●14A	●19J
4.1	■45T	■45T	■45T	●60W	●50U	■55V		●45V	●50U	■55V	●27C	■27G	■25I	■30G	■34I	●40A	●23A	■30G
4.2	■35T	■35T	●35T	●45V	●40U	■45V			●40U	■45V	●12B	●16E	●14F	■18F	■20G	●35A	●17A	■18G
4.3	■25S	■25S	●25T	●35U	●35T	■40U			●35T	■40U	●7A	●8C	●8C	■10C	●4B	●25A	●8A	■10C
5.1	■45T	■45T	■40U	■50W				●50V			●13D	●13H	●13H	■15H	●17I	●30A	●10A	■15I
5.2	■30S	■30S	●30T								●8C	●8F	●8F	■9F	●11G	●25A	●7A	■9G
5.3	■20S	■20S	●20T								●4A	●4B	●4B	■6C	●7E	●20A	●4A	■6E
6.1	■275V	■275V	■275W		■100V	■125W			■100V	■125W	■27D	●36H	●36H	●38I	●40E		■35A	●65H
6.2	■250V	■250V	●275W		■200V	■220W	■250V		■200V	■220W	■33E	●38J	●38K	●40K	■50I	●70G	●40A	●66J
6.3	■250V	■250V	●275W		■200V	■220W	■250V		■200V	■220W	■27D	●27I	●27I	●27J	■45K	●60E	●35A	●40J
6.4	■70T	■70T	●70U		●80U	■100V			●80U	■100V	■16D	●16H	●16I	●16I	●20F	●50C	●27A	●31G
7.1	■200V	■200V	■200W	■225Z	■225W	■250W	●200V	■225Y	■225W	■250W	■33E	●33K	■40F	●35K	●55I		■35A	●75L
7.2	■200V	■200V	●200W	■225Z	■225W	■250W	●200V	■225Y	■225W	■250W	■30E	●30J	■32K	●33J	■50M		■30A	■45N
7.3	■112V	■112V	●112W	■150Y	■180V	■200V	●112V	■150X	■180V	■200V	●30D	●30I	■32J	●31I	■37K		●27A	●40N
7.4	■60V	■60V	●60W	■65Y	■120V	■150V	●60V	■65X	■120V	■150V	●25D	●25I	●25J	●30G	■35I		●27A	●36J
8.1	■60X	■60X	■60U	■75Z			■60X	■75X			●30F	●30K	●30K	●35M	●65G		●48A	●55J
8.2	■100V	■100V	■100U	■115V			■100V	■115V			●35E	●35I	●35I	●28K	■50G	●60E	●25A	●40H
8.3											●17D	●17G	●17G	●17I	■35F			
9.1											●12A	●4C	●4C	■6C		●9C		
10.1																		

DORMER

	A921	A100	A101	A002	A108	A777	A170	A160	A510	A553	A554	A900	A901	A243	A244	A110	A940	A941
	HSS-E	HSS	HSS	HSS	HSS	HSS-E	HSS	HSS HM	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS	HSS-E	HSS-E
	DIN ANSI	DIN 338	DIN 338	DIN 338	DIN 338	DIN 338	DORMER	DIN 338	DIN 338	DORMER	DORMER	DIN ANSI	DIN ANSI	ANSI	ANSI	DIN 340	DIN ANSI	DIN ANSI
	3XD	4XD	4XD	4XD	4XD	4XD	4XD	4XD	4XD	5XD	5XD	6XD	6XD	4XD	4XD	6XD	10XD	10XD
	130°	118°	118°	118°	135°	135°	118°	118°	130°	130°	130°	130°	130°	135°	118°	118°	130°	130°
	Aurora Top	ST	ST	TiN	ST	Bronze	ST	ST	TiN	TiAlN Top	TiAlN Top		Aurora Top			ST		Aurora Top
										DIN 6535HA	DIN 6535HE							
	W	N	N	N	W	N	N	N				W	W	N	N	N	W	W
	a 36	a 41	a 41	a 41	a 41	a 41	a 48	a 50	a 51	a 54	a 54	a 56	a 56	a 61	a 61	a 62	a 66	a 66
1.1	■60M	■35H	■35H	■47J	●35I	●35J	●35H	●60E	■57M	■85L	■85L	■38H	■60J			●27G	■38F	■53G
1.2	■52M	■30H	■30H	■40J	●30I	●30H	●30H	●60E	■47M	■70L	■70L	■33H	■50J			●25G	■33F	■46G
1.3	■53J	■25F	■25F	■35F	●25G	●27G	●25F	●55D	■40K	■60L	■60L	■26H	■44I	●25F	●25F	●20E	■22G	■36G
1.4	■53J	■20F	■20F	■30F	●20F	●24F	●20E	●50D	■30H	■45H	■45H	■26H	■44I	●20F	●20F	●16E	■22G	■36G
1.5	■38G	●13E	●13E	●18F	●13E	■17E	●13D	●40C	■21F	■28F	■28F	■21E	■33G	■13E	■13E	●9D	■17C	■23D
1.6	■30G	●9D	●9D	●10E	●9D	■10D	●9C	●37A	●11D	■15D	■15D	■16E	■26G	■9D	■9D	●6B	■12C	■17D
1.7																		
1.8																		
2.1	■17F	●15E	●15E	●20F	●15E	●22E	●15D	●40B	■28G	■40G	■40G	■15E	■17E	●15E	●15E	●10D	■15C	■17C
2.2	■9F	●8G	●8G	●12G	■9G	●11G	●7F	●35C	■14I	■19I	■19I	■7E	■9E	■8G	■8G	●6F	■7E	■9E
2.3	■11D	●9C	●9C	●16C	■10D	●15C	●7B	●35A	●19G	●27G	●27G	■9C	■11C	■9C	■9C	●4B	■9B	■11B
2.4																		
3.1	■53L	■30H	■30H	■40J	●30H	●35H	●27H	■50C	■42K	■70K	■70K	●24J	■58I	●30I	●30I	●28H		■36I
3.2	■42L	■24F	■24F	■30E	●24F	●28D	●22E	■40A	■32J	■50J	■50J	●19J	■47I	●24F	●24F	●21E	●16I	■30I
3.3	■42L	●20E	●20E	●28E	●20E	●22E	●19D	■35A	■28J	■45J	■45J	●19J	■34J	●20E	●20E	●15D	●16I	■30I
3.4	■36J	●14E	●14E	●26E	●14E	●17E	●12D	■30A	■25F	■42F	■42F	●14I	■28I	■14E	■14E	●13D	●12H	■24H
4.1	●48I	●23E	●23E	●23F	■25G	■28F	●17E	●35A	●32G	■45G	■45G	■22E	●35G	■23F	■23F	●17E	■18E	●25F
4.2	●29I	●12D	●12D	●13D	■16E	■20D	●9C	●35A	●20H	●30E	●30E	■15E	●24G	■12D	■12D	●9C	■13C	●18D
4.3	●16E	●6B	●6B	●7B	●7B	■11C	●5A	●25A	●4B	●8C	●8C	■6C	●10E	■6B	■6B	●4A	■6C	●8D
5.1	●24L	●10G	●10G	●13G	●12G	●15G	●8F	●30A	●17I	●25I	●25I	■14G	●22I	■10G	■10G	●8F		
5.2	●14I	●6E	●6E	●7E	●7G	■7E	●4D	●25A	●9E	●15E	●15E	■7G	●11I	●6E	●6E	●4D		
5.3	●10G	●3A	●3A	●3A	●6E	●6B	●3A	●20A	●6E	●10G	●10G	■6C	●10E	●3A	●3A	●3A		
6.1		●33G	●33G	●50G	●33G	●38H	●35F	●55D	●40D	●70G	●70G	●65G				●30E	●65F	
6.2		●35I	●35I	●33I	●35I	●40F	●33H	●70G	■50I	■85I	■85I	●53I				●32H	●70F	
6.3	●71J	●27H	●27H	●39H	●31H	●27H	●27G	●60C	■45I	■80I	■80I	●34H	●56I	●27H	●27H	●27G	●34G	●48H
6.4	●50I	●16G	●16G	●30G	●16G	●21F	●16F	●50C	●20F	●35G	●35G	●30G	●48I	■16G	■16G	●16E	●30G	●42H
7.1		●33J	●33J	■41K	●33J	●33J	●33I	●50I	●50G	●70H	●70H	●60J				●32I	●53H	
7.2		●30I	●30I	■38J	●30I	●30I	●30H	●45H	■50M	■100M	■100M	■45N				●27H	■45N	
7.3		●27H	●27H	●33I	●27H	●30H	●27G	●40G	■31I	■55I	■55I	●40N				●27G	●40N	
7.4	■48J	●24F	●24F	●33I	●24F	●27F	●22G	●35F	■33I	■55J	■55J	●28I	■48I	■24F	■24F	●25E	●30G	■42H
8.1		●30J	●30J	■30I	●30J		●30I		■65G	■90G	■90G	●55I				●35I	●55H	
8.2		●28H	●28H	■50H	●28H		●28G	●60E	■50G			●40G				●26G	●40F	
8.3		●14F	●14F	●35F	●14F		●14E		■35F							●12E		
9.1		●3B	●3B	●3B	●3B	●6C	●3A	●9C						●3B	●3B	●3A		
10.1																		

DORMER

	A125	A976	A977	A978	A130	A530	A730	A166	A350	A345	A951	A952	A400	A402	A405	A412	A413	A200
HSS	HSS	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS-E	HSS HM	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
BS 328	DIN 1869/1	DIN 1869/2	DIN 1869/3	DIN 345	DIN 345	DIN 345	DIN 345	DIN 341	DIN 1870/1	DIN 1870/1	DIN 1870/2	DIN 8374	DIN 8376	DIN 8377	DORMER	DORMER	DIN 333A
10XD	15XD	20XD	25XD	4XD	4XD	4XD	4XD	6XD	10XD	15XD	20XD	4XD	4XD	4XD	2.5XD	2.5XD	1XD
118°	130°	130°	130°	118°	118°	118°	118°	118°	118°	130°	130°	118°	118°	118°	118°	118°	118°
ST				ST	TiN	Bronze	ST	ST	ST	ST	ST	ST	ST	ST	ST	ST	
N	W	W	W	N	N	N	N	N	N	W	W	N	N	N			
1.40 - 1"	1.50 - 14.00	1.50 - 14.00	3.00 - 10.00	2.00 - 100.00	8.50 - 40.00	10.00 - 32.00	10.00 - 33.00	5.00 - 50.00	8.00 - 50.00	10.00 - 30.00	8.00 - 40.00	M3 - M10	M3 - M10	M5 - M20	M3 - M10	M3 - M10	0.50 - 12.50

	a 70	a 74	a 74	a 74	a 77	a 77	a 77	a 83	a 84	a 86	a 88	a 88	a 90	a 91	a 92	a 93	a 94	a 95
1.1	■24E	●31C	●31B	●31A	■35I	■47I	●35J	●60E	■27I	■24G	■27G	■27G	■32G	■32G	■32G	■32I	■32I	■35I
1.2	■22E	●26C	●26B	●26A	■30I	■40I	●30H	●60E	■25I	■22G	■22G	■22G	■27G	■27G	■27G	■27I	■27I	■30I
1.3	●16C	■22C	■22B	■22A	■25F	■30F	●27G	●55D	●20G	●17E	■19E	■19E	■22E	■22E	■22E	■22G	■22G	■25G
1.4	●15C	■22C	■22B	■22A	■20F	■27F	●23F	●50D	●16F	●15D	●15D	●15D	■20E	■20E	■20E	■20G	■20G	■20F
1.5	●6A	■12A	■12A	■12A	●12E	●20E	■17E	●40C	●10E	●6C	●8C	●8C	●10C	●10C	●10C	●10E	●10E	●13E
1.6	●5A	■10A	■10A	■10A	●9D	●10D	■10D	●37A	●6D	●5B	●6B	●6B	●6C	●6C	●6C	●6C	●6C	●9D
1.7																		
1.8																		
2.1	●9C	●12B	●12B	●12A	●15E	●24E	●24E	●40B	●13E	●12C	●12C	●12C	●16E	●16E	●16E	■16G	■16G	●15E
2.2	●4E	●7C	●7B	●7A	●9G	●13G	■11G	●35C	●4G	●4E	●6E	●6E	●9G	●9G	●9G	●9I	●9I	●8G
2.3	●8A	●8A	●8A	●8A	●10C	●20C	■17C	●35A	●8C	●8A	●12A	●12A	●12C	●12C	●12C	●12E	●12E	●10C
2.4																		
3.1	●22G				■30I	●36I	●35J	■50C	●26I	●22G	●22G	●22G	■30G	■30G	■30G	■30G	■30G	■30I
3.2	●18D	●23C	●23B	●23A	■24E	■28E	●28G	■40C	●20F	●18D	●16D	●16D	■25E	■25E	■25E	■25E	■25E	■24F
3.3	●13C	●16C	●16B	●16A	●20E	■27E	●22E	■35C	●18E	●13C	●13C	●13C	●19E	●19E	●19E	●19E	●19E	●20E
3.4	●9C	●11A	●11A	●11A	●14E	●22E	■17E	■30A	●11E	●9C	●9C	●9C	●18C	●18C	●18C	●18E	●18E	●14E
4.1	●11D	●15C	●15B	●15A	●23F	●32F	●28G	●35A	●16F	●15D	●18D	●18D	●23E	●23E	●23E	●27G	●27G	●24F
4.2	●9B	●11A	●11A	●11A	●13D	●18D	●20D	●35A	●9D	●9B	●10B	●10B	●14C	●14C	●14C	●16E	●16E	●13D
4.3	●5A	●5A	●5A	●5A	●7B	●13B	●11C	●25A	●5B	●5A	●6A	●6A	●8A	●8A	●8A	●8C	●8C	●7B
5.1	●5E				●10G	●13G	●15G	●30A	●8G	●8E	●7E	●7E	●10G	●10G	●10G	●13I	●13I	●10G
5.2	●4C				●7E	●6E	●7E	●25A	●4E	●4C	●5C	●5C	●6C	●6C	●6C	●8G	●8G	●5E
5.3	●3A				●4A	●3A	●6B	●20A	●3A	●3A	●3A	●3A	●4A	●4A	●4A	●4C	●4C	●4A
6.1	●24D				●33F	●60G	●38L	●55D	●33F	●27D	●22D	●22D	●35E	●35E	●35E	●35G	●35G	●35G
6.2	●33G				●35I	●55I	●40J	●75G	●35I	●33G	●33G	●33G	●40E	●40E	●40E	●40G	●40G	●33I
6.3	●22F	●30D	●30C	●30B	●35H	■40G	●27H	●60C	●35H	●27F	●22F	●22F	●32E	●32E	●32E	●32G	●32G	●27H
6.4	●16D	●27D	●27C	●27B	●16F	●35E	●21F	●50C	●16F	●16D	●16D	●16D	●20E	●20E	●20E	●20G	●20G	●16G
7.1	●24H				●26J	●55I	●33J	●50I	●33J	●33H	●30H	●30H	●45E	●45E	●45E	●45G	●45G	●33J
7.2	●22G				●30I	●45I	●30I	●45H	●25I	●27G	●27G	●27G	●32E	●32E	●32E	●32G	●32G	●30I
7.3	●22F				●28H	●35G	●30H	●40G	●27H	●27F	●24F	●24F	●32E	●32E	●32E	●27G	●27G	●27H
7.4	●20E	●27D	●27C	●27B	●23H	●28G	●27F	●35F	●25H	●24F	●22F	●22F	●25E	●25E	●25E	●25G	●25G	●22H
8.1	●30H				●30K	●50J	●35K		●35L	●30J	●30J	●30J	●30I	●30I	●30I	●30I	●30I	●30J
8.2	●26F				●28J	●50H	●28J	●60E	●26J	●30H	●30H	●30H						●28H
8.3	●10D				●14H	●35F	●20H		●12H	●10F	●10F	●10F						●14F
9.1	●3A				●3B	●3B	●5C	●9C	●3B	●3A	●3A	●3A						●3B
10.1																		

	A205	A210	A201	A225	A088	A095	A099	A190	A191	A199
	HSS DIN 333A 1XD 118° TiN	HSS DIN 333R 1XD 118°	HSS DORMER 1XD 122°	HSS BS 328 1XD 120°						
	1.00 - 5.00	0.50 - 12.50	0.63 - 6.00	3/64 - 5/16	Set	Set	Set	Set	Set	Set
	a 95	a 96	a 97	a 98	a 99	a 100	a 101	a 102	a 103	a 104
1.1	■42I	■35I	■35I	■35I						
1.2	■36I	■30I	■30I	■30I						
1.3	■30G	■25G	■25G	■25G						
1.4	■24F	■20F	■20F	■20F						
1.5	●16E	●13E	●13E	●13E						
1.6	●11D	●9D	●9D	●9D						
1.7										
1.8										
2.1	●18E	●15E	●15E	●15E						
2.2	●10G	●8G	●8G	●8G						
2.3	●12C	●10C	●10C	●10C						
2.4										
3.1	■36I	■30I	■30I	■30I						
3.2	■29F	■24F	■24F	■24F						
3.3	●24E	●20E	●20E	●20E						
3.4	●17E	●14E	●14E	●14E						
4.1	●29F	●24F	●24F	●24F						
4.2	●16D	●13D	●13D	●13D						
4.3	●8B	●7B	●7B	●7B						
5.1	●12G	●10G	●10G	●10G						
5.2	●6E	●5E	●5E	●5E						
5.3	●5A	●4A	●4A	●4A						
6.1	●42G	●35G	●35G	●35G						
6.2	●40I	●33I	●33I	●33I						
6.3	●32H	●27H	●27H	●27H						
6.4	●19G	●16G	●16G	●16G						
7.1	●40J	●33J	●33J	●33J						
7.2	●36I	●30I	●30I	●30I						
7.3	●32H	●27H	●27H	●27H						
7.4	●26H	●22H	●22H	●22H						
8.1	●36J	●30J	●30J	●30J						
8.2	●34H	●28H	●28H	●28H						
8.3	●17F	●14F	●14F	●14F						
9.1	●4B	●3B	●3B	●3B						
10.1										

	A295 Set	**A296** Set
	a 105	**a 106**
1.1		
1.2		
1.3		
1.4		
1.5		
1.6		
1.7		
1.8		
2.1		
2.2		
2.3		
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3.1		
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5.3		
6.1		
6.2		
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6.4		
7.1		
7.2		
7.3		
7.4		
8.1		
8.2		
8.3		
9.1		
10.1		

HM | HSS HM | HSS | HSS-E

Ø(D)	1mm	2mm	3mm	4mm	5mm	6mm	8mm	10mm	12mm	15mm	16mm	20mm	25mm	30mm	40mm	50mm
A	0.012	0.023	0.029	0.032	0.036	0.042	0.054	0.062	0.069	0.082	0.086	0.110	0.125	0.135	0.155	0.175
B	0.014	0.028	0.037	0.041	0.046	0.053	0.067	0.080	0.090	0.103	0.108	0.135	0.153	0.165	0.188	0.208
C	0.015	0.032	0.044	0.050	0.056	0.064	0.080	0.098	0.110	0.125	0.130	0.160	0.180	0.195	0.220	0.240
D	0.016	0.038	0.053	0.060	0.068	0.078	0.098	0.119	0.130	0.149	0.155	0.188	0.210	0.228	0.253	0.275
E	0.017	0.043	0.062	0.071	0.080	0.092	0.115	0.140	0.150	0.173	0.180	0.215	0.240	0.260	0.285	0.310
F	0.018	0.050	0.073	0.084	0.095	0.109	0.138	0.165	0.178	0.202	0.210	0.248	0.275	0.295	0.320	0.343
G	0.019	0.056	0.084	0.096	0.109	0.126	0.160	0.190	0.205	0.231	0.240	0.280	0.310	0.330	0.355	0.375
H	0.020	0.066	0.102	0.116	0.130	0.150	0.190	0.228	0.243	0.271	0.280	0.320	0.355	0.375	0.398	0.418
I	0.021	0.076	0.119	0.134	0.150	0.173	0.220	0.265	0.280	0.310	0.320	0.360	0.400	0.420	0.440	0.460
J	0.024	0.084	0.135	0.152	0.170	0.197	0.250	0.298	0.315	0.349	0.360	0.405	0.445	0.465	0.485	0.503
K	0.026	0.092	0.150	0.170	0.190	0.220	0.280	0.330	0.350	0.388	0.400	0.450	0.490	0.510	0.530	0.545
L	0.028	0.101	0.165	0.186	0.208	0.240	0.305	0.360	0.385	0.419	0.430	0.485	0.525	0.545	0.568	0.588
M	0.030	0.110	0.180	0.202	0.225	0.260	0.330	0.390	0.420	0.450	0.460	0.520	0.560	0.580	0.605	0.630
N	0.032	0.119	0.195	0.218	0.242	0.280	0.355	0.420	0.455	0.481	0.490	0.555	0.595	0.615	0.642	0.672
S	0.008	0.014	0.020	0.025	0.030	0.037	0.050	0.080	0.100	0.123	0.130	0.150				
T	0.015	0.028	0.040	0.050	0.060	0.070	0.090	0.110	0.130	0.160	0.170	0.190				
U	0.026	0.048	0.070	0.080	0.090	0.107	0.140	0.170	0.200	0.223	0.230	0.240				
V	0.038	0.069	0.100	0.115	0.130	0.153	0.200	0.250	0.280	0.310	0.320	0.340				
W	0.049	0.089	0.130	0.150	0.170	0.200	0.260	0.330	0.380	0.418	0.430	0.450				
X	0.056	0.103	0.150	0.180	0.210	0.250	0.330	0.420	0.480	0.533	0.550	0.580				
Y	0.068	0.124	0.180	0.220	0.260	0.317	0.430	0.550	0.700	0.700	0.700	0.740				
Z	0.094	0.172	0.250	0.325	0.400	0.533	0.800	1.000	1.100	1.175	1.200	1.200				
	mm/N ± 25%															

$$n = \frac{Vc \times 1000}{\pi \times D}$$

$$Vf = n \times fn$$

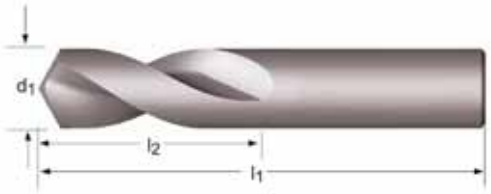
R122

R123

R122
R123

- Short Spotting Drill — Four Facet Point upto 10,0mm
- NC-Anbohrer, extra Kurz — 4-Flächenanschliff bis 10 mm
- Extra korte NC-centerboor — 4-vlakspunt tot 10.0 mm
- Extra court Forets de dessoudage — Pointe à 4 facettes jusqu'au Ø 10,0 mm
- Broca corta para centrados — Punta de 4 caras hasta 10,0mm
- Curta Broca Extra Curta — Ponta de 4 planos até 10.0mm

R122; R123 ▪ 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 2.1 2.2 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 8.2



R122	R123
5.00 - 20.00	5.00 - 20.00

d_1 $Øh_6$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	R122	R123
5.00	0.1969	16	62	R1225.0	R1235.0
6.00	0.2362	17	66	R1226.0	R1236.0
8.00	0.3150	22	79	R1228.0	R1238.0
10.00	0.3937	26	89	R12210.0	R12310.0
12.00	0.4724	30	102	R12212.0	R12312.0
16.00	0.6299	34	115	R12216.0	R12316.0
20.00	0.7874	40	131	R12220.0	R12320.0

DORMER

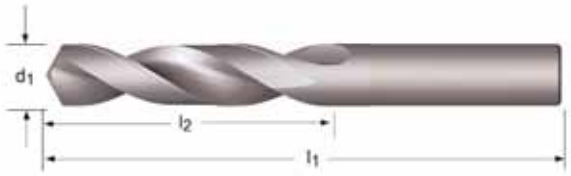
R120 DIN 6539 2.5XD HM 120° N

R120

- Stub Drillt
- Spiralbohrer, kurz
- Extra korte spiraalboor
- Foret extra-court
- Broca extra corta
- Broca Extra Curta

R120 ▪ 4.1 5.1 6.1 7.1 8.1 8.2

▪ 1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 3.1 3.2 3.3 3.4 4.2 4.3 5.2 5.3 6.2 6.3 6.4 7.2 7.3 7.4



d_1 $\emptyset h_7$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	R120
1.00	0.0394	6	26	R1201.0
1.10	0.0433	7	28	R1201.1
1.20	0.0472	8	30	R1201.2
1.30	0.0512	8	30	R1201.3
1.40	0.0551	9	32	R1201.4
1.50	0.0591	9	32	R1201.5
1.60	0.0630	10	34	R1201.6
1.70	0.0669	10	34	R1201.7
1.80	0.0709	11	36	R1201.8
1.90	0.0748	11	36	R1201.9
2.00	0.0787	12	38	R1202.0
2.10	0.0827	12	38	R1202.1
2.20	0.0866	13	40	R1202.2
2.30	0.0906	13	40	R1202.3
2.40	0.0945	14	43	R1202.4
2.50	0.0984	14	43	R1202.5
2.60	0.1024	14	43	R1202.6
2.70	0.1063	16	46	R1202.7
2.80	0.1102	16	46	R1202.8
2.90	0.1142	16	46	R1202.9
3.00	0.1181	16	46	R1203.0
3.10	0.1220	18	49	R1203.1
3.20	0.1260	18	49	R1203.2
3.30	0.1299	18	49	R1203.3
3.40	0.1339	20	52	R1203.4
3.50	0.1378	20	52	R1203.5
3.60	0.1417	20	52	R1203.6
3.70	0.1457	20	52	R1203.7
3.80	0.1496	22	55	R1203.8
3.90	0.1535	22	55	R1203.9
4.00	0.1575	22	55	R1204.0
4.10	0.1614	22	55	R1204.1
4.20	0.1654	22	55	R1204.2
4.30	0.1693	24	58	R1204.3

d_1 $\varnothing h_7$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	R120
4.40	0.1732	24	58	R1204.4
4.50	0.1772	24	58	R1204.5
4.60	0.1811	24	58	R1204.6
4.70	0.1850	24	58	R1204.7
4.80	0.1890	26	62	R1204.8
4.90	0.1929	26	62	R1204.9
5.00	0.1969	26	62	R1205.0
5.10	0.2008	26	62	R1205.1
5.20	0.2047	26	62	R1205.2
5.30	0.2087	26	62	R1205.3
5.40	0.2126	28	66	R1205.4
5.50	0.2165	28	66	R1205.5
5.60	0.2205	28	66	R1205.6
5.70	0.2244	28	66	R1205.7
5.80	0.2283	28	66	R1205.8
5.90	0.2323	28	66	R1205.9
6.00	0.2362	28	66	R1206.0
6.10	0.2402	31	70	R1206.1
6.20	0.2441	31	70	R1206.2
6.30	0.2480	31	70	R1206.3
6.40	0.2520	31	70	R1206.4
6.50	0.2559	31	70	R1206.5
6.60	0.2598	31	70	R1206.6
6.70	0.2638	31	70	R1206.7
6.80	0.2677	34	74	R1206.8
6.90	0.2717	34	74	R1206.9
7.00	0.2756	34	74	R1207.0
7.10	0.2795	34	74	R1207.1
7.20	0.2835	34	74	R1207.2
7.30	0.2874	34	74	R1207.3
7.40	0.2913	34	74	R1207.4
7.50	0.2953	34	74	R1207.5
7.60	0.2992	37	79	R1207.6
7.70	0.3031	37	79	R1207.7
7.80	0.3071	37	79	R1207.8
7.90	0.3110	37	79	R1207.9
8.00	0.3150	37	79	R1208.0
8.10	0.3189	37	79	R1208.1
8.20	0.3228	37	79	R1208.2
8.30	0.3268	37	79	R1208.3
8.40	0.3307	37	79	R1208.4
8.50	0.3346	37	79	R1208.5
8.60	0.3386	40	84	R1208.6
8.70	0.3425	40	84	R1208.7
8.80	0.3465	40	84	R1208.8
8.90	0.3504	40	84	R1208.9
9.00	0.3543	40	84	R1209.0
9.10	0.3583	40	84	R1209.1
9.20	0.3622	40	84	R1209.2
9.30	0.3661	40	84	R1209.3
9.40	0.3701	40	84	R1209.4
9.50	0.3740	40	84	R1209.5
9.60	0.3780	43	89	R1209.6
9.70	0.3819	43	89	R1209.7
9.80	0.3858	43	89	R1209.8
9.90	0.3898	43	89	R1209.9
10.00	0.3937	43	89	R12010.0
10.20	0.4016	43	89	R12010.2
10.50	0.4134	43	89	R12010.5
11.00	0.4331	47	95	R12011.0
11.50	0.4528	47	95	R12011.5
12.00	0.4724	51	102	R12012.0

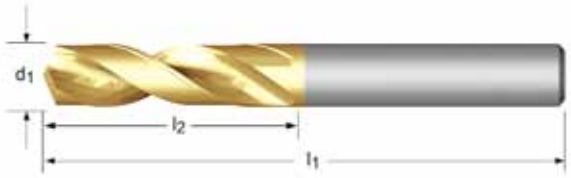
DORMER

R520 DIN 6539 2.5XD HM 130° TiN N S.P.

R520

- CDX Stub Drill
- CDX Spiralbohrer, kurz
- CDX Extra korte spiraalboren
- CDX Foret extra-court
- CDX Broca , serie extra corta
- CDX Broca Extra Curta

R520 ▪ 1.1 1.2 1.3 1.4 1.5 1.6 3.1 3.2 3.3 3.4 5.1 7.1 7.2 7.3 7.4 8.1 8.2
▪ 1.7 1.8 2.1 4.1 4.2 4.3



R520

CDX

3.00 - 16.50

d_1 $Øh_7$ mm	d_1 $Øh_7$ Inch	d_1 decimal Inch	l_2 mm	l_1 mm	R520
3.00		0.1181	16	46	R5203.0
3.10		0.1220	18	49	R5203.1
3.18	1/8	0.1252	18	49	R5201/8
3.20		0.1260	18	49	R5203.2
3.30		0.1299	18	49	R5203.3
3.40		0.1339	20	52	R5203.4
3.50		0.1378	20	52	R5203.5
3.57	9/64	0.1406	20	52	R5209/64
3.60		0.1417	20	52	R5203.6
3.70		0.1457	20	52	R5203.7
3.80		0.1496	22	55	R5203.8
3.90		0.1535	22	55	R5203.9
3.97	5/32	0.1563	22	55	R5205/32
4.00		0.1575	22	55	R5204.0
4.10		0.1614	22	55	R5204.1
4.20		0.1654	22	55	R5204.2
4.30		0.1693	24	58	R5204.3
4.37	11/64	0.1720	24	58	R52011/64
4.40		0.1732	24	58	R5204.4
4.50		0.1772	24	58	R5204.5
4.60		0.1811	24	58	R5204.6
4.70		0.1850	24	58	R5204.7
4.76	3/16	0.1874	26	62	R5203/16
4.80		0.1890	26	62	R5204.8
4.90		0.1929	26	62	R5204.9
5.00		0.1969	26	62	R5205.0
5.10		0.2008	26	62	R5205.1
5.16	13/64	0.2031	26	62	R52013/64
5.20		0.2047	26	62	R5205.2
5.30		0.2087	26	62	R5205.3
5.40		0.2126	28	66	R5205.4
5.50		0.2165	28	66	R5205.5
5.56	7/32	0.2189	28	66	R5207/32
5.60		0.2205	28	66	R5205.6
5.70		0.2244	28	66	R5205.7
5.80		0.2283	28	66	R5205.8

d_1 Øh$_7$ mm	d_1 Øh$_7$ Inch	d_1 decimal Inch	l_2 mm	l_1 mm	R520
5.90		0.2323	28	66	R5205.9
5.95	15/64	0.2343	28	66	R52015/64
6.00		0.2362	28	66	R5206.0
6.10		0.2402	31	70	R5206.1
6.20		0.2441	31	70	R5206.2
6.30		0.2480	31	70	R5206.3
6.35	1/4	0.2500	31	70	R5201/4
6.40		0.2520	31	70	R5206.4
6.50		0.2559	31	70	R5206.5
6.60		0.2598	31	70	R5206.6
6.70		0.2638	31	70	R5206.7
6.75	17/64	0.2657	34	74	R52017/64
6.80		0.2677	34	74	R5206.8
6.90		0.2717	34	74	R5206.9
7.00		0.2756	34	74	R5207.0
7.10		0.2795	34	74	R5207.1
7.14	9/32	0.2811	34	74	R5209/32
7.20		0.2835	34	74	R5207.2
7.30		0.2874	34	74	R5207.3
7.40		0.2913	34	74	R5207.4
7.50		0.2953	34	74	R5207.5
7.54	19/64	0.2969	37	79	R52019/64
7.60		0.2992	37	79	R5207.6
7.70		0.3031	37	79	R5207.7
7.80		0.3071	37	79	R5207.8
7.90		0.3110	37	79	R5207.9
7.94	5/16	0.3126	37	79	R5205/16
8.00		0.3150	37	79	R5208.0
8.10		0.3189	37	79	R5208.1
8.20		0.3228	37	79	R5208.2
8.30		0.3268	37	79	R5208.3
8.33	21/64	0.3280	37	79	R52021/64
8.40		0.3307	37	79	R5208.4
8.50		0.3346	37	79	R5208.5
8.60		0.3386	40	84	R5208.6
8.70		0.3425	40	84	R5208.7
8.73	11/32	0.3437	40	84	R52011/32
8.80		0.3465	40	84	R5208.8
8.90		0.3504	40	84	R5208.9
9.00		0.3543	40	84	R5209.0
9.10		0.3583	40	84	R5209.1
9.13	23/64	0.3594	40	84	R52023/64
9.20		0.3622	40	84	R5209.2
9.30		0.3661	40	84	R5209.3
9.40		0.3701	40	84	R5209.4
9.50		0.3740	40	84	R5209.5
9.52	3/8	0.3748	43	89	R5203/8
9.60		0.3780	43	89	R5209.6
9.70		0.3819	43	89	R5209.7
9.80		0.3858	43	89	R5209.8
9.90		0.3898	43	89	R5209.9
9.92	25/64	0.3906	43	89	R52025/64
10.00		0.3937	43	89	R52010.0
10.10		0.3976	43	89	R52010.1
10.20		0.4016	43	89	R52010.2
10.30		0.4055	43	89	R52010.3
10.32	13/32	0.4063	43	89	R52013/32
10.40		0.4094	43	89	R52010.4
10.50		0.4134	43	89	R52010.5
10.72	27/64	0.4220	47	95	R52027/64
11.00		0.4331	47	95	R52011.0
11.11	7/16	0.4374	47	95	R5207/16
11.20		0.4409	47	95	R52011.2
11.50		0.4528	47	95	R52011.5
11.51	29/64	0.4531	47	95	R52029/64
11.91	15/32	0.4689	51	102	R52015/32
12.00		0.4724	51	102	R52012.0
12.30	31/64	0.4843	51	102	R52031/64
12.50		0.4921	51	102	R52012.5
12.70	1/2	0.5000	51	102	R5201/2

d_1 Øh$_7$ mm	d_1 Øh$_7$ Inch	d_1 decimal Inch	l_2 mm	l_1 mm	R520
13.00		0.5118	51	102	R52013.0
13.50		0.5315	54	107	R52013.5
14.00		0.5512	54	107	R52014.0
14.20		0.5591	56	111	R52014.2
14.25		0.5610	56	111	R52014.25
14.29	9/16	0.5626	56	111	R5209/16
14.50		0.5709	56	111	R52014.5
15.00		0.5906	56	111	R52015.0
15.10		0.5945	58	115	R52015.1
15.88	5/8	0.6252	58	115	R5205/8
16.00		0.6299	58	115	R52016.0
16.50		0.6496	60	119	R52016.5

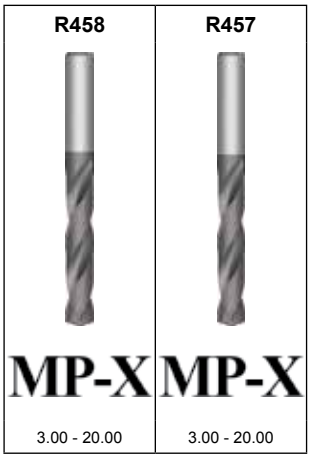
R458

- MP-X Drill Short
- MP-X Spiralbohrer, kurz
- MP-X Spiraalboren, kort
- Foret MP-X
- Broca MP-X, corta
- Broca MP-X Curta

R457

- MP-X Drill Short Oil Feed
- MP-X Spiralbohrer, kurz - Kühlkanal
- MP-X Spiraalboren, kort met koelkanalen
- Foret MP-X à trous d'huile
- Broca MP-X, corta refrigeración interna
- Broca MP-X Curta Lubr.

R458	■	1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 2.1 2.2 2.3 3.1 3.2 3.3 3.4 6.1 6.2 6.3 7.1 7.2 7.3 7.4
	●	2.4 4.1 4.2 4.3 6.4
R457	■	1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4



d_1 Ø m7 "/Nr./letter	d_1 Ø m7 mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Ø h6 mm	R458	R457
	3.00	0.1181	20	62	36	6	R4583.0	R4573.0
	3.10	0.1220	20	62	36	6	R4583.1	R4573.1
1/8	3.18	0.1252	20	62	36	6	R4581/8	R4571/8
	3.20	0.1260	20	62	36	6	R4583.2	R4573.2
30	3.26	0.1283	20	62	36	6	R458N30	R457N30
	3.30	0.1299	20	62	36	6	R4583.3	R4573.3
	3.40	0.1339	20	62	36	6	R4583.4	R4573.4
29	3.45	0.1358	20	62	36	6	R458N29	R457N29
	3.50	0.1378	20	62	36	6	R4583.5	R4573.5
28	3.57	0.1406	20	62	36	6	R458N28	R457N28
9/64	3.57	0.1406	20	62	36	6	R4589/64	R4579/64
	3.60	0.1417	20	62	36	6	R4583.6	R4573.6
27	3.66	0.1441	20	62	36	6	R458N27	R457N27
	3.70	0.1457	20	62	36	6	R4583.7	R4573.7
	3.73	0.1469	24	66	36	6	R4583.73	
26	3.73	0.1469	24	66	36	6	R458N26	R457N26
25	3.80	0.1496	24	66	36	6	R458N25	R457N25
	3.80	0.1496	24	66	36	6	R4583.8	R4573.8

DORMER

d_1 Ø m7 "/Nr./letter	d_1 Ø m7 mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Ø h6 mm	R458	R457
24	3.86	0.1520	24	66	36	6	R458N24	R457N24
	3.90	0.1535	24	66	36	6	R4583.9	R4573.9
23	3.91	0.1539	24	66	36	6	R458N23	R457N23
5/32	3.97	0.1563	24	66	36	6	R4585/32	R4575/32
22	3.99	0.1571	24	66	36	6	R458N22	R457N22
	4.00	0.1575	24	66	36	6	R4584.0	R4574.0
21	4.04	0.1591	24	66	36	6	R458N21	R457N21
	4.05	0.1594	24	66	36	6		R4574.05
20	4.09	0.1610	24	66	36	6	R458N20	R457N20
	4.10	0.1614	24	66	36	6	R4584.1	R4574.1
	4.20	0.1654	24	66	36	6	R4584.2	R4574.2
19	4.22	0.1661	24	66	36	6	R458N19	R457N19
	4.30	0.1693	24	66	36	6	R4584.3	R4574.3
18	4.31	0.1697	24	66	36	6	R458N18	R457N18
11/64	4.37	0.1720	24	66	36	6	R45811/64	R45711/64
17	4.39	0.1728	24	66	36	6	R458N17	R457N17
	4.40	0.1732	24	66	36	6	R4584.4	R4574.4
	4.50	0.1772	24	66	36	6	R4584.5	R4574.5
16	4.50	0.1772	24	66	36	6	R458N16	R457N16
15	4.57	0.1799	24	66	36	6	R458N15	R457N15
	4.60	0.1811	24	66	36	6	R4584.6	R4574.6
14	4.62	0.1819	24	66	36	6	R458N14	R457N14
13	4.70	0.1850	24	66	36	6	R458N13	R457N13
	4.70	0.1850	24	66	36	6	R4584.7	R4574.7
3/16	4.76	0.1874	28	66	36	6	R4583/16	R4573/16
	4.80	0.1890	28	66	36	6	R4584.8	R4574.8
12	4.80	0.1890	28	66	36	6	R458N12	R457N12
11	4.85	0.1909	28	66	36	6	R458N11	R457N11
	4.90	0.1929	28	66	36	6	R4584.9	R4574.9
10	4.92	0.1937	28	66	36	6	R458N10	R457N10
9	4.98	0.1961	28	66	36	6	R458N9	R457N9
	5.00	0.1969	28	66	36	6	R4585.0	R4575.0
	5.05	0.1988	28	66	36	6		R4575.05
8	5.06	0.1992	28	66	36	6	R458N8	R457N8
	5.10	0.2008	28	66	36	6	R4585.1	R4575.1
7	5.11	0.2012	28	66	36	6	R458N7	R457N7
13/64	5.16	0.2031	28	66	36	6	R45813/64	R45713/64
6	5.18	0.2039	28	66	36	6	R458N6	R457N6
	5.20	0.2047	28	66	36	6	R4585.2	R4575.2
5	5.22	0.2055	28	66	36	6	R458N5	R457N5
4	5.31	0.2091	28	66	36	6	R458N4	R457N4
3	5.41	0.2130	28	66	36	6	R458N3	R457N3
	5.50	0.2165	28	66	36	6	R4585.5	R4575.5
7/32	5.56	0.2189	28	66	36	6	R4587/32	R4577/32
	5.60	0.2205	28	66	36	6	R4585.6	R4575.6
2	5.61	0.2209	28	66	36	6	R458N2	R457N2
	5.70	0.2244	28	66	36	6	R4585.7	R4575.7
1	5.79	0.2280	28	66	36	6	R458N1	R457N1
	5.80	0.2283	28	66	36	6	R4585.8	R4575.8
A	5.94	0.2339	28	66	36	6	R458A	R457A
15/64	5.95	0.2343	28	66	36	6	R45815/64	R45715/64
	6.00	0.2362	28	66	36	6	R4586.0	R4576.0
	6.05	0.2382	34	79	36	8		R4576.05
	6.10	0.2402	34	79	36	8	R4586.1	R4576.1
	6.20	0.2441	34	79	36	8	R4586.2	R4576.2
D	6.25	0.2461	34	79	36	8	R458D	R457D
	6.30	0.2480	34	79	36	8	R4586.3	R4576.3
1/4	6.35	0.2500	34	79	36	8	R4581/4	R4571/4
	6.40	0.2520	34	79	36	8	R4586.4	R4576.4
	6.50	0.2559	34	79	36	8	R4586.5	R4576.5
	6.60	0.2598	34	79	36	8	R4586.6	R4576.6
	6.70	0.2638	34	79	36	8	R4586.7	R4576.7
17/64	6.75	0.2657	34	79	36	8	R45817/64	R45717/64
H	6.76	0.2661	34	79	36	8	R458H	R457H
	6.80	0.2677	34	79	36	8	R4586.8	R4576.8
	6.90	0.2717	34	79	36	8	R4586.9	R4576.9
	7.00	0.2756	34	79	36	8	R4587.0	R4577.0
	7.10	0.2795	41	79	36	8	R4587.1	R4577.1
9/32	7.14	0.2811	41	79	36	8	R4589/32	R4579/32
	7.30	0.2874	41	79	36	8	R4587.3	R4577.3

d_1 Ø m7 "/Nr./letter	d_1 Ø m7 mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Ø h6 mm	R458	R457
L	7.37	0.2902	41	79	36	8	R458L	R457L
	7.40	0.2913	41	79	36	8	R4587.4	R4577.4
M	7.49	0.2949	41	79	36	8	R458M	R457M
	7.50	0.2953	41	79	36	8	R4587.5	R4577.5
19/64	7.54	0.2969	41	79	36	8	R45819/64	R45719/64
	7.60	0.2992	41	79	36	8	R4587.6	R4577.6
N	7.67	0.3020	41	79	36	8	R458N	R457N
	7.70	0.3031	41	79	36	8	R4587.7	R4577.7
	7.80	0.3071	41	79	36	8	R4587.8	R4577.8
	7.90	0.3110	41	79	36	8	R4587.9	R4577.9
5/16	7.94	0.3126	41	79	36	8	R4585/16	R4575/16
	8.00	0.3150	41	79	36	8	R4588.0	R4578.0
O	8.03	0.3161	47	89	40	10	R458O	R457O
	8.05	0.3169	47	89	40	10		R4578.05
	8.10	0.3189	47	89	40	10	R4588.1	R4578.1
	8.20	0.3228	47	89	40	10	R4588.2	R4578.2
21/64	8.33	0.3280	47	89	40	10	R45821/64	R45721/64
	8.40	0.3307	47	89	40	10	R4588.4	R4578.4
Q	8.43	0.3319	47	89	40	10	R458Q	R457Q
	8.50	0.3346	47	89	40	10	R4588.5	R4578.5
	8.60	0.3386	47	89	40	10	R4588.6	R4578.6
	8.70	0.3425	47	89	40	10	R4588.7	R4578.7
11/32	8.73	0.3437	47	89	40	10	R45811/32	R45711/32
	8.80	0.3465	47	89	40	10	R4588.8	R4578.8
	8.90	0.3504	47	89	40	10		R4578.9
	9.00	0.3543	47	89	40	10	R4589.0	R4579.0
T	9.09	0.3579	47	89	40	10	R458T	R457T
	9.10	0.3583	47	89	40	10	R4589.1	R4579.1
23/64	9.13	0.3594	47	89	40	10	R45823/64	R45723/64
	9.30	0.3661	47	89	40	10	R4589.3	R4579.3
U	9.35	0.3681	47	89	40	10	R458U	R457U
	9.40	0.3701	47	89	40	10	R4589.4	R4579.4
	9.50	0.3740	47	89	40	10	R4589.5	R4579.5
3/8	9.52	0.3748	47	89	40	10	R4583/8	R4573/8
	9.60	0.3780	47	89	40	10	R4589.6	R4579.6
	9.70	0.3819	47	89	40	10	R4589.7	R4579.7
	9.80	0.3858	47	89	40	10	R4589.8	R4579.8
	9.90	0.3898	47	89	40	10	R4589.9	R4579.9
25/64	9.92	0.3906	47	89	40	10	R45825/64	R45725/64
	10.00	0.3937	47	89	40	10	R45810.0	R45710.0
	10.05	0.3957	55	102	45	12		R45710.05
X	10.08	0.3969	55	102	45	12	R458X	R457X
	10.10	0.3976	55	102	45	12	R45810.1	R45710.1
	10.20	0.4016	55	102	45	12	R45810.2	R45710.2
Y	10.26	0.4039	55	102	45	12	R458Y	R457Y
	10.30	0.4055	55	102	45	12	R45810.3	R45710.3
13/32	10.32	0.4063	55	102	45	12	R45813/32	R45713/32
	10.40	0.4094	55	102	45	12	R45810.4	R45710.4
Z	10.49	0.4130	55	102	45	12	R458Z	R457Z
	10.50	0.4134	55	102	45	12	R45810.5	R45710.5
	10.60	0.4173	55	102	45	12	R45810.6	R45710.6
27/64	10.72	0.4220	55	102	45	12	R45827/64	R45727/64
	10.80	0.4252	55	102	45	12	R45810.8	
	11.00	0.4331	55	102	45	12	R45811.0	R45711.0
7/16	11.11	0.4374	55	102	45	12	R4587/16	R4577/16
	11.20	0.4409	55	102	45	12	R45811.2	R45711.2
	11.40	0.4488	55	102	45	12	R45811.4	R45711.4
	11.50	0.4528	55	102	45	12	R45811.5	R45711.5
29/64	11.51	0.4531	55	102	45	12	R45829/64	R45729/64
	11.60	0.4567	55	102	45	12	R45811.6	R45711.6
	11.80	0.4646	55	102	45	12	R45811.8	R45711.8
15/32	11.91	0.4689	55	102	45	12	R45815/32	R45715/32
	12.00	0.4724	55	102	45	12	R45812.0	R45712.0
	12.05	0.4744	60	107	45	14		R45712.05
	12.10	0.4764	60	107	45	14	R45812.1	R45712.1
	12.20	0.4803	60	107	45	14	R45812.2	R45712.2
31/64	12.30	0.4843	60	107	45	14	R45831/64	R45731/64
	12.50	0.4921	60	107	45	14	R45812.5	R45712.5
	12.70	0.5000	60	107	45	14	R45812.7	R45712.7
1/2	12.70	0.5000	60	107	45	14	R4581/2	R4571/2

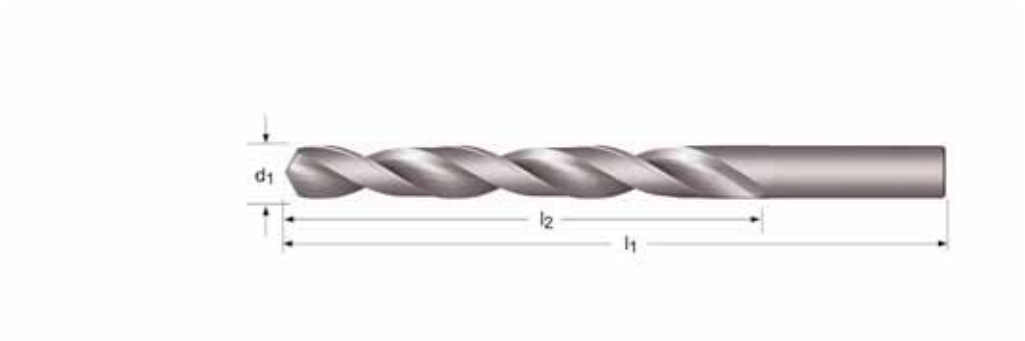
d_1 Ø m7 "/Nr./letter	d_1 Ø m7 mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Ø h6 mm	R458	R457
	12.80	0.5039	60	107	45	14	R45812.8	R45712.8
	13.00	0.5118	60	107	45	14	R45813.0	R45713.0
33/64	13.10	0.5157	60	107	45	14	R45833/64	R45733/64
17/32	13.49	0.5311	60	107	45	14	R45817/32	R45717/32
	13.50	0.5315	60	107	45	14	R45813.5	R45713.5
	13.80	0.5433	60	107	45	14	R45813.8	R45713.8
35/64	13.89	0.5469	60	107	45	14	R45835/64	R45735/64
	14.00	0.5512	60	107	45	14	R45814.0	R45714.0
	14.25	0.5610	65	115	48	16	R45814.25	R45714.25
9/16	14.29	0.5626	65	115	48	16	R4589/16	R4579/16
	14.50	0.5709	65	115	48	16	R45814.5	R45714.5
37/64	14.68	0.5780	65	115	48	16	R45837/64	R45737/64
	14.80	0.5827	65	115	48	16	R45814.8	R45714.8
	15.00	0.5906	65	115	48	16	R45815.0	R45715.0
19/32	15.08	0.5937	65	115	48	16	R45819/32	R45719/32
	15.10	0.5945	65	115	48	16	R45815.1	R45715.1
39/64	15.48	0.6094	65	115	48	16	R45839/64	R45739/64
	15.50	0.6102	65	115	48	16	R45815.5	R45715.5
	15.80	0.6220	65	115	48	16	R45815.8	R45715.8
5/8	15.88	0.6252	65	115	48	16	R4585/8	R4575/8
	16.00	0.6299	65	115	48	16	R45816.0	R45716.0
41/64	16.27	0.6406	73	123	48	18	R45841/64	R45741/64
	16.50	0.6496	73	123	48	18	R45816.5	R45716.5
21/32	16.67	0.6563	73	123	48	18	R45821/32	R45721/32
	17.00	0.6693	73	123	48	18	R45817.0	R45717.0
43/64	17.07	0.6720	73	123	48	18	R45843/64	R45743/64
11/16	17.46	0.6874	73	123	48	18	R45811/16	R45711/16
	17.50	0.6890	73	123	48	18	R45817.5	R45717.5
	17.80	0.7008	73	123	48	18	R45817.8	
45/64	17.86	0.7031	73	123	48	18	R45845/64	R45745/64
	18.00	0.7087	73	123	48	18	R45818.0	R45718.0
23/32	18.26	0.7189	79	131	50	20	R45823/32	R45723/32
	18.50	0.7283	79	131	50	20	R45818.5	R45718.5
47/64	18.65	0.7343	79	131	50	20	R45847/64	R45747/64
	18.80	0.7402	79	131	50	20		R45718.8
	19.00	0.7480	79	131	50	20	R45819.0	R45719.0
3/4	19.05	0.7500	79	131	50	20	R4583/4	R4573/4
	19.50	0.7677	79	131	50	20	R45819.5	R45719.5
	19.80	0.7795	79	131	50	20	R45819.8	R45719.8
	20.00	0.7874	79	131	50	20	R45820.0	R45720.0

R100 DIN 338 | 4XD | HM | 120° | N

R100

- Jobber Drill
- Spiralbohrer
- Korte spiraalboren
- Foret court
- Broca , serie corta
- Broca Curta

R100																	
▪	6.2	6.3	8.1	8.2													
▪	1.1	1.2	1.3	1.4	1.5	1.6	1.7	1.8	3.1	3.2	3.3	3.4	7.1	7.2	7.3	7.4	



d_1 Øh$_7$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	R100
1.00	0.0394	12	34	R1001.0
1.10	0.0433	14	36	R1001.1
1.20	0.0472	16	38	R1001.2
1.30	0.0512	16	38	R1001.3
1.40	0.0551	18	40	R1001.4
1.50	0.0591	18	40	R1001.5
1.60	0.0630	20	43	R1001.6
1.70	0.0669	20	43	R1001.7
1.80	0.0709	22	46	R1001.8
1.90	0.0748	22	46	R1001.9
2.00	0.0787	24	49	R1002.0
2.10	0.0827	24	49	R1002.1
2.20	0.0866	27	53	R1002.2
2.30	0.0906	27	53	R1002.3
2.40	0.0945	30	57	R1002.4
2.50	0.0984	30	57	R1002.5
2.60	0.1024	30	57	R1002.6
2.70	0.1063	33	61	R1002.7
2.80	0.1102	33	61	R1002.8
2.90	0.1142	33	61	R1002.9
3.00	0.1181	33	61	R1003.0
3.10	0.1220	36	65	R1003.1
3.20	0.1260	36	65	R1003.2
3.30	0.1299	36	65	R1003.3
3.40	0.1339	39	70	R1003.4
3.50	0.1378	39	70	R1003.5
3.60	0.1417	39	70	R1003.6
3.70	0.1457	39	70	R1003.7
3.80	0.1496	43	75	R1003.8
3.90	0.1535	43	75	R1003.9
4.00	0.1575	43	75	R1004.0
4.10	0.1614	43	75	R1004.1
4.20	0.1654	43	75	R1004.2
4.30	0.1693	47	80	R1004.3

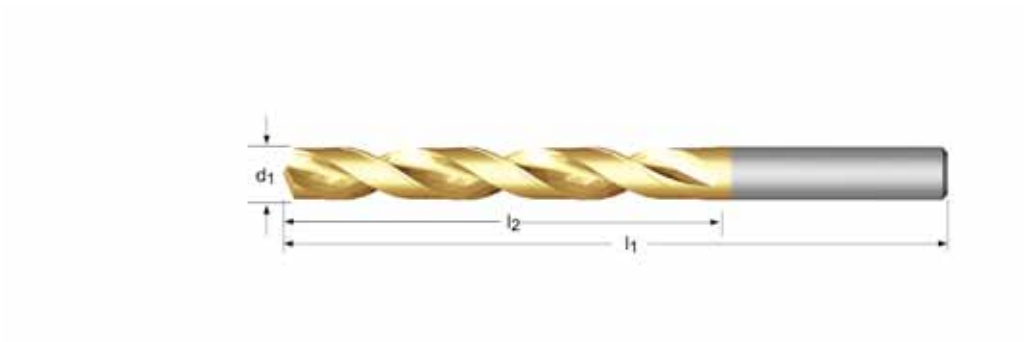
d_1 $\emptyset h_7$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	R100
4.40	0.1732	47	80	R1004.4
4.50	0.1772	47	80	R1004.5
4.60	0.1811	47	80	R1004.6
4.70	0.1850	47	80	R1004.7
4.80	0.1890	52	86	R1004.8
4.90	0.1929	52	86	R1004.9
5.00	0.1969	52	86	R1005.0
5.10	0.2008	52	86	R1005.1
5.20	0.2047	52	86	R1005.2
5.30	0.2087	52	86	R1005.3
5.40	0.2126	57	93	R1005.4
5.50	0.2165	57	93	R1005.5
5.60	0.2205	57	93	R1005.6
5.70	0.2244	57	93	R1005.7
5.80	0.2283	57	93	R1005.8
5.90	0.2323	57	93	R1005.9
6.00	0.2362	57	93	R1006.0
6.10	0.2402	63	101	R1006.1
6.20	0.2441	63	101	R1006.2
6.30	0.2480	63	101	R1006.3
6.40	0.2520	63	101	R1006.4
6.50	0.2559	63	101	R1006.5
6.60	0.2598	63	101	R1006.6
6.70	0.2638	63	101	R1006.7
6.80	0.2677	69	109	R1006.8
6.90	0.2717	69	109	R1006.9
7.00	0.2756	69	109	R1007.0
7.10	0.2795	69	109	R1007.1
7.20	0.2835	69	109	R1007.2
7.30	0.2874	69	109	R1007.3
7.40	0.2913	69	109	R1007.4
7.50	0.2953	69	109	R1007.5
7.60	0.2992	75	117	R1007.6
7.70	0.3031	75	117	R1007.7
7.80	0.3071	75	117	R1007.8
7.90	0.3110	75	117	R1007.9
8.00	0.3150	75	117	R1008.0
8.10	0.3189	75	117	R1008.1
8.20	0.3228	75	117	R1008.2
8.30	0.3268	75	117	R1008.3
8.40	0.3307	75	117	R1008.4
8.50	0.3346	75	117	R1008.5
8.60	0.3386	81	125	R1008.6
8.70	0.3425	81	125	R1008.7
8.80	0.3465	81	125	R1008.8
8.90	0.3504	81	125	R1008.9
9.00	0.3543	81	125	R1009.0
9.10	0.3583	81	125	R1009.1
9.20	0.3622	81	125	R1009.2
9.30	0.3661	81	125	R1009.3
9.40	0.3701	81	125	R1009.4
9.50	0.3740	81	125	R1009.5
9.60	0.3780	87	133	R1009.6
9.70	0.3819	87	133	R1009.7
9.80	0.3858	87	133	R1009.8
9.90	0.3898	87	133	R1009.9
10.00	0.3937	87	133	R10010.0
10.20	0.4016	87	133	R10010.2
10.50	0.4134	87	133	R10010.5
11.00	0.4331	94	142	R10011.0
11.50	0.4528	94	142	R10011.5
12.00	0.4724	101	151	R10012.0
13.00	0.5118	101	151	R10013.0
14.00	0.5512	108	160	R10014.0

R510 DIN 338 | 4XD | HM | 130° | TiN | N | S.P.

R510

- CDX Jobber Drill
- CDX Spiralbohrer, DIN 338
- CDX Korte spiraalboren
- Foret CDX court
- Broca CDX , serie corta
- Broca CDX Curta

R510																
■	1.1	1.2	1.3	1.4	1.5	1.6	3.1	3.2	3.3	3.4	7.1	7.2	7.3	7.4	8.1	8.2
■	1.7	1.8	2.1	4.1	5.1											



R510

CDX

3.00 - 14.25

d_1 Øh$_7$ mm	d_1 Øh$_7$ Inch	d_1 decimal Inch	l_2 mm	l_1 mm	R510
3.00		0.1181	33	61	R5103.0
3.18	1/8	0.1252	36	65	R5101/8
3.20		0.1260	36	65	R5103.2
3.30		0.1299	36	65	R5103.3
3.40		0.1339	39	70	R5103.4
3.50		0.1378	39	70	R5103.5
3.57	9/64	0.1406	39	70	R5109/64
3.70		0.1457	39	70	R5103.7
3.90		0.1535	43	75	R5103.9
3.97	5/32	0.1563	43	75	R5105/32
4.00		0.1575	43	75	R5104.0
4.10		0.1614	43	75	R5104.1
4.20		0.1654	43	75	R5104.2
4.30		0.1693	47	80	R5104.3
4.37	11/64	0.1720	47	80	R51011/64
4.50		0.1772	47	80	R5104.5
4.60		0.1811	47	80	R5104.6
4.70		0.1850	47	80	R5104.7
4.76	3/16	0.1874	52	86	R5103/16
4.90		0.1929	52	86	R5104.9
5.00		0.1969	52	86	R5105.0
5.10		0.2008	52	86	R5105.1
5.16	13/64	0.2031	52	86	R51013/64
5.50		0.2165	57	93	R5105.5
5.56	7/32	0.2189	57	93	R5107/32
5.60		0.2205	57	93	R5105.6
5.70		0.2244	57	93	R5105.7
5.95	15/64	0.2343	57	93	R51015/64
6.00		0.2362	57	93	R5106.0
6.35	1/4	0.2500	63	101	R5101/4
6.50		0.2559	63	101	R5106.5
6.60		0.2598	63	101	R5106.6

d_1 $\emptyset h_7$ mm	d_1 $\emptyset h_7$ Inch	d_1 decimal Inch	l_2 mm	l_1 mm	R510
6.75	17/64	0.2657	69	109	R51017/64
6.80		0.2677	69	109	R5106.8
6.90		0.2717	69	109	R5106.9
7.00		0.2756	69	109	R5107.0
7.14	9/32	0.2811	69	109	R5109/32
7.30		0.2874	69	109	R5107.3
7.40		0.2913	69	109	R5107.4
7.50		0.2953	69	109	R5107.5
7.54	19/64	0.2969	75	117	R51019/64
7.80		0.3071	75	117	R5107.8
7.90		0.3110	75	117	R5107.9
7.94	5/16	0.3126	75	117	R5105/16
8.00		0.3150	75	117	R5108.0
8.33	21/64	0.3280	75	117	R51021/64
8.50		0.3346	75	117	R5108.5
8.70		0.3425	81	125	R5108.7
8.73	11/32	0.3437	81	125	R51011/32
8.80		0.3465	81	125	R5108.8
9.00		0.3543	81	125	R5109.0
9.13	23/64	0.3594	81	125	R51023/64
9.20		0.3622	81	125	R5109.2
9.30		0.3661	81	125	R5109.3
9.40		0.3701	81	125	R5109.4
9.50		0.3740	81	125	R5109.5
9.52	3/8	0.3748	87	133	R5103/8
9.90		0.3898	87	133	R5109.9
9.92	25/64	0.3906	87	133	R51025/64
10.00		0.3937	87	133	R51010.0
10.20		0.4016	87	133	R51010.2
10.30		0.4055	87	133	R51010.3
10.32	13/32	0.4063	87	133	R51013/32
10.40		0.4094	87	133	R51010.4
10.50		0.4134	87	133	R51010.5
10.72	27/64	0.4220	94	142	R51027/64
10.80		0.4252	94	142	R51010.8
11.00		0.4331	94	142	R51011.0
11.11	7/16	0.4374	94	142	R5107/16
11.20		0.4409	94	142	R51011.2
11.50		0.4528	94	142	R51011.5
11.51	29/64	0.4531	94	142	R51029/64
11.91	15/32	0.4689	101	151	R51015/32
12.00		0.4724	101	151	R51012.0
12.30	31/64	0.4843	101	151	R51031/64
12.70	1/2	0.5000	101	151	R5101/2
13.00		0.5118	101	151	R51013.0
14.00		0.5512	108	160	R51014.0
14.25		0.5610	114	169	R51014.25

R454

- MP-X Drill Long
- MP-X Spiralbohrer, lang
- MP-X Spiraalboren, lang
- Foret MP-X série longue
- Broca MP-X, serie larga
- Broca MP-X Longa

R453

- MP-X Drill Long Oil Feed
- MP-X Spiralbohrer, lang - Kühlkanal
- MP-X Spiraalboren, lang met koelkanalen
- Foret MP-X série longue à trous d'huile
- Broca MP-X, serie larga refrigeración interna
- Broca MP-X Longa Lubr.

R454	▪	1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 2.1 2.2 2.3 3.1 3.2 3.3 3.4 6.1 6.2 6.3 7.1 7.2 7.3 7.4
	•	2.4 4.1 4.2 4.3 6.4
R453	▪	1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 2.1 2.2 3.1 3.2 3.3 3.4 4.1 4.2 4.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4
	•	2.3 2.4

d_1 Ø m7 "/Nr./letter	d_1 Ø m7 mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Ø h6 mm	R454	R453
	3.00	0.1181	28	66	36	6	R4543.0	R4533.0
	3.10	0.1220	28	66	36	6	R4543.1	R4533.1
1/8	3.18	0.1252	28	66	36	6	R4541/8	R4531/8
	3.20	0.1260	28	66	36	6	R4543.2	R4533.2
30	3.26	0.1283	28	66	36	6	R454N30	R453N30
	3.30	0.1299	28	66	36	6	R4543.3	R4533.3
	3.40	0.1339	28	66	36	6	R4543.4	R4533.4
29	3.45	0.1358	28	66	36	6	R454N29	R453N29
	3.50	0.1378	28	66	36	6	R4543.5	R4533.5
28	3.57	0.1406	28	66	36	6	R454N28	R453N28
9/64	3.57	0.1406	28	66	36	6	R4549/64	R4539/64
	3.60	0.1417	28	66	36	6	R4543.6	R4533.6
27	3.66	0.1441	28	66	36	6	R454N27	R453N27
	3.70	0.1457	28	66	36	6	R4543.7	R4533.7
26	3.73	0.1469	36	74	36	6	R454N26	R453N26
25	3.80	0.1496	36	74	36	6	R454N25	R453N25

DORMER

d_1 Ø m7 "/Nr./letter	d_1 Ø m7 mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Ø h6 mm	R454	R453
	3.80	0.1496	36	74	36	6	R4543.8	R4533.8
24	3.86	0.1520	36	74	36	6	R454N24	R453N24
	3.90	0.1535	36	74	36	6	R4543.9	R4533.9
23	3.91	0.1539	36	74	36	6	R454N23	R453N23
5/32	3.97	0.1563	36	74	36	6	R4545/32	R4535/32
22	3.99	0.1571	36	74	36	6	R454N22	R453N22
	4.00	0.1575	36	74	36	6	R4544.0	R4534.0
21	4.04	0.1591	36	74	36	6	R454N21	R453N21
	4.05	0.1594	36	74	36	6		R4534.05
20	4.09	0.1610	36	74	36	6	R454N20	R453N20
	4.10	0.1614	36	74	36	6	R4544.1	R4534.1
	4.20	0.1654	36	74	36	6	R4544.2	R4534.2
19	4.22	0.1661	36	74	36	6	R454N19	R453N19
	4.30	0.1693	36	74	36	6	R4544.3	R4534.3
18	4.31	0.1697	36	74	36	6	R454N18	R453N18
11/64	4.37	0.1720	36	74	36	6	R45411/64	R45311/64
17	4.39	0.1728	36	74	36	6	R454N17	R453N17
	4.40	0.1732	36	74	36	6	R4544.4	R4534.4
	4.50	0.1772	36	74	36	6	R4544.5	R4534.5
16	4.50	0.1772	36	74	36	6	R454N16	R453N16
15	4.57	0.1799	36	74	36	6	R454N15	R453N15
	4.60	0.1811	36	74	36	6	R4544.6	R4534.6
14	4.62	0.1819	36	74	36	6	R454N14	R453N14
13	4.70	0.1850	36	74	36	6	R454N13	R453N13
	4.70	0.1850	36	74	36	6	R4544.7	R4534.7
3/16	4.76	0.1874	44	82	36	6	R4543/16	R4533/16
12	4.80	0.1890	44	82	36	6	R454N12	R453N12
	4.80	0.1890	44	82	36	6	R4544.8	R4534.8
11	4.85	0.1909	44	82	36	6	R454N11	R453N11
	4.90	0.1929	44	82	36	6	R4544.9	R4534.9
10	4.92	0.1937	44	82	36	6	R454N10	R453N10
9	4.98	0.1961	44	82	36	6	R454N9	R453N9
	5.00	0.1969	44	82	36	6	R4545.0	R4535.0
	5.05	0.1988	44	82	36	6		R4535.05
8	5.06	0.1992	44	82	36	6	R454N8	R453N8
	5.10	0.2008	44	82	36	6	R4545.1	R4535.1
7	5.11	0.2012	44	82	36	6	R454N7	R453N7
13/64	5.16	0.2031	44	82	36	6	R45413/64	R45313/64
6	5.18	0.2039	44	82	36	6	R454N6	R453N6
	5.20	0.2047	44	82	36	6	R4545.2	R4535.2
5	5.22	0.2055	44	82	36	6	R454N5	R453N5
4	5.31	0.2091	44	82	36	6	R454N4	R453N4
3	5.41	0.2130	44	82	36	6	R454N3	R453N3
	5.50	0.2165	44	82	36	6	R4545.5	R4535.5
7/32	5.56	0.2189	44	82	36	6	R4547/32	R4537/32
	5.60	0.2205	44	82	36	6	R4545.6	R4535.6
2	5.61	0.2209	44	82	36	6	R454N2	R453N2
	5.70	0.2244	44	82	36	6	R4545.7	R4535.7
1	5.79	0.2280	44	82	36	6	R454N1	R453N1
	5.80	0.2283	44	82	36	6	R4545.8	R4535.8
A	5.94	0.2339	44	82	36	6	R454A	R453A
15/64	5.95	0.2343	44	82	36	6	R45415/64	R45315/64
	6.00	0.2362	44	82	36	6	R4546.0	R4536.0
	6.05	0.2382	53	91	36	8		R4536.05
	6.10	0.2402	53	91	36	8	R4546.1	R4536.1
	6.20	0.2441	53	91	36	8	R4546.2	R4536.2
D	6.25	0.2461	53	91	36	8	R454D	R453D
	6.30	0.2480	53	91	36	8	R4546.3	R4536.3
1/4	6.35	0.2500	53	91	36	8	R4541/4	R4531/4
	6.40	0.2520	53	91	36	8	R4546.4	R4536.4
	6.50	0.2559	53	91	36	8	R4546.5	R4536.5
	6.60	0.2598	53	91	36	8	R4546.6	R4536.6
	6.70	0.2638	53	91	36	8	R4546.7	R4536.7
17/64	6.75	0.2657	53	91	36	8	R45417/64	R45317/64
H	6.76	0.2661	53	91	36	8	R454H	R453H
	6.80	0.2677	53	91	36	8	R4546.8	R4536.8
	6.90	0.2717	53	91	36	8	R4546.9	R4536.9
	7.00	0.2756	53	91	36	8	R4547.0	R4537.0
	7.10	0.2795	53	91	36	8	R4547.1	R4537.1

d_1 Ø m7 "/Nr./letter	d_1 Ø m7 mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Ø h6 mm	R454	R453
9/32	7.14	0.2811	53	91	36	8	R4549/32	R4539/32
	7.30	0.2874	53	91	36	8	R4547.3	R4537.3
L	7.37	0.2902	53	91	36	8	R454L	R453L
	7.40	0.2913	53	91	36	8	R4547.4	R4537.4
M	7.49	0.2949	53	91	36	8	R454M	R453M
	7.50	0.2953	53	91	36	8	R4547.5	R4537.5
19/64	7.54	0.2969	53	91	36	8	R45419/64	R45319/64
	7.60	0.2992	53	91	36	8	R4547.6	R4537.6
N	7.67	0.3020	53	91	36	8	R454N	R453N
	7.70	0.3031	53	91	36	8	R4547.7	R4537.7
	7.80	0.3071	53	91	36	8	R4547.8	R4537.8
	7.90	0.3110	53	91	36	8	R4547.9	R4537.9
5/16	7.94	0.3126	53	91	36	8	R4545/16	R4535/16
	8.00	0.3150	53	91	36	8	R4548.0	R4538.0
O	8.03	0.3161	61	103	40	10	R454O	R453O
	8.05	0.3169	61	103	40	10		R4538.05
	8.10	0.3189	61	103	40	10	R4548.1	R4538.1
	8.20	0.3228	61	103	40	10	R4548.2	R4538.2
21/64	8.33	0.3280	61	103	40	10	R45421/64	R45321/64
	8.40	0.3307	61	103	40	10	R4548.4	R4538.4
Q	8.43	0.3319	61	103	40	10	R454Q	R453Q
	8.50	0.3346	61	103	40	10	R4548.5	R4538.5
	8.60	0.3386	61	103	40	10	R4548.6	R4538.6
	8.70	0.3425	61	103	40	10	R4548.7	R4538.7
11/32	8.73	0.3437	61	103	40	10	R45411/32	R45311/32
	8.80	0.3465	61	103	40	10	R4548.8	R4538.8
	8.90	0.3504	61	103	40	10	R4548.9	R4538.9
	9.00	0.3543	61	103	40	10	R4549.0	R4539.0
T	9.09	0.3579	61	103	40	10	R454T	R453T
	9.10	0.3583	61	103	40	10	R4549.1	R4539.1
23/64	9.13	0.3594	61	103	40	10	R45423/64	R45323/64
	9.30	0.3661	61	103	40	10	R4549.3	R4539.3
U	9.35	0.3681	61	103	40	10	R454U	R453U
	9.40	0.3701	61	103	40	10	R4549.4	R4539.4
	9.50	0.3740	61	103	40	10	R4549.5	R4539.5
3/8	9.52	0.3748	61	103	40	10	R4543/8	R4533/8
	9.60	0.3780	61	103	40	10	R4549.6	R4539.6
	9.70	0.3819	61	103	40	10	R4549.7	R4539.7
	9.80	0.3858	61	103	40	10	R4549.8	R4539.8
	9.90	0.3898	61	103	40	10	R4549.9	R4539.9
25/64	9.92	0.3906	61	103	40	10	R45425/64	R45325/64
	10.00	0.3937	61	103	40	10	R45410.0	R45310.0
	10.05	0.3957	70	118	45	12		R45310.05
X	10.08	0.3969	70	118	45	12	R454X	R453X
	10.10	0.3976	70	118	45	12	R45410.1	R45310.1
	10.20	0.4016	70	118	45	12	R45410.2	R45310.2
Y	10.26	0.4039	70	118	45	12	R454Y	R453Y
	10.30	0.4055	70	118	45	12	R45410.3	R45310.3
13/32	10.32	0.4063	70	118	45	12	R45413/32	R45313/32
	10.40	0.4094	70	118	45	12	R45410.4	R45310.4
Z	10.49	0.4130	70	118	45	12	R454Z	R453Z
	10.50	0.4134	70	118	45	12	R45410.5	R45310.5
	10.60	0.4173	70	118	45	12	R45410.6	R45310.6
27/64	10.72	0.4220	70	118	45	12	R45427/64	R45327/64
	11.00	0.4331	70	118	45	12	R45411.0	R45311.0
7/16	11.11	0.4374	70	118	45	12	R4547/16	R4537/16
	11.20	0.4409	70	118	45	12	R45411.2	R45311.2
	11.40	0.4488	70	118	45	12	R45411.4	R45311.4
	11.50	0.4528	70	118	45	12	R45411.5	R45311.5
29/64	11.51	0.4531	70	118	45	12	R45429/64	R45329/64
	11.60	0.4567	70	118	45	12	R45411.6	R45311.6
	11.80	0.4646	70	118	45	12	R45411.8	R45311.8
15/32	11.91	0.4689	70	118	45	12	R45415/32	R45315/32
	12.00	0.4724	70	118	45	12	R45412.0	R45312.0
	12.05	0.4744	76	124	45	14		R45312.05
	12.10	0.4764	76	124	45	14	R45412.1	
	12.20	0.4803	76	124	45	14	R45412.2	R45312.2
31/64	12.30	0.4843	76	124	45	14	R45431/64	R45331/64
	12.50	0.4921	76	124	45	14	R45412.5	R45312.5
	12.70	0.5000	76	124	45	14	R45412.7	R45312.7

d_1 Ø m7 "/Nr./letter	d_1 Ø m7 mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Ø h6 mm	R454	R453
1/2	12.70	0.5000	76	124	45	14	R4541/2	R4531/2
	12.80	0.5039	76	124	45	14	R45412.8	R45312.8
	13.00	0.5118	76	124	45	14	R45413.0	R45313.0
33/64	13.10	0.5157	76	124	45	14	R45433/64	R45333/64
17/32	13.49	0.5311	76	124	45	14	R45417/32	R45317/32
	13.50	0.5315	76	124	45	14	R45413.5	R45313.5
	13.80	0.5433	76	124	45	14	R45413.8	R45313.8
35/64	13.89	0.5469	76	124	45	14	R45435/64	R45335/64
	14.00	0.5512	76	124	45	14	R45414.0	R45314.0
	14.25	0.5610	82	133	48	16	R45414.25	R45314.25
9/16	14.29	0.5626	82	133	48	16	R4549/16	R4539/16
	14.50	0.5709	82	133	48	16	R45414.5	R45314.5
37/64	14.68	0.5780	82	133	48	16	R45437/64	R45337/64
	14.80	0.5827	82	133	48	16	R45414.8	R45314.8
	15.00	0.5906	82	133	48	16	R45415.0	R45315.0
19/32	15.08	0.5937	82	133	48	16	R45419/32	R45319/32
	15.10	0.5945	82	133	48	16	R45415.1	R45315.1
39/64	15.48	0.6094	82	133	48	16	R45439/64	R45339/64
	15.50	0.6102	82	133	48	16	R45415.5	R45315.5
	15.80	0.6220	82	133	48	16	R45415.8	R45315.8
5/8	15.88	0.6252	82	133	48	16	R4545/8	R4535/8
	16.00	0.6299	82	133	48	16	R45416.0	R45316.0
41/64	16.27	0.6406	91	143	48	18	R45441/64	R45341/64
	16.50	0.6496	91	143	48	18	R45416.5	R45316.5
21/32	16.67	0.6563	91	143	48	18	R45421/32	R45321/32
	17.00	0.6693	91	143	48	18	R45417.0	R45317.0
43/64	17.07	0.6720	91	143	48	18	R45443/64	R45343/64
11/16	17.46	0.6874	91	143	48	18	R45411/16	R45311/16
	17.50	0.6890	91	143	48	18	R45417.5	R45317.5
	17.80	0.7008	91	143	48	18	R45417.8	R45317.8
45/64	17.86	0.7031	91	143	48	18	R45445/64	R45345/64
	18.00	0.7087	91	143	48	18	R45418.0	R45318.0
23/32	18.26	0.7189	99	143	48	20		R45323/32
23/32	18.26	0.7189	99	153	50	20	R45423/32	
	18.50	0.7283	99	153	50	20	R45418.5	R45318.5
47/64	18.65	0.7343	99	153	50	20	R45447/64	R45347/64
	19.00	0.7480	99	153	50	20	R45419.0	R45319.0
3/4	19.05	0.7500	99	153	50	20	R4543/4	R4533/4
	19.50	0.7677	99	153	50	20	R45419.5	R45319.5
	19.80	0.7795	99	153	50	20	R45419.8	R45319.8
	20.00	0.7874	99	153	50	20	R45420.0	R45320.0

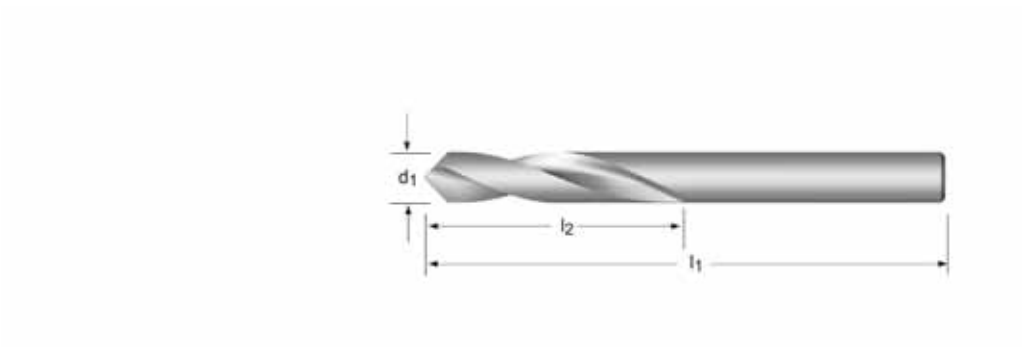
A122 DIN 1897 | 1XD | HSS | 90° / 120° | N

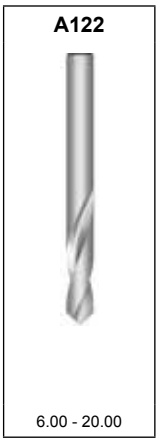
A122

- Spotting Drill — Overall Length to DIN 1897
- NC-Anbohrer — Gesamtlänge nach DIN 1897
- NC-centerboor — Totale lengte vlgs. DIN 1897
- Forets de dessoudage — Longueur totale selon la DIN 1897
- Broca para centrados — Longitud total según DIN 1897
- Broca Extra Curta — Comprimento Total conforme DIN 1898

A122

▪	1.1	1.2	1.3	6.1	6.2	6.3	6.4	7.1	7.2											
•	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	7.3	7.4	8.1	8.2
	8.3	9.1																		





d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A122
6.00	0.2362	30	66	A1226.0X90
6.00	0.2362	30	66	A1226.0X120
8.00	0.3150	33	79	A1228.0X90
8.00	0.3150	33	79	A1228.0X120
10.00	0.3937	35	89	A12210.0X90
10.00	0.3937	35	89	A12210.0X120
12.00	0.4724	40	102	A12212.0X90
12.00	0.4724	40	102	A12212.0X120
16.00	0.6299	40	115	A12216.0X90
16.00	0.6299	40	115	A12216.0X120
20.00	0.7874	55	131	A12220.0X90
20.00	0.7874	55	131	A12220.0X120

A120	DIN 1897	2.5XD	HSS		135°	ST		N		L115 c 108
A022	DIN ANSI	2.5XD	HSS		135°	TiN		N		A088 a 99
A117	DIN 1897	2.5XD	HSS-E		135°	Bronze		N		

A120

- Stub Drill — Bright below 1.0mm. 118º point up to 2.9mm and over 13.0mm
- Spiralbohrer, kurz — Blank bis Ø 1 mm, 118° Kegelmantelanschliff bis Ø 2,9 mm und über Ø 13,0 mm
- Extra korte spiraalboren — Blank beneden 1,0mm. 118º punt tot 2,9mm en boven 13,0mm
- Foret extra-court — Brillant au dessous de 1,0 mm. Pointe à 118° jusqu'au Ø 2,9 mm et au dessus du Ø 13,0 mm
- Broca extra corta — Brillante por debajo de 1,0mm.punta 118º hasta 2,9 mm y por encima de 13,0 mm
- Broca extra corta — Brilhante Abaixo de 1.0mm. Ângulo da Ponta 118ª até 2,9mm e acima de 13.0mm

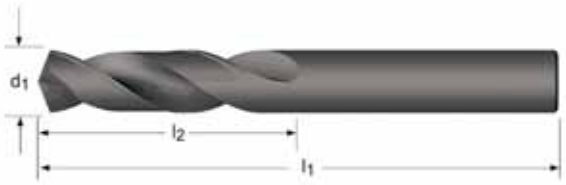
A022

- 022 Stub Drill — Bright below 2.0mm, TiN Tipped and Split Point 2.0mm and above
- 022 Spiralbohrer, kurz — Blank bis 2,0 mm, TiN-tip beschichtet mit Kreuzanschliff ab 2,0 mm
- 022 Extra korte spiraalboren — Blank tot 2.0 mm, TiN-Tip gecoat met Kruisslijping vanaf 2.0 mm
- 022 Foret extra-court — Brillant en dessous de 2,0mm, TIN en pointe et affutage en croix au dessus de 2,0 mm (y inclus)
- 022 Broca extra corta — Brillante por debajo de 2.0mm, Punta de TiN y rectificado de la punta a partir 2.0mm
- 022 Broca extra corta — Brillante por debajo de 2.0mm, Punta de TiN y rectificado de la punta a partir 2.0mm

A117

- Stub Drill — 118º point up to 1.5mm
- Spiralbohrer, kurz — Kegelmantelanschliff 118° bis Ø 1,5mm
- Extra korte spiraalboren — 118º punt tot 1,5mm
- Foret extra-court — Pointe à 118° jusqu'au Ø 1,5 mm
- Broca extra corta — punta de 118º hasta 1,5mm
- Broca extra corta — Ângulo da Ponta 118º até 1.5mm

A120	▪	1.1	1.2	1.3	1.4	2.1	3.1	3.2	3.3	4.1											
	•	1.5	1.6	2.2	2.3	3.4	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.1	7.2	7.3	7.4	8.1	8.2
		8.3	9.1																		
A022	▪	1.1	1.2	1.3	1.4	1.5	2.1	3.1	3.2	3.3	4.1	7.1	7.2	7.3							
	•	1.6	2.2	2.3	3.4	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.4	8.1	8.2	8.3	9.1		
A117	▪	1.5	1.6	2.1	2.2	2.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	9.1							
	•	1.1	1.2	1.3	1.4	3.1	3.2	3.3	6.1	6.2	6.3	6.4	7.1	7.2	7.3	7.4	8.1	8.2	8.3		



d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A120	A022	A117
	0.50	0.0197	3	20	A120.5	A022.5	
	0.60	0.0236	3.5	21	A120.6	A022.6	
	0.70	0.0276	4.5	23	A120.7	A022.7	
1/32	0.79	0.0311	13	35		A0221/32	

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A120	A022	A117
1/32	0.79	0.0311	5	24	A1201/32		
	0.80	0.0315	5	24	A120.8	A022.8	
	0.90	0.0354	5.5	25	A120.9	A022.9	
	1.00	0.0394	6	26	A1201.0	A0221.0	A1171.0
	1.10	0.0433	7	28	A1201.1	A0221.1	A1171.1
3/64	1.19	0.0469	13	35		A0223/64	
3/64	1.19	0.0469	8	30	A1203/64		
	1.20	0.0472	8	30	A1201.2	A0221.2	A1171.2
	1.30	0.0512	8	30	A1201.3	A0221.3	A1171.3
	1.40	0.0551	9	32	A1201.4	A0221.4	A1171.4
	1.50	0.0591	9	32	A1201.5	A0221.5	A1171.5
1/16	1.59	0.0626	10	34	A1201/16		
1/16	1.59	0.0626	16	41		A0221/16	
	1.60	0.0630	10	34	A1201.6	A0221.6	A1171.6
	1.70	0.0669	10	34	A1201.7	A0221.7	A1171.7
	1.80	0.0709	11	36	A1201.8	A0221.8	A1171.8
	1.90	0.0748	11	36	A1201.9	A0221.9	A1171.9
5/64	1.98	0.0780	12	38	A1205/64		
5/64	1.98	0.0780	17	43		A0225/64	
	2.00	0.0787	12	38	A1202.0	A0222.0	A1172.0
	2.10	0.0827	12	38	A1202.1	A0222.1	A1172.1
	2.20	0.0866	13	40	A1202.2	A0222.2	A1172.2
	2.25	0.0886	13	40	A1202.25	A0222.25	
	2.30	0.0906	13	40	A1202.3	A0222.3	A1172.3
3/32	2.38	0.0937	14	43	A1203/32		
3/32	2.38	0.0937	20	45		A0223/32	
	2.40	0.0945	14	43	A1202.4	A0222.4	A1172.4
	2.50	0.0984	14	43	A1202.5	A0222.5	A1172.5
	2.60	0.1024	14	43	A1202.6	A0222.6	A1172.6
	2.65	0.1043	14	43	A1202.65	A0222.65	
	2.70	0.1063	16	46	A1202.7	A0222.7	A1172.7
7/64	2.78	0.1094	16	46	A1207/64		
7/64	2.78	0.1094	22	47		A0227/64	
	2.80	0.1102	16	46	A1202.8	A0222.8	A1172.8
	2.90	0.1142	16	46	A1202.9	A0222.9	A1172.9
	3.00	0.1181	16	46	A1203.0	A0223.0	A1173.0
	3.10	0.1220	18	49	A1203.1	A0223.1	A1173.1
1/8	3.18	0.1252	18	49	A1201/8		A1171/8
1/8	3.18	0.1252	23	49		A0221/8	
	3.20	0.1260	18	49	A1203.2	A0223.2	A1173.2
	3.25	0.1280	18	49	A1203.25	A0223.25	
	3.30	0.1299	18	49	A1203.3	A0223.3	A1173.3
	3.40	0.1339	20	52	A1203.4	A0223.4	A1173.4
	3.50	0.1378	20	52	A1203.5	A0223.5	A1173.5
9/64	3.57	0.1406	20	52	A1209/64		
9/64	3.57	0.1406	25	50		A0229/64	
	3.60	0.1417	20	52	A1203.6	A0223.6	A1173.6
	3.70	0.1457	20	52	A1203.7	A0223.7	A1173.7
	3.80	0.1496	22	55	A1203.8	A0223.8	A1173.8
	3.90	0.1535	22	55	A1203.9	A0223.9	A1173.9
5/32	3.97	0.1563	22	55	A1205/32		A1175/32
5/32	3.97	0.1563	26	53		A0225/32	
	4.00	0.1575	22	55	A1204.0	A0224.0	A1174.0
	4.10	0.1614	22	55	A1204.1	A0224.1	A1174.1
	4.20	0.1654	22	55	A1204.2	A0224.2	A1174.2
	4.30	0.1693	24	58	A1204.3	A0224.3	A1174.3
11/64	4.37	0.1720	24	58	A12011/64		
11/64	4.37	0.1720	28	55		A02211/64	
	4.40	0.1732	24	58	A1204.4	A0224.4	A1174.4
	4.50	0.1772	24	58	A1204.5	A0224.5	A1174.5
	4.60	0.1811	24	58	A1204.6	A0224.6	A1174.6
	4.70	0.1850	24	58	A1204.7	A0224.7	A1174.7
3/16	4.76	0.1874	26	62	A1203/16		A1173/16
3/16	4.76	0.1874	30	57		A0223/16	
	4.80	0.1890	26	62	A1204.8	A0224.8	A1174.8
	4.90	0.1929	26	62	A1204.9	A0224.9	A1174.9
	5.00	0.1969	26	62	A1205.0	A0225.0	A1175.0
	5.10	0.2008	26	62	A1205.1	A0225.1	A1175.1

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A120	A022	A117
13/64	5.16	0.2031	26	62	A12013/64		
13/64	5.16	0.2031	31	58		A02213/64	
	5.20	0.2047	26	62	A1205.2	A0225.2	A1175.2
	5.30	0.2087	26	62	A1205.3	A0225.3	A1175.3
	5.40	0.2126	28	66	A1205.4	A0225.4	A1175.4
	5.50	0.2165	28	66	A1205.5	A0225.5	A1175.5
7/32	5.56	0.2189	28	66	A1207/32		
7/32	5.56	0.2189	33	61		A0227/32	
	5.60	0.2205	28	66	A1205.6	A0225.6	A1175.6
	5.70	0.2244	28	66	A1205.7	A0225.7	A1175.7
	5.80	0.2283	28	66	A1205.8	A0225.8	A1175.8
	5.90	0.2323	28	66	A1205.9	A0225.9	A1175.9
15/64	5.95	0.2343	28	66	A12015/64		
15/64	5.95	0.2343	34	63		A02215/64	
	6.00	0.2362	28	66	A1206.0	A0226.0	A1176.0
	6.10	0.2402	31	70	A1206.1	A0226.1	A1176.1
	6.20	0.2441	31	70	A1206.2	A0226.2	A1176.2
	6.30	0.2480	31	70	A1206.3	A0226.3	A1176.3
1/4	6.35	0.2500	31	70	A1201/4		A1171/4
1/4	6.35	0.2500	36	65		A0221/4	
	6.40	0.2520	31	70	A1206.4	A0226.4	A1176.4
	6.50	0.2559	31	70	A1206.5	A0226.5	A1176.5
	6.60	0.2598	31	70	A1206.6	A0226.6	A1176.6
	6.70	0.2638	31	70	A1206.7	A0226.7	A1176.7
	6.80	0.2677	34	74	A1206.8	A0226.8	A1176.8
	6.90	0.2717	34	74	A1206.9	A0226.9	A1176.9
	7.00	0.2756	34	74	A1207.0	A0227.0	A1177.0
	7.10	0.2795	34	74	A1207.1	A0227.1	A1177.1
9/32	7.14	0.2811	34	74	A1209/32		
9/32	7.14	0.2811	40	70		A0229/32	
	7.20	0.2835	34	74	A1207.2	A0227.2	A1177.2
	7.30	0.2874	34	74	A1207.3	A0227.3	A1177.3
	7.40	0.2913	34	74	A1207.4	A0227.4	A1177.4
	7.50	0.2953	34	74	A1207.5	A0227.5	A1177.5
	7.60	0.2992	37	79	A1207.6	A0227.6	A1177.6
	7.70	0.3031	37	79	A1207.7	A0227.7	A1177.7
	7.80	0.3071	37	79	A1207.8	A0227.8	A1177.8
	7.90	0.3110	37	79	A1207.9	A0227.9	A1177.9
5/16	7.94	0.3126	37	79	A1205/16		A1175/16
5/16	7.94	0.3126	43	73		A0225/16	
	8.00	0.3150	37	79	A1208.0	A0228.0	A1178.0
	8.10	0.3189	37	79	A1208.1	A0228.1	A1178.1
	8.20	0.3228	37	79	A1208.2	A0228.2	A1178.2
	8.30	0.3268	37	79	A1208.3	A0228.3	A1178.3
	8.40	0.3307	37	79	A1208.4	A0228.4	A1178.4
	8.50	0.3346	37	79	A1208.5	A0228.5	A1178.5
	8.60	0.3386	40	84	A1208.6	A0228.6	A1178.6
	8.70	0.3425	40	84	A1208.7	A0228.7	A1178.7
11/32	8.73	0.3437	40	84	A12011/32		
11/32	8.73	0.3437	45	78		A02211/32	
	8.80	0.3465	40	84	A1208.8	A0228.8	A1178.8
	8.90	0.3504	40	84	A1208.9	A0228.9	A1178.9
	9.00	0.3543	40	84	A1209.0	A0229.0	A1179.0
	9.10	0.3583	40	84	A1209.1	A0229.1	A1179.1
	9.20	0.3622	40	84	A1209.2	A0229.2	A1179.2
	9.30	0.3661	40	84	A1209.3	A0229.3	A1179.3
	9.40	0.3701	40	84	A1209.4	A0229.4	A1179.4
	9.50	0.3740	40	84	A1209.5	A0229.5	A1179.5
3/8	9.52	0.3748	43	89	A1203/8		A1173/8
3/8	9.52	0.3748	48	81		A0223/8	
	9.60	0.3780	43	89	A1209.6	A0229.6	A1179.6
	9.70	0.3819	43	89	A1209.7	A0229.7	A1179.7
	9.80	0.3858	43	89	A1209.8	A0229.8	A1179.8
	9.90	0.3898	43	89	A1209.9	A0229.9	A1179.9
	10.00	0.3937	43	89	A12010.0	A02210.0	A11710.0
	10.10	0.3976	43	89	A12010.1	A02210.1	
	10.20	0.4016	43	89	A12010.2	A02210.2	A11710.2
	10.30	0.4055	43	89	A12010.3	A02210.3	

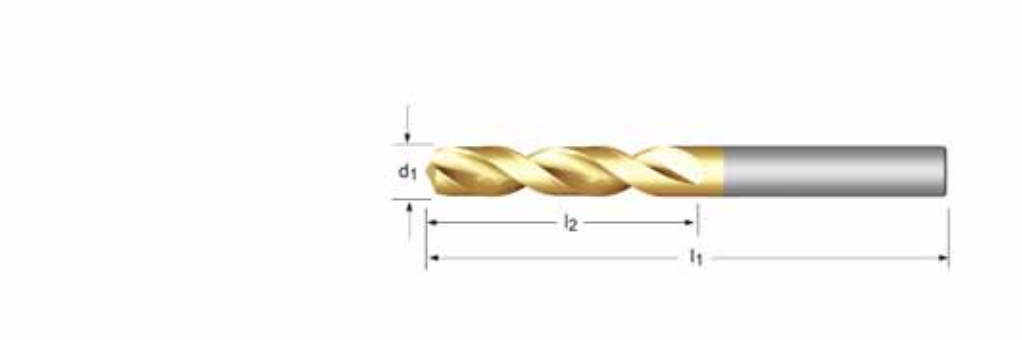
d_1 $\varnothing h_8$ Inch	d_1 $\varnothing h_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A120	A022	A117
13/32	10.32	0.4063	43	89	A12013/32		
13/32	10.32	0.4063	51	86		A02213/32	
	10.40	0.4094	43	89	A12010.4	A02210.4	
	10.50	0.4134	43	89	A12010.5	A02210.5	A11710.5
	10.60	0.4173	43	89	A12010.6	A02210.6	
	10.70	0.4213	47	95	A12010.7	A02210.7	
	10.80	0.4252	47	95	A12010.8	A02210.8	
	10.90	0.4291	47	95	A12010.9	A02210.9	
	11.00	0.4331	47	95	A12011.0	A02211.0	A11711.0
	11.10	0.4370	47	95	A12011.1	A02211.1	
7/16	11.11	0.4374	47	95	A1207/16		
7/16	11.11	0.4374	54	89		A0227/16	
	11.20	0.4409	47	95	A12011.2	A02211.2	
	11.30	0.4449	47	95	A12011.3	A02211.3	
	11.50	0.4528	47	95	A12011.5	A02211.5	A11711.5
	11.60	0.4567	47	95	A12011.6	A02211.6	
	11.70	0.4606	47	95	A12011.7	A02211.7	
	11.80	0.4646	47	95	A12011.8	A02211.8	
	11.90	0.4685	51	102	A12011.9	A02211.9	
	12.00	0.4724	51	102	A12012.0	A02212.0	A11712.0
	12.10	0.4764	51	102	A12012.1	A02212.1	
	12.20	0.4803	51	102	A12012.2	A02212.2	
	12.50	0.4921	51	102	A12012.5	A02212.5	
1/2	12.70	0.5000	51	102	A1201/2		A1171/2
1/2	12.70	0.5000	60	98		A0221/2	
	13.00	0.5118	51	102	A12013.0	A02213.0	A11713.0
	13.50	0.5315	54	107	A12013.5	A02213.5	
	14.00	0.5512	54	107	A12014.0	A02214.0	
9/16	14.29	0.5626	56	111	A1209/16		
9/16	14.29	0.5626	67	105		A0229/16	
	14.50	0.5709	56	111	A12014.5	A02214.5	
	15.00	0.5906	56	111	A12015.0	A02215.0	
	15.50	0.6102	58	115	A12015.5	A02215.5	
5/8	15.88	0.6252	58	115	A1205/8		
5/8	15.88	0.6252	73	111		A0225/8	
	16.00	0.6299	58	115	A12016.0	A02216.0	
	16.50	0.6496	60	119	A12016.5		
	17.00	0.6693	60	119	A12017.0		
11/16	17.46	0.6874	62	123	A12011/16		
	17.50	0.6890	62	123	A12017.5		
	18.00	0.7087	62	123	A12018.0		
	18.50	0.7283	64	127	A12018.5		
	19.00	0.7480	64	127	A12019.0		
3/4	19.05	0.7500	66	131	A1203/4		
	19.50	0.7677	66	131	A12019.5		
	20.00	0.7874	66	131	A12020.0		
	20.50	0.8071	68	136	A12020.5		
13/16	20.64	0.8126	68	136	A12013/16		
	21.00	0.8268	68	136	A12021.0		
	22.00	0.8661	70	141	A12022.0		
7/8	22.22	0.8748	70	141	A1207/8		
	23.00	0.9055	72	146	A12023.0		
15/16	23.81	0.9374	75	151	A12015/16		
	24.00	0.9449	75	151	A12024.0		
	25.00	0.9843	75	151	A12025.0		

A520 DIN 1897 2.5XD HSS 130° TiN

A520

- ADX Stub Drill
- ADX Spiralbohrer, kurz
- ADX Extra korte spiraalboren
- Foret extra-court ADX
- Broca ADX , serie extra corta
- Broca ADX Extra Curta

A520	▪	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.1	4.2	6.2	6.3	7.2	7.3	7.4	8.2	8.3
	▪	1.6	4.3	5.1	5.2	5.3	6.1	6.4	7.1	8.1												



d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A520
	3.00	0.1181	16	46	A5203.0
	3.10	0.1220	18	49	A5203.1
1/8	3.18	0.1252	18	49	A5201/8
	3.20	0.1260	18	49	A5203.2
	3.30	0.1299	18	49	A5203.3
	3.40	0.1339	20	52	A5203.4
	3.50	0.1378	20	52	A5203.5
9/64	3.57	0.1406	20	52	A5209/64
	3.60	0.1417	20	52	A5203.6
	3.70	0.1457	20	52	A5203.7
	3.80	0.1496	22	55	A5203.8
	3.90	0.1535	22	55	A5203.9
5/32	3.97	0.1563	22	55	A5205/32
	4.00	0.1575	22	55	A5204.0
	4.10	0.1614	22	55	A5204.1
	4.20	0.1654	22	55	A5204.2
	4.30	0.1693	24	58	A5204.3
11/64	4.37	0.1720	24	58	A52011/64
	4.40	0.1732	24	58	A5204.4
	4.50	0.1772	24	58	A5204.5
	4.60	0.1811	24	58	A5204.6
	4.70	0.1850	24	58	A5204.7
3/16	4.76	0.1874	26	62	A5203/16
	4.80	0.1890	26	62	A5204.8
	4.90	0.1929	26	62	A5204.9
	5.00	0.1969	26	62	A5205.0
	5.10	0.2008	26	62	A5205.1
13/64	5.16	0.2031	26	62	A52013/64
	5.20	0.2047	26	62	A5205.2
	5.30	0.2087	26	62	A5205.3
	5.40	0.2126	28	66	A5205.4

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A520
	5.50	0.2165	28	66	A5205.5
7/32	5.56	0.2189	28	66	A5207/32
	5.60	0.2205	28	66	A5205.6
	5.70	0.2244	28	66	A5205.7
	5.80	0.2283	28	66	A5205.8
	5.90	0.2323	28	66	A5205.9
15/64	5.95	0.2343	28	66	A52015/64
	6.00	0.2362	28	66	A5206.0
	6.10	0.2402	31	70	A5206.1
	6.20	0.2441	31	70	A5206.2
	6.30	0.2480	31	70	A5206.3
1/4	6.35	0.2500	31	70	A5201/4
	6.40	0.2520	31	70	A5206.4
	6.50	0.2559	31	70	A5206.5
	6.60	0.2598	31	70	A5206.6
	6.70	0.2638	31	70	A5206.7
17/64	6.75	0.2657	34	74	A52017/64
	6.80	0.2677	34	74	A5206.8
	6.90	0.2717	34	74	A5206.9
	7.00	0.2756	34	74	A5207.0
	7.10	0.2795	34	74	A5207.1
9/32	7.14	0.2811	34	74	A5209/32
	7.20	0.2835	34	74	A5207.2
	7.30	0.2874	34	74	A5207.3
	7.40	0.2913	34	74	A5207.4
	7.50	0.2953	34	74	A5207.5
19/64	7.54	0.2969	37	79	A52019/64
	7.60	0.2992	37	79	A5207.6
	7.70	0.3031	37	79	A5207.7
	7.80	0.3071	37	79	A5207.8
	7.90	0.3110	37	79	A5207.9
5/16	7.94	0.3126	37	79	A5205/16
	8.00	0.3150	37	79	A5208.0
	8.10	0.3189	37	79	A5208.1
	8.20	0.3228	37	79	A5208.2
	8.30	0.3268	37	79	A5208.3
21/64	8.33	0.3280	37	79	A52021/64
	8.40	0.3307	37	79	A5208.4
	8.50	0.3346	37	79	A5208.5
	8.60	0.3386	40	84	A5208.6
	8.70	0.3425	40	84	A5208.7
11/32	8.73	0.3437	40	84	A52011/32
	8.80	0.3465	40	84	A5208.8
	8.90	0.3504	40	84	A5208.9
	9.00	0.3543	40	84	A5209.0
	9.10	0.3583	40	84	A5209.1
23/64	9.13	0.3594	40	84	A52023/64
	9.20	0.3622	40	84	A5209.2
	9.30	0.3661	40	84	A5209.3
	9.40	0.3701	40	84	A5209.4
	9.50	0.3740	40	84	A5209.5
3/8	9.52	0.3748	43	89	A5203/8
	9.60	0.3780	43	89	A5209.6
	9.70	0.3819	43	89	A5209.7
	9.80	0.3858	43	89	A5209.8
	9.90	0.3898	43	89	A5209.9
25/64	9.92	0.3906	43	89	A52025/64
	10.00	0.3937	43	89	A52010.0
	10.10	0.3976	43	89	A52010.1
	10.20	0.4016	43	89	A52010.2
	10.30	0.4055	43	89	A52010.3
13/32	10.32	0.4063	43	89	A52013/32
	10.40	0.4094	43	89	A52010.4
	10.50	0.4134	43	89	A52010.5
	10.60	0.4173	43	89	A52010.6
	10.70	0.4213	47	95	A52010.7
27/64	10.72	0.4220	47	95	A52027/64
	10.80	0.4252	47	95	A52010.8
	10.90	0.4291	47	95	A52010.9

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A520
	11.00	0.4331	47	95	A52011.0
	11.10	0.4370	47	95	A52011.1
7/16	11.11	0.4374	47	95	A5207/16
	11.20	0.4409	47	95	A52011.2
	11.30	0.4449	47	95	A52011.3
	11.40	0.4488	47	95	A52011.4
	11.50	0.4528	47	95	A52011.5
29/64	11.51	0.4531	47	95	A52029/64
	11.60	0.4567	47	95	A52011.6
	11.70	0.4606	47	95	A52011.7
	11.80	0.4646	47	95	A52011.8
	11.90	0.4685	51	102	A52011.9
15/32	11.91	0.4689	51	102	A52015/32
	12.00	0.4724	51	102	A52012.0
	12.10	0.4764	51	102	A52012.1
	12.20	0.4803	51	102	A52012.2
	12.30	0.4843	51	102	A52012.3
31/64	12.30	0.4843	51	102	A52031/64
	12.40	0.4882	51	102	A52012.4
	12.50	0.4921	51	102	A52012.5
	12.60	0.4961	51	102	A52012.6
	12.70	0.5000	51	102	A52012.7
1/2	12.70	0.5000	51	102	A5201/2
	12.80	0.5039	51	102	A52012.8
	12.90	0.5079	51	102	A52012.9
	13.00	0.5118	51	102	A52013.0

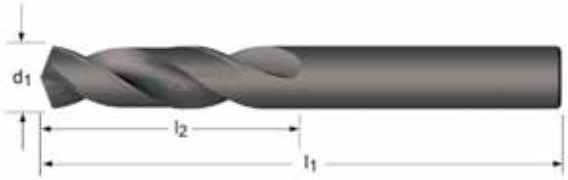
A124 DIN 8037 | 2.5XD | HSS HM | 118° | ST | H

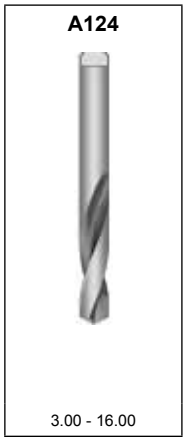
A124

- Stub Drill 4 facet
- Spiralbohrer, kurz, 4-Flächenanschliff
- Extra korte spiraalboren met 4-vlakspunt
- Foret extra-court 4 facettes
- Broca extra corta 4 caras
- Broca extra corta 4 Faces

Tang to DIN 1809
mit Mitnehmer DIN 1809
Met lip DIN 1809
Tenon selon la DIN 1809
Lengüeta según DIN 1809
Lingueta DIN 1809

A124 ▪ 3.1 3.2 3.3 3.4
▪ 1.5 1.6 2.2 2.3 4.1 4.2 4.3 5.1 5.2 5.3 6.2 6.3 6.4 8.2 9.1





d_1 Ø mm	d_1 decimal Inch	l_2 mm	l_1 mm	A124
3.00	0.1181	20	50	A1243.0
3.20	0.1260	25	56	A1243.2
3.50	0.1378	25	56	A1243.5
4.00	0.1575	25	56	A1244.0
4.20	0.1654	28	63	A1244.2
4.50	0.1772	28	63	A1244.5
4.80	0.1890	28	63	A1244.8
5.00	0.1969	28	63	A1245.0
5.20	0.2047	32	71	A1245.2
5.50	0.2165	32	71	A1245.5
5.80	0.2283	32	71	A1245.8
6.00	0.2362	32	71	A1246.0
6.50	0.2559	32	71	A1246.5
6.80	0.2677	40	80	A1246.8
7.00	0.2756	40	80	A1247.0
7.50	0.2953	40	80	A1247.5
8.00	0.3150	40	80	A1248.0
8.50	0.3346	50	90	A1248.5
9.00	0.3543	50	90	A1249.0
9.50	0.3740	50	90	A1249.5
10.00	0.3937	56	100	A12410.0
10.50	0.4134	56	100	A12410.5
11.00	0.4331	56	100	A12411.0
11.50	0.4528	63	112	A12411.5
12.00	0.4724	63	112	A12412.0
13.00	0.5118	63	112	A12413.0
14.00	0.5512	71	125	A12414.0
15.00	0.5906	71	125	A12415.0
16.00	0.6299	80	140	A12416.0

DORMER

A720 DIN 1899 | 2.5XD | HSS-E | 118° | N

A720

- Micro Drill
- Kleinstbohrer
- Microboor
- Micro foret
- Micro Broca
- Micro Brocas

A720 ▪ 1.1 1.2 1.3 1.4 3.1 3.2

▪ 1.5 1.6 2.1 2.2 2.3 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 8.2

d_1 Ø mm	d_1 decimal Inch	l_2 mm	l_1 mm	d_2 Ø mm	A720
0.15	0.0059	1.0	25	1	A720.15
0.16	0.0063	1.4	25	1	A720.16
0.17	0.0067	1.4	25	1	A720.17
0.18	0.0070	1.4	25	1	A720.18
0.20	0.0078	1.8	25	1	A720.2
0.22	0.0087	1.8	25	1	A720.22
0.25	0.0098	2.2	25	1	A720.25
0.27	0.0106	2.2	25	1	A720.27
0.28	0.0110	2.2	25	1	A720.28
0.30	0.0118	2.2	25	1	A720.3
0.35	0.0138	2.8	25	1	A720.35
0.38	0.0150	2.8	25	1	A720.38
0.39	0.0154	3.6	25	1	A720.39
0.40	0.0157	3.6	25	1	A720.4
0.45	0.0177	3.6	25	1	A720.45
0.50	0.0197	4.0	25	1	A720.5
0.55	0.0217	4.5	25	1	A720.55
0.60	0.0236	4.5	25	1	A720.6
0.62	0.0244	5.0	25	1	A720.62
0.65	0.0256	5.0	25	1	A720.65
0.70	0.0276	5.6	25	1	A720.7
0.75	0.0295	5.6	25	1	A720.75
0.80	0.0315	6.3	25	1.5	A720.8
0.85	0.0335	6.3	25	1.5	A720.85
0.90	0.0354	7.1	25	1.5	A720.9
0.95	0.0374	7.1	25	1.5	A720.95
1.00	0.0394	8.0	25	1.5	A7201.0
1.05	0.0413	8.0	25	1.5	A7201.05
1.10	0.0433	9.0	25	1.5	A7201.1
1.20	0.0472	10.0	25	1.5	A7201.2
1.30	0.0512	10.0	25	1.5	A7201.3
1.40	0.0551	11.2	25	1.5	A7201.4

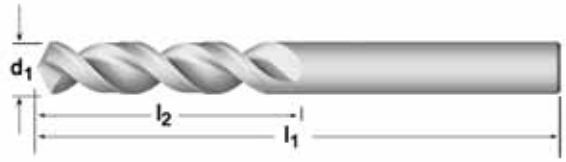
A920 DIN ANSI | 3XD | HSS-E | 130° | W

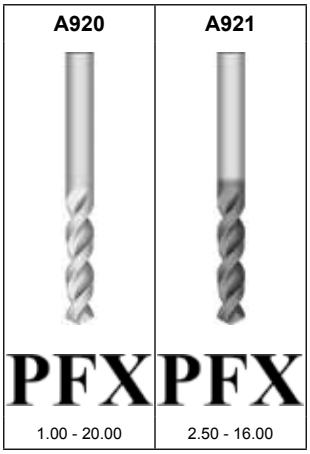
A921 DIN ANSI | 3XD | HSS-E | 130° | Alcrona Top | W

A920
A921

- PFX Stub Drill
- PFX - Spiralbohrer, kurz
- Extra korte PFX boren
- Foret PFX extra-court
- Broca PFX Extra Corta
- Broca Extra Curta PFX

A920	■	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	4.1	4.2	4.3	5.1	5.2	5.3	7.2
	●	3.1	3.2	3.3	3.4	6.1	6.2	6.3	6.4	7.1	7.3	7.4	8.1	8.2			
A921	■	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	7.4		
	●	4.1	4.2	4.3	5.1	5.2	5.3	6.3	6.4								





d_1 Øh$_8$ Inch	d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A920	A921
	1.00	0.0394	6	26	A9201.0	
60	1.02	0.0402	13	35	A920N60	
59	1.04	0.0409	13	35	A920N59	
58	1.07	0.0421	13	35	A920N58	
57	1.09	0.0429	13	35	A920N57	
	1.10	0.0433	7	28	A9201.1	
56	1.18	0.0465	13	35	A920N56	
3/64	1.19	0.0469	13	35	A9203/64	
	1.20	0.0472	8	30	A9201.2	
	1.25	0.0492	8	30	A9201.25	
	1.30	0.0512	8	30	A9201.3	
55	1.32	0.0520	16	41	A920N55	
	1.35	0.0531	9	32	A9201.35	
	1.40	0.0551	9	32	A9201.4	
	1.45	0.0571	9	32	A9201.45	
	1.50	0.0591	9	32	A9201.5	
53	1.51	0.0594	16	41	A920N53	
	1.55	0.0610	10	34	A9201.55	
1/16	1.59	0.0626	16	41	A9201/16	
	1.60	0.0630	10	34	A9201.6	
52	1.61	0.0634	17	43	A920N52	
	1.70	0.0669	10	34	A9201.7	
	1.75	0.0689	11	36	A9201.75	
50	1.78	0.0701	17	43	A920N50	
	1.80	0.0709	11	36	A9201.8	
49	1.85	0.0728	17	43	A920N49	
	1.90	0.0748	11	36	A9201.9	
48	1.93	0.0760	17	43	A920N48	

DORMER

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A920	A921
5/64	1.98	0.0780	17	43	A9205/64	
47	1.99	0.0783	17	43	A920N47	
	2.00	0.0787	12	38	A9202.0	
46	2.06	0.0811	19	44	A920N46	
45	2.08	0.0819	19	44	A920N45	
	2.10	0.0827	12	38	A9202.1	
	2.15	0.0846	13	40	A9202.15	
44	2.18	0.0858	19	44	A920N44	
	2.20	0.0866	13	40	A9202.2	
43	2.26	0.0890	19	44	A920N43	
	2.30	0.0906	13	40	A9202.3	
	2.35	0.0925	14	43	A9202.35	
42	2.38	0.0937	19	44	A920N42	
3/32	2.38	0.0937	19	41	A9203/32	
	2.40	0.0945	14	43	A9202.4	
41	2.44	0.0961	21	46	A920N41	
40	2.49	0.0980	21	46	A920N40	
	2.50	0.0984	14	43	A9202.5	A9212.5
39	2.53	0.0996	21	46	A920N39	A921N39
38	2.58	0.1016	21	46	A920N38	A921N38
	2.60	0.1024	14	43	A9202.6	A9212.6
37	2.64	0.1039	21	46	A920N37	A921N37
	2.65	0.1043	14	43	A9202.65	
	2.70	0.1063	16	46	A9202.7	A9212.7
36	2.71	0.1067	21	46	A920N36	A921N36
7/64	2.78	0.1094	21	46	A9207/64	A9217/64
35	2.79	0.1098	22	48	A920N35	A921N35
	2.80	0.1102	16	46	A9202.8	
34	2.82	0.1110	22	48	A920N34	A921N34
33	2.87	0.1130	22	48	A920N33	A921N33
	2.90	0.1142	16	46	A9202.9	A9212.9
32	2.95	0.1161	22	48	A920N32	A921N32
	3.00	0.1181	16	46	A9203.0	A9213.0
31	3.05	0.1201	22	48	A920N31	A921N31
	3.10	0.1220	18	49	A9203.1	A9213.1
1/8	3.18	0.1252	22	48	A9201/8	A9211/8
	3.20	0.1260	18	49	A9203.2	A9213.2
30	3.26	0.1283	24	49	A920N30	A921N30
	3.30	0.1299	18	49	A9203.3	A9213.3
	3.40	0.1339	20	52	A9203.4	A9213.4
29	3.45	0.1358	24	49	A920N29	A921N29
	3.50	0.1378	20	52	A9203.5	A9213.5
9/64	3.57	0.1406	24	49	A9209/64	A9219/64
	3.60	0.1417	20	52	A9203.6	A9213.6
27	3.66	0.1441	25	52	A920N27	A921N27
	3.70	0.1457	20	52	A9203.7	A9213.7
26	3.73	0.1469	25	52	A920N26	A921N26
	3.80	0.1496	22	55	A9203.8	A9213.8
24	3.86	0.1520	25	52	A920N24	A921N24
	3.90	0.1535	22	55	A9203.9	A9213.9
23	3.91	0.1539	25	52	A920N23	A921N23
5/32	3.97	0.1563	25	52	A9205/32	A9215/32
22	3.99	0.1571	27	54	A920N22	A921N22
	4.00	0.1575	22	55	A9204.0	A9214.0
21	4.04	0.1591	27	54	A920N21	A921N21
20	4.09	0.1610	27	54	A920N20	A921N20
	4.10	0.1614	22	55	A9204.1	A9214.1
	4.20	0.1654	22	55	A9204.2	A9214.2
19	4.22	0.1661	27	54	A920N19	A921N19
	4.30	0.1693	24	58	A9204.3	A9214.3
18	4.31	0.1697	27	54	A920N18	A921N18
11/64	4.37	0.1720	27	54	A92011/64	A92111/64
17	4.39	0.1728	29	56	A920N17	A921N17
	4.40	0.1732	24	58	A9204.4	A9214.4
	4.50	0.1772	24	58	A9204.5	A9214.5
15	4.57	0.1799	29	56	A920N15	A921N15
	4.60	0.1811	24	58	A9204.6	A9214.6
14	4.62	0.1819	29	56	A920N14	A921N14

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A920	A921
	4.70	0.1850	24	58	A9204.7	A9214.7
3/16	4.76	0.1874	29	56	A9203/16	A9213/16
	4.80	0.1890	26	62	A9204.8	A9214.8
11	4.85	0.1909	30	57	A920N11	A921N11
	4.90	0.1929	26	62	A9204.9	A9214.9
10	4.92	0.1937	30	57	A920N10	A921N10
9	4.98	0.1961	30	57	A920N9	A921N9
	5.00	0.1969	26	62	A9205.0	A9215.0
8	5.06	0.1992	30	57	A920N8	A921N8
	5.10	0.2008	26	62	A9205.1	A9215.1
7	5.11	0.2012	30	57	A920N7	A921N7
13/64	5.16	0.2031	30	57	A92013/64	A92113/64
6	5.18	0.2039	32	60	A920N6	A921N6
	5.20	0.2047	26	62	A9205.2	A9215.2
5	5.22	0.2055	32	60	A920N5	A921N5
	5.30	0.2087	26	62	A9205.3	A9215.3
4	5.31	0.2091	32	60	A920N4	A921N4
	5.40	0.2126	28	66	A9205.4	A9215.4
3	5.41	0.2130	32	60	A920N3	A921N3
	5.50	0.2165	28	66	A9205.5	A9215.5
7/32	5.56	0.2189	32	60	A9207/32	A9217/32
	5.60	0.2205	28	66	A9205.6	A9215.6
2	5.61	0.2209	33	62	A920N2	A921N2
	5.70	0.2244	28	66	A9205.7	A9215.7
1	5.79	0.2280	33	62	A920N1	A921N1
	5.80	0.2283	28	66	A9205.8	A9215.8
	5.90	0.2323	28	66	A9205.9	A9215.9
A	5.94	0.2339	33	62	A920A	A921A
15/64	5.95	0.2343	33	62	A92015/64	A92115/64
	6.00	0.2362	28	66	A9206.0	A9216.0
B	6.03	0.2374	35	64	A920B	A921B
	6.10	0.2402	31	70	A9206.1	A9216.1
C	6.15	0.2421	35	64	A920C	A921C
	6.20	0.2441	31	70	A9206.2	A9216.2
D	6.25	0.2461	35	64	A920D	A921D
	6.30	0.2480	31	70	A9206.3	A9216.3
1/4	6.35	0.2500	35	64	A9201/4	A9211/4
	6.40	0.2520	31	70	A9206.4	A9216.4
	6.50	0.2559	31	70	A9206.5	A9216.5
F	6.53	0.2571	37	67	A920F	A921F
	6.60	0.2598	31	70	A9206.6	A9216.6
G	6.63	0.2610	37	67	A920G	A921G
	6.70	0.2638	31	70	A9206.7	A9216.7
17/64	6.75	0.2657	37	67	A92017/64	A92117/64
H	6.76	0.2661	38	68	A920H	A921H
	6.80	0.2677	34	74	A9206.8	A9216.8
	6.90	0.2717	34	74	A9206.9	A9216.9
I	6.91	0.2720	38	68	A920I	A921I
	7.00	0.2756	34	74	A9207.0	A9217.0
J	7.04	0.2772	38	68	A920J	A921J
	7.10	0.2795	34	74	A9207.1	A9217.1
9/32	7.14	0.2811	38	68	A9209/32	A9219/32
	7.20	0.2835	34	74	A9207.2	A9217.2
	7.30	0.2874	34	74	A9207.3	A9217.3
L	7.37	0.2902	40	70	A920L	A921L
	7.40	0.2913	34	74	A9207.4	A9217.4
M	7.49	0.2949	40	70	A920M	A921M
	7.50	0.2953	34	74	A9207.5	A9217.5
19/64	7.54	0.2969	40	70	A92019/64	A92119/64
	7.60	0.2992	37	79	A9207.6	A9217.6
N	7.67	0.3020	41	71	A920N	A921N
	7.70	0.3031	37	79	A9207.7	A9217.7
	7.80	0.3071	37	79	A9207.8	A9217.8
	7.90	0.3110	37	79	A9207.9	A9217.9
5/16	7.94	0.3126	41	71	A9205/16	A9215/16
	8.00	0.3150	37	79	A9208.0	A9218.0
O	8.03	0.3161	43	76	A920O	A921O
	8.10	0.3189	37	79	A9208.1	A9218.1
	8.20	0.3228	37	79	A9208.2	A9218.2
	8.30	0.3268	37	79	A9208.3	A9218.3

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A920	A921
21/64	8.33	0.3280	43	75	A92021/64	
21/64	8.33	0.3280	43	76		A92121/64
	8.40	0.3307	37	79	A9208.4	A9218.4
Q	8.43	0.3319	43	76	A920Q	A921Q
	8.50	0.3346	37	79	A9208.5	A9218.5
	8.60	0.3386	40	84	A9208.6	A9218.6
R	8.61	0.3390	43	76	A920R	A921R
	8.70	0.3425	40	84	A9208.7	A9218.7
11/32	8.73	0.3437	43	76	A92011/32	A92111/32
	8.80	0.3465	40	84	A9208.8	A9218.8
S	8.84	0.3480	44	78	A920S	A921S
	8.90	0.3504	40	84	A9208.9	A9218.9
	9.00	0.3543	40	84	A9209.0	A9219.0
T	9.09	0.3579	44	78	A920T	A921T
	9.10	0.3583	40	84	A9209.1	A9219.1
23/64	9.13	0.3594	44	78	A92023/64	A92123/64
	9.20	0.3622	40	84	A9209.2	A9219.2
	9.30	0.3661	40	84	A9209.3	A9219.3
U	9.35	0.3681	46	79	A920U	A921U
	9.40	0.3701	40	84	A9209.4	A9219.4
	9.50	0.3740	40	84	A9209.5	A9219.5
3/8	9.52	0.3748	46	79	A9203/8	A9213/8
V	9.58	0.3772	48	83	A920V	A921V
	9.60	0.3780	43	89	A9209.6	A9219.6
	9.70	0.3819	43	89	A9209.7	A9219.7
	9.80	0.3858	43	89	A9209.8	A9219.8
	9.90	0.3898	43	89	A9209.9	A9219.9
25/64	9.92	0.3906	48	83	A92025/64	A92125/64
	10.00	0.3937	43	89	A92010.0	A92110.0
X	10.08	0.3969	49	84	A920X	A921X
	10.20	0.4016	43	89	A92010.2	A92110.2
Y	10.26	0.4039	49	84	A920Y	A921Y
	10.30	0.4055	43	89	A92010.3	A92110.3
13/32	10.32	0.4063	49	84	A92013/32	A92113/32
	10.40	0.4094	43	89	A92010.4	A92110.4
Z	10.49	0.4130	51	86	A920Z	A921Z
	10.50	0.4134	43	89	A92010.5	A92110.5
27/64	10.72	0.4220	51	86	A92027/64	A92127/64
	10.75	0.4232	47	95	A92010.75	A92110.75
	10.80	0.4252	47	95	A92010.8	A92110.8
	11.00	0.4331	47	95	A92011.0	A92111.0
7/16	11.11	0.4374	52	87	A9207/16	A9217/16
	11.20	0.4409	47	95	A92011.2	A92111.2
	11.25	0.4429	47	95	A92011.25	A92111.25
	11.50	0.4528	47	95	A92011.5	A92111.5
29/64	11.51	0.4531	54	90	A92029/64	A92129/64
	11.80	0.4646	47	95	A92011.8	A92111.8
15/32	11.91	0.4689	54	92	A92015/32	A92115/32
	12.00	0.4724	51	102	A92012.0	A92112.0
	12.20	0.4803	51	102	A92012.2	A92112.2
31/64	12.30	0.4843	56	94	A92031/64	A92131/64
	12.50	0.4921	51	102	A92012.5	A92112.5
1/2	12.70	0.5000	57	95	A9201/2	A9211/2
	12.75	0.5020	51	102	A92012.75	A92112.75
	12.80	0.5039	51	102	A92012.8	A92112.8
	12.90	0.5079	51	102	A92012.9	
	13.00	0.5118	51	102	A92013.0	A92113.0
33/64	13.10	0.5157	60	98	A92033/64	A92133/64
	13.50	0.5315	54	107	A92013.5	A92113.5
35/64	13.89	0.5469	64	102	A92035/64	A92135/64
	14.00	0.5512	54	107	A92014.0	A92114.0
9/16	14.29	0.5626	64	102	A9209/16	A9219/16
	14.50	0.5709	56	111	A92014.5	A92114.5
37/64	14.68	0.5780	67	105	A92037/64	A92137/64
	14.75	0.5807	56	111	A92014.75	A92114.75
	15.00	0.5906	56	111	A92015.0	A92115.0
19/32	15.08	0.5937	67	105	A92019/32	A92119/32
39/64	15.48	0.6094	70	108	A92039/64	A92139/64

d_1 $\emptyset h_8$ Inch	d_1 $\emptyset h_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A920	A921
	15.50	0.6102	58	115	A92015.5	A92115.5
5/8	15.88	0.6252	70	108	A9205/8	A9215/8
	16.00	0.6299	58	115	A92016.0	A92116.0
41/64	16.27	0.6406	73	114	A92041/64	
	16.50	0.6496	60	119	A92016.5	
21/32	16.67	0.6563	73	114	A92021/32	
	16.75	0.6594	60	119	A92016.75	
	17.00	0.6693	60	119	A92017.0	
43/64	17.07	0.6720	73	117	A92043/64	
11/16	17.46	0.6874	73	117	A92011/16	
	17.50	0.6890	62	123	A92017.5	
45/64	17.86	0.7031	76	121	A92045/64	
	18.00	0.7087	62	123	A92018.0	
23/32	18.26	0.7189	76	121	A92023/32	
	18.50	0.7283	64	127	A92018.5	
47/64	18.65	0.7343	79	127	A92047/64	
	19.00	0.7480	64	127	A92019.0	
3/4	19.05	0.7500	79	127	A9203/4	
49/64	19.45	0.7657	83	130	A92049/64	
	19.50	0.7677	66	131	A92019.5	
25/32	19.84	0.7811	83	130	A92025/32	
	20.00	0.7874	66	131	A92020.0	

A100	DIN 338	4XD	HSS		118°	ST		N			A190 a 102	A191 a 103	A199 a 104
A101	DIN 338	4XD	HSS		118°	ST		N					
A002	DIN 338	4XD	HSS		118°	TiN		N		PS	A095 a 100	A099 a 101	
A108	DIN 338	4XD	HSS		135°	ST		W					
A777	DIN 338	4XD	HSS-E		135°	Bronze		N		NAS 907	A295 a 105		

A100

• Jobber Drill	Bright below 1.0mm, 3/64”, N60
• Spiralbohrer	Blank bis Ø 1mm, Nr.60
• Korte spiraalboren	Blank beneden 1,0mm, 3/16”, N60
• Foret court	Brillant au dessous de 1,0, 3/64, N60
• Broca , serie corta	Brillante por debajo de 1,0 mm, 3/64”.N60
• Broca Curta	Brilhante Abaixo de 1.0mm, 3/64”, Nr.60

A101

• Jobber Drill - LH	Bright below 3.0mm
• Spiralbohrer - LH	Blank bis Ø 3,0 mm
• Korte spiraalboren	Blank beneden 3,0mm
• Foret court - LH	Brillant au dessous de 3,0 mm
• Broca , serie corta - LH	Brillante por debajo de 3,0 mm
• Broca Curta Standard - LH	Brilhante Abaixo de 3.0mm

A002

• 002 Jobber Drill	Bright below 2.0mm, TiN Tipped and Split Point 2.0mm and above
• 002 Spiralbohrer	Blank bis 2,0 mm, TiN-tip beschichtet mit Kreuzanschliff ab 2,0 mm
• 002 Korte spiraalboren	Blank tot 2.0 mm, TiN-Tip gecoat met Kruisslijping vanaf 2.0 mm
• Foret court 002	Brillant en dessous de 2,0mm, TIN en pointe et affutage en croix au dessus de 2,0 mm (y inclus)
• Broca 002, serie corta	Brillante por debajo de 2.0mm, Punta de TiN y rectificado de la punta a partir 2.0mm
• Broca 002 Curta	Brillante por debajo de 2.0mm, Punta de TiN y rectificado de la punta a partir 2.0mm

A108

• Jobber Drill Split Point	Split Point 1.6mm, 1/16” and above
• Spiralbohrer, Kreuzanschliff	Kreuzanschliff ab Ø 1,6 mm
• Korte spiraalboren met kruisslijping	Kruisslijping boven 1.6 mm, 1/16”
• Foret court Spéciale	Affûtage en croix au dessus de 1,6 mm, 1/16
• Broca , serie corta Punta afilada	Afilado en cruz desde1,6mm,1/16”
• Broca Curta Afiamento em Cruz	Afiamento em Cruz a partir de 1,6mm, 1/16” (inclusivé)

A777

• Jobber Drill	4 Facet Point up to 1.4mm.
• Spiralbohrer	4 Flächenanschliff bis Ø 1,4mm
• Korte spiraalboren	4-vlakspunt vanaf 1.4 mm
• Foret court	Pointe à 4 facettes jusqu’au Ø 1,4 mm
• Broca , serie corta	Punta de 4 caras hasta 1,4 mm
• Broca Curta	Ponta 4 Faces até 1.4mm.

A100; A101	▪	1.1	1.2	1.3	1.4	3.1	3.2													
	•	1.5	1.6	2.1	2.2	2.3	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.1	7.2
		7.3	7.4	8.1	8.2	8.3	9.1													
A002	▪	1.1	1.2	1.3	1.4	3.1	3.2	7.1	7.2	8.1	8.2									
	•	1.5	1.6	2.1	2.2	2.3	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.3	7.4
		8.3	9.1																	
A108	▪	2.2	2.3	4.1	4.2															
	•	1.1	1.2	1.3	1.4	1.5	1.6	2.1	3.1	3.2	3.3	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4
		7.1	7.2	7.3	7.4	8.1	8.2	8.3	9.1											
A777	▪	1.5	1.6	3.4	4.1	4.2	4.3	5.2												
	•	1.1	1.2	1.3	1.4	2.1	2.2	2.3	3.1	3.2	3.3	5.1	5.3	6.1	6.2	6.3	6.4	7.1	7.2	7.3
		7.4	9.1																	

A100	A101	A002	A108	A777
0.20 - 20.00	1.00 - 12.00	1.00 - 16.00	1.00 - 16.00	0.30 - 16.00

d_1 $Øh_8$ "/Nr./letter	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A100	A101	A002	A108	A777
	0.2	0.0079	2.5	19	A100.2				
	0.25	0.0098	3	19	A100.25				
	0.3	0.0118	3	19	A100.3				A777.3
	0.32	0.0126	4	19	A100.32				
80	0.34	0.0134	4	19	A100N80				
	0.35	0.0138	4	19	A100.35				A777.35
79	0.37	0.0146	4	19	A100N79				
	0.38	0.015	4	19	A100.38				
1/64	0.4	0.0157	5	20	A1001/64				
	0.4	0.0157	5	20	A100.4				A777.4
78	0.41	0.0161	5	20	A100N78				
	0.42	0.0165	5	20	A100.42				
	0.45	0.0177	5	20	A100.45				A777.45
77	0.46	0.0181	5	20	A100N77				
	0.48	0.0189	5	20	A100.48				
	0.5	0.0197	6	22	A100.5				A777.5
76	0.51	0.0201	6	22	A100N76				
	0.52	0.0205	6	22	A100.52				
75	0.53	0.0209	6	22	A100N75				
	0.55	0.0217	7	24	A100.55				A777.55
74	0.57	0.0224	7	24	A100N74				
	0.58	0.0228	7	24	A100.58				
	0.6	0.0236	7	24	A100.6				A777.6
73	0.61	0.024	8	26	A100N73				
	0.62	0.0244	8	26	A100.62				
72	0.64	0.0252	8	26	A100N72				
	0.65	0.0256	8	26	A100.65				A777.65
71	0.66	0.026	8	26	A100N71				
	0.68	0.0268	9	28	A100.68				
	0.7	0.0276	9	28	A100.7				A777.7

d_1 $\emptyset h_8$ "/Nr./letter	d_1 $\emptyset h_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A100	A101	A002	A108	A777
70	0.71	0.028	9	28	A100N70				
	0.72	0.0283	9	28	A100.72				
69	0.74	0.0291	9	28	A100N69				
	0.75	0.0295	9	28	A100.75				
	0.78	0.0307	10	30	A100.78				
1/32	0.79	0.0311	10	30	A1001/32				
68	0.79	0.0311	10	30	A100N68				
	0.8	0.0315	10	30	A100.8				A777.8
67	0.81	0.0319	10	30	A100N67				
	0.82	0.0323	10	30	A100.82				
66	0.84	0.0331	10	30	A100N66				
	0.85	0.0335	10	30	A100.85				
	0.88	0.0346	11	32	A100.88				
65	0.89	0.035	11	32	A100N65				
	0.9	0.0354	11	32	A100.9				A777.9
64	0.91	0.0358	11	32	A100N64				
	0.92	0.0362	11	32	A100.92				
63	0.94	0.037	11	32	A100N63				
	0.95	0.0374	11	32	A100.95				A777.95
62	0.97	0.0382	12	34	A100N62				
	0.98	0.0386	12	34	A100.98				
61	0.99	0.039	12	34	A100N61				
	1	0.0394	12	34	A1001.0	A1011.0	A0021.0	A1081.0	A7771.0
60	1.02	0.0402	12	34	A100N60				
59	1.04	0.0409	12	34	A100N59				
	1.05	0.0413	12	34	A1001.05				
58	1.07	0.0421	14	36	A100N58				
57	1.09	0.0429	14	36	A100N57				
	1.1	0.0433	14	36	A1001.1	A1011.1	A0021.1	A1081.1	A7771.1
	1.15	0.0453	14	36	A1001.15				
56	1.18	0.0465	14	36	A100N56				
3/64	1.19	0.0469	16	38	A1003/64		A0023/64		
	1.2	0.0472	16	38	A1001.2	A1011.2	A0021.2	A1081.2	A7771.2
	1.25	0.0492	16	38	A1001.25	A1011.25			
	1.3	0.0512	16	38	A1001.3	A1011.3	A0021.3	A1081.3	A7771.3
55	1.32	0.052	16	38	A100N55				
	1.35	0.0531	18	40	A1001.35				
	1.4	0.0551	18	40	A1001.4	A1011.4	A0021.4	A1081.4	A7771.4
54	1.4	0.0551	18	40	A100N54				
	1.45	0.0571	18	40	A1001.45				
	1.5	0.0591	18	40	A1001.5	A1011.5	A0021.5	A1081.5	A7771.5
53	1.51	0.0594	20	43	A100N53				
	1.55	0.061	20	43	A1001.55				
1/16	1.59	0.0626	20	43	A1001/16		A0021/16	A1081/16	A7771/16
	1.6	0.063	20	43	A1001.6	A1011.6	A0021.6	A1081.6	A7771.6
52	1.61	0.0634	20	43	A100N52				
	1.65	0.065	20	43	A1001.65				
	1.7	0.0669	20	43	A1001.7	A1011.7	A0021.7	A1081.7	A7771.7
51	1.7	0.0669	22	46	A100N51				
	1.75	0.0689	22	46	A1001.75	A1011.75			
50	1.78	0.0701	22	46	A100N50				
	1.8	0.0709	22	46	A1001.8	A1011.8	A0021.8	A1081.8	A7771.8
	1.85	0.0728	22	46	A1001.85				
49	1.85	0.0728	22	46	A100N49				
	1.9	0.0748	22	46	A1001.9	A1011.9	A0021.9	A1081.9	A7771.9
48	1.93	0.076	24	49	A100N48				
	1.95	0.0768	24	49	A1001.95				
5/64	1.98	0.078	24	49	A1005/64		A0025/64	A1085/64	A7775/64
47	1.99	0.0783	24	49	A100N47				
	2	0.0787	24	49	A1002.0	A1012.0	A0022.0	A1082.0	A7772.0
	2.05	0.0807	24	49	A1002.05				
46	2.06	0.0811	24	49	A100N46				
45	2.08	0.0819	24	49	A100N45				
	2.1	0.0827	24	49	A1002.1	A1012.1	A0022.1	A1082.1	A7772.1
	2.15	0.0846	27	53	A1002.15				
44	2.18	0.0858	27	53	A100N44				
	2.2	0.0866	27	53	A1002.2	A1012.2	A0022.2	A1082.2	A7772.2
	2.25	0.0886	27	53	A1002.25				

d_1 $Øh_8$ "/Nr./letter	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A100	A101	A002	A108	A777
43	2.26	0.089	27	53	A100N43				
	2.3	0.0906	27	53	A1002.3	A1012.3	A0022.3	A1082.3	A7772.3
	2.35	0.0925	27	53	A1002.35				
3/32	2.38	0.0937	30	57	A1003/32		A0023/32	A1083/32	A7773/32
42	2.38	0.0937	30	57	A100N42				
	2.4	0.0945	30	57	A1002.4	A1012.4	A0022.4	A1082.4	A7772.4
41	2.44	0.0961	30	57	A100N41				
	2.45	0.0965	30	57	A1002.45				
40	2.49	0.098	30	57	A100N40				
	2.5	0.0984	30	57	A1002.5	A1012.5	A0022.5	A1082.5	A7772.5
39	2.53	0.0996	30	57	A100N39				
	2.55	0.1004	30	57	A1002.55				
38	2.58	0.1016	30	57	A100N38				
	2.6	0.1024	30	57	A1002.6	A1012.6	A0022.6	A1082.6	A7772.6
37	2.64	0.1039	30	57	A100N37				
	2.65	0.1043	30	57	A1002.65				
	2.7	0.1063	33	61	A1002.7	A1012.7	A0022.7	A1082.7	A7772.7
36	2.71	0.1067	33	61	A100N36				
	2.75	0.1083	33	61	A1002.75				
7/64	2.78	0.1094	33	61	A1007/64		A0027/64	A1087/64	A7777/64
35	2.79	0.1098	33	61	A100N35				
	2.8	0.1102	33	61	A1002.8	A1012.8	A0022.8	A1082.8	A7772.8
34	2.82	0.111	33	61	A100N34				
	2.85	0.1122	33	61	A1002.85				
33	2.87	0.113	33	61	A100N33				
	2.9	0.1142	33	61	A1002.9	A1012.9	A0022.9	A1082.9	A7772.9
	2.95	0.1161	33	61	A1002.95				
32	2.95	0.1161	33	61	A100N32				
	3	0.1181	33	61	A1003.0	A1013.0	A0023.0	A1083.0	A7773.0
31	3.05	0.1201	36	65	A100N31				
	3.1	0.122	36	65	A1003.1		A0023.1	A1083.1	A7773.1
	3.15	0.124	36	65	A1003.15				
1/8	3.18	0.1252	36	65	A1001/8		A0021/8	A1081/8	A7771/8
	3.2	0.126	36	65	A1003.2	A1013.2	A0023.2	A1083.2	A7773.2
	3.25	0.128	36	65	A1003.25		A0023.25		
30	3.26	0.1283	36	65	A100N30				
	3.3	0.1299	36	65	A1003.3	A1013.3	A0023.3	A1083.3	A7773.3
	3.4	0.1339	39	70	A1003.4		A0023.4	A1083.4	A7773.4
29	3.45	0.1358	39	70	A100N29				
	3.5	0.1378	39	70	A1003.5	A1013.5	A0023.5	A1083.5	A7773.5
9/64	3.57	0.1406	39	70	A1009/64		A0029/64	A1089/64	A7779/64
28	3.57	0.1406	39	70	A100N28				
	3.6	0.1417	39	70	A1003.6		A0023.6	A1083.6	A7773.6
27	3.66	0.1441	39	70	A100N27				
	3.7	0.1457	39	70	A1003.7		A0023.7	A1083.7	A7773.7
26	3.73	0.1469	39	70	A100N26				
	3.75	0.1476	39	70	A1003.75				
	3.8	0.1496	43	75	A1003.8	A1013.8	A0023.8	A1083.8	A7773.8
25	3.8	0.1496	43	75	A100N25				
24	3.86	0.152	43	75	A100N24				
	3.9	0.1535	43	75	A1003.9		A0023.9	A1083.9	A7773.9
23	3.91	0.1539	43	75	A100N23				
5/32	3.97	0.1563	43	75	A1005/32		A0025/32	A1085/32	A7775/32
22	3.99	0.1571	43	75	A100N22				
	4	0.1575	43	75	A1004.0	A1014.0	A0024.0	A1084.0	A7774.0
21	4.04	0.1591	43	75	A100N21				
20	4.09	0.161	43	75	A100N20				
	4.1	0.1614	43	75	A1004.1		A0024.1	A1084.1	A7774.1
	4.2	0.1654	43	75	A1004.2	A1014.2	A0024.2	A1084.2	A7774.2
19	4.22	0.1661	43	75	A100N19				
	4.25	0.1673	43	75	A1004.25				
	4.3	0.1693	47	80	A1004.3		A0024.3	A1084.3	A7774.3
18	4.31	0.1697	47	80	A100N18				
11/64	4.37	0.172	47	80	A10011/64		A00211/64	A10811/64	A77711/64
17	4.39	0.1728	47	80	A100N17				
	4.4	0.1732	47	80	A1004.4		A0024.4	A1084.4	A7774.4
	4.5	0.1772	47	80	A1004.5	A1014.5	A0024.5	A1084.5	A7774.5
16	4.5	0.1772	47	80	A100N16				

d_1 $Øh_8$ "/Nr./letter	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A100	A101	A002	A108	A777
15	4.57	0.1799	47	80	A100N15				
	4.6	0.1811	47	80	A1004.6		A0024.6	A1084.6	A7774.6
14	4.62	0.1819	47	80	A100N14				
	4.7	0.185	47	80	A1004.7		A0024.7	A1084.7	A7774.7
13	4.7	0.185	47	80	A100N13				
	4.75	0.187	47	80	A1004.75				
3/16	4.76	0.1874	52	86	A1003/16		A0023/16	A1083/16	A7773/16
	4.8	0.189	52	86	A1004.8	A1014.8	A0024.8	A1084.8	A7774.8
12	4.8	0.189	52	86	A100N12				
11	4.85	0.1909	52	86	A100N11				
	4.9	0.1929	52	86	A1004.9		A0024.9	A1084.9	A7774.9
10	4.92	0.1937	52	86	A100N10				
9	4.98	0.1961	52	86	A100N9				
	5	0.1969	52	86	A1005.0	A1015.0	A0025.0	A1085.0	A7775.0
8	5.06	0.1992	52	86	A100N8				
	5.1	0.2008	52	86	A1005.1	A1015.1	A0025.1	A1085.1	A7775.1
7	5.11	0.2012	52	86	A100N7				
13/64	5.16	0.2031	52	86	A10013/64		A00213/64	A10813/64	A77713/64
6	5.18	0.2039	52	86	A100N6				
	5.2	0.2047	52	86	A1005.2	A1015.2	A0025.2	A1085.2	A7775.2
5	5.22	0.2055	52	86	A100N5				
	5.25	0.2067	52	86	A1005.25				
	5.3	0.2087	52	86	A1005.3		A0025.3	A1085.3	A7775.3
4	5.31	0.2091	57	93	A100N4				
	5.4	0.2126	57	93	A1005.4		A0025.4	A1085.4	A7775.4
3	5.41	0.213	57	93	A100N3				
	5.5	0.2165	57	93	A1005.5	A1015.5	A0025.5	A1085.5	A7775.5
7/32	5.56	0.2189	57	93	A1007/32		A0027/32	A1087/32	A7777/32
	5.6	0.2205	57	93	A1005.6		A0025.6	A1085.6	A7775.6
2	5.61	0.2209	57	93	A100N2				
	5.7	0.2244	57	93	A1005.7		A0025.7	A1085.7	A7775.7
	5.75	0.2264	57	93	A1005.75				
1	5.79	0.228	57	93	A100N1				
	5.8	0.2283	57	93	A1005.8		A0025.8	A1085.8	A7775.8
	5.9	0.2323	57	93	A1005.9		A0025.9	A1085.9	A7775.9
A	5.94	0.2339	57	93	A100A				
15/64	5.95	0.2343	57	93	A10015/64		A00215/64		A77715/64
	6	0.2362	57	93	A1006.0	A1016.0	A0026.0	A1086.0	A7776.0
B	6.03	0.2374	63	101	A100B				
	6.1	0.2402	63	101	A1006.1		A0026.1	A1086.1	A7776.1
C	6.15	0.2421	63	101	A100C				
	6.2	0.2441	63	101	A1006.2		A0026.2	A1086.2	A7776.2
	6.25	0.2461	63	101	A1006.25				
D	6.25	0.2461	63	101	A100D				
	6.3	0.248	63	101	A1006.3		A0026.3	A1086.3	A7776.3
1/4	6.35	0.25	63	101	A1001/4		A0021/4	A1081/4	A7771/4
E	6.35	0.25	63	101	A100E				
	6.4	0.252	63	101	A1006.4		A0026.4	A1086.4	A7776.4
	6.5	0.2559	63	101	A1006.5	A1016.5	A0026.5	A1086.5	A7776.5
F	6.53	0.2571	63	101	A100F				
	6.6	0.2598	63	101	A1006.6		A0026.6	A1086.6	A7776.6
G	6.63	0.261	63	101	A100G				
	6.7	0.2638	63	101	A1006.7		A0026.7	A1086.7	A7776.7
17/64	6.75	0.2657	69	109	A10017/64		A00217/64		A77717/64
	6.75	0.2657	69	109	A1006.75				
H	6.76	0.2661	69	109	A100H				
	6.8	0.2677	69	109	A1006.8		A0026.8	A1086.8	A7776.8
	6.9	0.2717	69	109	A1006.9		A0026.9	A1086.9	A7776.9
I	6.91	0.272	69	109	A100I				
	7	0.2756	69	109	A1007.0	A1017.0	A0027.0	A1087.0	A7777.0
J	7.04	0.2772	69	109	A100J				
	7.1	0.2795	69	109	A1007.1		A0027.1	A1087.1	A7777.1
K	7.14	0.2811	69	109	A100K				
9/32	7.14	0.2811	69	109	A1009/32		A0029/32	A1089/32	A7779/32
	7.2	0.2835	69	109	A1007.2		A0027.2	A1087.2	A7777.2
	7.25	0.2854	69	109	A1007.25				
	7.3	0.2874	69	109	A1007.3		A0027.3	A1087.3	A7777.3
L	7.37	0.2902	69	109	A100L				

d_1 $Øh_8$ "/Nr./letter	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A100	A101	A002	A108	A777
	7.4	0.2913	69	109	A1007.4		A0027.4	A1087.4	A7777.4
M	7.49	0.2949	69	109	A100M				
	7.5	0.2953	69	109	A1007.5	A1017.5	A0027.5	A1087.5	A7777.5
19/64	7.54	0.2969	75	117	A10019/64		A00219/64		A77719/64
	7.6	0.2992	75	117	A1007.6		A0027.6	A1087.6	A7777.6
N	7.67	0.302	75	117	A100N				
	7.7	0.3031	75	117	A1007.7		A0027.7	A1087.7	A7777.7
	7.75	0.3051	75	117	A1007.75				
	7.8	0.3071	75	117	A1007.8		A0027.8	A1087.8	A7777.8
	7.9	0.311	75	117	A1007.9		A0027.9	A1087.9	A7777.9
5/16	7.94	0.3126	75	117	A1005/16		A0025/16	A1085/16	A7775/16
	8	0.315	75	117	A1008.0	A1018.0	A0028.0	A1088.0	A7778.0
O	8.03	0.3161	75	117	A100O				
	8.1	0.3189	75	117	A1008.1		A0028.1	A1088.1	A7778.1
	8.2	0.3228	75	117	A1008.2		A0028.2	A1088.2	A7778.2
P	8.2	0.3228	75	117	A100P				
	8.25	0.3248	75	117	A1008.25				
	8.3	0.3268	75	117	A1008.3		A0028.3	A1088.3	A7778.3
21/64	8.33	0.328	75	117	A10021/64		A00221/64		A77721/64
	8.4	0.3307	75	117	A1008.4		A0028.4	A1088.4	A7778.4
Q	8.43	0.3319	75	117	A100Q				
	8.5	0.3346	75	117	A1008.5	A1018.5	A0028.5	A1088.5	A7778.5
	8.6	0.3386	81	125	A1008.6		A0028.6	A1088.6	A7778.6
R	8.61	0.339	81	125	A100R				
	8.7	0.3425	81	125	A1008.7		A0028.7	A1088.7	A7778.7
11/32	8.73	0.3437	81	125	A10011/32		A00211/32	A10811/32	A77711/32
	8.75	0.3445	81	125	A1008.75				
	8.8	0.3465	81	125	A1008.8		A0028.8	A1088.8	A7778.8
S	8.84	0.348	81	125	A100S				
	8.9	0.3504	81	125	A1008.9		A0028.9	A1088.9	A7778.9
	9	0.3543	81	125	A1009.0	A1019.0	A0029.0	A1089.0	A7779.0
T	9.09	0.3579	81	125	A100T				
	9.1	0.3583	81	125	A1009.1		A0029.1	A1089.1	A7779.1
23/64	9.13	0.3594	81	125	A10023/64		A00223/64		A77723/64
	9.2	0.3622	81	125	A1009.2		A0029.2	A1089.2	A7779.2
	9.25	0.3642	81	125	A1009.25				
	9.3	0.3661	81	125	A1009.3		A0029.3	A1089.3	A7779.3
U	9.35	0.3681	81	125	A100U				
	9.4	0.3701	81	125	A1009.4		A0029.4	A1089.4	A7779.4
	9.5	0.374	81	125	A1009.5		A0029.5	A1089.5	A7779.5
3/8	9.52	0.3748	87	133	A1003/8		A0023/8	A1083/8	A7773/8
V	9.58	0.3772	87	133	A100V				
	9.6	0.378	87	133	A1009.6		A0029.6	A1089.6	A7779.6
	9.7	0.3819	87	133	A1009.7		A0029.7	A1089.7	A7779.7
	9.75	0.3839	87	133	A1009.75				
	9.8	0.3858	87	133	A1009.8		A0029.8	A1089.8	A7779.8
W	9.8	0.3858	87	133	A100W				
	9.9	0.3898	87	133	A1009.9		A0029.9	A1089.9	A7779.9
25/64	9.92	0.3906	87	133	A10025/64		A00225/64		A77725/64
	10	0.3937	87	133	A10010.0	A10110.0	A00210.0	A10810.0	A77710.0
X	10.08	0.3969	87	133	A100X				
	10.1	0.3976	87	133	A10010.1		A00210.1		A77710.1
	10.2	0.4016	87	133	A10010.2		A00210.2	A10810.2	A77710.2
	10.25	0.4035	87	133	A10010.25				
Y	10.26	0.4039	87	133	A100Y				
	10.3	0.4055	87	133	A10010.3		A00210.3		
13/32	10.32	0.4063	87	133	A10013/32		A00213/32	A10813/32	A77713/32
	10.4	0.4094	87	133	A10010.4		A00210.4		
Z	10.49	0.413	87	133	A100Z				
	10.5	0.4134	87	133	A10010.5		A00210.5	A10810.5	A77710.5
	10.6	0.4173	87	133	A10010.6		A00210.6		
	10.7	0.4213	94	142	A10010.7		A00210.7		
27/64	10.72	0.422	94	142	A10027/64		A00227/64		A77727/64
	10.75	0.4232	94	142	A10010.75				
	10.8	0.4252	94	142	A10010.8		A00210.8	A10810.8	A77710.8
	10.9	0.4291	94	142	A10010.9		A00210.9		
	11	0.4331	94	142	A10011.0	A10111.0	A00211.0	A10811.0	A77711.0
	11.1	0.437	94	142	A10011.1		A00211.1		

d_1 $Øh_8$ "/Nr./letter	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A100	A101	A002	A108	A777
7/16	11.11	0.4374	94	142	A1007/16		A0027/16	A1087/16	A7777/16
	11.2	0.4409	94	142	A10011.2		A00211.2		A77711.2
	11.25	0.4429	94	142	A10011.25				
	11.3	0.4449	94	142	A10011.3		A00211.3		
	11.4	0.4488	94	142	A10011.4		A00211.4		
	11.5	0.4528	94	142	A10011.5		A00211.5	A10811.5	A77711.5
29/64	11.51	0.4531	94	142	A10029/64		A00229/64		A77729/64
	11.6	0.4567	94	142	A10011.6		A00211.6		
	11.7	0.4606	94	142	A10011.7		A00211.7		
	11.75	0.4626	94	142	A10011.75				
	11.8	0.4646	94	142	A10011.8		A00211.8	A10811.8	A77711.8
	11.9	0.4685	101	151	A10011.9		A00211.9		
15/32	11.91	0.4689	101	151	A10015/32		A00215/32	A10815/32	A77715/32
	12	0.4724	101	151	A10012.0	A10112.0	A00212.0	A10812.0	A77712.0
	12.1	0.4764	101	151	A10012.1		A00212.1		
	12.2	0.4803	101	151	A10012.2		A00212.2	A10812.2	A77712.2
	12.25	0.4823	101	151	A10012.25				
	12.3	0.4843	101	151	A10012.3		A00212.3		
31/64	12.3	0.4843	101	151	A10031/64		A00231/64		A77731/64
	12.4	0.4882	101	151	A10012.4		A00212.4		
	12.5	0.4921	101	151	A10012.5		A00212.5	A10812.5	A77712.5
	12.6	0.4961	101	151	A10012.6		A00212.6		
	12.7	0.5	101	151	A10012.7		A00212.7		
1/2	12.7	0.5	101	151	A1001/2		A0021/2	A1081/2	A7771/2
	12.75	0.502	101	151	A10012.75				
	12.8	0.5039	101	151	A10012.8		A00212.8	A10812.8	A77712.8
	12.9	0.5079	101	151	A10012.9		A00212.9	A10812.9	
	13	0.5118	101	151	A10013.0		A00213.0	A10813.0	A77713.0
33/64	13.1	0.5157	101	151	A10033/64		A00233/64		
	13.1	0.5157	101	151	A10013.1		A00213.1		
	13.2	0.5197	101	151	A10013.2		A00213.2		
	13.25	0.5217	108	160	A10013.25		A00213.25		
	13.3	0.5236	108	160	A10013.3		A00213.3		
	13.4	0.5276	108	160	A10013.4		A00213.4		
17/32	13.49	0.5311	108	160	A10017/32		A00217/32		
	13.5	0.5315	108	160	A10013.5		A00213.5	A10813.5	A77713.5
	13.6	0.5354	108	160	A10013.6		A00213.6		
	13.7	0.5394	108	160	A10013.7		A00213.7		
	13.75	0.5413	108	160	A10013.75		A00213.75		
	13.8	0.5433	108	160	A10013.8		A00213.8		
35/64	13.89	0.5469	108	160	A10035/64		A00235/64		
	13.9	0.5472	108	160	A10013.9		A00213.9		
	14	0.5512	108	160	A10014.0		A00214.0	A10814.0	A77714.0
	14.25	0.561	114	169	A10014.25		A00214.25		
9/16	14.29	0.5626	114	169	A1009/16		A0029/16		
	14.5	0.5709	114	169	A10014.5		A00214.5	A10814.5	A77714.5
37/64	14.68	0.578	114	169	A10037/64		A00237/64		
	14.75	0.5807	114	169	A10014.75		A00214.75		
	15	0.5906	114	169	A10015.0		A00215.0	A10815.0	A77715.0
19/32	15.08	0.5937	120	178	A10019/32		A00219/32		
	15.25	0.6004	120	178	A10015.25		A00215.25	A10815.25	
39/64	15.48	0.6094	120	178	A10039/64		A00239/64		
	15.5	0.6102	120	178	A10015.5		A00215.5	A10815.5	A77715.5
	15.75	0.6201	120	178	A10015.75		A00215.75		
5/8	15.88	0.6252	120	178	A1005/8		A0025/8		
	16	0.6299	120	178	A10016.0		A00216.0	A10816.0	A77716.0
41/64	16.27	0.6406	125	184	A10041/64				
	16.5	0.6496	125	184	A10016.5				
21/32	16.67	0.6563	125	184	A10021/32				
	17	0.6693	125	184	A10017.0				
43/64	17.07	0.672	130	191	A10043/64				
11/16	17.46	0.6874	130	191	A10011/16				
	17.5	0.689	130	191	A10017.5				
	18	0.7087	130	191	A10018.0				
	18.5	0.7283	135	198	A10018.5				
	19	0.748	135	198	A10019.0				
	19.5	0.7677	140	205	A10019.5				
	20	0.7874	140	205	A10020.0				

A170

A170

- 1/2” Reduced Parallel Shank Drill
- Spiralbohrer zylindrisch, Schaft Ø 12,7 mm
- Spiraalboor met 1/2” cilindrische schacht
- Foret queue dégagée de 12,7 mm
- Brocas de mango cilindrico, Mango rebajado 1/2”
- Brocas de mango cilindrico, Mango rebajado 1/2”

A170 • 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 8.2 8.3 9.1

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 Inch	l_1 Inch	l_2 mm	l_1 mm	A170
	13.00	0.5118			83	156	A17013.0
33/64	13.10	0.5157	3.1/8	6“			A17033/64
17/32	13.49	0.5311	3.1/8	6“			A17017/32
	13.50	0.5315			83	156	A17013.5
35/64	13.89	0.5469	3.1/8	6“			A17035/64
	14.00	0.5512			83	156	A17014.0
9/16	14.29	0.5626	3.1/8	6“			A1709/16
	14.50	0.5709			83	156	A17014.5
37/64	14.68	0.5780	3.1/8	6“			A17037/64
	15.00	0.5906			83	156	A17015.0
19/32	15.08	0.5937	3.1/8	6“			A17019/32
39/64	15.48	0.6094	3.1/8	6“			A17039/64
	15.50	0.6102			83	156	A17015.5
5/8	15.88	0.6252	3.1/8	6“			A1705/8
	16.00	0.6299			84	157	A17016.0
41/64	16.27	0.6406	3.1/8	6“			A17041/64
	16.50	0.6496			84	157	A17016.5
21/32	16.67	0.6563	3.1/8	6“			A17021/32
	17.00	0.6693			84	157	A17017.0
43/64	17.07	0.6720	3.1/8	6“			A17043/64
11/16	17.46	0.6874	3.1/8	6“			A17011/16
	17.50	0.6890			84	157	A17017.5
45/64	17.86	0.7031	3.1/8	6“			A17045/64
	18.00	0.7087			84	157	A17018.0
23/32	18.26	0.7189	3.1/8	6“			A17023/32
	18.50	0.7283			84	157	A17018.5
47/64	18.65	0.7343	3.1/8	6“			A17047/64
	19.00	0.7480			84	157	A17019.0
3/4	19.05	0.7500	3.1/8	6“			A1703/4
49/64	19.45	0.7657	3“	6“			A17049/64

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 Inch	l_1 Inch	l_2 mm	l_1 mm	A170
	19.50	0.7677			81	158	A17019.5
25/32	19.84	0.7811	3“	6“			A17025/32
	20.00	0.7874			81	158	A17020.0
51/64	20.24	0.7969	3“	6“			A17051/64
13/16	20.64	0.8126	3“	6“			A17013/16
	21.00	0.8268			82	158	A17021.0
53/64	21.03	0.8280	3“	6“			A17053/64
27/32	21.43	0.8437	3“	6“			A17027/32
55/64	21.83	0.8594	3“	6“			A17055/64
	22.00	0.8661			82	158	A17022.0
7/8	22.22	0.8748	3“	6“			A1707/8
57/64	22.62	0.8906	3“	6“			A17057/64
	23.00	0.9055			82	158	A17023.0
29/32	23.02	0.9063	3“	6“			A17029/32
59/64	23.42	0.9220	3“	6“			A17059/64
15/16	23.81	0.9374	3“	6“			A17015/16
	24.00	0.9449			83	159	A17024.0
61/64	24.21	0.9531	3“	6“			A17061/64
31/32	24.61	0.9689	3“	6“			A17031/32
	25.00	0.9843			83	159	A17025.0
63/64	25.00	0.9843	3“	6“			A17063/64
1“	25.40	1.0000	3“	6“			A1701
1.1/64	25.80	1.0157	3“	6“			A1701.1/64
1.1/32	26.19	1.0311	3“	6“			A1701.1/32
1.3/64	26.59	1.0469	3“	6“			A1701.3/64
1.1/16	26.99	1.0626	3“	6“			A1701.1/16
1.5/64	27.38	1.0780	3“	6“			A1701.5/64
1.3/32	27.78	1.0937	3“	6“			A1701.3/32
1.7/64	28.18	1.1094	3“	6“			A1701.7/64
1.1/8	28.58	1.1252	3“	6“			A1701.1/8
1.9/64	28.97	1.1406	3“	6“			A1701.9/64
1.5/32	29.37	1.1563	3“	6“			A1701.5/32
1.11/64	29.77	1.1720	3“	6“			A1701.11/64
1.3/16	30.16	1.1874	3“	6“			A1701.3/16
1.13/64	30.56	1.2031	3“	6“			A1701.13/64
1.7/32	30.96	1.2189	3“	6“			A1701.7/32
1.15/64	31.35	1.2343	3“	6“			A1701.15/64
1.1/4	31.75	1.2500	3“	6“			A1701.1/4
1.9/32	32.54	1.2811	3“	6“			A1701.9/32
1.5/16	33.34	1.3126	3“	6“			A1701.5/16
1.11/32	34.13	1.3437	3“	6“			A1701.11/32
1.3/8	34.93	1.3752	3“	6“			A1701.3/8
1.13/32	35.72	1.4063	3“	6“			A1701.13/32
1.7/16	36.51	1.4374	3“	6“			A1701.7/16
1.15/32	37.31	1.4689	3“	6“			A1701.15/32
1.1/2	38.10	1.5000	3“	6“			A1701.1/2

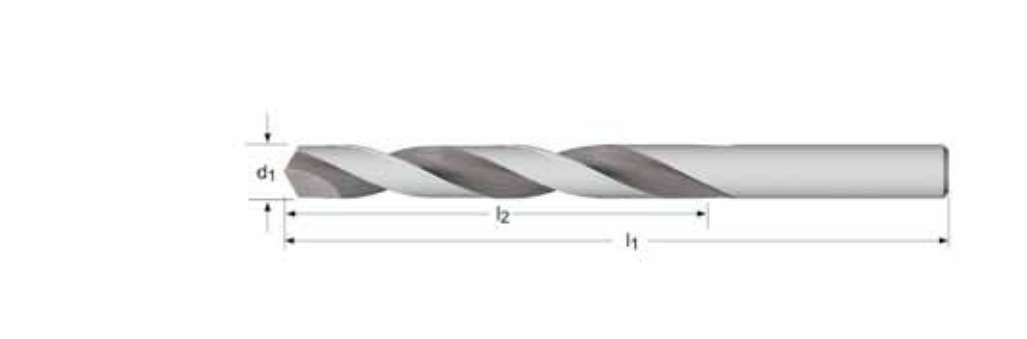
A160 DIN 338 | 4XD | HSS HM | 118° | ST | N

A160

- Jobber Drill
- Spiralbohrer
- Korte spiraalboren
- Foret court
- Broca , serie corta
- Broca Curta

A160 ▪ 3.1 3.2 3.3 3.4

• 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.2 9.1



A160

4.00 - 16.00

d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A160
4.00	0.1575	43	75	A1604.0
4.50	0.1772	47	80	A1604.5
5.00	0.1969	52	86	A1605.0
5.50	0.2165	57	93	A1605.5
6.00	0.2362	57	93	A1606.0
6.50	0.2559	63	101	A1606.5
6.80	0.2677	69	109	A1606.8
7.00	0.2756	69	109	A1607.0
7.50	0.2953	69	109	A1607.5
8.00	0.3150	75	117	A1608.0
8.50	0.3346	75	117	A1608.5
9.00	0.3543	81	125	A1609.0
9.50	0.3740	81	125	A1609.5
10.00	0.3937	87	133	A16010.0
10.20	0.4016	87	133	A16010.2
10.50	0.4134	87	133	A16010.5
11.00	0.4331	94	142	A16011.0
11.50	0.4528	94	142	A16011.5
12.00	0.4724	101	151	A16012.0
13.00	0.5118	101	151	A16013.0
14.00	0.5512	108	160	A16014.0
15.00	0.5906	114	169	A16015.0
16.00	0.6299	120	178	A16016.0

DORMER

A510 DIN 338 4XD HSS 130° TiN

A510

- ADX Jobber Drill
- ADX Spiralbohrer
- ADX Korte spiraalboren
- Foret court ADX
- Broca ADX , serie corta
- Broca ADX Curta

A510																				
▪	1.1	1.2	1.3	1.4	1.5	2.1	2.2	3.1	3.2	3.3	3.4	6.2	6.3	7.2	7.3	7.4	8.1	8.2	8.3
▪	1.6	2.3	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.4	7.1								

d_1 $Øh_8$ "/Nr./letter	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A510
	3.00	0.1181	33	61	A5103.0
	3.10	0.1220	36	65	A5103.1
1/8	3.18	0.1252	36	65	A5101/8
	3.20	0.1260	36	65	A5103.2
	3.30	0.1299	36	65	A5103.3
	3.40	0.1339	39	70	A5103.4
	3.50	0.1378	39	70	A5103.5
9/64	3.57	0.1406	39	70	A5109/64
	3.60	0.1417	39	70	A5103.6
	3.70	0.1457	39	70	A5103.7
	3.80	0.1496	43	75	A5103.8
	3.90	0.1535	43	75	A5103.9
5/32	3.97	0.1563	43	75	A5105/32
	4.00	0.1575	43	75	A5104.0
	4.10	0.1614	43	75	A5104.1
	4.20	0.1654	43	75	A5104.2
	4.30	0.1693	47	80	A5104.3
11/64	4.37	0.1720	47	80	A51011/64
	4.40	0.1732	47	80	A5104.4
	4.50	0.1772	47	80	A5104.5
	4.60	0.1811	47	80	A5104.6
	4.70	0.1850	47	80	A5104.7
3/16	4.76	0.1874	52	86	A5103/16
	4.80	0.1890	52	86	A5104.8
	4.90	0.1929	52	86	A5104.9
	5.00	0.1969	52	86	A5105.0
	5.10	0.2008	52	86	A5105.1
13/64	5.16	0.2031	52	86	A51013/64
	5.20	0.2047	52	86	A5105.2
	5.30	0.2087	52	86	A5105.3
	5.40	0.2126	57	93	A5105.4
	5.50	0.2165	57	93	A5105.5

d_1 $Øh_8$ "/Nr./letter	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A510
7/32	5.56	0.2189	57	93	A5107/32
	5.60	0.2205	57	93	A5105.6
	5.70	0.2244	57	93	A5105.7
	5.80	0.2283	57	93	A5105.8
	5.90	0.2323	57	93	A5105.9
15/64	5.95	0.2343	57	93	A51015/64
	6.00	0.2362	57	93	A5106.0
	6.10	0.2402	63	101	A5106.1
	6.20	0.2441	63	101	A5106.2
	6.30	0.2480	63	101	A5106.3
1/4	6.35	0.2500	63	101	A5101/4
	6.40	0.2520	63	101	A5106.4
	6.50	0.2559	63	101	A5106.5
	6.60	0.2598	63	101	A5106.6
	6.70	0.2638	63	101	A5106.7
17/64	6.75	0.2657	69	109	A51017/64
	6.80	0.2677	69	109	A5106.8
	6.90	0.2717	69	109	A5106.9
	7.00	0.2756	69	109	A5107.0
	7.10	0.2795	69	109	A5107.1
9/32	7.14	0.2811	69	109	A5109/32
	7.20	0.2835	69	109	A5107.2
	7.30	0.2874	69	109	A5107.3
	7.40	0.2913	69	109	A5107.4
	7.50	0.2953	69	109	A5107.5
19/64	7.54	0.2969	75	117	A51019/64
	7.60	0.2992	75	117	A5107.6
	7.70	0.3031	75	117	A5107.7
	7.80	0.3071	75	117	A5107.8
	7.90	0.3110	75	117	A5107.9
5/16	7.94	0.3126	75	117	A5105/16
	8.00	0.3150	75	117	A5108.0
	8.10	0.3189	75	117	A5108.1
	8.20	0.3228	75	117	A5108.2
	8.30	0.3268	75	117	A5108.3
21/64	8.33	0.3280	75	117	A51021/64
	8.40	0.3307	75	117	A5108.4
	8.50	0.3346	75	117	A5108.5
	8.60	0.3386	81	125	A5108.6
	8.70	0.3425	81	125	A5108.7
11/32	8.73	0.3437	81	125	A51011/32
	8.80	0.3465	81	125	A5108.8
	8.90	0.3504	81	125	A5108.9
	9.00	0.3543	81	125	A5109.0
	9.10	0.3583	81	125	A5109.1
23/64	9.13	0.3594	81	125	A51023/64
	9.20	0.3622	81	125	A5109.2
	9.30	0.3661	81	125	A5109.3
	9.40	0.3701	81	125	A5109.4
	9.50	0.3740	81	125	A5109.5
3/8	9.52	0.3748	87	133	A5103/8
	9.60	0.3780	87	133	A5109.6
	9.70	0.3819	87	133	A5109.7
	9.80	0.3858	87	133	A5109.8
	9.90	0.3898	87	133	A5109.9
25/64	9.92	0.3906	87	133	A51025/64
	10.00	0.3937	87	133	A51010.0
	10.10	0.3976	87	133	A51010.1
	10.20	0.4016	87	133	A51010.2
	10.30	0.4055	87	133	A51010.3
13/32	10.32	0.4063	87	133	A51013/32
	10.40	0.4094	87	133	A51010.4
	10.50	0.4134	87	133	A51010.5
	10.60	0.4173	87	133	A51010.6
	10.70	0.4213	94	142	A51010.7
27/64	10.72	0.4220	94	142	A51027/64
	10.80	0.4252	94	142	A51010.8
	10.90	0.4291	94	142	A51010.9

d_1 Øh$_8$ "/Nr./letter	d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A510
	11.00	0.4331	94	142	A51011.0
	11.10	0.4370	94	142	A51011.1
7/16	11.11	0.4374	94	142	A5107/16
	11.20	0.4409	94	142	A51011.2
	11.30	0.4449	94	142	A51011.3
	11.40	0.4488	94	142	A51011.4
	11.50	0.4528	94	142	A51011.5
29/64	11.51	0.4531	94	142	A51029/64
	11.60	0.4567	94	142	A51011.6
	11.70	0.4606	94	142	A51011.7
	11.80	0.4646	94	142	A51011.8
	11.90	0.4685	101	151	A51011.9
15/32	11.91	0.4689	101	151	A51015/32
	12.00	0.4724	101	151	A51012.0
	12.10	0.4764	101	151	A51012.1
	12.20	0.4803	101	151	A51012.2
	12.30	0.4843	101	151	A51012.3
31/64	12.30	0.4843	101	151	A51031/64
	12.40	0.4882	101	151	A51012.4
	12.50	0.4921	101	151	A51012.5
	12.60	0.4961	101	151	A51012.6
	12.70	0.5000	101	151	A51012.7
1/2	12.70	0.5000	101	151	A5101/2
	12.80	0.5039	101	151	A51012.8
	12.90	0.5079	101	151	A51012.9
	13.00	0.5118	101	151	A51013.0
	14.00	0.5512	108	160	A51014.0

A553 DORMER | 5XD | HSS-E | 130° | TiAlN Top | DIN 6535HA | S.P.

A554 DORMER | 5XD | HSS-E | 130° | TiAlN Top | DIN 6535HE | S.P.

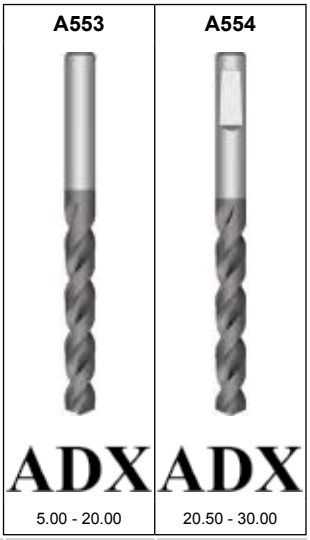
A553
A554

- ADX Drill Oil Feed
- ADX Spiralbohrer - Kühlkanal
- ADX Spiraalboren, lang met koelkanalen
- Foret ADX - à trous d'huile
- Broca ADX - refrigeración interna
- Broca ADX - Lub.

A553; A554

▪ 1.1 | 1.2 | 1.3 | 1.4 | 1.5 | 1.6 | 2.1 | 2.2 | 3.1 | 3.2 | 3.3 | 3.4 | 4.1 | 6.2 | 6.3 | 7.2 | 7.3 | 7.4 | 8.1

• 2.3 | 4.2 | 4.3 | 5.1 | 5.2 | 5.3 | 6.1 | 6.4 | 7.1



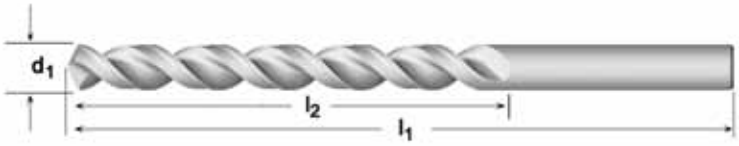
d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Øh$_6$ mm	A553	A554
5.00	0.1969	36	79	36	6	A5535.0	
5.20	0.2047	38	79	36	6	A5535.2	
5.50	0.2165	40	79	36	6	A5535.5	
6.00	0.2362	43	79	36	6	A5536.0	
6.30	0.2480	46	87	36	8	A5536.3	
6.50	0.2559	47	87	36	8	A5536.5	
6.80	0.2677	48	87	36	8	A5536.8	
6.90	0.2717	48	87	36	8	A5536.9	
7.00	0.2756	48	87	36	8	A5537.0	
7.40	0.2913	54	94	36	8	A5537.4	
7.50	0.2953	54	94	36	8	A5537.5	
8.00	0.3150	58	94	36	8	A5538.0	
8.50	0.3346	75	130	40	10	A5538.5	
8.70	0.3425	75	130	40	10	A5538.7	
9.00	0.3543	75	130	40	10	A5539.0	
9.50	0.3740	75	130	40	10	A5539.5	
10.00	0.3937	75	130	40	10	A55310.0	
10.20	0.4016	87	150	45	12	A55310.2	
10.30	0.4055	87	150	45	12	A55310.3	
10.50	0.4134	87	150	45	12	A55310.5	
11.00	0.4330	94	150	45	12	A55311.0	
11.30	0.4449	94	150	45	12	A55311.3	
11.50	0.4528	94	150	45	12	A55311.5	
12.00	0.4724	94	150	45	12	A55312.0	
12.50	0.4921	101	160	45	14	A55312.5	
13.00	0.5118	101	160	45	14	A55313.0	
13.50	0.5315	101	160	45	14	A55313.5	
14.00	0.5512	101	160	45	14	A55314.0	

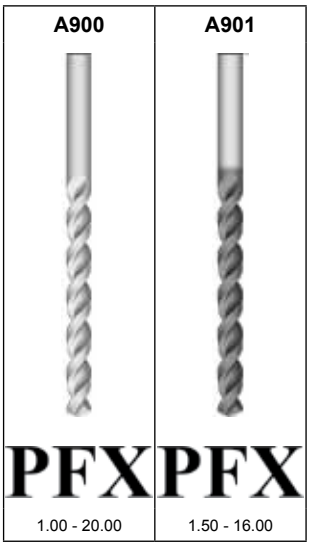
d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 $Øh_6$ mm	A553	A554
14.25	0.5610	108	170	48	16	A55314.25	
14.50	0.5709	108	170	48	16	A55314.5	
15.00	0.5906	108	170	48	16	A55315.0	
15.25	0.6004	108	170	48	16	A55315.25	
15.50	0.6102	108	170	48	16	A55315.5	
16.00	0.6299	108	170	48	16	A55316.0	
16.50	0.6496	125	190	48	18	A55316.5	
17.00	0.6693	125	190	48	18	A55317.0	
17.50	0.6890	130	190	48	18	A55317.5	
17.75	0.6988	130	190	48	18	A55317.75	
18.00	0.7087	130	190	48	18	A55318.0	
19.00	0.7480	135	200	50	20	A55319.0	
19.25	0.7579	140	200	50	20	A55319.25	
20.00	0.7874	140	200	50	20	A55320.0	
20.50	0.8071	141	219	56	25		A55420.5
21.00	0.8268	141	219	56	25		A55421.0
21.50	0.8465	148	226	56	25		A55421.5
22.00	0.8661	148	226	56	25		A55422.0
22.50	0.8858	155	233	56	25		A55422.5
23.00	0.9055	155	233	56	25		A55423.0
24.00	0.9449	162	240	56	25		A55424.0
24.50	0.9646	168	240	56	25		A55424.5
25.00	0.9843	168	246	56	25		A55425.0
26.00	1.0236	175	257	60	32		A55426.0
26.50	1.0433	182	264	60	32		A55426.5
27.00	1.0630	182	264	60	32		A55427.0
28.00	1.1024	189	271	60	32		A55428.0
29.00	1.1417	195	277	60	32		A55429.0
29.50	1.1614	202	284	60	32		A55429.5
30.00	1.1811	202	284	60	32		A55430.0

A900
A901

- PFX Jobber Drill
- PFX - Spiralbohrer
- PFX Korte spiraalboren
- Foret PFX court
- Broca PFX Serie Corta
- Broca Curta PFX

A900	■	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	4.1	4.2	4.3	5.1	5.2	5.3	7.2
	●	3.1	3.2	3.3	3.4	6.1	6.2	6.3	6.4	7.1	7.3	7.4	8.1	8.2			
A901	■	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	7.4		
	●	4.1	4.2	4.3	5.1	5.2	5.3	6.3	6.4								





d_1 Øh_8 Inch	d_1 Øh_8 mm	d_1 decimal Inch	l_2 mm	l_1 mm	A900	A901
	1.00	0.0394	12	34	A9001.0	
60	1.02	0.0402	17	41	A900N60	
59	1.04	0.0409	17	41	A900N59	
58	1.07	0.0421	17	41	A900N58	
57	1.09	0.0429	19	44	A900N57	
	1.10	0.0433	14	36	A9001.1	
56	1.18	0.0465	19	44	A900N56	
3/64	1.19	0.0469	19	44	A9003/64	
	1.20	0.0472	16	38	A9001.2	
	1.25	0.0492	16	36	A9001.25	
	1.30	0.0512	16	38	A9001.3	
55	1.32	0.0520	22	48	A900N55	
	1.35	0.0531	18	40	A9001.35	
	1.40	0.0551	18	40	A9001.4	
	1.45	0.0571	18	40	A9001.45	
	1.50	0.0591	18	40	A9001.5	A9011.5
53	1.51	0.0594	22	48	A900N53	A901N53
	1.55	0.0610	20	43	A9001.55	A9011.55
1/16	1.59	0.0626	22	48	A9001/16	A9011/16
	1.60	0.0630	20	43	A9001.6	A9011.6
52	1.61	0.0634	22	48	A900N52	A901N52
	1.70	0.0669	20	43	A9001.7	
51	1.70	0.0669	25	51		A901N51
	1.75	0.0689	22	46	A9001.75	A9011.75

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A900	A901
50	1.78	0.0701	25	51	A900N50	A901N50
	1.80	0.0709	22	46	A9001.8	A9011.8
49	1.85	0.0728	25	51	A900N49	A901N49
	1.90	0.0748	22	46	A9001.9	A9011.9
48	1.93	0.0760	25	51	A900N48	A901N48
5/64	1.98	0.0780	25	51	A9005/64	A9015/64
47	1.99	0.0783	25	51	A900N47	A901N47
	2.00	0.0787	24	49	A9002.0	A9012.0
46	2.06	0.0811	29	54	A900N46	A901N46
45	2.08	0.0819	29	54	A900N45	A901N45
	2.10	0.0827	24	49	A9002.1	A9012.1
	2.15	0.0846	27	53	A9002.15	A9012.15
44	2.18	0.0858	29	54	A900N44	A901N44
	2.20	0.0866	27	53	A9002.2	
43	2.26	0.0890	32	57	A900N43	A901N43
	2.30	0.0906	27	53	A9002.3	
	2.35	0.0925	27	53	A9002.35	A9012.35
42	2.38	0.0937	32	57	A900N42	A901N42
3/32	2.38	0.0937	32	57	A9003/32	A9013/32
	2.40	0.0945	30	57	A9002.4	A9012.4
41	2.44	0.0961	35	60	A900N41	A901N41
40	2.49	0.0980	35	60	A900N40	A901N40
	2.50	0.0984	30	57	A9002.5	A9012.5
39	2.53	0.0996	35	60	A900N39	A901N39
38	2.58	0.1016	37	64	A900N38	A901N38
	2.60	0.1024	30	57	A9002.6	A9012.6
37	2.64	0.1039	37	64	A900N37	A901N37
	2.70	0.1063	33	61	A9002.7	A9012.7
36	2.71	0.1067	37	64	A900N36	A901N36
7/64	2.78	0.1094	38	67	A9007/64	A9017/64
35	2.79	0.1098	38	67	A900N35	A901N35
	2.80	0.1102	33	61	A9002.8	
34	2.82	0.1110	38	67	A900N34	A901N34
33	2.87	0.1130	38	67	A900N33	A901N33
	2.90	0.1142	33	61	A9002.9	A9012.9
32	2.95	0.1161	41	70	A900N32	A901N32
	3.00	0.1181	33	61	A9003.0	A9013.0
31	3.05	0.1201	41	70	A900N31	A901N31
	3.10	0.1220	36	65	A9003.1	A9013.1
1/8	3.18	0.1252	41	70	A9001/8	A9011/8
	3.20	0.1260	36	65	A9003.2	A9013.2
30	3.26	0.1283	41	70	A900N30	A901N30
	3.30	0.1299	36	65	A9003.3	A9013.3
	3.40	0.1339	39	70	A9003.4	A9013.4
29	3.45	0.1358	44	73	A900N29	A901N29
	3.50	0.1378	39	70	A9003.5	A9013.5
9/64	3.57	0.1406	44	73	A9009/64	A9019/64
	3.60	0.1417	39	70	A9003.6	A9013.6
27	3.66	0.1441	48	76	A900N27	A901N27
	3.70	0.1457	39	70	A9003.7	A9013.7
26	3.73	0.1469	48	76	A900N26	A901N26
	3.80	0.1496	43	75	A9003.8	A9013.8
24	3.86	0.1520	51	79	A900N24	A901N24
	3.90	0.1535	43	75	A9003.9	A9013.9
23	3.91	0.1539	51	79	A900N23	A901N23
5/32	3.97	0.1563	51	79	A9005/32	A9015/32
22	3.99	0.1571	51	79	A900N22	A901N22
	4.00	0.1575	43	75	A9004.0	A9014.0
21	4.04	0.1591	54	83	A900N21	A901N21
20	4.09	0.1610	54	83	A900N20	A901N20
	4.10	0.1614	43	75	A9004.1	A9014.1
	4.20	0.1654	43	75	A9004.2	A9014.2
19	4.22	0.1661	54	83	A900N19	A901N19
	4.30	0.1693	47	80	A9004.3	A9014.3
18	4.31	0.1697	54	83	A900N18	A901N18
11/64	4.37	0.1720	54	83	A90011/64	A90111/64
17	4.39	0.1728	56	86	A900N17	A901N17
	4.40	0.1732	47	80	A9004.4	A9014.4
	4.50	0.1772	47	80	A9004.5	A9014.5
15	4.57	0.1799	56	86	A900N15	A901N15

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A900	A901
	4.60	0.1811	47	80	A9004.6	A9014.6
14	4.62	0.1819	56	86	A900N14	A901N14
	4.70	0.1850	47	80	A9004.7	A9014.7
3/16	4.76	0.1874	59	89	A9003/16	A9013/16
	4.80	0.1890	52	86	A9004.8	A9014.8
11	4.85	0.1909	59	89	A900N11	A901N11
	4.90	0.1929	52	86	A9004.9	A9014.9
10	4.92	0.1937	62	92	A900N10	A901N10
9	4.98	0.1961	62	92	A900N9	A901N9
	5.00	0.1969	52	86	A9005.0	A9015.0
8	5.06	0.1992	62	92	A900N8	A901N8
	5.10	0.2008	52	86	A9005.1	A9015.1
7	5.11	0.2012	62	92	A900N7	A901N7
13/64	5.16	0.2031	62	92	A90013/64	A90113/64
6	5.18	0.2039	64	95	A900N6	A901N6
	5.20	0.2047	52	86	A9005.2	A9015.2
5	5.22	0.2055	64	95	A900N5	A901N5
	5.30	0.2087	52	86	A9005.3	A9015.3
4	5.31	0.2091	64	95	A900N4	A901N4
	5.40	0.2126	57	93	A9005.4	A9015.4
3	5.41	0.2130	64	95	A900N3	A901N3
	5.50	0.2165	57	93	A9005.5	A9015.5
7/32	5.56	0.2189	64	95	A9007/32	A9017/32
	5.60	0.2205	57	93	A9005.6	A9015.6
2	5.61	0.2209	67	98	A900N2	A901N2
	5.70	0.2244	57	93	A9005.7	A9015.7
1	5.79	0.2280	67	98	A900N1	A901N1
	5.80	0.2283	57	93	A9005.8	A9015.8
	5.90	0.2323	57	93	A9005.9	A9015.9
A	5.94	0.2339	67	98	A900A	A901A
15/64	5.95	0.2343	67	98	A90015/64	A90115/64
	6.00	0.2362	57	93	A9006.0	A9016.0
B	6.03	0.2374	70	102	A900B	A901B
	6.10	0.2402	63	101	A9006.1	A9016.1
C	6.15	0.2421	70	102	A900C	A901C
	6.20	0.2441	63	101	A9006.2	A9016.2
D	6.25	0.2461	70	102	A900D	A901D
	6.30	0.2480	63	101	A9006.3	A9016.3
1/4	6.35	0.2500	70	102	A9001/4	A9011/4
	6.40	0.2520	63	101	A9006.4	A9016.4
	6.50	0.2559	63	101	A9006.5	A9016.5
F	6.53	0.2571	73	105	A900F	A901F
	6.60	0.2598	63	101	A9006.6	A9016.6
G	6.63	0.2610	73	105	A900G	A901G
	6.70	0.2638	63	101	A9006.7	A9016.7
17/64	6.75	0.2657	73	105	A90017/64	A90117/64
H	6.76	0.2661	73	105	A900H	A901H
	6.80	0.2677	69	109	A9006.8	A9016.8
	6.90	0.2717	69	109	A9006.9	A9016.9
I	6.91	0.2720	73	105	A900I	A901I
	7.00	0.2756	69	109	A9007.0	A9017.0
J	7.04	0.2772	73	105	A900J	A901J
	7.10	0.2795	69	109	A9007.1	A9017.1
9/32	7.14	0.2811	75	108	A9009/32	A9019/32
	7.20	0.2835	69	109	A9007.2	A9017.2
	7.30	0.2874	69	109	A9007.3	A9017.3
L	7.37	0.2902	75	108	A900L	A901L
	7.40	0.2913	69	109	A9007.4	A9017.4
M	7.49	0.2949	78	111	A900M	A901M
	7.50	0.2953	69	109	A9007.5	A9017.5
19/64	7.54	0.2969	78	111	A90019/64	A90119/64
	7.60	0.2992	75	117	A9007.6	A9017.6
N	7.67	0.3020	78	111	A900N	A901N
	7.70	0.3031	75	117	A9007.7	A9017.7
	7.80	0.3071	75	117	A9007.8	A9017.8
	7.90	0.3110	75	117	A9007.9	A9017.9
5/16	7.94	0.3126	81	114	A9005/16	A9015/16
	8.00	0.3150	75	117	A9008.0	A9018.0
O	8.03	0.3161	81	114	A900O	A901O
	8.10	0.3189	75	117	A9008.1	A9018.1

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A900	A901
	8.20	0.3228	75	117	A9008.2	A9018.2
	8.30	0.3268	75	117	A9008.3	A9018.3
21/64	8.33	0.3280	84	117	A90021/64	A90121/64
	8.40	0.3307	75	117	A9008.4	A9018.4
Q	8.43	0.3319	87	121	A900Q	A901Q
	8.50	0.3346	75	117	A9008.5	A9018.5
	8.60	0.3386	81	125	A9008.6	A9018.6
R	8.61	0.3390	87	121	A900R	A901R
	8.70	0.3425	81	125	A9008.7	A9018.7
11/32	8.73	0.3437	87	121	A90011/32	A90111/32
	8.80	0.3465	81	125	A9008.8	A9018.8
S	8.84	0.3480	89	124	A900S	A901S
	8.90	0.3504	81	125	A9008.9	A9018.9
	9.00	0.3543	81	125	A9009.0	A9019.0
T	9.09	0.3579	89	124	A900T	A901T
	9.10	0.3583	81	125	A9009.1	A9019.1
23/64	9.13	0.3594	89	124	A90023/64	A90123/64
	9.20	0.3622	81	125	A9009.2	A9019.2
	9.30	0.3661	81	125	A9009.3	A9019.3
U	9.35	0.3681	92	127	A900U	A901U
	9.40	0.3701	81	125	A9009.4	A9019.4
	9.50	0.3740	81	125	A9009.5	A9019.5
3/8	9.52	0.3748	92	127	A9003/8	A9013/8
V	9.58	0.3772	92	127	A900V	A901V
	9.60	0.3780	87	133	A9009.6	A9019.6
	9.70	0.3819	87	133	A9009.7	A9019.7
	9.80	0.3858	87	133	A9009.8	A9019.8
	9.90	0.3898	87	133	A9009.9	A9019.9
25/64	9.92	0.3906	95	130	A90025/64	A90125/64
	10.00	0.3937	87	133	A90010.0	A90110.0
X	10.08	0.3969	95	130	A900X	A901X
	10.20	0.4016	87	133	A90010.2	A90110.2
Y	10.26	0.4039	98	133	A900Y	A901Y
	10.30	0.4055	87	133	A90010.3	A90110.3
13/32	10.32	0.4063	98	133	A90013/32	A90113/32
	10.40	0.4094	87	133	A90010.4	A90110.4
Z	10.49	0.4130	98	133	A900Z	A901Z
	10.50	0.4134	87	133	A90010.5	A90110.5
27/64	10.72	0.4220	100	137	A90027/64	A90127/64
	10.75	0.4232	94	142	A90010.75	A90110.75
	10.80	0.4252	94	142	A90010.8	A90110.8
	11.00	0.4331	94	142	A90011.0	A90111.0
7/16	11.11	0.4374	103	140	A9007/16	A9017/16
	11.20	0.4409	94	142	A90011.2	A90111.2
	11.25	0.4429	94	142	A90011.25	A90111.25
	11.50	0.4528	94	142	A90011.5	A90111.5
29/64	11.51	0.4531	106	143	A90029/64	A90129/64
	11.80	0.4646	94	142	A90011.8	A90111.8
15/32	11.91	0.4689	110	146	A90015/32	A90115/32
	12.00	0.4724	101	151	A90012.0	A90112.0
	12.20	0.4803	101	151	A90012.2	A90112.2
31/64	12.30	0.4843	111	149	A90031/64	A90131/64
	12.50	0.4921	101	151	A90012.5	A90112.5
1/2	12.70	0.5000	101	151	A9001/2	A9011/2
	12.75	0.5020	101	151	A90012.75	A90112.75
	12.80	0.5039	101	151	A90012.8	A90112.8
	12.90	0.5079	101	151	A90012.9	
	13.00	0.5118	101	151	A90013.0	A90113.0
33/64	13.10	0.5157	122	168	A90033/64	A90133/64
	13.50	0.5315	108	160	A90013.5	A90113.5
35/64	13.89	0.5469	122	168	A90035/64	A90135/64
	14.00	0.5512	108	160	A90014.0	A90114.0
9/16	14.29	0.5626	122	168	A9009/16	A9019/16
	14.50	0.5709	114	169	A90014.5	A90114.5
37/64	14.68	0.5780	122	168	A90037/64	A90137/64
	14.75	0.5807	114	169	A90014.75	A90114.75
	15.00	0.5906	114	169	A90015.0	A90115.0
19/32	15.08	0.5937	132	181	A90019/32	A90119/32

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A900	A901
39/64	15.48	0.6094	132	181	A90039/64	A90139/64
	15.50	0.6102	120	178	A90015.5	A90115.5
5/8	15.88	0.6252	132	181	A9005/8	A9015/8
	16.00	0.6299	120	178	A90016.0	A90116.0
41/64	16.27	0.6406	132	181	A90041/64	
	16.50	0.6496	125	184	A90016.5	
21/32	16.67	0.6563	132	181	A90021/32	
	16.75	0.6594	125	184	A90016.75	
	17.00	0.6693	125	184	A90017.0	
43/64	17.07	0.6720	143	194	A90043/64	
11/16	17.46	0.6874	143	194	A90011/16	
	17.50	0.6890	130	191	A90017.5	
45/64	17.86	0.7031	130	191	A90045/64	
	18.00	0.7087	130	191	A90018.0	
23/32	18.26	0.7189	130	191	A90023/32	
	18.50	0.7283	135	198	A90018.5	
47/64	18.65	0.7343	135	198	A90047/64	
	19.00	0.7480	135	198	A90019.0	
3/4	19.05	0.7500	135	198	A9003/4	
49/64	19.45	0.7657	135	198	A90049/64	
	19.50	0.7677	140	205	A90019.5	
25/32	19.84	0.7811	140	205	A90025/32	
	20.00	0.7874	140	205	A90020.0	

DORMER

A243 ANSI | 4XD | HSS | 135° | N | NAS 907

A244 ANSI | 4XD | HSS | 118° | N | NAS 907

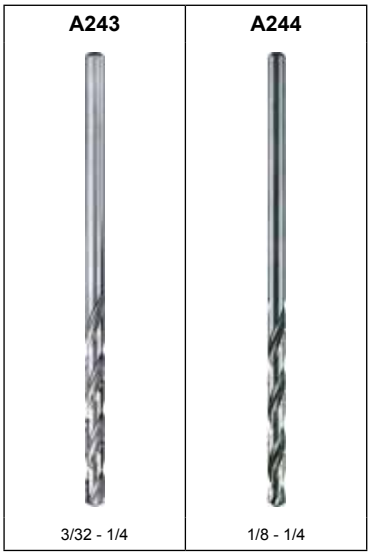
A243
A244

- Aircraft Extension Drill
- Bohrer für die Flugzeugindustrie
- Aircraft spiraalboren
- Foret aéronautique à queue cylindrique rallongée
- Broca extralarga para la industria Aeronáutica
- Broca p/ Aviação Haste Longa

6” and 12” Overall Length
150 mm Gesamtlänge
150 mm totale lengte
Longueur totale de 150 mm
Longitud Total 150 mm
Comprimento Total 150mm

A243: A244

▪	1.5	1.6	2.2	2.3	3.4	4.1	4.2	4.3	5.1	6.4	7.4
▪	1.3	1.4	2.1	3.1	3.2	3.3	5.2	5.3	6.3	9.1	



d_1 Øh8 Inch	d_1 decimal Inch	l_2 Inch	l_1 Inch	A243	A244
3/32X6	0.0938	1.1/4	6“	A2433/32X6	
40	0.0980	1.3/8	6“	A243N40X6	
1/8X6	0.1250	1.5/8	6“	A2431/8X6	A2441/8X6
30	0.1285	1.5/8	6“	A243N30X6	
5/32X6	0.1563	2“	6“	A2435/32X6	A2445/32X6
21	0.1590	2.1/8	6“	A243N21X6	
20	0.1610	2.1/8	6“	A243N20X6	
3/16	0.1875	2.5/16	6“	A2433/16X6	A2443/16X6
11	0.1910	2.5/16	6“	A243N11X6	
10	0.1935	2.7/16	6“	A243N10X6	
1/4X6	0.2500	2.3/4	6“	A2431/4X6	A2441/4X6

A110 DIN 340 | 6XD | HSS | 118° | ST | N

A110

- Long Series Drill — Bright below 1.0mm, 1/16”
- Lange Spiralbohrer — Blank bis Ø 1mm
- Lange spiraalboren — Blank beneden 1,0mm, 3/16”
- Foret série longue — Brillant au dessous de 1,0 mm, 1/16
- Broca, serie larga — Brillante por debajo de 1,0mm,1/16”
- Broca Longa — Brilhante abaixo de 1.0mm, 1/16”

A110 • 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 8.2 8.3 9.1

A110

0.50 - 1“

d_1 Øh$_8$ Inch	d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A110
	0.50	0.0197	12	32	A110.5
	0.60	0.0236	15	35	A110.6
	0.70	0.0276	21	42	A110.7
1/32	0.79	0.0311	25	46	A1101/32
	0.80	0.0315	25	46	A110.8
	0.90	0.0354	29	51	A110.9
	1.00	0.0394	33	56	A1101.0
	1.10	0.0433	37	60	A1101.1
	1.20	0.0472	41	65	A1101.2
	1.30	0.0512	41	65	A1101.3
	1.40	0.0551	45	70	A1101.4
	1.50	0.0591	45	70	A1101.5
1/16	1.59	0.0626	50	76	A1101/16
	1.60	0.0630	50	76	A1101.6
	1.70	0.0669	50	76	A1101.7
	1.75	0.0689	53	80	A1101.75
	1.80	0.0709	53	80	A1101.8
	1.90	0.0748	53	80	A1101.9
5/64	1.98	0.0780	56	85	A1105/64
	2.00	0.0787	56	85	A1102.0
	2.05	0.0807	56	85	A1102.05
	2.10	0.0827	56	85	A1102.1
	2.20	0.0866	59	90	A1102.2
	2.25	0.0886	59	90	A1102.25
	2.30	0.0906	59	90	A1102.3
3/32	2.38	0.0937	62	95	A1103/32
	2.40	0.0945	62	95	A1102.4
	2.50	0.0984	62	95	A1102.5

d_1 Øh$_8$ Inch	d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A110
	2.60	0.1024	62	95	A1102.6
	2.70	0.1063	66	100	A1102.7
7/64	2.78	0.1094	66	100	A1107/64
	2.80	0.1102	66	100	A1102.8
	2.90	0.1142	66	100	A1102.9
	3.00	0.1181	66	100	A1103.0
	3.10	0.1220	69	106	A1103.1
1/8	3.18	0.1252	69	106	A1101/8
	3.20	0.1260	69	106	A1103.2
	3.25	0.1280	69	106	A1103.25
	3.30	0.1299	69	106	A1103.3
	3.40	0.1339	73	112	A1103.4
	3.50	0.1378	73	112	A1103.5
9/64	3.57	0.1406	73	112	A1109/64
	3.60	0.1417	73	112	A1103.6
	3.70	0.1457	73	112	A1103.7
	3.75	0.1476	73	112	A1103.75
	3.80	0.1496	78	119	A1103.8
	3.90	0.1535	78	119	A1103.9
5/32	3.97	0.1563	78	119	A1105/32
	4.00	0.1575	78	119	A1104.0
	4.10	0.1614	78	119	A1104.1
	4.20	0.1654	78	119	A1104.2
	4.25	0.1673	78	119	A1104.25
	4.30	0.1693	82	126	A1104.3
11/64	4.37	0.1720	82	126	A11011/64
	4.40	0.1732	82	126	A1104.4
	4.50	0.1772	82	126	A1104.5
	4.60	0.1811	82	126	A1104.6
	4.70	0.1850	82	126	A1104.7
	4.75	0.1870	82	126	A1104.75
3/16	4.76	0.1874	87	132	A1103/16
	4.80	0.1890	87	132	A1104.8
	4.90	0.1929	87	132	A1104.9
	5.00	0.1969	87	132	A1105.0
	5.10	0.2008	87	132	A1105.1
13/64	5.16	0.2031	87	132	A11013/64
	5.20	0.2047	87	132	A1105.2
	5.25	0.2067	87	132	A1105.25
	5.30	0.2087	87	132	A1105.3
	5.40	0.2126	91	139	A1105.4
	5.50	0.2165	91	139	A1105.5
7/32	5.56	0.2189	91	139	A1107/32
	5.60	0.2205	91	139	A1105.6
	5.70	0.2244	91	139	A1105.7
	5.75	0.2264	91	139	A1105.75
	5.80	0.2283	91	139	A1105.8
	5.90	0.2323	91	139	A1105.9
15/64	5.95	0.2343	91	139	A11015/64
	6.00	0.2362	91	139	A1106.0
	6.10	0.2402	97	148	A1106.1
	6.20	0.2441	97	148	A1106.2
	6.25	0.2461	97	148	A1106.25
	6.30	0.2480	97	148	A1106.3
1/4	6.35	0.2500	97	148	A1101/4
	6.40	0.2520	97	148	A1106.4
	6.50	0.2559	97	148	A1106.5
	6.60	0.2598	97	148	A1106.6
	6.70	0.2638	97	148	A1106.7
17/64	6.75	0.2657	102	156	A11017/64

d_1 $\emptyset h_8$ Inch	d_1 $\emptyset h_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A110
	6.75	0.2657	102	156	A1106.75
	6.80	0.2677	102	156	A1106.8
	6.90	0.2717	102	156	A1106.9
	7.00	0.2756	102	156	A1107.0
	7.10	0.2795	102	156	A1107.1
9/32	7.14	0.2811	102	156	A1109/32
	7.20	0.2835	102	156	A1107.2
	7.25	0.2854	102	156	A1107.25
	7.30	0.2874	102	156	A1107.3
	7.40	0.2913	102	156	A1107.4
	7.50	0.2953	102	156	A1107.5
	7.60	0.2992	109	165	A1107.6
	7.70	0.3031	109	165	A1107.7
	7.75	0.3051	109	165	A1107.75
	7.80	0.3071	109	165	A1107.8
	7.90	0.3110	109	165	A1107.9
5/16	7.94	0.3126	109	165	A1105/16
	8.00	0.3150	109	165	A1108.0
	8.10	0.3189	109	165	A1108.1
	8.20	0.3228	109	165	A1108.2
	8.25	0.3248	109	165	A1108.25
	8.30	0.3268	109	165	A1108.3
	8.40	0.3307	109	165	A1108.4
	8.50	0.3346	109	165	A1108.5
	8.60	0.3386	115	175	A1108.6
	8.70	0.3425	115	175	A1108.7
11/32	8.73	0.3437	115	175	A11011/32
	8.75	0.3445	115	175	A1108.75
	8.80	0.3465	115	175	A1108.8
	8.90	0.3504	115	175	A1108.9
	9.00	0.3543	115	175	A1109.0
	9.10	0.3583	115	175	A1109.1
	9.20	0.3622	115	175	A1109.2
	9.25	0.3642	115	175	A1109.25
	9.30	0.3661	115	175	A1109.3
	9.40	0.3701	115	175	A1109.4
	9.50	0.3740	115	175	A1109.5
3/8	9.52	0.3748	121	184	A1103/8
	9.60	0.3780	121	184	A1109.6
	9.70	0.3819	121	184	A1109.7
	9.75	0.3839	121	184	A1109.75
	9.80	0.3858	121	184	A1109.8
	9.90	0.3898	121	184	A1109.9
	10.00	0.3937	121	184	A11010.0
	10.10	0.3976	121	184	A11010.1
	10.20	0.4016	121	184	A11010.2
	10.25	0.4035	121	184	A11010.25
	10.30	0.4055	121	184	A11010.3
13/32	10.32	0.4063	121	184	A11013/32
	10.50	0.4134	121	184	A11010.5
	10.75	0.4232	128	195	A11010.75
	10.80	0.4252	128	195	A11010.8
	11.00	0.4331	128	195	A11011.0
7/16	11.11	0.4374	128	195	A1107/16
	11.25	0.4429	128	195	A11011.25
	11.40	0.4488	128	195	A11011.4
	11.50	0.4528	128	195	A11011.5
	11.75	0.4626	128	195	A11011.75
	12.00	0.4724	134	205	A11012.0
	12.10	0.4764	134	205	A11012.1

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A110
	12.25	0.4823	134	205	A11012.25
	12.50	0.4921	134	205	A11012.5
1/2	12.70	0.5000	134	205	A1101/2
	13.00	0.5118	134	205	A11013.0
17/32	13.49	0.5311	140	214	A11017/32
	13.50	0.5315	140	214	A11013.5
	14.00	0.5512	140	214	A11014.0
9/16	14.29	0.5626	144	220	A1109/16
	14.50	0.5709	144	220	A11014.5
	15.00	0.5906	144	220	A11015.0
	15.50	0.6102	149	227	A11015.5
5/8	15.88	0.6252	149	227	A1105/8
	16.00	0.6299	149	227	A11016.0
	16.50	0.6496	154	235	A11016.5
	17.00	0.6693	154	235	A11017.0
11/16	17.46	0.6874	158	241	A11011/16
	17.50	0.6890	158	241	A11017.5
	18.00	0.7087	158	241	A11018.0
	18.50	0.7283	162	247	A11018.5
	19.00	0.7480	162	247	A11019.0
3/4	19.05	0.7500	166	254	A1103/4
	19.50	0.7677	166	254	A11019.5
	20.00	0.7874	166	254	A11020.0
	21.00	0.8268	171	261	A11021.0
	22.00	0.8661	176	268	A11022.0
7/8	22.22	0.8748	176	268	A1107/8
15/16	23.81	0.9374	185	282	A11015/16
1	25.40	1.0000	190	290	A1101

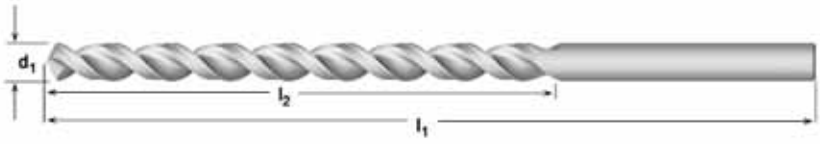
A940 DIN ANSI | 10XD | HSS-E | 130° | W

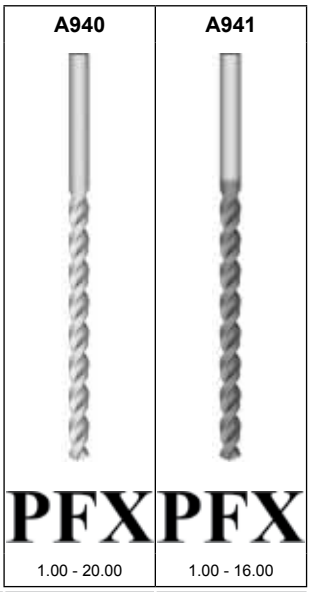
A941 DIN ANSI | 10XD | HSS-E | 130° | Alcrona Top | W

A940
A941

- PFX Long Series Drill
- PFX - Spiralbohrer, lang
- PFX Lange spiraalboren
- Foret PFX série longue
- Broca PFX, serie larga
- Broca Longa PFX

A940	■	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	4.1	4.2	4.3	7.2
	●	3.2	3.3	3.4	6.1	6.2	6.3	6.4	7.1	7.3	7.4	8.1	8.2	
A941	■	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	7.4
	●	4.1	4.2	4.3	6.3	6.4								





d_1 Øh$_8$ Inch	d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A940	A941
	1.00	0.0394	33	56	A9401.0	A9411.0
	1.10	0.0433	37	60	A9401.1	
3/64	1.19	0.0469	29	57	A9403/64	A9413/64
	1.20	0.0472	41	65	A9401.2	
	1.30	0.0512	41	65	A9401.3	
	1.40	0.0551	45	70	A9401.4	
	1.50	0.0591	45	70	A9401.5	A9411.5
1/16	1.59	0.0626	44	76	A9401/16	A9411/16
	1.60	0.0630	50	76	A9401.6	
	1.70	0.0669	50	76	A9401.7	
	1.80	0.0709	53	80	A9401.8	
	1.90	0.0748	53	80	A9401.9	
5/64	1.98	0.0780	51	95	A9405/64	A9415/64
	2.00	0.0787	56	85	A9402.0	A9412.0
	2.10	0.0827	56	85	A9402.1	
	2.20	0.0866	59	90	A9402.2	
	2.30	0.0906	59	90	A9402.3	
3/32	2.38	0.0937	57	108	A9403/32	A9413/32
	2.40	0.0945	62	95	A9402.4	
	2.50	0.0984	62	95	A9402.5	A9412.5

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A940	A941
	2.60	0.1024	62	95	A9402.6	
	2.70	0.1063	66	100	A9402.7	
7/64	2.78	0.1094	64	117	A9407/64	A9417/64
	2.80	0.1102	66	100	A9402.8	
	2.90	0.1142	66	100	A9402.9	
	3.00	0.1181	66	100	A9403.0	A9413.0
	3.10	0.1220	69	106	A9403.1	A9413.1
1/8	3.18	0.1252	70	130	A9401/8	A9411/8
	3.20	0.1260	69	106	A9403.2	A9413.2
	3.30	0.1299	69	106	A9403.3	A9413.3
	3.40	0.1339	73	112	A9403.4	A9413.4
	3.50	0.1378	73	112	A9403.5	A9413.5
9/64	3.57	0.1406	76	137	A9409/64	A9419/64
	3.60	0.1417	73	112	A9403.6	A9413.6
	3.70	0.1457	73	112	A9403.7	A9413.7
	3.80	0.1496	78	119	A9403.8	A9413.8
	3.90	0.1535	78	119	A9403.9	A9413.9
5/32	3.97	0.1563	76	137	A9405/32	A9415/32
	4.00	0.1575	78	119	A9404.0	A9414.0
	4.10	0.1614	78	119	A9404.1	A9414.1
	4.20	0.1654	78	119	A9404.2	A9414.2
	4.30	0.1693	82	126	A9404.3	A9414.3
11/64	4.37	0.1720	86	146	A94011/64	A94111/64
	4.40	0.1732	82	126	A9404.4	A9414.4
	4.50	0.1772	82	126	A9404.5	A9414.5
	4.60	0.1811	82	126	A9404.6	A9414.6
	4.70	0.1850	82	126	A9404.7	A9414.7
3/16	4.76	0.1874	86	146	A9403/16	A9413/16
	4.80	0.1890	87	132	A9404.8	A9414.8
	4.90	0.1929	87	132	A9404.9	A9414.9
	5.00	0.1969	87	132	A9405.0	A9415.0
	5.10	0.2008	87	132	A9405.1	A9415.1
13/64	5.16	0.2031	92	152	A94013/64	A94113/64
	5.20	0.2047	87	132	A9405.2	A9415.2
	5.30	0.2087	87	132	A9405.3	A9415.3
	5.40	0.2126	91	139	A9405.4	A9415.4
	5.50	0.2165	91	139	A9405.5	A9415.5
7/32	5.56	0.2189	92	152	A9407/32	A9417/32
	5.60	0.2205	91	139	A9405.6	A9415.6
	5.70	0.2244	91	139	A9405.7	A9415.7
	5.80	0.2283	91	139	A9405.8	A9415.8
	5.90	0.2323	91	139	A9405.9	A9415.9
15/64	5.95	0.2343	95	156	A94015/64	A94115/64
	6.00	0.2362	91	139	A9406.0	A9416.0
	6.10	0.2402	97	148	A9406.1	A9416.1
	6.20	0.2441	97	148	A9406.2	A9416.2
	6.30	0.2480	97	148	A9406.3	A9416.3
1/4	6.35	0.2500	95	156	A9401/4	A9411/4
	6.40	0.2520	97	148	A9406.4	A9416.4
	6.50	0.2559	97	148	A9406.5	A9416.5
	6.60	0.2598	97	148	A9406.6	A9416.6
	6.70	0.2638	97	148	A9406.7	A9416.7
17/64	6.75	0.2657	98	159	A94017/64	A94117/64
	6.80	0.2677	102	156	A9406.8	A9416.8
	6.90	0.2717	102	156	A9406.9	A9416.9
	7.00	0.2756	102	156	A9407.0	A9417.0
	7.10	0.2795	102	156	A9407.1	A9417.1
9/32	7.14	0.2811	98	159	A9409/32	A9419/32
	7.20	0.2835	102	156	A9407.2	A9417.2
	7.30	0.2874	102	156	A9407.3	A9417.3

d_1 $\emptyset h_8$ Inch	d_1 $\emptyset h_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A940	A941
	7.40	0.2913	102	156	A9407.4	A9417.4
	7.50	0.2953	102	156	A9407.5	A9417.5
19/64	7.54	0.2969	102	162	A94019/64	A94119/64
	7.60	0.2992	109	165	A9407.6	A9417.6
	7.70	0.3031	109	165	A9407.7	A9417.7
	7.80	0.3071	109	165	A9407.8	A9417.8
	7.90	0.3110	109	165	A9407.9	A9417.9
5/16	7.94	0.3126	102	162	A9405/16	A9415/16
	8.00	0.3150	109	165	A9408.0	A9418.0
	8.10	0.3189	109	165	A9408.1	A9418.1
	8.20	0.3228	109	165	A9408.2	A9418.2
	8.30	0.3268	109	165	A9408.3	A9418.3
21/64	8.33	0.3280	105	165	A94021/64	A94121/64
	8.40	0.3307	109	165	A9408.4	A9418.4
	8.50	0.3346	109	165	A9408.5	A9418.5
	8.60	0.3386	115	175	A9408.6	A9418.6
	8.70	0.3425	115	175	A9408.7	A9418.7
11/32	8.73	0.3437	105	165	A94011/32	A94111/32
	8.80	0.3465	115	175	A9408.8	A9418.8
	8.90	0.3504	115	175	A9408.9	A9418.9
	9.00	0.3543	115	175	A9409.0	A9419.0
	9.10	0.3583	115	175	A9409.1	A9419.1
23/64	9.13	0.3594	108	171	A94023/64	A94123/64
	9.20	0.3622	115	175	A9409.2	A9419.2
	9.30	0.3661	115	175	A9409.3	A9419.3
	9.40	0.3701	115	175	A9409.4	A9419.4
	9.50	0.3740	115	175	A9409.5	A9419.5
3/8	9.52	0.3748	108	171	A9403/8	A9413/8
	9.60	0.3780	121	184	A9409.6	A9419.6
	9.70	0.3819	121	184	A9409.7	A9419.7
	9.80	0.3858	121	184	A9409.8	A9419.8
	9.90	0.3898	121	184	A9409.9	A9419.9
25/64	9.92	0.3906	111	178	A94025/64	A94125/64
	10.00	0.3937	121	184	A94010.0	A94110.0
	10.20	0.4016	121	184	A94010.2	A94110.2
	10.30	0.4055	121	184	A94010.3	A94110.3
13/32	10.32	0.4063	111	178	A94013/32	A94113/32
	10.40	0.4094	121	184	A94010.4	A94110.4
	10.50	0.4134	121	184	A94010.5	A94110.5
27/64	10.72	0.4220	117	184	A94027/64	A94127/64
	10.80	0.4252	128	195	A94010.8	A94110.8
	11.00	0.4331	128	195	A94011.0	A94111.0
7/16	11.11	0.4374	117	184	A9407/16	A9417/16
	11.20	0.4409	128	195	A94011.2	A94111.2
	11.50	0.4528	128	195	A94011.5	A94111.5
29/64	11.51	0.4531	121	190	A94029/64	A94129/64
	11.80	0.4646	128	195	A94011.8	A94111.8
15/32	11.91	0.4689	121	190	A94015/32	A94115/32
	12.00	0.4724	134	205	A94012.0	A94112.0
	12.20	0.4803	134	205	A94012.2	A94112.2
31/64	12.30	0.4843	121	197	A94031/64	A94131/64
	12.50	0.4921	134	205	A94012.5	A94112.5
1/2	12.70	0.5000	121	197	A9401/2	A9411/2
	12.80	0.5039	134	205	A94012.8	A94112.8
	13.00	0.5118	134	205	A94013.0	A94113.0
33/64	13.10	0.5157	121	203	A94033/64	A94133/64
17/32	13.49	0.5311	121	203	A94017/32	
	13.50	0.5315	140	214	A94013.5	A94113.5
35/64	13.89	0.5469	124	210	A94035/64	A94135/64
	14.00	0.5512	140	214	A94014.0	A94114.0

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A940	A941
9/16	14.29	0.5626	124	210	A9409/16	A9419/16
	14.50	0.5709	144	220	A94014.5	A94114.5
37/64	14.68	0.5780	124	222	A94037/64	A94137/64
	15.00	0.5906	144	220	A94015.0	A94115.0
19/32	15.08	0.5937	124	222	A94019/32	A94119/32
39/64	15.48	0.6094	124	222	A94039/64	A94139/64
	15.50	0.6102	149	227	A94015.5	A94115.5
5/8	15.88	0.6252	124	222	A9405/8	A9415/8
	16.00	0.6299	149	227	A94016.0	A94116.0
41/64	16.27	0.6406	130	229	A94041/64	
	16.50	0.6496	154	235	A94016.5	
21/32	16.67	0.6563	130	229	A94021/32	
	17.00	0.6693	154	235	A94017.0	
43/64	17.07	0.6720	137	235	A94043/64	
11/16	17.46	0.6874	137	235	A94011/16	
	17.50	0.6890	158	241	A94017.5	
45/64	17.86	0.7031	143	241	A94045/64	
	18.00	0.7087	158	241	A94018.0	
23/32	18.26	0.7189	143	241	A94023/32	
47/64	18.65	0.7343	149	248	A94047/64	
	19.00	0.7480	162	247	A94019.0	
3/4	19.05	0.7500	149	248	A9403/4	
49/64	19.45	0.7657	152	251	A94049/64	
25/32	19.84	0.7811	152	251	A94025/32	
	20.00	0.7874	166	254	A94020.0	

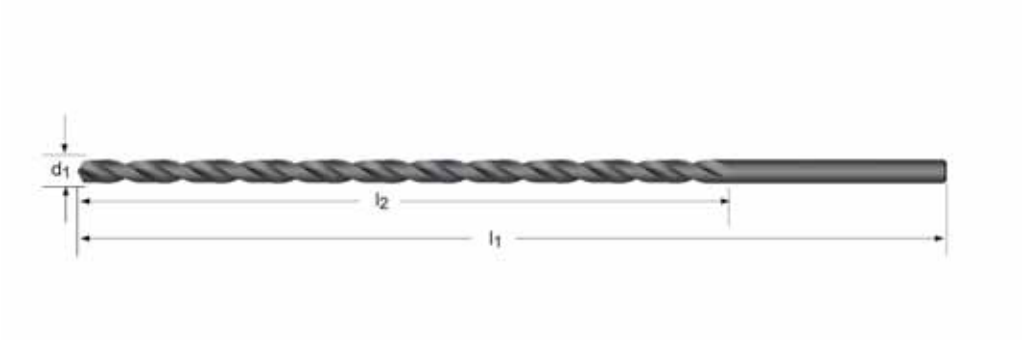
A125 BS 328 | 10XD | HSS | 118° | ST | N

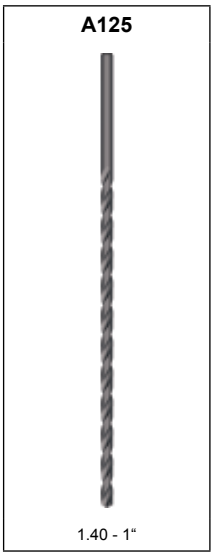
A125

- Extra Length Drill
- Spiralbohrer, extra lang
- Extra lange spiraalboren
- Foret cylindrique série longue
- Broca serie extra larga
- Broca CM - Extra Longa

Bright below 2.2mm, 5/64”
Blank bis Ø 2,2mm
Blank beneden 2,2mm, 5/16”
Brillant au dessous de 2,2 mm, 5/64
Brillante por debajo de 2,2 mm, 5/64”
Brilhante Abaixo de 2.2 mm, 5/64”

A125 ▪ 1.1 1.2
• 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3
6.4 7.1 7.2 7.3 7.4 8.1 8.2 8.3 9.1





d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A125
	1.40	0.0551	100	160	A1251.4X160
	1.50	0.0591	80	125	A1251.5X125
	1.50	0.0591	100	160	A1251.5X160
1/16	1.59	0.0626	80	125	A1251/16X125
1/16	1.59	0.0626	100	160	A1251/16X160
	1.80	0.0709	100	160	A1251.8X160
5/64	1.98	0.0780	100	160	A1255/64X160
5/64	1.98	0.0780	80	125	A1255/64X125
	2.00	0.0787	80	125	A1252.0X125
	2.00	0.0787	100	160	A1252.0X160
	2.20	0.0866	100	160	A1252.2X160
3/32	2.38	0.0937	100	160	A1253/32X160
3/32	2.38	0.0937	80	125	A1253/32X125
	2.50	0.0984	80	125	A1252.5X125
	2.50	0.0984	100	160	A1252.5X160
7/64	2.78	0.1094	80	125	A1257/64X125
7/64	2.78	0.1094	100	160	A1257/64X160
	3.00	0.1181	100	160	A1253.0X160
	3.00	0.1181	150	200	A1253.0X200
	3.00	0.1181	200	250	A1253.0X250
1/8	3.18	0.1252	100	160	A1251/8X160
1/8	3.18	0.1252	150	200	A1251/8X200
1/8	3.18	0.1252	200	250	A1251/8X250
1/8	3.18	0.1252	250	315	A1251/8X315
	3.30	0.1299	100	160	A1253.3X160
	3.50	0.1378	100	160	A1253.5X160

DORMER

d_1 Øh$_8$ Inch	d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A125
	3.50	0.1378	150	200	A1253.5X200
	3.50	0.1378	200	250	A1253.5X250
9/64	3.57	0.1406	100	160	A1259/64X160
9/64	3.57	0.1406	150	200	A1259/64X200
9/64	3.57	0.1406	250	315	A1259/64X315
5/32	3.97	0.1563	100	160	A1255/32X160
5/32	3.97	0.1563	150	200	A1255/32X200
5/32	3.97	0.1563	200	250	A1255/32X250
5/32	3.97	0.1563	250	315	A1255/32X315
	4.00	0.1575	100	160	A1254.0X160
	4.00	0.1575	150	200	A1254.0X200
	4.00	0.1575	200	250	A1254.0X250
	4.00	0.1575	250	315	A1254.0X315
11/64	4.37	0.1720	100	160	A12511/64X160
11/64	4.37	0.1720	150	200	A12511/64X200
11/64	4.37	0.1720	250	315	A12511/64X315
	4.50	0.1772	100	160	A1254.5X160
	4.50	0.1772	150	200	A1254.5X200
	4.50	0.1772	200	250	A1254.5X250
	4.50	0.1772	250	315	A1254.5X315
3/16	4.76	0.1874	100	160	A1253/16X160
3/16	4.76	0.1874	150	200	A1253/16X200
3/16	4.76	0.1874	200	250	A1253/16X250
3/16	4.76	0.1874	250	315	A1253/16X315
3/16	4.76	0.1874	300	400	A1253/16X400
	5.00	0.1969	100	160	A1255.0X160
	5.00	0.1969	150	200	A1255.0X200
	5.00	0.1969	200	250	A1255.0X250
	5.00	0.1969	250	315	A1255.0X315
	5.00	0.1969	300	400	A1255.0X400
13/64	5.16	0.2031	150	200	A12513/64X200
13/64	5.16	0.2031	200	250	A12513/64X250
13/64	5.16	0.2031	250	315	A12513/64X315
	5.50	0.2165	150	200	A1255.5X200
	5.50	0.2165	200	250	A1255.5X250
	5.50	0.2165	250	315	A1255.5X315
7/32	5.56	0.2189	150	200	A1257/32X200
7/32	5.56	0.2189	200	250	A1257/32X250
7/32	5.56	0.2189	250	315	A1257/32X315
15/64	5.95	0.2343	150	200	A12515/64X200
15/64	5.95	0.2343	200	250	A12515/64X250
15/64	5.95	0.2343	250	315	A12515/64X315
	6.00	0.2362	150	200	A1256.0X200
	6.00	0.2362	200	250	A1256.0X250
	6.00	0.2362	250	315	A1256.0X315
	6.00	0.2362	300	400	A1256.0X400
1/4	6.35	0.2500	150	200	A1251/4X200
1/4	6.35	0.2500	200	250	A1251/4X250
1/4	6.35	0.2500	250	315	A1251/4X315
1/4	6.35	0.2500	300	400	A1251/4X400
1/4	6.35	0.2500	400	500	A1251/4X500
	6.50	0.2559	150	200	A1256.5X200
	6.50	0.2559	200	250	A1256.5X250
	6.50	0.2559	250	315	A1256.5X315
17/64	6.75	0.2657	150	200	A12517/64X200
17/64	6.75	0.2657	200	250	A12517/64X250
17/64	6.75	0.2657	400	500	A12517/64X500
	7.00	0.2756	150	200	A1257.0X200
	7.00	0.2756	200	250	A1257.0X250
	7.00	0.2756	250	315	A1257.0X315

d_1 $\emptyset h_8$ Inch	d_1 $\emptyset h_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A125
9/32	7.14	0.2811	150	200	A1259/32X200
9/32	7.14	0.2811	200	250	A1259/32X250
9/32	7.14	0.2811	250	315	A1259/32X315
9/32	7.14	0.2811	400	500	A1259/32X500
	7.50	0.2953	150	200	A1257.5X200
	7.50	0.2953	200	250	A1257.5X250
	7.50	0.2953	250	315	A1257.5X315
19/64	7.54	0.2969	250	315	A12519/64X315
19/64	7.54	0.2969	400	500	A12519/64X500
5/16	7.94	0.3126	150	200	A1255/16X200
5/16	7.94	0.3126	200	250	A1255/16X250
5/16	7.94	0.3126	250	315	A1255/16X315
5/16	7.94	0.3126	300	400	A1255/16X400
5/16	7.94	0.3126	400	500	A1255/16X500
	8.00	0.3150	200	250	A1258.0X250
	8.00	0.3150	250	315	A1258.0X315
	8.00	0.3150	300	400	A1258.0X400
21/64	8.33	0.3280	250	315	A12521/64X315
21/64	8.33	0.3280	400	500	A12521/64X500
	8.50	0.3346	200	250	A1258.5X250
	8.50	0.3346	250	315	A1258.5X315
11/32	8.73	0.3437	200	250	A12511/32X250
11/32	8.73	0.3437	250	315	A12511/32X315
11/32	8.73	0.3437	300	400	A12511/32X400
11/32	8.73	0.3437	400	500	A12511/32X500
	9.00	0.3543	200	250	A1259.0X250
	9.00	0.3543	250	315	A1259.0X315
	9.00	0.3543	300	400	A1259.0X400
23/64	9.13	0.3594	250	315	A12523/64X315
23/64	9.13	0.3594	400	500	A12523/64X500
	9.50	0.3740	200	250	A1259.5X250
	9.50	0.3740	250	315	A1259.5X315
3/8	9.52	0.3748	200	250	A1253/8X250
3/8	9.52	0.3748	250	315	A1253/8X315
3/8	9.52	0.3748	300	400	A1253/8X400
3/8	9.52	0.3748	400	500	A1253/8X500
25/64	9.92	0.3906	250	315	A12525/64X315
25/64	9.92	0.3906	400	500	A12525/64X500
	10.00	0.3937	200	250	A12510.0X250
	10.00	0.3937	250	315	A12510.0X315
	10.00	0.3937	300	400	A12510.0X400
13/32	10.32	0.4063	200	250	A12513/32X250
13/32	10.32	0.4063	250	315	A12513/32X315
13/32	10.32	0.4063	400	500	A12513/32X500
	10.50	0.4134	200	250	A12510.5X250
	10.50	0.4134	250	315	A12510.5X315
	10.50	0.4134	300	400	A12510.5X400
27/64	10.72	0.4220	250	315	A12527/64X315
	11.00	0.4331	200	250	A12511.0X250
	11.00	0.4331	250	315	A12511.0X315
	11.00	0.4331	300	400	A12511.0X400
7/16	11.11	0.4374	200	250	A1257/16X250
7/16	11.11	0.4374	250	315	A1257/16X315
7/16	11.11	0.4374	300	400	A1257/16X400
7/16	11.11	0.4374	400	500	A1257/16X500
29/64	11.51	0.4531	250	315	A12529/64X315
29/64	11.51	0.4531	400	500	A12529/64X500
15/32	11.91	0.4689	200	250	A12515/32X250
15/32	11.91	0.4689	250	315	A12515/32X315
15/32	11.91	0.4689	400	500	A12515/32X500

DORMER

d_1 Øh$_8$ Inch	d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A125
	12.00	0.4724	200	250	A12512.0X250
	12.00	0.4724	250	315	A12512.0X315
	12.00	0.4724	300	400	A12512.0X400
31/64	12.30	0.4843	250	315	A12531/64X315
31/64	12.30	0.4843	400	500	A12531/64X500
1/2	12.70	0.5000	200	250	A1251/2X250
1/2	12.70	0.5000	250	315	A1251/2X315
1/2	12.70	0.5000	300	400	A1251/2X400
1/2	12.70	0.5000	400	500	A1251/2X500
	13.00	0.5118	250	315	A12513.0X315
	13.00	0.5118	300	400	A12513.0X400
33/64	13.10	0.5157	250	315	A12533/64X315
33/64	13.10	0.5157	400	500	A12533/64X500
17/32	13.49	0.5311	250	315	A12517/32X315
17/32	13.49	0.5311	400	500	A12517/32X500
35/64	13.89	0.5469	250	315	A12535/64X315
35/64	13.89	0.5469	400	500	A12535/64X500
	14.00	0.5512	250	315	A12514.0X315
	14.00	0.5512	300	400	A12514.0X400
9/16	14.29	0.5626	250	315	A1259/16X315
9/16	14.29	0.5626	400	500	A1259/16X500
37/64	14.68	0.5780	250	315	A12537/64X315
19/32	15.08	0.5937	250	315	A12519/32X315
19/32	15.08	0.5937	400	500	A12519/32X500
39/64	15.48	0.6094	250	315	A12539/64X315
39/64	15.48	0.6094	400	500	A12539/64X500
5/8	15.88	0.6252	250	315	A1255/8X315
5/8	15.88	0.6252	400	500	A1255/8X500
21/32	16.67	0.6563	250	315	A12521/32X315
21/32	16.67	0.6563	400	500	A12521/32X500
11/16	17.46	0.6874	250	315	A12511/16X315
11/16	17.46	0.6874	400	500	A12511/16X500
23/32	18.26	0.7189	250	315	A12523/32X315
23/32	18.26	0.7189	400	500	A12523/32X500
3/4	19.05	0.7500	250	315	A1253/4X315
3/4	19.05	0.7500	400	500	A1253/4X500
25/32	19.84	0.7811	400	500	A12525/32X500
13/16	20.64	0.8126	400	500	A12513/16X500
7/8	22.22	0.8748	400	500	A1257/8X500
15/16	23.81	0.9374	400	500	A12515/16X500
1“	25.40	1.0000	400	500	A1251X500

A976	DIN 1869/1	15XD	HSS-E		130°			W	
A977	DIN 1869/2	20XD	HSS-E		130°			W	
A978	DIN 1869/3	25XD	HSS-E		130°			W	

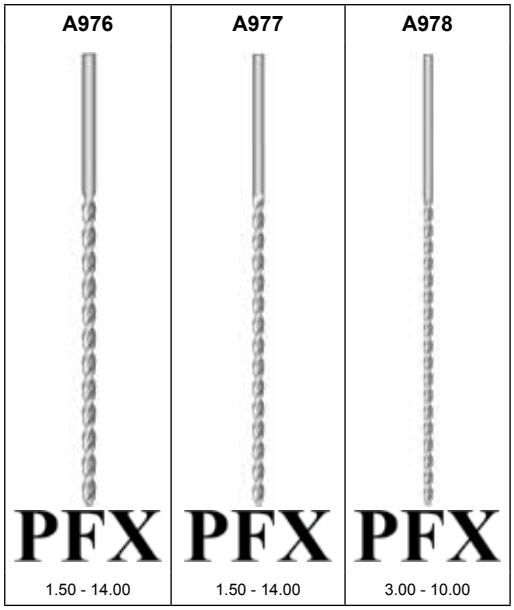
A976
A977
A978

- PFX Extra Length Drill
- PFX - Spiralbohrer, extra lang
- PFX Extra lange spiraalboren
- Foret PFX extra-long
- Broca PFX Extra Larga
- Broca Extra Longa PFX

A976; A977; A978

▪ 1.3 1.4 1.5 1.6

• 1.1 1.2 2.1 2.2 2.3 3.2 3.3 3.4 4.1 4.2 4.3 6.3 6.4 7.4



d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A976	A977	A978
	1.50	0.0591	100	150		A9771.5 [1]	
	1.50	0.0591	75	115	A9761.5		
1/16	1.59	0.0626	100	150		A9771/16 [1]	
	2.00	0.0787	110	160		A9772.0 [1]	
	2.00	0.0787	85	125	A9762.0X125		
	2.10	0.0827	85	125	A9762.1X125		
	2.20	0.0866	90	135	A9762.2X135		
	2.30	0.0906	90	135	A9762.3X135		
3/32	2.38	0.0937	115	170		A9773/32 [1]	
	2.40	0.0945	95	140	A9762.4X140		
	2.50	0.0984	95	140	A9762.5X140		
	2.60	0.1024	95	140	A9762.6X140		
	2.70	0.1063	100	150	A9762.7X150		
	2.80	0.1102	100	150	A9762.8X150		
	2.90	0.1142	100	150	A9762.9X150		
	3.00	0.1181	100	150	A9763.0X150		

[1] Dormer Standard / Werksnorm / Spiraalgroef en totale lengte volgens Dormer standaard / Goujure et longueur totale selon la norme usine / Norma Dormer / Standard Dormer

d_1 Øh$_8$ Inch	d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A976	A977	A978
	3.00	0.1181	130	190		A9773.0X190	
	3.00	0.1181	160	240			A9783.0 [1)]
	3.10	0.1220	105	155	A9763.1X155		
1/8	3.18	0.1252	105	155	A9761/8		
1/8	3.18	0.1252	135	200		A9771/8	
	3.20	0.1260	105	155	A9763.2X155		
	3.30	0.1299	105	155	A9763.3X155		
	3.40	0.1339	115	165	A9763.4X165		
	3.50	0.1378	115	165	A9763.5X165		
	3.50	0.1378	145	210		A9773.5X210	
	3.50	0.1378	180	265			A9783.5X265
	3.60	0.1417	115	165	A9763.6X165		
	3.70	0.1457	115	165	A9763.7X165		
	3.80	0.1496	120	175	A9763.8X175		
	3.90	0.1535	120	175	A9763.9X175		
5/32	3.97	0.1563	120	175	A9765/32		
	4.00	0.1575	120	175	A9764.0X175		
	4.00	0.1575	150	220		A9774.0X220	
	4.00	0.1575	190	280			A9784.0X280
	4.10	0.1614	120	175	A9764.1X175		
	4.20	0.1654	120	175	A9764.2X175		
	4.30	0.1693	125	185	A9764.3X185		
	4.40	0.1732	125	185	A9764.4X185		
	4.50	0.1772	125	185	A9764.5X185		
	4.50	0.1772	160	235		A9774.5X235	
	4.50	0.1772	200	295			A9784.5X295
	4.60	0.1811	125	185	A9764.6X185		
	4.70	0.1850	125	185	A9764.7X185		
3/16	4.76	0.1874	135	195	A9763/16		
3/16	4.76	0.1874	170	245		A9773/16	
	4.80	0.1890	135	195	A9764.8X195		
	4.90	0.1929	135	195	A9764.9X195		
	5.00	0.1969	135	195	A9765.0X195		
	5.00	0.1969	170	245		A9775.0X245	
	5.00	0.1969	210	315			A9785.0X315
	5.10	0.2008	135	195	A9765.1X195		
	5.20	0.2047	135	195	A9765.2X195		
	5.30	0.2087	135	195	A9765.3X195		
	5.40	0.2126	140	205	A9765.4X205		
	5.50	0.2165	140	205	A9765.5X205		
	5.50	0.2165	180	260		A9775.5X260	
	5.50	0.2165	225	330			A9785.5X330
	5.60	0.2205	140	205	A9765.6X205		
	5.70	0.2244	140	205	A9765.7X205		
	5.80	0.2283	140	205	A9765.8X205		
	5.90	0.2323	140	205	A9765.9X205		
	6.00	0.2362	140	205	A9766.0X205		
	6.00	0.2362	180	260		A9776.0X260	
	6.00	0.2362	225	330			A9786.0X330
	6.10	0.2402	150	215	A9766.1X215		
	6.20	0.2441	150	215	A9766.2X215		
	6.30	0.2480	150	215	A9766.3X215		
1/4	6.35	0.2500	150	215	A9761/4		
1/4	6.35	0.2500	190	275		A9771/4	
1/4	6.35	0.2500	235	350			A9781/4
	6.40	0.2520	150	215	A9766.4X215		
	6.50	0.2559	150	215	A9766.5X215		
	6.50	0.2559	190	275		A9776.5X275	

[1)] Dormer Standard / Werksnorm / Spiraalgroef en totale lengte volgens Dormer standaard / Goujure et longueur totale selon la norme usine / Norma Dormer / Standard Dormer

d_1 Øh$_8$ Inch	d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	A976	A977	A978
	6.50	0.2559	235	350			A9786.5X350
	6.60	0.2598	150	215	A9766.6X215		
	6.70	0.2638	150	215	A9766.7X215		
	6.80	0.2677	155	225	A9766.8X225		
	6.90	0.2717	155	225	A9766.9X225		
	7.00	0.2756	155	225	A9767.0X225		
	7.00	0.2756	200	290		A9777.0X290	
	7.00	0.2756	250	370			A9787.0X370
	7.50	0.2953	155	225	A9767.5X225		
	7.50	0.2953	200	290		A9777.5X290	
	7.50	0.2953	250	370			A9787.5X370
5/16	7.94	0.3126	165	240	A9765/16		
	8.00	0.3150	165	240	A9768.0X240		
	8.00	0.3150	210	305		A9778.0X305	
	8.00	0.3150	265	390			A9788.0X390
	8.50	0.3346	165	240	A9768.5X240		
	8.50	0.3346	210	305		A9778.5X305	
	8.50	0.3346	265	390			A9788.5X390
11/32	8.73	0.3437	175	250	A97611/32		
11/32	8.73	0.3437	220	320		A97711/32	
	9.00	0.3543	175	250	A9769.0X250		
	9.00	0.3543	220	320		A9779.0X320	
	9.00	0.3543	280	410			A9789.0X410
	9.50	0.3740	175	250	A9769.5X250		
	9.50	0.3740	220	320		A9779.5X320	
	9.50	0.3740	280	410			A9789.5X410
3/8	9.52	0.3748	185	265	A9763/8		
	10.00	0.3937	185	265	A97610.0X265		
	10.00	0.3937	235	340		A97710.0X340	
	10.00	0.3937	295	430			A97810.0X430
	10.50	0.4134	185	265	A97610.5		
	10.50	0.4134	235	340		A97710.5	
	11.00	0.4331	195	280	A97611.0		
	11.00	0.4331	250	365		A97711.0	
7/16	11.11	0.4374	195	280	A9767/16		
	11.50	0.4528	195	280	A97611.5		
	11.50	0.4528	250	365		A97711.5	
	12.00	0.4724	205	295	A97612.0		
	12.00	0.4724	260	375		A97712.0	
	12.50	0.4921	205	295	A97612.5		
	12.50	0.4921	260	375		A97712.5	
1/2	12.70	0.5000	205	295	A9761/2		
	13.00	0.5118	205	295	A97613.0		
	13.00	0.5118	260	375		A97713.0	
	14.00	0.5512	215	310	A97614.0 [1)]		
	14.00	0.5512	270	390		A97714.0 [1)]	

[1)] Dormer Standard / Werksnorm / Spiraalgroef en totale lengte volgens Dormer standaard / Goujure et longueur totale selon la norme usine / Norma Dormer / Standard Dormer

DORMER

A130	DIN 345	4XD	HSS		118°	ST		N
A530	DIN 345	4XD	HSS		118°	TiN		N
A730	DIN 345	4XD	HSS-E		118°	Bronze		N

A130
A530

- Taper Shank Drill
- Spiralbohrer, MK
- Spiraalboren met MC
- Foret queue cône morse
- Broca de mango cónico
- Broca de Haste Cónica

Above 14.0mm - Point Thinned
über Ø 14 mm ausgespitzt
Boven 14,0mm - uitgedund
Au dessus du Ø 14,0 mm - Pointe amincie
Por encima de 14,0mm-Punta adelgazada
Acima de 14.0mm - Alma Corrigida

A730

- Taper Shank Drill
- Spiralbohrer, MK
- Spiraalboren met MC
- Foret queue cône morse
- Broca de mango cónico
- Broca de Haste Cónica

A130 ▪	1.1	1.2	1.3	1.4	3.1	3.2														
•	1.5	1.6	2.1	2.2	2.3	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.1	7.2	7.3
	7.4	8.1	8.2	8.3	9.1															
A530 ▪	1.1	1.2	1.3	1.4	3.2	3.3	6.3													
•	1.5	1.6	2.1	2.2	2.3	3.1	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.4	7.1	7.2	7.3	7.4
	8.1	8.2	8.3	9.1																
A730 ▪	1.5	1.6	2.2	2.3	3.4															
•	1.1	1.2	1.3	1.4	2.1	3.1	3.2	3.3	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.1	7.2
	7.3	7.4	8.1	8.2	8.3	9.1														

A130	A530	A730
2.00 - 100.00	8.50 - 40.00	10.00 - 32.00

d_1 Øh$_8$ Inch	d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	MK	A130	A530	A730
	2.00	0.0787	24	105	1	A1302.0		
	2.50	0.0984	30	111	1	A1302.5		
	3.00	0.1181	33	114	1	A1303.0		
1/8	3.18	0.1252	36	117	1	A1301/8		
	3.20	0.1260	36	117	1	A1303.2		
	3.25	0.1280	36	117	1	A1303.25		
	3.30	0.1299	36	117	1	A1303.3		
	3.50	0.1378	39	120	1	A1303.5		

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	MK	A130	A530	A730
9/64	3.57	0.1406	39	120	1	A1309/64		
	3.75	0.1476	39	120	1	A1303.75		
5/32	3.97	0.1563	43	124	1	A1305/32		
	4.00	0.1575	43	124	1	A1304.0		
	4.10	0.1614	43	124	1	A1304.1		
	4.20	0.1654	43	124	1	A1304.2		
	4.25	0.1673	43	124	1	A1304.25		
11/64	4.37	0.1720	47	128	1	A13011/64		
	4.50	0.1772	47	128	1	A1304.5		
	4.75	0.1870	52	128	1	A1304.75		
3/16	4.76	0.1874	52	133	1	A1303/16		
	4.80	0.1890	52	133	1	A1304.8		
	4.90	0.1929	52	133	1	A1304.9		
	5.00	0.1969	52	133	1	A1305.0		
	5.10	0.2008	52	133	1	A1305.1		
13/64	5.16	0.2031	52	133	1	A13013/64		
	5.20	0.2047	52	133	1	A1305.2		
	5.25	0.2067	52	133	1	A1305.25		
	5.40	0.2126	57	138	1	A1305.4		
	5.50	0.2165	57	138	1	A1305.5		
7/32	5.56	0.2189	57	138	1	A1307/32		
	5.70	0.2244	57	138	1	A1305.7		
	5.75	0.2264	57	138	1	A1305.75		
	5.80	0.2283	57	138	1	A1305.8		
	5.90	0.2323	57	138	1	A1305.9		
15/64	5.95	0.2343	57	138	1	A13015/64		
	6.00	0.2362	57	138	1	A1306.0		
	6.10	0.2402	63	144	1	A1306.1		
	6.20	0.2441	63	144	1	A1306.2		
	6.25	0.2461	63	144	1	A1306.25		
	6.30	0.2480	63	144	1	A1306.3		
1/4	6.35	0.2500	63	144	1	A1301/4		
	6.40	0.2520	63	144	1	A1306.4		
	6.50	0.2559	63	144	1	A1306.5		
	6.60	0.2598	63	144	1	A1306.6		
	6.70	0.2638	63	144	1	A1306.7		
17/64	6.75	0.2657	69	150	1	A13017/64		
	6.75	0.2657	69	150	1	A1306.75		
	6.80	0.2677	69	150	1	A1306.8		
	6.90	0.2717	69	150	1	A1306.9		
	7.00	0.2756	69	150	1	A1307.0		
9/32	7.14	0.2811	69	150	1	A1309/32		
	7.20	0.2835	69	150	1	A1307.2		
	7.25	0.2854	69	150	1	A1307.25		
	7.30	0.2874	69	150	1	A1307.3		
	7.40	0.2913	69	150	1	A1307.4		
	7.50	0.2953	69	150	1	A1307.5		
19/64	7.54	0.2969	75	156	1	A13019/64		
	7.70	0.3031	75	156	1	A1307.7		
	7.75	0.3051	75	156	1	A1307.75		
	7.80	0.3071	75	156	1	A1307.8		
	7.90	0.3110	75	156	1	A1307.9		
5/16	7.94	0.3126	75	156	1	A1305/16		
	8.00	0.3150	75	156	1	A1308.0		
	8.10	0.3189	75	156	1	A1308.1		
	8.20	0.3228	75	156	1	A1308.2		
	8.25	0.3248	75	156	1	A1308.25		
	8.30	0.3268	75	156	1	A1308.3		
21/64	8.33	0.3280	75	156	1	A13021/64		
	8.40	0.3307	75	156	1	A1308.4		
	8.50	0.3346	75	156	1	A1308.5	A5308.5	
	8.60	0.3386	81	162	1	A1308.6		
	8.70	0.3425	81	162	1	A1308.7		
11/32	8.73	0.3437	81	162	1	A13011/32		
	8.75	0.3445	81	162	1	A1308.75		
	8.80	0.3465	81	162	1	A1308.8		
	8.90	0.3504	81	162	1	A1308.9		
	9.00	0.3543	81	162	1	A1309.0	A5309.0	
	9.10	0.3583	81	162	1	A1309.1		
23/64	9.13	0.3594	81	162	1	A13023/64		

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	MK	A130	A530	A730
	9.20	0.3622	81	162	1	A1309.2		
	9.25	0.3642	81	162	1	A1309.25		
	9.30	0.3661	81	162	1	A1309.3		
	9.50	0.3740	81	162	1	A1309.5		
3/8	9.52	0.3748	87	168	1	A1303/8		
	9.60	0.3780	87	168	1	A1309.6		
	9.70	0.3819	87	168	1	A1309.7		
	9.75	0.3839	87	168	1	A1309.75		
	9.80	0.3858	87	168	1	A1309.8		
	9.90	0.3898	87	168	1	A1309.9		
25/64	9.92	0.3906	87	168	1	A13025/64		
	10.00	0.3937	87	168	1	A13010.0	A53010.0	A73010.0
	10.10	0.3976	87	168	1	A13010.1		
	10.20	0.4016	87	168	1	A13010.2	A53010.2	A73010.2
	10.25	0.4035	87	168	1	A13010.25		
	10.30	0.4055	87	168	1	A13010.3		
13/32	10.32	0.4063	87	168	1	A13013/32		
	10.50	0.4134	87	168	1	A13010.5	A53010.5	A73010.5
27/64	10.72	0.4220	94	175	1	A13027/64		
	10.75	0.4232	94	175	1	A13010.75		
	10.80	0.4252	94	175	1	A13010.8		A73010.8
	10.90	0.4291	94	175	1	A13010.9		
	11.00	0.4331	94	175	1	A13011.0	A53011.0	A73011.0
	11.10	0.4370	94	175	1	A13011.1		
7/16	11.11	0.4374	94	175	1	A1307/16		
	11.20	0.4409	94	175	1	A13011.2		
	11.25	0.4429	94	175	1	A13011.25		
	11.30	0.4449	94	175	1	A13011.3		
	11.40	0.4488	94	175	1	A13011.4		
	11.50	0.4527	94	175	1		A53011.5	
	11.50	0.4528	94	175	1	A13011.5		A73011.5
29/64	11.51	0.4531	94	175	1	A13029/64		
	11.60	0.4567	94	175	1	A13011.6		
	11.70	0.4606	94	175	1	A13011.7		
	11.75	0.4626	94	175	1	A13011.75	A53011.75	
	11.80	0.4646	94	175	1	A13011.8		A73011.8
	11.90	0.4685	101	182	1	A13011.9		
15/32	11.91	0.4689	101	182	1	A13015/32		
	12.00	0.4724	101	182	1	A13012.0	A53012.0	A73012.0
	12.10	0.4764	101	182	1	A13012.1		
	12.20	0.4803	101	182	1	A13012.2		A73012.2
	12.25	0.4823	101	182	1	A13012.25		
	12.30	0.4843	101	182	1	A13012.3		
31/64	12.30	0.4843	101	182	1	A13031/64		
	12.40	0.4882	101	182	1	A13012.4		
	12.50	0.4921	101	182	1	A13012.5	A53012.5	A73012.5
	12.60	0.4961	101	182	1	A13012.6		
	12.70	0.5000	101	182	1	A13012.7		
1/2	12.70	0.5000	101	182	1	A1301/2		
	12.75	0.5020	101	182	1	A13012.75		
	12.80	0.5039	101	182	1	A13012.8		A73012.8
	12.90	0.5079	101	182	1	A13012.9		
	13.00	0.5118	101	182	1	A13013.0	A53013.0	A73013.0
33/64	13.10	0.5157	101	182	1	A13033/64		
	13.20	0.5197	101	182	1	A13013.2		
	13.25	0.5217	108	189	1	A13013.25		
17/32	13.49	0.5311	108	189	1	A13017/32		
	13.50	0.5315	108	189	1	A13013.5	A53013.5	A73013.5
	13.60	0.5354	108	189	1	A13013.6		
	13.70	0.5394	108	189	1	A13013.7		
	13.75	0.5413	108	189	1	A13013.75		
	13.80	0.5433	108	189	1	A13013.8		A73013.8
35/64	13.89	0.5469	108	189	1	A13035/64		
	13.90	0.5472	108	189	1	A13013.9		
	14.00	0.5512	108	189	1	A13014.0	A53014.0	A73014.0
	14.10	0.5551	114	212	2	A13014.1		
	14.20	0.5591	114	212	2	A13014.2		
	14.25	0.5610	114	212	2	A13014.25		A73014.25
9/16	14.29	0.5626	114	212	2	A1309/16		
	14.30	0.5630	114	212	2	A13014.3		

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	MK	A130	A530	A730
	14.40	0.5669	114	212	2	A13014.4		
	14.50	0.5709	114	212	2	A13014.5	A53014.5	A73014.5
	14.60	0.5748	114	212	2	A13014.6		
37/64	14.68	0.5780	114	212	2	A13037/64		
	14.70	0.5787	114	212	2	A13014.7		
	14.75	0.5807	114	212	2	A13014.75		A73014.75
	14.80	0.5827	114	212	2	A13014.8		
	14.90	0.5866	114	212	2	A13014.9		
	15.00	0.5906	114	212	2	A13015.0	A53015.0	A73015.0
19/32	15.08	0.5937	120	218	2	A13019/32		
	15.10	0.5945	120	218	2	A13015.1		
	15.20	0.5984	120	218	2	A13015.2		
	15.25	0.6004	120	218	2	A13015.25	A53015.25	A73015.25
39/64	15.48	0.6094	120	218	2	A13039/64		
	15.50	0.6102	120	218	2	A13015.5	A53015.5	A73015.5
	15.70	0.6181	120	218	2	A13015.7		
	15.75	0.6201	120	218	2	A13015.75		A73015.75
	15.80	0.6220	120	218	2	A13015.8		
5/8	15.88	0.6252	120	218	2	A1305/8		
	15.90	0.6260	120	218	2	A13015.9		
	16.00	0.6299	120	218	2	A13016.0	A53016.0	A73016.0
	16.10	0.6339	125	223	2	A13016.1		
	16.20	0.6378	125	223	2	A13016.2		
	16.25	0.6398	120	218	2			A73016.25
	16.25	0.6398	125	223	2	A13016.25		
41/64	16.27	0.6406	125	223	2	A13041/64		
	16.50	0.6496	125	223	2	A13016.5	A53016.5	A73016.5
21/32	16.67	0.6563	125	223	2	A13021/32		
	16.75	0.6594	125	223	2	A13016.75		
	17.00	0.6693	125	223	2	A13017.0	A53017.0	A73017.0
43/64	17.07	0.6720	130	228	2	A13043/64		
	17.25	0.6791	130	228	2	A13017.25		A73017.25
11/16	17.46	0.6874	130	228	2	A13011/16		
	17.50	0.6890	130	228	2	A13017.5	A53017.5	A73017.5
	17.75	0.6988	130	228	2	A13017.75		A73017.75
45/64	17.86	0.7031	130	228	2	A13045/64		
	18.00	0.7087	130	228	2	A13018.0	A53018.0	A73018.0
	18.25	0.7185	135	233	2	A13018.25		A73018.25
23/32	18.26	0.7189	135	233	2	A13023/32		
	18.50	0.7283	135	233	2	A13018.5	A53018.5	A73018.5
47/64	18.65	0.7343	135	233	2	A13047/64		
	18.75	0.7382	135	233	2	A13018.75		A73018.75
	19.00	0.7480	135	233	2	A13019.0	A53019.0	A73019.0
3/4	19.05	0.7500	140	238	2	A1303/4		
	19.25	0.7579	140	238	2	A13019.25		A73019.25
49/64	19.45	0.7657	140	238	2	A13049/64		
	19.50	0.7677	140	238	2	A13019.5	A53019.5	A73019.5
	19.75	0.7776	140	238	2	A13019.75		A73019.75
25/32	19.84	0.7811	140	238	2	A13025/32		
	20.00	0.7874	140	238	2	A13020.0	A53020.0	A73020.0
51/64	20.24	0.7969	145	243	2	A13051/64		
	20.25	0.7972	145	243	2	A13020.25		A73020.25
	20.40	0.8031	145	243	2	A13020.4		
	20.50	0.8071	145	243	2	A13020.5	A53020.5	A73020.5
13/16	20.64	0.8126	145	243	2	A13013/16		
	20.75	0.8169	145	243	2	A13020.75		A73020.75
	21.00	0.8268	145	243	2	A13021.0	A53021.0	A73021.0
53/64	21.03	0.8280	145	243	2	A13053/64		
	21.25	0.8366	150	248	2	A13021.25		
27/32	21.43	0.8437	150	248	2	A13027/32		
	21.50	0.8465	150	248	2	A13021.5	A53021.5	A73021.5
	21.75	0.8563	150	248	2	A13021.75		
55/64	21.83	0.8594	150	248	2	A13055/64		
	22.00	0.8661	150	248	2	A13022.0	A53022.0	A73022.0
7/8	22.22	0.8748	150	248	2	A1307/8		
	22.25	0.8760	150	248	2	A13022.25		
	22.50	0.8858	155	253	2	A13022.5	A53022.5	A73022.5
57/64	22.62	0.8906	155	253	2	A13057/64		
	22.75	0.8957	155	253	2	A13022.75		
	23.00	0.9055	155	253	2	A13023.0	A53023.0	A73023.0

DORMER

d_1 Øh$_8$ Inch	d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	MK	A130	A530	A730
29/32	23.02	0.9063	155	253	2	A13029/32		
	23.25	0.9154	155	276	3	A13023.25		
59/64	23.42	0.9220	155	276	3	A13059/64		
	23.50	0.9252	155	276	3	A13023.5	A53023.5	A73023.5
	23.75	0.9350	160	281	3	A13023.75		
15/16	23.81	0.9374	160	281	3	A13015/16		
	24.00	0.9449	160	281	3	A13024.0	A53024.0	A73024.0
61/64	24.21	0.9531	160	281	3	A13061/64		
	24.25	0.9547	160	281	3	A13024.25		
	24.50	0.9646	160	281	3	A13024.5	A53024.5	A73024.5
31/32	24.61	0.9689	160	281	3	A13031/32		
	24.75	0.9744	160	281	3	A13024.75		
	25.00	0.9843	160	281	3	A13025.0	A53025.0	A73025.0
63/64	25.00	0.9843	160	286	3	A13063/64		
	25.25	0.9941	165	286	3	A13025.25		
1“	25.40	1.0000	165	286	3	A1301		
	25.50	1.0039	165	286	3	A13025.5	A53025.5	A73025.5
	25.75	1.0138	165	286	3	A13025.75		
	26.00	1.0236	165	286	3	A13026.0	A53026.0	A73026.0
	26.25	1.0335	165	286	3	A13026.25		
	26.50	1.0433	165	286	3	A13026.5	A53026.5	A73026.5
	26.75	1.0531	170	291	3	A13026.75		
1.1/16	26.99	1.0626	170	291	3	A1301.1/16		
	27.00	1.0630	170	291	3	A13027.0	A53027.0	A73027.0
	27.25	1.0728	170	291	3	A13027.25		
	27.50	1.0827	170	291	3	A13027.5	A53027.5	A73027.5
	27.75	1.0925	170	291	3	A13027.75		
	28.00	1.1024	170	291	3	A13028.0	A53028.0	A73028.0
	28.25	1.1122	175	296	3	A13028.25		
	28.50	1.1220	175	296	3	A13028.5	A53028.5	A73028.5
1.1/8	28.58	1.1252	175	296	3	A1301.1/8		
	28.75	1.1319	175	296	3	A13028.75		
	29.00	1.1417	175	296	3	A13029.0	A53029.0	A73029.0
	29.25	1.1516	175	296	3	A13029.25		
1.5/32	29.37	1.1563	175	296	3	A1301.5/32		
	29.50	1.1614	175	296	3	A13029.5	A53029.5	A73029.5
	29.75	1.1713	175	296	3	A13029.75		
	30.00	1.1811	175	296	3	A13030.0	A53030.0	A73030.0
1.3/16	30.16	1.1874	180	301	3	A1301.3/16		
	30.25	1.1909	180	301	3	A13030.25		
	30.50	1.2008	180	301	3	A13030.5		A73030.5
	30.75	1.2106	180	301	3	A13030.75		
1.7/32	30.96	1.2189	180	301	3	A1301.7/32		
	31.00	1.2205	180	301	3	A13031.0	A53031.0	A73031.0
	31.25	1.2303	180	301	3	A13031.25		
	31.50	1.2402	180	301	3	A13031.5		A73031.5
	31.75	1.2500	185	306	3	A13031.75		
1.1/4	31.75	1.2500	185	306	3	A1301.1/4		
	32.00	1.2598	185	334	4	A13032.0	A53032.0	A73032.0
	32.50	1.2795	185	334	4	A13032.5		
1.9/32	32.54	1.2811	185	334	4	A1301.9/32		
	33.00	1.2992	185	334	4	A13033.0	A53033.0	
1.5/16	33.34	1.3126	185	334	4	A1301.5/16		
	33.50	1.3189	185	334	4	A13033.5		
	34.00	1.3386	190	339	4	A13034.0		
1.11/32	34.13	1.3437	190	339	4	A1301.11/32		
	34.50	1.3583	190	339	4	A13034.5		
1.3/8	34.93	1.3752	190	339	4	A1301.3/8		
	35.00	1.3780	190	339	4	A13035.0	A53035.0	
	35.50	1.3976	190	339	4	A13035.5		
1.13/32	35.72	1.4063	195	344	4	A1301.13/32		
	36.00	1.4173	195	344	4	A13036.0		
	36.50	1.4370	195	344	4	A13036.5		
1.7/16	36.51	1.4374	195	344	4	A1301.7/16		
	37.00	1.4567	195	344	4	A13037.0		
	37.50	1.4764	195	344	4	A13037.5		
	38.00	1.4961	200	349	4	A13038.0		
1.1/2	38.10	1.5000	200	349	4	A1301.1/2		
	38.50	1.5157	200	349	4	A13038.5		
	39.00	1.5354	200	349	4	A13039.0		

d_1 $Øh_8$ Inch	d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	MK	A130	A530	A730
	39.50	1.5551	200	349	4	A13039.5		
1.9/16	39.69	1.5626	200	349	4	A1301.9/16		
	40.00	1.5748	200	349	4	A13040.0	A53040.0	
	40.50	1.5945	205	354	4	A13040.5		
	41.00	1.6142	205	354	4	A13041.0		
1.5/8	41.28	1.6252	205	354	4	A1301.5/8		
	41.50	1.6339	205	354	4	A13041.5		
	42.00	1.6535	205	354	4	A13042.0		
	42.50	1.6732	205	354	4	A13042.5		
1.11/16	42.86	1.6874	210	359	4	A1301.11/16		
	43.00	1.6929	210	359	4	A13043.0		
	43.50	1.7126	210	359	4	A13043.5		
	44.00	1.7323	210	359	4	A13044.0		
1.3/4	44.45	1.7500	210	359	4	A1301.3/4		
	44.50	1.7520	210	359	4	A13044.5		
	45.00	1.7717	210	359	4	A13045.0		
	45.50	1.7913	215	364	4	A13045.5		
	46.00	1.8110	215	364	4	A13046.0		
	46.50	1.8307	215	364	4	A13046.5		
	47.00	1.8504	215	364	4	A13047.0		
	47.50	1.8701	215	364	4	A13047.5		
	48.00	1.8898	220	369	4	A13048.0		
	48.50	1.9094	220	369	4	A13048.5		
	49.00	1.9291	220	369	4	A13049.0		
	49.50	1.9488	220	369	4	A13049.5		
	50.00	1.9685	220	369	4	A13050.0		
2“	50.80	2.0000	225	374	4	A1302		
	51.00	2.0079	225	412	5	A13051.0		
	52.00	2.0472	225	412	5	A13052.0		
	53.00	2.0866	225	412	5	A13053.0		
	54.00	2.1260	230	417	5	A13054.0		
	55.00	2.1654	230	417	5	A13055.0		
	56.00	2.2047	230	417	5	A13056.0		
	57.00	2.2441	235	422	5	A13057.0		
	58.00	2.2835	235	422	5	A13058.0		
	59.00	2.3228	235	422	5	A13059.0		
	60.00	2.3622	235	422	5	A13060.0		
	61.00	2.4016	240	427	5	A13061.0		
	62.00	2.4409	240	427	5	A13062.0		
	63.00	2.4803	240	427	5	A13063.0		
2.1/2	63.50	2.5000	245	432	5	A1302.1/2		
	64.00	2.5197	245	432	5	A13064.0		
	65.00	2.5591	245	432	5	A13065.0		
	66.00	2.5984	245	432	5	A13066.0		
2.5/8	66.68	2.6252	245	432	5	A1302.5/8		
	67.00	2.6378	245	432	5	A13067.0		
	68.00	2.6772	250	437	5	A13068.0		
	69.00	2.7165	250	437	5	A13069.0		
2.3/4	69.85	2.7500	250	437	5	A1302.3/4		
	70.00	2.7559	250	437	5	A13070.0		
	71.00	2.7953	250	437	5	A13071.0		
	72.00	2.8346	255	442	5	A13072.0		
	73.00	2.8740	255	442	5	A13073.0		
2.7/8	73.03	2.8752	255	442	5	A1302.7/8		
	74.00	2.9134	255	442	5	A13074.0		
	75.00	2.9528	255	442	5	A13075.0		
	76.00	2.9921	260	447	5	A13076.0		
3“	76.20	3.0000	260	447	5	A1303		
	77.00	3.0315	260	514	6	A13077.0		
	78.00	3.0709	260	514	6	A13078.0		
	79.00	3.1102	260	514	6	A13079.0		
	80.00	3.1496	260	514	6	A13080.0		
	81.00	3.1890	265	519	6	A13081.0		
	84.00	3.3071	265	519	6	A13084.0		
	85.00	3.3465	265	519	6	A13085.0		
	90.00	3.5433	270	524	6	A13090.0		
	95.00	3.7402	275	529	6	A13095.0		
	100.00	3.9370	280	534	6	A130100.0		

A166 DIN 345 4XD HSS HM 118° ST N

A166

- Taper Shank Drill
- Spiralbohrer, MK
- Spiraalboren met MC
- Foret queue cône morse
- Broca de mango cónico
- Broca de Haste Cónica

A166 ▪ 3.1 3.2 3.3 3.4

▪ 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.2 9.1

A166

10.00 - 33.00

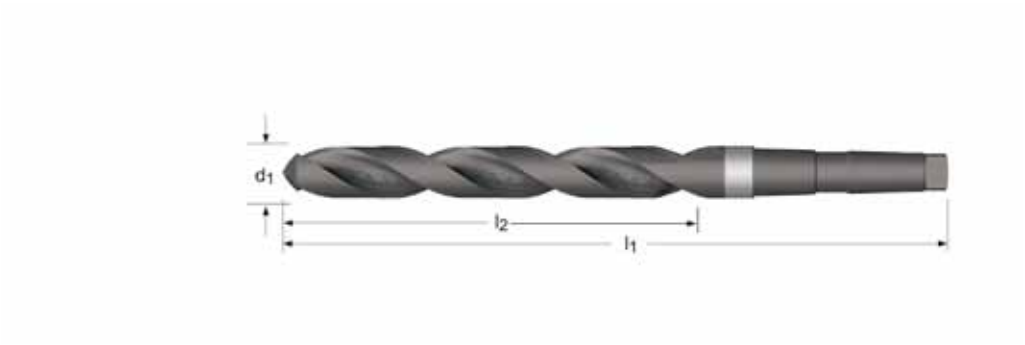
d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	MK	A166
10.00	0.3937	87	168	1	A16610.0
10.50	0.4134	87	168	1	A16610.5
11.00	0.4331	94	175	1	A16611.0
11.50	0.4528	94	175	1	A16611.5
12.00	0.4724	101	182	1	A16612.0
13.00	0.5118	101	182	1	A16613.0
13.50	0.5315	108	189	1	A16613.5
14.00	0.5512	108	189	1	A16614.0
15.00	0.5906	114	212	2	A16615.0
16.00	0.6299	120	218	2	A16616.0
17.00	0.6693	125	223	2	A16617.0
17.50	0.6890	130	228	2	A16617.5
18.00	0.7087	130	228	2	A16618.0
19.00	0.7480	135	233	2	A16619.0
20.00	0.7874	140	238	2	A16620.0
21.00	0.8268	145	243	2	A16621.0
22.00	0.8661	150	248	2	A16622.0
22.50	0.8858	155	253	2	A16622.5
23.00	0.9055	155	253	2	A16623.0
24.00	0.9449	160	281	3	A16624.0
25.00	0.9843	160	281	3	A16625.0
26.00	1.0236	165	286	3	A16626.0
27.00	1.0630	170	291	3	A16627.0
28.00	1.1024	170	291	3	A16628.0
29.00	1.1417	175	296	3	A16629.0
30.00	1.1811	175	296	3	A16630.0
32.00	1.2598	185	334	4	A16632.0
33.00	1.2992	185	334	4	A16633.0

A350 DIN 341 | 6XD | HSS | 118° | ST | N

A350

- Long Series Tapershank
- Lange Spiralbohrer
- Lange spiraalboren met MC, met zieluitdunning
- Foret série longue
- Broca de mango cónico, serie larga
- Broca Longa

A350																				
▪	1.1	1.2																		
•	1.3	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3
	6.4	7.1	7.2	7.3	7.4	8.1	8.2	8.3	9.1											



A350

5.00 - 50.00

d_1 $\varnothing h_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	MK	A350
5.00	0.1969	74	155	1	A3505.0
5.50	0.2165	80	161	1	A3505.5
6.00	0.2362	80	161	1	A3506.0
6.70	0.2638	86	167	1	A3506.7
6.80	0.2677	93	174	1	A3506.8
7.00	0.2756	93	174	1	A3507.0
7.50	0.2953	93	174	1	A3507.5
8.00	0.3150	100	181	1	A3508.0
8.40	0.3307	100	181	1	A3508.4
8.50	0.3346	100	181	1	A3508.5
8.75	0.3445	107	188	1	A3508.75
9.00	0.3543	107	188	1	A3509.0
9.50	0.3740	107	188	1	A3509.5
9.80	0.3858	116	197	1	A3509.8
10.00	0.3937	116	197	1	A35010.0
10.20	0.4016	116	197	1	A35010.2
10.50	0.4134	116	197	1	A35010.5
10.70	0.4213	125	206	1	A35010.7
11.00	0.4331	125	206	1	A35011.0
11.50	0.4528	125	206	1	A35011.5
11.75	0.4626	125	206	1	A35011.75
11.80	0.4646	125	206	1	A35011.8
12.00	0.4724	134	215	1	A35012.0
12.50	0.4921	134	215	1	A35012.5
13.00	0.5118	134	215	1	A35013.0
13.50	0.5315	142	223	1	A35013.5
14.00	0.5512	142	223	1	A35014.0
14.25	0.5610	147	245	2	A35014.25

DORMER

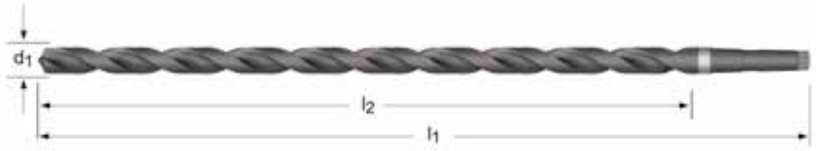
d_1 Øh$_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	MK	A350
14.50	0.5709	147	245	2	A35014.5
14.75	0.5807	147	245	2	A35014.75
15.00	0.5906	147	245	2	A35015.0
15.25	0.6004	153	251	2	A35015.25
15.50	0.6102	153	251	2	A35015.5
15.75	0.6201	153	251	2	A35015.75
16.00	0.6299	153	251	2	A35016.0
16.25	0.6398	159	257	2	A35016.25
16.50	0.6496	159	257	2	A35016.5
16.75	0.6594	159	257	2	A35016.75
17.00	0.6693	159	257	2	A35017.0
17.25	0.6791	165	263	2	A35017.25
17.50	0.6890	165	263	2	A35017.5
18.00	0.7087	165	263	2	A35018.0
18.50	0.7283	171	269	2	A35018.5
19.00	0.7480	171	269	2	A35019.0
19.50	0.7677	177	275	2	A35019.5
19.75	0.7776	177	275	2	A35019.75
20.00	0.7874	177	275	2	A35020.0
20.25	0.7972	184	282	2	A35020.25
20.50	0.8071	184	282	2	A35020.5
21.00	0.8268	184	282	2	A35021.0
21.50	0.8465	191	289	2	A35021.5
22.00	0.8661	191	289	2	A35022.0
22.50	0.8858	198	296	2	A35022.5
23.00	0.9055	198	296	2	A35023.0
23.50	0.9252	198	319	3	A35023.5
24.00	0.9449	206	327	3	A35024.0
24.50	0.9646	206	327	3	A35024.5
25.00	0.9843	206	327	3	A35025.0
25.50	1.0039	214	335	3	A35025.5
26.00	1.0236	214	335	3	A35026.0
26.50	1.0433	214	335	3	A35026.5
27.00	1.0630	222	343	3	A35027.0
27.50	1.0827	222	343	3	A35027.5
28.00	1.1024	222	343	3	A35028.0
29.00	1.1417	230	351	3	A35029.0
30.00	1.1811	230	351	3	A35030.0
30.50	1.2008	239	360	3	A35030.5
31.00	1.2205	239	360	3	A35031.0
31.50	1.2402	239	360	3	A35031.5
32.00	1.2598	248	397	4	A35032.0
33.00	1.2992	248	397	4	A35033.0
34.00	1.3386	257	406	4	A35034.0
35.00	1.3780	257	406	4	A35035.0
36.00	1.4173	267	416	4	A35036.0
37.00	1.4567	267	416	4	A35037.0
38.00	1.4961	277	426	4	A35038.0
39.00	1.5354	277	426	4	A35039.0
40.00	1.5748	277	426	4	A35040.0
41.00	1.6142	287	436	4	A35041.0
42.00	1.6535	287	436	4	A35042.0
43.00	1.6929	298	447	4	A35043.0
44.00	1.7323	298	447	4	A35044.0
45.00	1.7717	298	447	4	A35045.0
46.00	1.8110	310	459	4	A35046.0
47.00	1.8504	310	459	4	A35047.0
48.00	1.8898	321	470	4	A35048.0
50.00	1.9685	321	470	4	A35050.0

A345 DIN 1870/1 | 10XD | HSS | 118° | ST | N

A345

- Extra Length Drill
- Spiralbohrer, extra lang
- Extra lange spiraalboren met MC
- Foret queue cône morse - Extra long
- Broca serie extra larga
- Broca CM - Extra Longa

A345																				
▪	1.1	1.2																		
•	1.3	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3
	6.4	7.1	7.2	7.3	7.4	8.1	8.2	8.3	9.1											



d1 Ø h8 Inch	d1 Ø h8 mm	d1 decimal Inch	l2 mm	l1 mm	MK	A345
	8.00	0.3150	165	265	1	A3458.0
	8.50	0.3346	165	265	1	A3458.5
	9.00	0.3543	175	275	1	A3459.0
	9.50	0.3740	175	275	1	A3459.5
3/8	9.52	0.3748	185	285	1	A3453/8
	10.00	0.3937	185	285	1	A34510.0
13/32	10.32	0.4063	185	285	1	A34513/32
	10.50	0.4134	185	285	1	A34510.5
	11.00	0.4331	195	300	1	A34511.0
7/16	11.11	0.4374	195	300	1	A3457/16
	11.50	0.4528	195	300	1	A34511.5
29/64	11.51	0.4531	205	310	1	A34529/64
	12.00	0.4724	205	310	1	A34512.0
	12.50	0.4921	205	310	1	A34512.5
1/2	12.70	0.5000	205	310	1	A3451/2
	13.00	0.5118	205	310	1	A34513.0
17/32	13.49	0.5311	220	325	1	A34517/32
	13.50	0.5315	220	325	1	A34513.5
	14.00	0.5512	220	325	1	A34514.0
9/16	14.29	0.5626	220	340	2	A3459/16
37/64	14.68	0.5780	220	340	2	A34537/64
	15.00	0.5906	220	340	2	A34515.0
39/64	15.48	0.6094	230	355	2	A34539/64
	15.50	0.6102	230	355	2	A34515.5
5/8	15.88	0.6252	230	355	2	A3455/8
	16.00	0.6299	230	355	2	A34516.0
41/64	16.27	0.6406	230	355	2	A34541/64
	16.50	0.6496	230	355	2	A34516.5
21/32	16.67	0.6563	230	355	2	A34521/32
	17.00	0.6693	230	355	2	A34517.0

d_1 Ø h8 Inch	d_1 Ø h8 mm	d_1 decimal Inch	l_2 mm	l_1 mm	MK	A345
11/16	17.46	0.6874	245	370	2	A34511/16
	17.50	0.6890	245	370	2	A34517.5
	18.00	0.7087	245	370	2	A34518.0
	18.50	0.7283	245	370	2	A34518.5
	19.00	0.7480	245	370	2	A34519.0
3/4	19.05	0.7500	260	385	2	A3453/4
	19.50	0.7677	260	385	2	A34519.5
	20.00	0.7874	260	385	2	A34520.0
	20.50		260	385	2	A34520.5
	21.00	0.8268	260	385	2	A34521.0
	21.50		270	405	2	A34521.5
	22.00	0.8661	270	405	2	A34522.0
7/8	22.22	0.8748	270	405	2	A3457/8
	22.50		270	405	3	A34522.5
	23.00	0.9055	270	405	3	A34523.0
	23.50		270	425	3	A34523.5
	24.00	0.9449	290	440	3	A34524.0
	24.50		290	440	3	A34524.5
	25.00	0.9843	290	440	3	A34525.0
1“	25.40	1.0000	290	440	3	A3451
	25.50		290	440	3	A34525.5
	26.00	1.0236	290	440	3	A34526.0
	26.50		290	440	3	A34526.5
	27.00	1.0630	305	460	3	A34527.0
	28.00	1.1024	305	460	3	A34528.0
	29.00		305	460	3	A34529.0
	30.00	1.1811	305	460	3	A34530.0
	31.00		320	480	3	A34531.0
1.1/4	31.75	1.2500	320	480	3	A3451.1/4
	32.00	1.2598	320	505	4	A34532.0
	33.00	1.2992	320	505	4	A34533.0
	34.00	1.3386	340	530	4	A34534.0
	35.00	1.3780	340	530	4	A34535.0
	36.00	1.4173	340	530	4	A34536.0
	37.00	1.4567	340	530	4	A34537.0
	38.00	1.4961	360	555	4	A34538.0
1.1/2	38.10	1.5000	360	555	4	A3451.1/2
	39.00	1.5354	360	555	4	A34539.0
	40.00	1.5748	360	555	4	A34540.0
	41.00	1.6142	360	555	4	A34541.0
	42.00	1.6535	360	555	4	A34542.0
1.3/4	44.45	1.7500	385	585	4	A3451.3/4
	45.00	1.7717	385	585	4	A34545.0
	48.00	1.8898	405	605	4	A34548.0
	50.00	1.9685	405	605	4	A34550.0

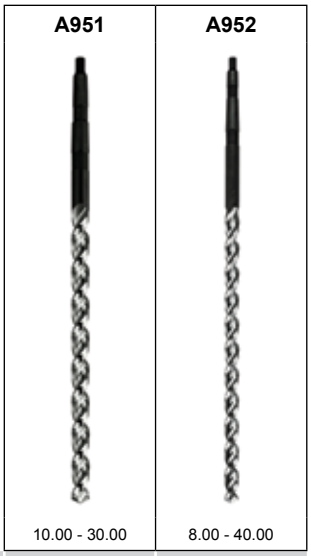
A951	DIN 1870/1	15XD	HSS		130°	ST		W	
A952	DIN 1870/2	20XD	HSS		130°	ST		W	

A951
A952

- Extra Length Drill
- Spiralbohrer, extra lang
- Extra lange spiraalboren met MC
- Foret queue cône morse - Extra long
- Broca serie extra larga
- Broca CM - Extra Longa

A951; A952

▪	1.1	1.2	1.3																
•	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3
	6.4	7.1	7.2	7.3	7.4	8.1	8.2	8.3	9.1										



d_1 $Øh_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	MK	A951	A952
8.00	0.3150	210	330	1		A9528.0
8.50	0.3346	210	330	1		A9528.5
9.00	0.3543	220	345	1		A9529.0
10.00	0.3937	185	285	1	A95110.0	
10.00	0.3937	235	360	1		A95210.0
10.50	0.4134	235	360	1		A95210.5
11.00	0.4331	195	300	1	A95111.0	
11.00	0.4331	250	375	1		A95211.0
11.50	0.4528	250	375	1		A95211.5
12.00	0.4724	205	310	1	A95112.0	
12.00	0.4724	260	395	1		A95212.0
12.50	0.4921	205	310	1	A95112.5	
12.50	0.4921	260	395	1		A95212.5
13.00	0.5118	205	310	1	A95113.0	
13.00	0.5118	260	395	1		A95213.0
13.50	0.5315	220	325	1	A95113.5	
13.50	0.5315	275	410	1		A95213.5
14.00	0.5512	220	325	1	A95114.0	
14.00	0.5512	275	410	1		A95214.0
14.50	0.5709	220	340	2	A95114.5	
14.50	0.5709	275	425	2		A95214.5
15.00	0.5906	220	340	2	A95115.0	
15.00	0.5906	275	425	2		A95215.0
15.50	0.6102	230	355	2	A95115.5	
15.50	0.6102	295	445	2		A95215.5
16.00	0.6299	230	355	2	A95116.0	

d_1 $\varnothing h_8$ mm	d_1 decimal Inch	l_2 mm	l_1 mm	MK	A951	A952
16.00	0.6299	295	445	2		A95216.0
16.50	0.6496	230	355	2	A95116.5	
16.50	0.6496	295	445	2		A95216.5
17.00	0.6693	230	355	2	A95117.0	
17.00	0.6693	295	445	2		A95217.0
17.50	0.6890	245	370	2	A95117.5	
17.50	0.6890	310	465	2		A95217.5
18.00	0.7087	245	370	2	A95118.0	
18.00	0.7087	310	465	2		A95218.0
18.50	0.7283	245	370	2	A95118.5	
18.50	0.7283	310	465	2		A95218.5
19.00	0.7480	245	370	2	A95119.0	
19.00	0.7480	310	465	2		A95219.0
19.50	0.7677	260	385	2	A95119.5	
19.50	0.7677	325	490	2		A95219.5
20.00	0.7874	260	385	2	A95120.0	
20.00	0.7874	325	490	2		A95220.0
21.00	0.8268	260	385	2	A95121.0	
21.00	0.8268	325	490	2		A95221.0
22.00	0.8661	270	405	2	A95122.0	
22.00	0.8661	345	515	2		A95222.0
23.00	0.9055	270	405	2	A95123.0	
23.00	0.9055	345	515	2		A95223.0
24.00	0.9449	290	440	3	A95124.0	
24.00	0.9449	365	555	3		A95224.0
25.00	0.9843	290	440	3	A95125.0	
25.00	0.9843	365	555	3		A95225.0
26.00	1.0236	290	440	3	A95126.0	
26.00	1.0236	365	555	3		A95226.0
27.00	1.0630	305	460	3	A95127.0	
27.00	1.0630	385	580	3		A95227.0
28.00	1.1024	305	460	3	A95128.0	
28.00	1.1024	385	580	3		A95228.0
29.00	1.1417	305	460	3	A95129.0	
29.00	1.1417	385	580	3		A95229.0
30.00	1.1811	305	460	3	A95130.0	
30.00	1.1811	385	580	3		A95230.0
31.00	1.2205	410	610	3		A95231.0
32.00	1.2598	410	635	4		A95232.0
33.00	1.2992	410	635	4		A95233.0
34.00	1.3386	430	665	4		A95234.0
35.00	1.3780	430	665	4		A95235.0
38.00	1.4961	460	695	4		A95238.0
40.00	1.5748	460	695	4		A95240.0

A400 DIN 8374 | 4XD | HSS | 118° | ST | N | 90°

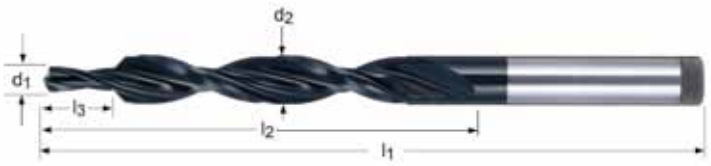
A400

- Subland Drill - 90º
- Mehrfasen-Stufenbohrer, Zylinderschaft - 90º
- Meerfasenboor - 90° voor doorlopende gaten
- Foret étagé - 90º
- Broca Bidiametral - 90º
- Broca Escalonada - 90º

Tang to DIN 1809
mit Mitnehmer DIN 1809
Met lip DIN 1809
Tenon selon la DIN 1809
Lengüeta según DIN 1809
Lingueta DIN 1809

A400

▪	1.1	1.2	1.3	1.4	3.1	3.2														
•	1.5	1.6	2.1	2.2	2.3	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.1	7.2	7.3
	7.4	8.1																		



A400

M3 - M10

M	d_1 Ø mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Ø mm	A400
M3	3.20	0.1260	57	93	9	6.0	A400M3
M4	4.30	0.1693	75	117	11	8.0	A400M4
M5	5.30	0.2087	87	133	13	10.0	A400M5
M6	6.40	0.2520	94	142	15	11.5	A400M6
M8	8.40	0.3307	114	169	19	15.0	A400M8
M10	10.50	0.4134	135	198	23	19.0	A400M10

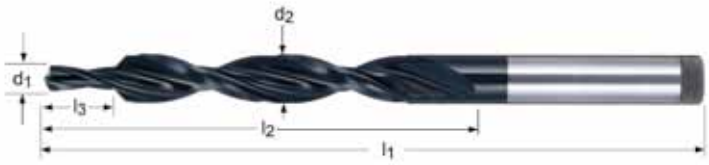
A402 DIN 8376 | 4XD | HSS | 118° | ST | N

A402

- Subland Drill - 180º
- Mehrfasen-Stufenbohrer, Zylinderschaft - 180º
- Meerfasenboor - 180° voor doorlopende gaten
- Foret étagé - 180º
- Broca Bidiametral - 180º
- Broca Escalonada - 180º

Tang to DIN 1809
mit Mitnehmer DIN 1809
Met lip DIN 1809
Tenon selon la DIN 1809
Lengüeta según DIN 1809
Lingueta DIN 1809

A402																						
▪	1.1	1.2	1.3	1.4	3.1	3.2																
•	1.5	1.6	2.1	2.2	2.3	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.1	7.2	7.3	7.4	8.1



A402

M3 - M10

M	d_1 Ø mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Ø mm	A402
M3	3.40	0.1339	57	93	9	6	A402M3
M4	4.50	0.1772	75	117	11	8	A402M4
M5	5.50	0.2165	87	133	13	10	A402M5
M6	6.60	0.2598	94	142	15	11	A402M6
M8	9.00	0.3543	114	169	19	15	A402M8
M10	11.00	0.4331	130	191	23	18	A402M10

A405 DIN 8377 4XD HSS 118° ST N

A405

- Subland Drill - 180º
- Mehrfasen-Stufenbohrer, zylinderschaft - 180º
- Meerfasenboor met MC - 180° voor doorlopende gaten
- Foret étagé - 180º
- Broca Bidiametral - 180º
- Broca Escalonada - 180º

A405 ▪ 1.1 1.2 1.3 1.4 3.1 3.2

▪ 1.5 1.6 2.1 2.2 2.3 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1

A405

M5 - M20

M	d_1 Ø mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Ø mm	MK	A405
M5	5.50	0.2165	87	168	13	10	1	A405M5
M6	6.60	0.2598	94	175	15	11	1	A405M6
M8	9.00	0.3543	114	212	19	15	2	A405M8
M10	11.00	0.4331	130	228	23	18	2	A405M10
M12	13.50	0.5315	140	238	27	20	2	A405M12
M14	15.50	0.6102	160	281	31	24	3	A405M14
M16	17.50	0.6890	165	286	35	26	3	A405M16
M18	20.00	0.7874	175	296	39	30	3	A405M18
M20	22.00	0.8661	185	334	43	33	4	A405M20

A412

A412

- Step Drill
- Stufenbohrer
- Trapboor - 90° voor doorlopende gaten
- Foret étagé
- Broca escalonada
- Broca Escalonada

A412 ▪ 1.1 1.2 1.3 1.4 2.1 3.1 3.2

▪ 1.5 1.6 2.2 2.3 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1

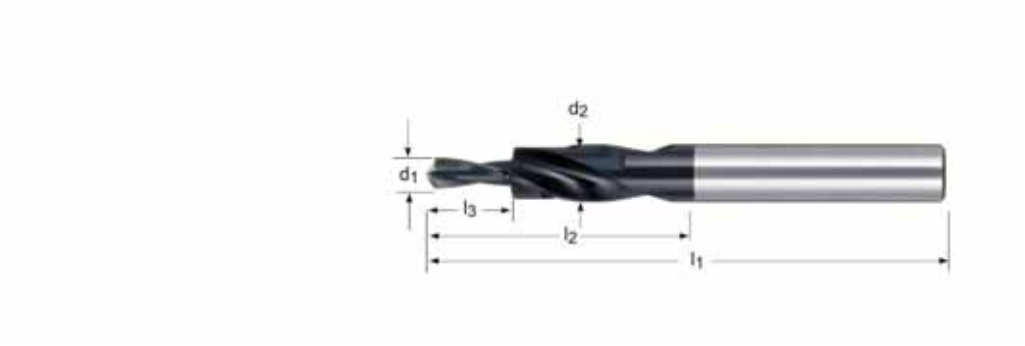
M	d_1 Ø mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Ø mm	A412
M3	3.40	0.1339	31	70	9	6.6	A412M3
M4	4.50	0.1772	40	84	11	9.0	A412M4
M5	5.50	0.2165	47	95	13	11.0	A412M5
M6	6.60	0.2598	51	102	15	13.0	A412M6
M8	9.00	0.3543	62	123	19	17.2	A412M8
M10	11.00	0.4331	70	141	23	21.5	A412M10

A413

A413

- Step Drill
- Stufenbohrer
- Trapboor - 180° voor doorlopende gaten
- Foret étagé
- Broca escalonada
- Broca Escalonada

A413																				
▪	1.1	1.2	1.3	1.4	2.1	3.1	3.2													
▪	1.5	1.6	2.2	2.3	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.1	7.2	7.3	7.4
	8.1																			



A413

M3 - M10

M	d_1 Ø mm	d_1 decimal Inch	l_2 mm	l_1 mm	l_3 mm	d_2 Ø mm	A413
M3	3.40	0.1339	28	66	9	6.0	A413M3
M4	4.50	0.1772	37	79	11	8.0	A413M4
M5	5.50	0.2165	43	89	13	10.0	A413M5
M6	6.60	0.2598	47	95	15	11.0	A413M6
M8	9.00	0.3543	56	111	19	15.0	A413M8
M10	11.00	0.4331	62	123	23	18.0	A413M10

A200
A205

- Centre Drill
- Zentrierbohrer
- Centerboren
- Foret à centrer
- Brocas de Centrar
- Broca de Centrar

A200; A205

▪	1.1	1.2	1.3	1.4	3.1	3.2													
▪	1.5	1.6	2.1	2.2	2.3	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.1	7.2
	7.3	7.4	8.1	8.2	8.3	9.1													

d_1 Ø mm	d_1 decimal Inch	d_2 Ø mm	l_2 max/min mm	l_1 mm	max T mm	A200	A205
0.50	0.0197	3.15	1.0 - 0.8	25.0	3.09	A200.5X3.15 [2)]	
0.80	0.0315	3.15	1.5 - 1.1	25.0	3.14	A200.8X3.15 [2)]	
1.00	0.0394	3.15	1.9 - 1.3	31.5	3.16	A2001.0X3.15	A2051.0X3.15
1.25	0.0492	3.15	2.2 - 1.6	31.5	3.25	A2001.25X3.15	A2051.25X3.15
1.60	0.0630	4.00	2.8 - 2.0	35.5	4.08	A2001.6X4.0	A2051.6X4.0
2.00	0.0787	5.00	3.3 - 2.5	40.0	5.10	A2002.0X5.0	A2052.0X5.0
2.50	0.0984	6.30	4.1 - 3.1	45.0	6.39	A2002.5X6.3	A2052.5X6.3
3.15	0.1240	8.00	4.9 - 3.9	50.0	8.10	A2003.15X8.0	A2053.15X8.0
4.00	0.1575	10.00	6.2 - 5.0	56.0	10.20	A2004.0X10.0	A2054.0X10.0
5.00	0.1969	12.50	7.5 - 6.3	63.0	12.80	A2005.0X12.5	A2055.0X12.5
6.30	0.2480	16.00	9.2 - 8.0	71.0	16.40	A2006.3X16.0	
8.00	0.3150	20.00	11.5 - 10.1	80.0	20.49	A2008.0X20.0	
10.00	0.3937	25.00	14.2 - 12.8	100.0	25.79	A20010.0X25.0	
12.50	0.4921	31.50	19.0 - 16.5	125.0	32.95	A20012.5X31.5	

[2)] Single Ended Only / nur einseitig / Eenzijdig / Une pointe seulement / Afilada sólo por una punta / Afiada num só lado

A210 DIN 333R | 1XD | HSS | 118°

A210

- Centre Drill
- Zentrierbohrer
- Centerboren
- Foret à centrer
- Brocas de Centrar
- Broca de Centrar

Radius Form
mit Radius
Radius uitvoering
Chanfrein à rayon
Radio protegido
Forma de Raio

A210 ▪ 1.1 1.2 1.3 1.4 3.1 3.2
● 1.5 1.6 2.1 2.2 2.3 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 8.2 8.3 9.1

d_1 Ø mm	d_1 decimal Inch	d_2 Ø mm	l_1 mm	l_2 mm	r max/min	max T mm	A210
0.50	0.0197	3.15	3.12	1.60 - 1.25	25.0	3.12	A210.5X3.15 [2]
0.80	0.0315	3.15	2.65	2.50 - 2.00	25.0	2.65	A210.8X3.15 [2]
1.00	0.0394	3.15	3.00	3.15 - 2.50	31.5	3.00	A2101.0X3.15
1.25	0.0492	3.15	3.35	4.00 - 3.15	31.5	3.35	A2101.25X3.15
1.60	0.0630	4.00	4.25	5.00 - 4.00	35.5	4.25	A2101.6X4.0
2.00	0.0787	5.00	5.30	6.30 - 5.00	40.0	5.30	A2102.0X5.0
2.50	0.0984	6.30	6.70	8.00 - 6.30	45.0	6.70	A2102.5X6.3
3.15	0.1240	8.00	8.50	10.0 - 8.00	50.0	8.50	A2103.15X8.0
4.00	0.1575	10.00	10.6	12.5 - 10.0	56.0	10.60	A2104.0X10.0
5.00	0.1969	12.50	13.2	16.0 - 12.5	63.0	13.20	A2105.0X12.5
6.30	0.2480	16.00	17.0	20.0 - 16.0	71.0	17.00	A2106.3X16.0
8.00	0.3150	20.00	21.2	25.0 - 20.0	80.0	21.20	A2108.0X20.0
10.00	0.3937	25.00	26.5	31.5 - 25.0	100.0	26.50	A21010.0X25.0
12.50	0.4921	31.50	33.5	40.0 - 31.5	125.0	33.50	A21012.5X31.5

[2] Single Ended Only / nur einseitig / Eenzijdig / Une pointe seulement / Afilada sólo por una punta / Afiada num só lado

A201

A201

- Centre Drill
- Zentrierbohrer
- Centerboren
- Foret à centrer
- Brocas de Centrar
- Broca de Centrar

A201																					
▪	1.1	1.2	1.3	1.4	3.1	3.2															
•	1.5	1.6	2.1	2.2	2.3	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.1	7.2	7.3	
	7.4	8.1	8.2	8.3	9.1																

d_1 Ø mm	d_1 decimal Inch	d_2 Ø mm	l_2 max/min mm	l_1 mm	max T mm	A201
0.63	0.0248	3.15	1.2 - 0.9	20.0	3.18	A201.63X3.15
0.75	0.0295	3.50	1.3 - 1.0	35.0	3.38	A201.75X3.5
1.00	0.0394	4.00	2.1 - 1.5	31.5	4.10	A2011.0X4.0
1.50	0.0591	5.00	2.8 - 2.0	40.0	5.03	A2011.5X5.0
1.60	0.0630	5.00	2.4 - 2.0	40.0	4.94	A2011.6X5.0
2.00	0.0787	6.00	4.0 - 3.0	45.0	6.46	A2012.0X6.0
2.00	0.0787	6.30	2.9 - 2.5	45.0	6.02	A2012.0X6.3
2.50	0.0984	8.00	4.5 - 3.5	50.0	8.26	A2012.5X8.0
3.00	0.1181	8.00	4.4 - 3.9	50.0	8.33	A2013.0X8.0
3.00	0.1181	10.00	5.0 - 4.0	56.0	10.06	A2013.0X10.0
3.15	0.1240	10.00	4.4 - 3.9	56.0	9.93	A2013.15X10.0
4.00	0.1575	12.00	6.2 - 5.0	66.0	11.93	A2014.0X12.0
5.00	0.1969	14.00	7.7 - 6.5	78.0	14.29	A2015.0X14.0
6.00	0.2362	18.00	9.2 - 8.0	90.0	18.39	A2016.0X18.0

A225 BS 328 | 1XD | HSS | 120° | A296 a 106

A225

- Centre Drill
- Zentrierbohrer
- Centerboren
- Foret à centrer
- Brocas de Centrar
- Broca de Centrar

A225 ▪ 1.1 1.2 1.3 1.4 3.1 3.2

▪ 1.5 1.6 2.1 2.2 2.3 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 8.2 8.3 9.1

A225

3/64 - 5/16

Nr.	d_1 Ø Inch	d_1 decimal Inch	d_2 Ø Inch	l_2 max/min Inch	l_1 Inch	max T mm	A225
BS1	3/64	0.0469	1/8	5/64 - 1/16	1.1/2	3.32	A225BS1
BS2	1/16	0.0625	3/16	3/32 - 5/64	1.3/4	4.75	A225BS2
BS3	3/32	0.0938	1/4	5/32 - 1/8	2“	6.59	A225BS3
BS4	1/8	0.1250	5/16	3/16 - 5/32	2.1/4	8.07	A225BS4
BS5	3/16	0.1875	7/16	9/32 - 1/4	2.1/2	11.85	A225BS5
BS5A	7/32	0.2188	1/2	5/16 - 9/32	2.3/4	13.34	A225BS5A
BS6	1/4	0.2500	5/8	3/8 - 5/16	3“	16.20	A225BS6
BS7	5/16	0.3125	3/4	15/32 - 13/32	3.1/2	19.97	A225BS7

A088

- Stub Drill Set — A=Types in Set, B=No. in Set, C=Diameters in Set
- Spiralbohrer, Satz — A=Typen in Satz, B=Bohreranzahl, C=Durchmesser im Satz
- Extra korte spiraalboren in set — A=Type, B=Aantal, C=Diameters
- Coffret de Foret Extra court — A=Types de coffrets, B=Nombre de forets dans le coffret, C=Diamètres dans le coffret
- Juego de Brocas, serie corta — A=Tipos en el juego, B=No. Brocas en el Juego, C=Diámetros en el Juego
- Jogo de Brocas Curtas — A=Tipos no Jogo, B=No. brocas/jogo, C=Diâmetros por Jogo

A088

Set

Nr.	A	B	C	A088
200S	A022	24	1.0 mm - 10.5 mm x 0.5 mm + 3.3 - 4.2 - 6.8 - 10.2 mm	A088200S

A095

- Jobber Drill Set
- Spiralbohrer, Satz
- Korte spiraalboren in set
- Coffret de forets courts
- Juego de Brocas, serie corta
- Jogo de Brocas Curtas

1.0mm - 2.9mm (inclusive) 118º 4 Facet Point. A=Types in Set B=No. in Set. C=Diameters in Set
1.0 mm - 2.9 mm 118º 4 -Flächenanschliff, B=Bohreranzahl, C=Durchmesser im Satz
1.0mm - 2.9mm (inclusief) 118º 4-Vlaks punt. B=No. boren in Set. C=Diameters in Set
Pointe à 118° à 4 facettes du Ø 1.0 mm à 2.9 mm inclus B=nombre de forets dans le coffret C=Diamètres dans le coffret
1.0mm-2.9mm (inclusive)118º Punta de 4 caras B=No. Brocas en el Juego C=Diametros en el Juego
1.0mm - 2.9mm (inclusive) Ponta 4 Faces - 118º. B=Quant. de brocas por Jogo. C=Diâmetros por Jogo

A095

002

Set

Nr.	A	B	C	A095
18	A002	29	1/16 - 1/2 x 1/64	A09518
201	A002	19	1.0 mm - 10.0 mm x 0.5 mm	A095201
202	A002	51	1.0 mm - 6.0 mm x 0.1 mm	A095202
203	A002	41	6.0 mm - 10.0 mm x 0.1 mm	A095203
204	A002	25	1.0 mm - 13.0 mm x 0.5 mm	A095204
206	A002	29	1.0 mm - 13.0 mm x 0.5 mm + 3.3 - 4.2 - 6.8 - 10.2 mm	A095206
209	A002	91	1.0 mm - 10.0 mm x 0.1 mm	A095209

A099

- Counter Dispenser — A=Types in Set, B=No. in Set, C=Diameters in Set
- Spiralbohrersatz in Kassette — A=Typen in Satz, B=Bohreranzahl, C=Durchmesser im Satz
- Toonbankdispencer — A=Type, B=Aantal, C=Diameters
- Présentoir — A=Types de coffrets, B=Nombre de forets dans le coffret, C=Diamètres dans le coffret
- Exhibidor de Brocas — A=Tipos en el juego, B=No. Brocas en el Juego, C=Diámetros en el Juego
- Jogo de Brocas Curtas — A=Tipos no Jogo, B=No. brocas/jogo, C=Diâmetros por Jogo

A099

Set

Nr.	A	B	C	A099
F1	A002	380	5 x 13/32, 7/16, 15/32, 1/2 10 x 5/64, 7/64, 9/64, 11/64, 13/64, 15/64, 17/64, 9/32, 19/64, 5/16, 21/64, 11/32, 23/64, 3/8 20 x 1/16, 7/32, 1/4 30 x 3/32 40 x 5/32, 3/16 50 x 1/8	A099F1
M1	A002	340	5 x 10.5mm, 11mm, 11.5mm, 12mm, 12.5mm, 13mm 10 x 1.5mm, 2.5mm, 3.5mm, 4.5mm, 5.5mm 6.5mm, 7mm, 7.5mm, 8mm, 8.5mm, 9mm, 9.5mm, 10mm 20 x 1mm, 5mm, 6mm 30 x 2mm 40 x 4mm 50 x 3mm	A099M1

A190

- Jobber Drill Set — A=Types in Set, B=No. in Set, C=Diameters in Set
- Spiralbohrer, Satz — A=Typen in Satz, B=Bohreranzahl, C=Durchmesser im Satz
- Korte spiraalboren in set — A=Type, B=Aantal, C=Diameters
- Coffret de forets courts — A=Types de coffrets, B=Nombre de forets dans le coffret, C=Diamètres dans le coffret
- Juego de Brocas, serie corta — A=Tipos en el juego, B=No. Brocas en el Juego, C=Diámetros en el Juego
- Jogo de Brocas Curtas — A=Tipos no Jogo, B=No. brocas/jogo, C=Diâmetros por Jogo

A190

Set

Nr.	A	B	C	A190
3	A100	21	1/16 - 3/8 x 1/64	A1903
12	A100	60	Nr.1 - Nr.60	A19012
14	A100	26	A - Z	A19014
18	A100	29	1/16 - 1/2 x 1/64	A19018
20	A100	15	1/16 - 1/2 x 1/32	A19020
200	A100	24	1.0 mm - 10.5 mm x 0.5 mm + 3.3 - 4.2 - 6.8 - 10.2 mm	A190200
201	A100	19	1.0 mm - 10.0 mm x 0.5 mm	A190201
202	A100	51	1.0 mm - 6.0 mm x 0.1 mm	A190202
203	A100	41	6.0 mm - 10.0 mm x 0.1 mm	A190203
204	A100	25	1.0 mm - 13.0 mm x 0.5 mm	A190204
206	A100	29	1.0 mm - 13.0 mm x 0.5 mm + 3.3 - 4.2 - 6.8 - 10.2 mm	A190206
209	A100	91	1.0 mm - 10.0 mm x 0.1 mm	A190209

A191

- Jobber Drill Set
- Spiralbohrer, Satz
- Korte spiraalboren in set
- Coffret de forets courts
- Juego de Brocas, serie corta
- Jogo de Brocas Curtas

A=Types in Set, B=No. in Set, C=Diameters in Set
A=Typen in Satz, B=Bohreranzahl, C=Durchmesser im Satz
A=Type, B=Aantal, C=Diameters
A=Types de coffrets, B=Nombre de forets dans le coffret, C=Diamètres dans le coffret
A=Tipos en el juego, B=No. Brocas en el Juego, C=Diámetros en el Juego
A=Tipos no Jogo, B=No. brocas/jogo, C=Diâmetros por Jogo

A191

Set

Nr.	A	B	C	A191
31M	A100	20	0.3 mm - 1.0 mm x 0.05 mm + 0.38 - 0.52 - 0.58 - 0.78 - 0.82 mm	A19131M
61-80	A100	20	N61 - N80	A19161-80
413	A100	13	1.5 mm - 6.5 mm x 0.5 mm + 3.3 - 4.2 mm	A191413
419	A100	19	1.0 mm - 10.0 mm x 0.5 mm	A191419

A199

- Counter Dispenser — A=Types in Set, B=No. in Set, C=Diameters in Set
- Spiralbohrersatz in Kassette — A=Typen in Satz, B=Bohreranzahl, C=Durchmesser im Satz
- Toonbankdispencer — A=Type, B=Aantal, C=Diameters
- Présentoir — A=Types de coffrets, B=Nombre de forets dans le coffret, C=Diamètres dans le coffret
- Exhibidor de Brocas — A=Tipos en el juego, B=No. Brocas en el Juego, C=Diámetros en el Juego
- Jogo de Brocas Curtas — A=Tipos no Jogo, B=No. brocas/jogo, C=Diâmetros por Jogo

A199

Set

Nr.	A	B	C	A199
F1	A100	380	5 x 13/32, 7/16, 15/32, 1/2 10 x 5/64, 7/64, 9/64, 11/64, 13/64, 15/64, 17/64, 9/32, 19/64, 5/16, 21/64, 11/32, 23/64, 3/8 20 x 1/16, 7/32, 1/4 30 x 3/32 40 x 5/32, 3/16 50 x 1/8	A199F1
M1	A100	340	5 x 10.5mm, 11mm, 11.5mm, 12mm, 12.5mm, 13mm 10 x 1.5mm, 2.5mm, 3.5mm, 4.5mm, 5.5mm 6.5mm, 7mm, 7.5mm, 8mm, 8.5mm, 9mm, 9.5mm, 10mm: 20 x 1mm, 5mm, 6mm 30 x 2mm 40 x 4mm 50 x 3mm	A199M1

A295

- Jobber Drill Set
- Spiralbohrer, Satz
- Korte spiraalboren in set
- Coffret de forets courts
- Juego de Brocas, serie corta
- Jogo de Brocas Curtas

4 Facet Point up to 1.4mm. A=Types in Set B=No. in Set, C=Diameters in Set

4 Flächenanschliff bis Ø 1,4 mm, A=Typen in Satz, B=Bohreranzahl, C=Durchmesser im Satz

Viervlaks punt vanaf 1,4mm. A=Typen in set, B=No.boren in sets, C=diameters in sets

Pointe à 4 facettes jusqu'au Ø 1,4 mm. A=Types de coffrets, B=Nombre de forets dans le coffret, C=Diamètres dans le coffret

Punta de 4 caras hasta 1.4 mm. A=Tipos en el juego, B=No. Brocas en el Juego, C=Diámetros en el Juego

Ponta 4 Faces até 1.4mm. A=Tipos no Jogo, B=Quant. de brocas/Jogo, C=Diâmetros/Jogo

Set

Nr.	A	B	C	A295
219	A777	19	1.0 mm - 10.0 mm x 0.5 mm	A295219
225	A777	25	1.0 mm - 13.0 mm x 0.5 mm	A295225

A296

- Centre Drill — A=Types in Set, B=No. in Set, C=Diameters in Set
- Zentrierbohrer — A=Typen in Satz, B=Bohreranzahl, C=Durchmesser im Satz
- Centerboren — A=Type, B=Aantal, C=Diameters
- Foret à centrer — A=Types de coffrets, B=Nombre de forets dans le coffret, C=Diamètres dans le coffret
- Brocas de Centrar — A=Tipos en el juego, B=No. Brocas en el Juego, C=Diámetros en el Juego
- Broca de Centrar — A=Tipos no Jogo, B=No. brocas/jogo, C=Diâmetros por Jogo

A296

Set

Nr.	A	B	C	A296
200	A200	5	1.0 mm - 4.0 mm	A296200
225	A225	5	BS1 - BS5	A296225

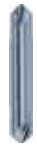
B100	b 13	**B411**	b 11	**G125**	b 52	**G171**	b 49
B101	b 31	**B441**	b 10	**G129**	b 43	**G236**	b 53
B121	b 33	**B442**	b 12	**G132**	b 47	**G314**	b 51
B122	b 21	**B481**	b 8	**G135**	b 40	**G335**	b 40

b1 - b54

B157	b 28	**B901**	b 17	**G136**	b 45	**G338**	b 48
B161	b 29	**B903**	b 19	**G137**	b 41	**G400**	b 38
B170	b 25	**B952**	b 20	**G138**	b 48	**G405**	b 39
B180	b 23	**B953**	b 22	**G142**	b 45	**G560**	b 45
B301	b 18	**B954**	b 34	**G149**	b 44	**M138**	b 50
B334	b 15	**B955**	b 35	**G154**	b 42		
B335	b 16	**B956**	b 36				
B400	b 7	**B957**	b 37				

	B400	B481	B441	B411	B442	B100	B334	B335	B901	B301	B903	B952	B122	B953
	HM	HM	HM	HM	HM	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E
	DIN 8093	DIN 8093	DIN 8050	DIN 8094	DIN 8051	DIN 206	DORMER	DORMER	BS 328	BS 328	DIN 9	DIN 9	ANSI	DIN 2179
	B	B	A	B	A	B			B	A	A	B		
	H7		H7	H7	H7	H7			H7					
										1:48	1:50	1:50		1:50
	1.00 - 20.00	0.98 - 12.05	10.00 - 20.00	5.00 - 30.00	10.00 - 20.00	1.50 - 50.00	N000 - N16	N000BLADES - N16NUT	1.50 - 1/2	1/16 - 7/8	1.50 - 20.00	1.20 - 50.00	Index - 1.1/16	1.00 - 12.00
	b 7	b 8	b 10	b 11	b 12	b 13	b 15	b 16	b 17	b 18	b 19	b 20	b 21	b 22
1.1	●18B	●18B	●18B	●18B	●18B	■18C			■18C	■18C	■18C	■18C	■18C	●25C
1.2	●18B	●18B	●18B	●18B	●18B	■14C			■14C	■14C	■14C	■14C	■14C	●20C
1.3	●14B	●14B	●14B	●14B	●14B	■11C			■11C	■11C	■11C	■11C	■11C	●16C
1.4	●14B	●14B	●14B	●14B	●14B	■10B			■10B	■10B	■10B	■10B	■10B	●15B
1.5	■10C	■10C	■10C	■10C	■10C	●5B			●5B	●5B	●5B	●5B	●5B	●9B
1.6	■10C	■10C	■10C	■10C	■10C	●4A			●4A	●4A	●4A	●4A	●4A	●5A
1.7														
1.8														
2.1						■8F			■8C	■8C	■8C	■8C	■8C	■11C
2.2										●5B	●5B	●5B	●5B	■6B
2.3										●6B	●6B	●6B	●6B	■8B
2.4														
3.1	■17D	■17D	■17D	■17D	■17D	■14E			■14E	■14E	■14E	■14E	■14E	
3.2	■17D	■17D	■17D	■17D	■17D	●11D			●11D	●11D	●11D	●11D	●11D	
3.3	■17D	■17D	■17D	■17D	■17D	●10C			●10C	●10C	●10C	●10C	●10C	
3.4	■14D	■14D	■14D	■14D	■14D	●9C			●9C	●9C	●9C	●9C	●9C	
4.1	■14C	■14C	■14C	■14C	■14C	■11C			■11C	■11C	■11C	■11C	■11C	■15C
4.2	■14C	■14C	■14C	■14C	■14C	●5B			●5B	●5B	●5B	●5B	●5B	●9B
4.3	■10B	■10B	■10B	■10B	■10B	●4B			●4B	●4B	●4B	●4B	●4B	■5B
5.1	■10C	■10C	■10C	■10C	■10C	●5D			●5D	●5D	●5D	●5D	●5D	■8D
5.2	■10B	■10B	■10B	■10B	■10B	●3C			●3C					■5C
5.3	■10B	■10B	■10B	■10B	■10B	●2C			●2C					■3C
6.1	■38E	■38E	■38E	■38E	■38E	●18D			●18D	●18D	●18D	●18D	●18D	■25D
6.2	■38E	■38E	■38E	■38E	■38E	■20E			■20E	■20E	■20E	■20E	■20E	●28E
6.3	■38E	■38E	■38E	■38E	■38E	●18D			●18D	●18D	●18D	●18D	●18D	
6.4	■38D	■38D	■38D	■38D	■38D	●11D			●11D	●11D	●11D	●11D	●11D	
7.1	■60D	■60D	■60D	■60D	■60D	●23F			●23F	●23F	●23F	●23F	●23F	■28F
7.2	■60D	■60D	■60D	■60D	■60D	●18F			●18F	●18F	●18F	●18F	●18F	■25F
7.3	■25D	■25D	■25D	■25D	■25D					●15E	●15E	●15E	●15E	■20E
7.4	■25D	■25D	■25D	■25D	■25D					●14D	●14D	●14D	●14D	■16D
8.1	■25C	■25C	■25C	■25C	■25C									■30B
8.2	■13C	■13C	■13C	■13C	■13C	●21B			●21B	●21B	●21B	●21B	●21B	
8.3														
9.1														●3A
10.1														

	B180	B170	B157	B161	B101	B121	B954	B955	B956	B957
	HSS-E	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS-E	HSS-E	HSS-E	
					ST	ST		ST		
	DIN 212	DIN 212	DIN 212	DIN 208	BS 328	DIN 311	DIN 2180	DIN 219	DIN 217	
	DIN 6535HA									
	B	B	E	B	B			B		
	H7	Ø 03-5.5 0 +0.004 Ø5.51-12 0 +0.005	H7	H7	H7	k11		H7		
							1:50			
	1.50 - 20.00	0.98 - 12.00	2.00 - 20.00	3.00 - 50.00	3.00 - 2"	10.00 - 30.00	5.00 - 30.00	25.00 - 80.00	13.00 - 40.00	N3DRIVER - N9WASHER
	b 23	**b 25**	**b 28**	**b 29**	**b 31**	**b 33**	**b 34**	**b 35**	**b 36**	**b 37**
1.1	■25C	■25C	■25C	■25C	■18C	■18C	●25C	■18C		
1.2	■20C	■20C	■20C	■20C	■14C	■14C	●20C	■14C		
1.3	■16C	■16C	■16C	■16C	■11C	■11C	●16C	■11C		
1.4	■15B	■15B	■15B	■15B	■10B	■10B	●15B	■10B		
1.5	●9B	●9B	●9B	●9B	●5B	●5B	●9B	●5B		
1.6	●5A	●5A	●5A	●5A	●4A	●4A	●5A	●4A		
1.7										
1.8										
2.1	■11C	■11C	■11C	■11C	■8C		■11C	■8C		
2.2	●6B	●6B	■6B	●6B			■6B	●5B		
2.3	●8B	●8B	■8B	●8B			■8B	●6B		
2.4	●6B									
3.1	●16E	●16E		●16E	■14E	■14E		●14E		
3.2	●15D	●15D		●15D	●11D	●11D				
3.3	●13C	●13C		●13C	●10C	●10C				
3.4	●11C	●11C		●11C	●9C	●9C				
4.1	●15C	●15C	■15C	■15C	■11C	■11C	■15C	■11C		
4.2	■9B	■9B	■9B	●9B	●5B		■9B	●5B		
4.3	●5B	●5B	■5B	●5B	●4B		■5B	●4B		
5.1	■8D	■8D	■8D	■8D	●5D		■8D	■5D		
5.2	●5C	●5C	■5C	●5C	●3C		■5C	●3C		
5.3	●3C	●3C	■3C	●3C	●2C		■3C	●2C		
6.1	●25D	●25D	■25D	●25D	●18D		■25D	●18D		
6.2	●28E	●28E	●28E	●28E	■20E		●28E	●20E		
6.3	●25D	●25D		●25D	●18D					
6.4	●14D	●14D		●14D	●11D					
7.1			■28F		●23F		■28F	●23F		
7.2			■25F		●18F		■25F	●18F		
7.3			■20E				■20E	●15E		
7.4			■16D				■16D	●14D		
8.1			■30B				■30B			
8.2					●21B	●21B		●21B		
8.3										
9.1			●3A				●3A			
10.1										

	G400	G405	G135	G335	G137	G154	G129	G149	G136	G142
	HM	HM	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS	HSS
				TiN						
	DIN 335C	DIN 335	DIN 334C	DIN 334C	DIN 334D	DIN 335C	DORMER	DORMER	DIN 335C	DIN 335C
	90°	90°	60°	60°	60°	82°	90°	90°	90°	90°
										
	b 38	**b 39**	**b 40**	**b 40**	**b 41**	**b 42**	**b 43**	**b 44**	**b 45**	**b 45**
1.1	■30F	■30F	■30F	■50E	■30F	■30F	■30D	■30D	■30F	■30F
1.2	■25E	■25E	■25E	■40E	■25E	■25E	■25D	■25D	■25E	■25E
1.3	■20D	■20D	■20D	■30D	■20D	■20D	■20C	■20C	■20D	●20D
1.4	■15D	■15D	■15D	●20D	■15D	■15D	■15B	■15B	■15D	●15D
1.5	■10B	■10B	■10B	●15B	■10B	■10B	●10A	●10A	■10B	
1.6	●6A	●6A	●6A	●10B	●6A	●6A	●6A	●6A	●6A	
1.7										
1.8										
2.1	●8C	●8C	●8C		●8C	●8C	●8B	●8B	●8C	■8C
2.2	●6B	●6B	●6B		●6B	●6B	●6A	●6A	●6B	■6B
2.3	●4A	●4A	●4A		●4A	●4A			●4A	■4A
2.4										
3.1	●25F	●25F	●25F	■45F	●25F	●25F	●25D	●25D	●25F	
3.2	●15D	●15D	●15D	■35D	●15D	●15D	●15C	●15C	●15D	
3.3	●12C	●12C	●12C	■30C	●12C	●12C	●12A	●12A	●12C	
3.4	●8C	●8C	●8C	■30C	●8C	●8C	●8A	●8A	●8C	
4.1	■12C	■12C	■12C	●20C	■12C	■12C	■12B	■12B	■12C	■12C
4.2	■10A	■10A	■10A	●15A	■10A	■10A	■10A	■10A	■10A	●10A
4.3	■8A	■8A	■8A	●10A	■8A	■8A	●8A	●8A	■8A	
5.1	■12C	■12C	■12C	●20C	■12C	■12C	■12B	■12B	■12C	■12C
5.2	■6B	■6B	■6B	●10B	■6B	■6B	■6A	■6A	■6B	●6B
5.3	■4A	■4A	■4A	●6A	■4A	■4A	●4A	●4A	■4A	
6.1	■25D	■25D	■25D	●40D	■25D	■25D	■25B	■25B	■25D	■25D
6.2	■20F	■20F	■20F	●30F	■20F	■20F	■20C	■20C	■20F	■20F
6.3	■25F	■25F	■25F	●40F	■25F	■25F	■25C	■25C	■25F	●25F
6.4	●10D	●10D	●10D	●15D	●10D	●10D	●10B	●10B	●10D	
7.1	●30G	●30G	●30G	■50G	●30G	●30G	■30D	■30D	●30G	■30G
7.2	●25F	●25F	●25F	■40F	●25F	●25F	■25C	■25C	●25F	■25F
7.3	●20F	●20F	●20F	■30F	●20F	●20F	●20C	●20C	●20F	●20F
7.4	●10F	●10F	●10F	■15F	●10F	●10F	●10C	●10C	●10F	●10F
8.1	●30G	●30G	●30G	●50G	●30G	●30G	●30D	●30D	●30G	■30G
8.2	●20G	●20G	●20G	●30G	●20G	●20G	●20D	●20D	●20G	■20G
8.3										
9.1										
10.1										

	G560	G132	G138	G338	G171	M138	G314	G125	G236
	HSS / TiAN / DIN 335C / 90°	HSS / DIN 335A / 90°	HSS / DIN 335D / 90°	HSS / TiN / DIN 335D / 90°	HSS / TiAN / DIN 335C / 100°	HSS / ST / DORMER / 20°	HSS / DORMER / 20°	HSS / DIN 373 / 180°	
	G560	**G132**	**G138**	**G338**	**G171**	**M138**	**G314**	**G125**	**G236**
	6.30 - 31.00	8.00 - 20.00	25.00 - 80.00	25.00 - 63.00	6.30 - 25.00	No.1 - No.6	4.00 - 9.00	6.50 - 20.00	Set
	b 45	**b 47**	**b 48**	**b 48**	**b 49**	**b 50**	**b 51**	**b 52**	**b 53**
1.1	■50E		■30F	■50F	■50E	■30D	■30D	■30E	
1.2	■40E		■25E	■40E	■40E	■25D	■25D	■25E	
1.3	■30D	●20E	■20D	■30D	■30D	■20C	■20C	■20D	
1.4	●20D	●15D	■15D	■20D	●20D	■15B	■15B	●15D	
1.5	●15B	■10D	■10B	■15B	●15B	●10A	●10A	●10C	
1.6	●10B	■6B	●6A	●10A	●10B	●6A	●6A	●6C	
1.7									
1.8									
2.1			●8C			●8B	●8B	■8D	
2.2			●6B			●6A	●6A	●6C	
2.3		●4B	●4A			●4A	●4A		
2.4									
3.1	■45F		●25F	■45F	■45F	●25D	●25D	■25E	
3.2	■35D		●15D	■35D	■35D	●15C	●15C	■15E	
3.3	■30C		●12C	■30C	■30C	●12A	●12A	●12D	
3.4	■30C	■8D	●8C	■30C	■30C	●8A	●8A	●8C	
4.1	●20C		■12C	●20C	●20C	■12B	■12B	●12E	
4.2	●15A	■8A	■10A	●15A	●15A	■10A	■10A	●10E	
4.3	●10A	■8A	■8A	●10A	●10A	■8A	■8A	●8E	
5.1	●20C		■12C	●20C	●20C	■12B	■12B	●12E	
5.2	●10B	■6C	■6B	●10B	●10B	■6A	■6A	●6C	
5.3	●6A	■4B	■4A	●6A	●6A	■4A	■4A	●4E	
6.1	●40D		■25D	●40D	●40D	■25B	■25B	●25C	
6.2	●30F		■20F	●30F	●30F	■20C	■20C	●20C	
6.3	●40F		■25F	●40F	●40F	■25C	■25C	●25C	
6.4	●15D	■10F	●10D	●15D	●15D	●10B	●10B		
7.1	■50G		●30G	■50G	■50G	■30D	■30D	■30G	
7.2	■40F		●25F	■40F	■40F	■25C	■25C	■25G	
7.3	■30F		●20F	■30F	■30F	●20C	●20C	●20G	
7.4	■15F		●10F	■15F	■15F	●10C	●10C	●10E	
8.1	●50G		●30G	●50G	●50G	■30D	■30D	■30C	
8.2	●30G		●20G	●30G	●30G	■20D	■20D	●20C	
8.3		●5G							
9.1									
10.1									

	Ø mm												
	1,5	2	3	5	8	10	12	16	20	25	30	40	50
A	0,045	0,055	0,078	0,100	0,150	0,170	0,185	0,220	0,250	0,280	0,320	0,390	0,440
B	0,055	0,072	0,110	0,150	0,180	0,210	0,240	0,280	0,310	0,360	0,400	0,500	0,550
C	0,065	0,085	0,135	0,185	0,220	0,260	0,285	0,335	0,390	0,440	0,480	0,600	0,680
D	0,080	0,110	0,160	0,200	0,270	0,320	0,360	0,410	0,470	0,540	0,600	0,730	0,850
E	0,100	0,140	0,180	0,250	0,350	0,390	0,430	0,500	0,530	0,640	0,750	0,910	1,100
F	0,140	0,180	0,260	0,350	0,440	0,500	0,550	0,630	0,700	0,800	0,930	1,200	1,500
	mm/REV ± 15%												

	Ø mm									
	6	8	10	16	20	25	32	40	60	80
A	0.03	0.04	0.05	0.06	0.08	0.09	0.10	0.12	0.14	0.16
B	0.04	0.05	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
C	0.05	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20	0.22
D	0.06	0.08	0.10	0.12	0.15	0.18	0.20	0.22	0.25	0.28
E	0.08	0.10	0.12	0.15	0.18	0.20	0.25	0.27	0.30	0.32
F	0.09	0.11	0.13	0.16	0.19	0.21	0.26	0.29	0.33	0.36
G	0.10	0.12	0.15	0.18	0.20	0.22	0.28	0.32	0.36	0.40
H	0.12	0.15	0.18	0.20	0.22	0.25	0.30	0.35	0.40	0.45
	mm/N									

● General guidelines for stock removal when pre-drilling holes ● Allgemeine Richtlinien für Materialabtragung beim Vorbohren ● Algemene richtijn voor materiaal afname bij voorboren ● Préconisations de surépaisseur de perçage avant alésage ● Guía general para la eliminación de material cuando existe agujero pre-taladrado ● Regras gerais para material a ser removido durante a furação

	Ø (mm)				
	3 - 5mm	**5.1 - 10mm**	**10.1 - 20mm**	**20.1 - 30mm**	**> 30mm**
1.1	0.1-0.2	0.2	0.2-0.3	0.3-0.4	0.4-.05
1.2	0.1-0.2	0.2	0.2-0.3	0.3-0.4	0.4-.05
1.3	0.1-0.2	0.2	0.2-0.3	0.3-0.4	0.4-.05
1.4	0.1-0.2	0.2	0.2	0.3	0.3-0.4
1.5	0.1-0.2	0.2	0.2	0.3	0.3-0.4
1.6	0.1-0.2	0.2	0.2	0.3	0.3-0.4
1.7	0.1-0.2	0.2	0.2	0.3	0.3-0.4
1.8	0.1-0.2	0.2	0.2	0.3	0.3-0.4
2.1	0.1-0.2	0.2	0.2	0.3	0.3-0.4
2.2	0.1-0.2	0.2	0.2	0.3	0.3-0.4
2.3	0.1-0.2	0.2	0.2	0.3	0.3-0.4
2.4	0.1-0.2	0.2	0.2	0.3	0.3-0.4
3.1	0.1-0.2	0.2	0.2-0.3	0.3-0.4	0.4-0.5
3.2	0.1-0.2	0.2	0.2-0.3	0.3-0.4	0.4-0.5
3.3	0.1-0.2	0.2	0.3	0.4	0.5
3.4	0.1-0.2	0.2	0.3	0.4	0.5
4.1	0.1-0.2	0.2	0.2-0.3	0.3-0.4	0.3-0.4
4.2	0.1-0.2	0.2	0.2	0.3	0.3-0.4
4.3	0.1-0.2	0.2	0.2	0.3	0.3-0.4
5.1	0.1-0.2	0.2	0.2-0.3	0.3-0.4	0.4-.05
5.2	0.1-0.2	0.2	0.2	0.3	0.3-0.4
5.3	0.1-0.2	0.2	0.2	0.3	0.3-0.4
6.1	0.1-0.2	0.2-0.3	0.3-0.4	0.4-0.5	0.5
6.2	0.1-0.2	0.2	0.2-0.3	0.3	0.3-0.4
6.3	0.1-0.2	0.2	0.2-0.3	0.3	0.3-0.4
6.4	0.1-0.2	0.2	0.2-0.3	0.3	0.3-0.4
7.1	0.1-0.2	0.2-0.3	0.3-0.4	0.4-0.5	0.5
7.2	0.1-0.2	0.2-0.3	0.3-0.4	0.4-0.5	0.5
7.3	0.1-0.2	0.2-0.3	0.3-0.4	0.4-0.5	0.5
7.4	0.1-0.2	0.2-0.3	0.3-0.4	0.4-0.5	0.5
8.1	0.1-0.2	0.3	0.4	0.4-0.5	0.5
8.2	0.1-0.2	0.2	0.2	0.3	0.3-0.4
8.3	0.1-0.2	0.2	0.2	0.3	0.3-0.4
9.1	0.1-0.2	0.2	0.2	0.3	0.3-0.4
10.1	0.1-0.2	0.2	0.2-0.3	0.3-0.4	0.4-0.5

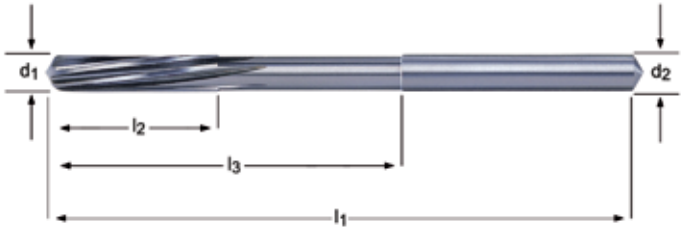
For adjustable or blade reamers reduce stock removal by 30%. For quick helix reamers increase by 50% / Für verstellbare Reibahlen die Materialabtragung um 30% reduzieren. Für Schälreibahlen um 50% erhöhen. / Voor verstelbare ruimers de materiaal afname met 30% reduceren. Voor schilruimers met 50% verhogen. / Pour les alésoirs expansibles ou brasés réduire l'avance de 30%. Pour les alésoirs à hélice rapide augmenter de 50%. / Para escariadores ajustables y con cuchillas reducir la eliminación de material un 30%.Para escariadores de hélice rápida incrementar un 50% / Para alargadores ajustáveis reduza o sobremetal em 30%. Para alargadores com hélice rápida aumente em 50%

B400 HM DIN 8093 B H7

B400

- Machine Reamer Extremely unequal spacing
- Maschinenreibahle, extrem ungleiche Teilung
- Machineruimer differentiaal vertand
- Alésoir machine Pas différentiel
- Escariador de máquina Espacio extremadamente irregular
- Mandril p/ Cavilhas Cónicas Espaçamento Assimétrico

B400																				
	▪	1.5	1.6	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.1	7.2	7.3	7.4
		8.1	8.2																		
	•	1.1	1.2	1.3	1.4																



d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	z	d_2 Øh$_9$ mm	B400	
1.0	34	6	15	3	1.0	B4001.0	3)
1.2	38	8	16.5	3	1.2	B4001.2	3)
1.4	40	8	18	3	1.4	B4001.4	3)
1.5	40	8	18	3	1.5	B4001.5	3)
1.6	49	11	26	3	1.6	B4001.6	3)
1.8	49	11	25	4	1.8	B4001.8	3)
2.0	49	11	24	4	2.0	B4002.0	3)
2.2	57	15	30	4	2.2	B4002.2	3)
2.5	57	15	28	4	2.5	B4002.5	3)
2.8	61	15	32	4	2.8	B4002.8	3)
3.0	61	15	30	6	3.0	B4003.0	3)
3.2	70	18	33	6	3.2	B4003.2	3)
3.5	70	18	33	6	3.5	B4003.5	3)
4.0	75	19	44	6	4.0	B4004.0	3)
4.5	80	21	46	6	4.5	B4004.5	3)
5.0	86	23	53	6	5.0	B4005.0	3)
5.5	93	26	56	6	5.6	B4005.5	3)
6.0	93	26	56	6	5.6	B4006.0	3)
6.5	101	28	63	6	6.3	B4006.5	4)
7.0	109	31	69	6	7.1	B4007.0	4)
8.0	117	33	75	6	8.0	B4008.0	4)
9.0	125	36	81	6	9.0	B4009.0	4)
10.0	133	38	87	6	10.0	B40010.0	4)
12.0	151	44	105	6	10.0	B40012.0	4)
14.0	160	47	110	8	12.5	B40014.0	4)
16.0	170	52	120	8	12.5	B40016.0	4)
18.0	182	56	130	6	14.0	B40018.0	3)
20.0	195	60	137	6	16.0	B40020.0	3)

[3] Solid Carbide / VHM / Volhardmetalen machineruimer / Carbure monobloc / Monobloc de Metal Duro / Metal Duro Integral
[4] Carbide Head / VHM-Kopf / VHM kop / Tête carbure / Cabeza de Metal Duro / Empastilhado

B481 HM DIN 8093 DIN 6535HA B Ø.95-5.5 0,+0.004 Ø5.51-12 0,+0.005

B481

- NC - Centesimal Reamer for High Precision Chucks
- NC- 1/100 Reibahle für Hochgenauigkeitsfutter
- 1/100 Machineruimers met NC-eenheidsschacht
- NC - Alésoir au centième pour mandrins haute précision
- NC - Escariador Centesimal para portas de alta precisión
- NC - Mandril Centesimal p/ buchas de alta precisão

Extremely unequal spacing
Extrem ungleiche Teilung
Differentiaal vertand
Pas différentiel
Espacio extremadamente irregular
Espaçamento Assimétrico

B481																				
▪	1.5	1.6	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.1	7.2	7.3	7.4
	8.1	8.2																		
▪	1.1	1.2	1.3	1.4																

B481

0.98 - 12.05

d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	z	d_2 Øh$_6$ mm	B481
0.98	49.5	6	21.5	3	4	B4810.98
0.99	49.5	6	21.5	3	4	B4810.99
1.00	49.5	6	21.5	3	4	B4811.00
1.01	49.5	6	21.5	3	4	B4811.01
1.02	49.5	6	21.5	3	4	B4811.02
1.03	49.5	9	21.5	3	4	B4811.03
1.48	49	9	21	3	4	B4811.48
1.49	49	9	21	3	4	B4811.49
1.50	49	9	21	3	4	B4811.50
1.51	49	9	21	3	4	B4811.51
1.52	49	9	21	3	4	B4811.52
1.53	49	9	21	3	4	B4811.53
1.98	49	12	21	4	4	B4811.98
1.99	49	12	21	4	4	B4811.99
2.00	49	12	21	4	4	B4812.00
2.01	49	12	21	4	4	B4812.01
2.02	49	12	21	4	4	B4812.02
2.03	49	12	21	4	4	B4812.03
2.48	59	16	31	4	4	B4812.48
2.49	59	16	31	4	4	B4812.49
2.50	59	16	31	4	4	B4812.50
2.51	59	16	31	4	4	B4812.51
2.52	59	16	31	4	4	B4812.52
2.53	59	16	31	4	4	B4812.53
2.97	62.5	17	35	6	4	B4812.97
2.98	62.5	17	35	6	4	B4812.98
2.99	62.5	17	35	6	4	B4812.99
3.00	62.5	17	35	6	4	B4813.00
3.01	62.5	17	35	6	4	B4813.01
3.02	62.5	17	35	6	4	B4813.02
3.03	62.5	17	35	6	4	B4813.03
3.97	75	19	47	6	4	B4813.97

d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	z	d_2 Øh_6 mm	B481
3.98	75	19	47	6	4	B4813.98
3.99	75	19	47	6	4	B4813.99
4.00	75	19	47	6	4	B4814.00
4.01	75	19	47	6	4	B4814.01
4.02	75	19	47	6	4	B4814.02
4.03	75	19	47	6	4	B4814.03
4.97	86	23	50	6	6	B4814.97
4.98	86	23	50	6	6	B4814.98
4.99	86	23	50	6	6	B4814.99
5.00	86	23	50	6	6	B4815.00
5.01	86	23	50	6	6	B4815.01
5.02	86	23	50	6	6	B4815.02
5.03	86	23	50	6	6	B4815.03
5.97	93	26	57	6	6	B4815.97
5.98	93	26	57	6	6	B4815.98
5.99	93	26	57	6	6	B4815.99
6.00	93	26	57	6	6	B4816.00
6.01	93	26	57	6	6	B4816.01
6.02	93	26	57	6	6	B4816.02
6.03	93	26	57	6	6	B4816.03
7.97	117	33	81	6	8	B4817.97
7.98	117	33	81	6	8	B4817.98
7.99	117	33	81	6	8	B4817.99
8.00	117	33	81	6	8	B4818.00
8.01	117	33	81	6	8	B4818.01
8.02	117	33	81	6	8	B4818.02
8.03	117	33	81	6	8	B4818.03
8.04	117	33	81	6	8	B4818.04
9.97	133	38	93	6	10	B4819.97
9.98	133	38	93	6	10	B4819.98
9.99	133	38	93	6	10	B4819.99
10.00	133	38	93	6	10	B48110.00
10.01	133	38	93	6	10	B48110.01
10.02	133	38	93	6	10	B48110.02
10.03	133	38	93	6	10	B48110.03
10.04	133	38	93	6	10	B48110.04
10.05	133	38	93	6	10	B48110.05
11.97	151	44	106	6	12	B48111.97
11.98	151	44	106	6	12	B48111.98
11.99	151	44	106	6	12	B48111.99
12.00	151	44	106	6	12	B48112.00
12.01	151	44	106	6	12	B48112.01
12.02	151	44	106	6	12	B48112.02
12.03	151	44	106	6	12	B48112.03
12.04	151	44	106	6	12	B48112.04
12.05	151	44	106	6	12	B48112.05

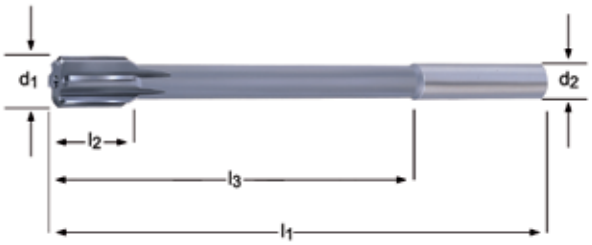
B441 HM DIN 8050 A H7

B441

- Machine Reamer Extremely unequal spacing
- Maschinenreibahle, extrem ungleiche Teilung
- Machineruimers differentiaal vertand
- Alésoir machine Pas différentiel
- Escariador de máquina Espacio extremadamente irregular
- Mandril p/ Cavilhas Cónicas Espaçamento Assimétrico

B441 ▪ 1.5 1.6 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 8.2

▪ 1.1 1.2 1.3 1.4



B441

10.00 - 20.00

d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	z	d_2 Øh$_9$ mm	B441
10.0	133	19	87	6	10	B44110.0
11.0	142	19	96	6	10	B44111.0
12.0	151	19	105	6	10	B44112.0
13.0	151	19	105	6	10	B44113.0
14.0	160	19	110	6	12.5	B44114.0
15.0	162	19	112	6	12.5	B44115.0
16.0	170	22	120	6	12.5	B44116.0
17.0	175	22	123	6	14	B44117.0
18.0	182	22	130	6	14	B44118.0
19.0	189	22	131	6	16	B44119.0
20.0	195	22	137	6	16	B44120.0

DORMER

B411 HM DIN 8094 B H7

B411

- Machine Reamer Extremely unequal spacing
- Maschinenreibahle, extrem ungleiche Teilung
- Machineruimers differentiaal vertand
- Alésoir machine Pas différentiel
- Escariador de máquina Espacio extremadamente irregular
- Mandril p/ Cavilhas Cónicas Espaçamento Assimétrico

B411 ▪ 1.5 1.6 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 8.2

▪ 1.1 1.2 1.3 1.4

B411

5.00 - 30.00

d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	z	MK	B411	
5.0	133	23	67.5	6	1	B4115.0	3)
6.0	138	26	72.5	6	1	B4116.0	3)
7.0	150	31	84.5	6	1	B4117.0	3)
8.0	156	33	90.5	6	1	B4118.0	3)
9.0	162	36	96.5	6	1	B4119.0	3)
10.0	168	38	102.5	6	1	B41110.0	3)
12.0	182	44	116.5	6	1	B41112.0	3)
14.0	189	47	123.5	8	1	B41114.0	3)
15.0	204	50	124	8	2	B41115.0	4)
16.0	210	52	130	8	2	B41116.0	4)
17.0	214	54	134	6	2	B41117.0	4)
18.0	219	56	139	6	2	B41118.0	4)
19.0	223	58	143	6	2	B41119.0	4)
20.0	228	60	148	6	2	B41120.0	4)
22.0	237	64	157	6	2	B41122.0	4)
24.0	268	68	169	8	3	B41124.0	4)
25.0	268	68	169	8	3	B41125.0	4)
26.0	273	70	174	8	3	B41126.0	4)
30.0	281	73	182	8	3	B41130.0	4)

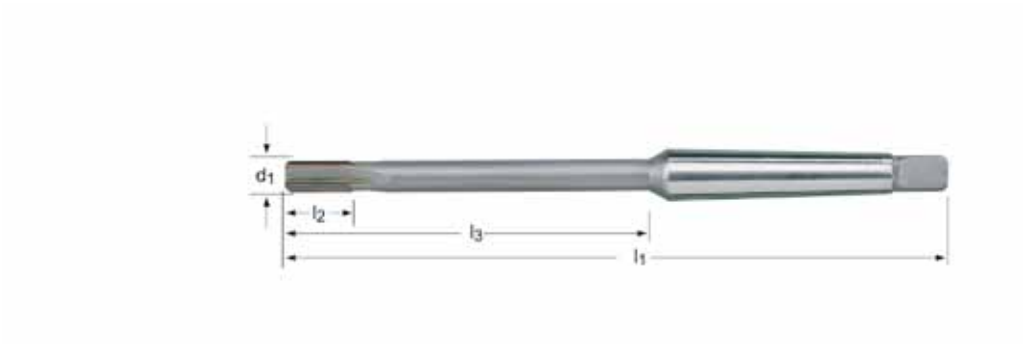
[3] Solid Carbide / VHM / Volhardmetalen machineruimer / Carbure monobloc / Monobloc de Metal Duro / Metal Duro Integral
[4] Carbide Head / VHM-Kopf / VHM kop / Tête carbure / Cabeza de Metal Duro / Empastilhado

B442 HM DIN 8051 A H7

B442

- Machine Reamer Extremely unequal spacing
- Maschinenreibahle Extrem ungleiche Teilung
- Machineruimers differentiaal vertand
- Alésoir machine Pas différentiel
- Escariador de máquina Espacio extremadamente irregular
- Mandril p/ Cavilhas Cónicas Espaçamento Assimétrico

B442																				
	▪	1.5	1.6	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.1	7.2	7.3	7.4
		8.1	8.2																		
	▪	1.1	1.2	1.3	1.4																



B442

10.00 - 20.00

d_1 Ø	l_1	l_2	l_3			B442
mm	mm	mm	mm	z	MK	
10.0	168	19	102.5	6	1	B44210.0
12.0	182	19	116.5	6	1	B44212.0
14.0	189	19	123.5	6	1	B44214.0
15.0	204	19	124	6	2	B44215.0
16.0	210	22	130	6	2	B44216.0
17.0	214	22	134	6	2	B44217.0
18.0	219	22	139	6	2	B44218.0
19.0	223	22	143	6	2	B44219.0
20.0	228	22	148	6	2	B44220.0

B100 HSS ST DIN 206 B H7

B100

- Hand Reamer — d2=d1 with tolerance e9
- Handreibahle — d2=d1 with tolerance e9
- Handruimer — d2=d1 met tolerantie e9
- Alésoir à main — d2=d1 with tolerance e9
- Escariador de mano — d2=d1 with tolerance e9
- Mandril Manual — d2=d1 with tolerance e9

B100 ▪ 1.1 1.2 1.3 1.4 2.1 3.1 4.1 6.2

▪ 1.5 1.6 3.2 3.3 3.4 4.2 4.3 5.1 5.2 5.3 6.1 6.3 6.4 7.1 7.2 8.2

B100

1.50 - 50.00

d1 Ø Inch	d1 Ø mm	l1 mm	l2 mm	l3 mm	z	a mm	B100
	1.50	41	20	5	3	1.12	B1001.5
1/16	1.59	41	20	5	3	1.12	B1001/16
	1.60	44	21	5	3	1.25	B1001.6
5/64	1.98	47	23	6	4	1.40	B1005/64
	2.00	50	25	6	4	1.60	B1002.0
3/32	2.38	54	27	7	4	1.80	B1003/32
	2.50	58	29	7	4	2.10	B1002.5
7/64	2.78	62	31	8	6	2.10	B1007/64
	3.00	62	31	8	6	2.40	B1003.0
1/8	3.18	66	33	8	6	2.40	B1001/8
	3.20	66	33	8	6	2.40	B1003.2
	3.50	71	35	9	6	2.70	B1003.5
9/64	3.57	71	35	9	6	2.70	B1009/64
5/32	3.97	76	38	10	6	3.00	B1005/32
	4.00	76	38	10	6	3.00	B1004.0
11/64	4.37	81	41	10	6	3.40	B10011/64
	4.50	81	41	10	6	3.40	B1004.5
3/16	4.76	87	44	11	6	3.80	B1003/16
	5.00	87	44	11	6	3.80	B1005.0
13/64	5.16	87	44	11	6	3.80	B10013/64
	5.50	93	47	12	6	4.30	B1005.5
7/32	5.56	93	47	12	6	4.30	B1007/32
15/64	5.95	93	47	12	6	4.90	B10015/64
	6.00	93	47	12	6	4.90	B1006.0
1/4	6.35	100	50	13	6	4.90	B1001/4
	6.50	100	50	13	6	4.90	B1006.5
17/64	6.75	107	54	14	6	5.50	B10017/64
	7.00	107	54	14	6	5.50	B1007.0
9/32	7.14	107	54	14	6	6.20	B1009/32
	7.50	107	54	14	6	6.20	B1007.5
19/64	7.54	115	58	15	6	6.20	B10019/64
5/16	7.94	115	58	15	6	6.20	B1005/16
	8.00	115	58	15	6	6.20	B1008.0
21/64	8.33	115	58	15	6	7.00	B10021/64

d_1 Ø Inch	d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	z	▨ a mm	B100
	8.50	115	58	15	6	7.00	B1008.5
11/32	8.73	124	62	16	6	7.00	B10011/32
	9.00	124	62	16	6	7.00	B1009.0
23/64	9.13	124	62	16	6	8.00	B10023/64
	9.50	124	62	16	6	8.00	B1009.5
3/8	9.52	124	62	17	6	8.00	B1003/8
25/64	9.92	133	66	17	6	8.00	B10025/64
	10.00	133	66	17	6	8.00	B10010.0
13/32	10.32	133	66	17	6	8.00	B10013/32
	10.50	133	66	17	6	8.00	B10010.5
	11.00	142	71	18	6	9.00	B10011.0
7/16	11.11	142	71	18	6	9.00	B1007/16
	11.50	142	71	18	6	9.00	B10011.5
	12.00	152	76	19	6	9.00	B10012.0
	12.50	152	76	19	6	10.00	B10012.5
1/2	12.70	152	76	19	6	10.00	B1001/2
	13.00	152	76	19	6	10.00	B10013.0
17/32	13.49	163	81	20	8	11.00	B10017/32
	13.50	163	81	20	8	11.00	B10013.5
	14.00	163	81	20	8	11.00	B10014.0
9/16	14.29	163	81	20	8	11.00	B1009/16
	14.50	163	81	20	8	11.00	B10014.5
	15.00	163	81	20	8	12.00	B10015.0
19/32	15.08	163	81	22	8	12.00	B10019/32
5/8	15.88	175	87	22	8	12.00	B1005/8
	16.00	175	87	22	8	12.00	B10016.0
	17.00	175	87	22	8	13.00	B10017.0
11/16	17.46	188	93	23	8	14.50	B10011/16
	18.00	188	93	23	8	14.50	B10018.0
	19.00	188	93	23	8	14.50	B10019.0
3/4	19.05	188	93	25	8	14.50	B1003/4
	20.00	201	100	25	8	16.00	B10020.0
13/16	20.64	201	100	25	8	16.00	B10013/16
	21.00	201	100	25	8	16.00	B10021.0
	22.00	215	107	27	8	18.00	B10022.0
7/8	22.22	215	107	27	8	18.00	B1007/8
	23.00	215	107	27	8	18.00	B10023.0
	24.00	231	115	29	8	18.00	B10024.0
	25.00	231	115	29	8	20.00	B10025.0
1“	25.40	231	115	29	8	20.00	B1001
	26.00	231	115	29	8	20.00	B10026.0
	27.00	247	124	31	10	22.00	B10027.0
	28.00	247	124	31	10	22.00	B10028.0
	29.00	247	124	31	10	22.00	B10029.0
	30.00	247	124	31	10	24.00	B10030.0
	31.00	265	133	33	10	24.00	B10031.0
	32.00	265	133	33	10	24.00	B10032.0
	33.00	265	133	33	10	26.00	B10033.0
	34.00	284	142	36	10	26.00	B10034.0
	35.00	284	142	36	10	29.00	B10035.0
	36.00	284	142	36	10	29.00	B10036.0
	37.00	284	142	36	10	29.00	B10037.0
	38.00	305	152	38	10	29.00	B10038.0
	39.00	305	152	38	10	32.00	B10039.0
	40.00	305	152	38	10	32.00	B10040.0
	45.00	326	163	41	12	35.00	B10045.0
	50.00	347	174	44	12	39.00	B10050.0

B334 HSS

B334

- Hand Reamer Quickly Adjustable
- VerstellbareHandreibahle
- Verstelbare handruimers
- Alésoirs à main expansibles
- Escariador de mano Extensibles
- Mandril Manual Expansível

B334

N000 - N16

Nr.	d min-max mm	l_1 mm	l_2 mm	l_3 mm	z	▨ a mm	B334
000	6.4 - 7.2	110	32	7	4	3.0	B334000
00	7.2 - 8.0	110	32	7	4	3.4	B33400
0	8.0 - 9.0	115	34	9	5	3.8	B3340
1	9.0 - 10.0	115	34	9	5	4.3	B3341
2	10.0 - 11.0	115	34	9	5	4.9	B3342
3	11.0 - 12.0	125	35	9	5	4.9	B3343
4	12.0 - 13.5	135	41	9	5	6.2	B3344
5	13.5 - 15.5	146	50	12	5	7.0	B3345
6	15.5 - 18.0	166	60	12	5	8.0	B3346
7	18.0 - 21.0	178	65	15	5	9.0	B3347
8	21.0 - 24.0	195	76	15	5	11.0	B3348
9	24.0 - 27.5	218	82	18	5	12.0	B3349
10	27.5 - 31.5	245	86	18	5	14.5	B33410
11	31.5 - 37.0	280	98	18	6	18.0	B33411
12	37.0 - 45.0	325	108	20	6	20.0	B33412
13	45.0 - 55.0	370	118	20	6	26.0	B33413
14	55.0 - 67.0	400	125	20	6	32.0	B33414
15	67.0 - 80.0	435	140	23	8	39.0	B33415
16	80.0 - 95.0	475	155	23	8	49.0	B33416

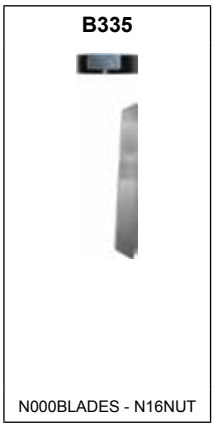
B335 HSS DORMER

B335

- Hand Reamer Quickly Adjustable - Spare Parts (B334)
- Ersatzteile für B334
- Verstelbare handruimers - reserve onderdelen (B334)
- Accessoires pour alésoirs à main expansibles (B334)
- Accesorios para el porta-escariador tipo B334
- Acessórios de Substituição p/ B334

BLADES

NUT



Nr.	B335
000	B335000BLADES
000	B335000NUT
00	B33500BLADES
00	B33500NUT
0	B3350BLADES
0	B3350NUT
1	B3351BLADES
1	B3351NUT
2	B3352BLADES
2	B3352NUT
3	B3353BLADES
3	B3353NUT
4	B3354BLADES
4	B3354NUT
5	B3355BLADES
5	B3355NUT
6	B3356BLADES
6	B3356NUT
7	B3357BLADES
7	B3357NUT
8	B3358BLADES
8	B3358NUT
9	B3359BLADES
9	B3359NUT
10	B33510BLADES
10	B33510NUT
11	B33511BLADES
11	B33511NUT
12	B33512BLADES
12	B33512NUT
13	B33513BLADES
13	B33513NUT
14	B33514BLADES
14	B33514NUT
15	B33515BLADES
15	B33515NUT
16	B33516BLADES
16	B33516NUT

DORMER

B901 HSS ST BS 328 B H7

B901

- Machine Reamer d2=d1-0.025
- Maschinenreibahle d2=d1 - 0.025
- Machineruimer d2=d1 - 0.025
- Alésoir machine d2=d1 - 0.025
- Escariador de máquina d2=d1 - 0.025
- Mandril p/ Cavilhas Cónicas d2=d1 - 0.025

B901

▪ 1.1 1.2 1.3 1.4 2.1 3.1 4.1 6.2

▪ 1.5 1.6 3.2 3.3 3.4 4.2 4.3 5.1 5.2 5.3 6.1 6.3 6.4 7.1 7.2 8.2

d_1 Ø Inch	d_1 Ø mm	l_1 mm	l_2 mm	z	B901
	1.50	44	21	4	B9011.5
1/16	1.59	44	21	4	B9011/16
	2.00	50	25	4	B9012.0
3/32	2.38	58	29	4	B9013/32
	2.50	58	29	4	B9012.5
	3.00	62	31	4	B9013.0
1/8	3.18	66	33	4	B9011/8
	3.50	71	35	4	B9013.5
9/64	3.57	71	35	4	B9019/64
5/32	3.97	76	38	6	B9015/32
	4.00	76	38	6	B9014.0
11/64	4.37	81	41	6	B90111/64
	4.50	81	41	6	B9014.5
3/16	4.76	87	44	6	B9013/16
	5.00	87	44	6	B9015.0
13/64	5.16	87	44	6	B90113/64
	5.50	93	47	6	B9015.5
7/32	5.56	93	47	6	B9017/32
15/64	5.95	93	47	6	B90115/64
	6.00	93	47	6	B9016.0
1/4	6.35	100	50	6	B9011/4
	7.00	107	54	6	B9017.0
9/32	7.14	107	54	6	B9019/32
5/16	7.94	115	58	6	B9015/16
	8.00	115	58	6	B9018.0
11/32	8.73	124	62	6	B90111/32
	9.00	124	62	6	B9019.0
3/8	9.52	133	66	6	B9013/8
	10.00	133	66	6	B90110.0
13/32	10.32	133	66	6	B90113/32
	11.00	142	71	6	B90111.0
7/16	11.11	142	71	6	B9017/16
	12.00	152	76	6	B90112.0
1/2	12.70	152	76	6	B9011/2

B301 HSS ST BS 328 A 1:48

B301

- Hand Taper Pin Reamer
- Handreibahle, konisch
- Pengat handruimers
- Alésoir à main conique
- Escariador de mano para pasadores cónicos
- com quadra Mandril Manual Cónico p/ Cavilhas B

B301

▪	1.1	1.2	1.3	1.4	2.1	3.1	4.1	6.2										
•	1.5	1.6	2.2	2.3	3.2	3.3	3.4	4.2	4.3	5.1	6.1	6.3	6.4	7.1	7.2	7.3	7.4	8.2

B301

1/16 - 7/8

nom Ø	d_1 Ø mm	l_1 mm	l_2 mm	z	▨ a mm	d_2 Ø mm	B301	
1/16	1.59	51	25	4	1.2	1.63	B3011/16	1)
5/64	1.98	51	25	4	1.6	2.03	B3015/64	1)
3/32	2.38	57	32	4	2.0	2.41	B3013/32	1)
7/64	2.78	64	38	4	2.2	2.82	B3017/64	1)
1/8	3.18	70	44	4	2.5	3.23	B3011/8	1)
9/64	3.57	73	48	4	2.8	3.63	B3019/64	1)
5/32	3.97	76	51	4	3.1	4.01	B3015/32	1)
11/64	4.37	89	57	4	3.6	4.42	B30111/64	1)
3/16	4.76	102	70	4	4.0	4.95	B3013/16	1)
7/32	5.56	102	70	6	4.5	5.59	B3017/32	1)
1/4	6.35	117	86	6	5.0	6.43	B3011/4	2)
9/32	7.14	143	105	6	5.6	7.42	B3019/32	2)
5/16	7.94	143	105	6	6.3	8.03	B3015/16	2)
11/32	8.73	152	114	6	7.1	8.81	B30111/32	2)
3/8	9.52	165	127	6	8.0	9.68	B3013/8	2)
13/32	10.32	191	146	6	8.0	10.46	B30113/32	2)
7/16	11.11	191	146	6	9.0	11.25	B3017/16	2)
1/2	12.70	210	165	6	10.0	12.85	B3011/2	2)
9/16	14.29	216	171	6	11.2	14.50	B3019/16	2)
5/8	15.88	235	191	6	12.5	16.08	B3015/8	2)
3/4	19.05	273	222	6	16.0	19.30	B3013/4	2)
7/8	22.22	305	241	6	18.0	22.48	B3017/8	2)

[1] Limit of tolerance +0.0030 / Toleranz +0.0030 / Tolerantie +0.0030 / Tolérance +0.0030 / Límite de tolerancia +0.0030 / Limite de tolerância +0.0030

[2] Limit of tolerance +0.0050 / Toleranz +0.0050 / Tolerantie +0.0050 / Tolérance +0.0050 / Límite de tolerancia +0.0050 / Limite de tolerância +0.0050

B903 HSS ST DIN 9 A 1:50

B903

- Hand Taper Pin Reamer
- Handreibahle, konisch
- Pengat handruimers
- Alésoir à main conique
- Escariador de mano para pasadores cónicos
- com quadra Mandril Manual Cónico p/ Cavilhas B

B903

▪	1.1	1.2	1.3	1.4	2.1	3.1	4.1	6.2										
▪	1.5	1.6	2.2	2.3	3.2	3.3	3.4	4.2	4.3	5.1	6.1	6.3	6.4	7.1	7.2	7.3	7.4	8.2

nom Ø	d_1 Ø mm	d_2 Ø mm	l_1 mm	l_2 mm	z	a mm	d_3 Øh_{11} mm	B903	
1.5	1.40	2.14	57	37	4	1.80	2.14	B9031.5	5)
2.0	1.90	2.86	68	48	4	2.24	2.86	B9032.0	5)
2.5	2.40	3.36	68	48	4	2.80	3.36	B9032.5	5)
3.0	2.90	4.06	80	58	4	3.15	4.00	B9033.0	5)
4.0	3.90	5.26	93	68	4	4.00	5.00	B9034.0	5)
5.0	4.90	6.36	100	73	4	5.00	6.30	B9035.0	5)
6.0	5.90	8.00	135	105	6	6.30	7.90	B9036.0	6)
8.0	7.90	10.80	180	145	6	8.00	10.50	B9038.0	6)
10.0	9.90	13.40	215	175	6	10.00	13.30	B90310.0	6)
12.0	11.80	16.00	255	210	8	11.20	16.00	B90312.0	6)
13.0	12.86	16.74	255	210	8	12.50	16.74	B90313.0	6)
14.0	13.86	17.74	255	210	8	12.50	17.74	B90314.0	6)
16.0	15.80	20.40	280	230	8	14.00	20.40	B90316.0	6)
20.0	19.80	24.80	310	250	8	18.00	24.80	B90320.0	6)

[5] Limit of tolerance +0.0750 / Toleranz +0.0750 / Tolerantie +0.0750 / Tolérance +0.0750 / Límite de tolerancia +0.0750 / Limite de tolerância +0.0750

[6] Limit of tolerance +0.125 / Toleranz +0.125 / Tolerantie +0.125 / Tolérance +0.125 / Límite de tolerancia +0.125 / Limite de tolerância +0.1250

B952 HSS DIN 9 B 1:50

B952

- Hand Taper Pin Reamer
- Handreibahle, konisch
- Pengat handruimers
- Alésoir à main conique
- Escariador de mano para pasadores cónicos
- com quadra Mandril Manual Cónico p/ Cavilhas B

B952																		
	▪	1.1	1.2	1.3	1.4	2.1	3.1	4.1	6.2									
	▪	1.5	1.6	2.2	2.3	3.2	3.3	3.4	4.2	4.3	5.1	6.1	6.3	6.4	7.1	7.2	7.3	7.4	8.2

nom Ø	d_1 Ø mm	d_2 Ø mm	l_1 mm	l_2 mm	z	▨ a mm	d_3 Øh_{11} mm	B952	
1.2	1.1	1.74	50	32	3	2.4	3.15	B9521.2	7)
1.5	1.4	2.14	57	37	3	2.4	3.15	B9521.5	7)
2.0	1.9	2.86	68	48	3	2.4	3.15	B9522.0	7)
2.5	2.4	3.36	68	48	4	2.4	3.15	B9522.5	7)
3.0	2.9	4.06	80	58	5	3.0	4.00	B9523.0	
3.5	3.4	4.66	87	63	5	3.4	4.50	B9523.5	
4.0	3.9	5.26	93	68	5	3.8	5.00	B9524.0	
4.5	4.4	5.80	95	70	5	4.3	5.60	B9524.5	
5.0	4.9	6.36	100	73	5	4.9	6.30	B9525.0	
5.5	5.4	7.20	118	90	6	5.5	7.10	B9525.5	
6.0	5.9	8.00	135	105	6	6.2	8.00	B9526.0	
6.5	6.4	8.60	140	110	6	6.2	8.00	B9526.5	
7.0	6.9	9.40	160	125	6	7.0	9.00	B9527.0	
8.0	7.9	10.8	180	145	6	8.0	10.00	B9528.0	
9.0	8.9	12.1	195	160	6	9.0	11.20	B9529.0	
10.0	9.9	13.4	215	175	6	10.0	12.50	B95210.0	
12.0	11.8	16.0	255	210	8	11.0	14.00	B95212.0	
13.0	12.8	17.0	255	210	8	12.0	16.00	B95213.0	
14.0	13.8	18.0	255	210	8	12.0	16.00	B95214.0	
16.0	15.8	20.4	280	230	8	14.5	18.00	B95216.0	
20.0	19.8	24.8	310	250	8	18.0	22.40	B95220.0	
25.0	24.7	30.7	370	300	10	22.0	28.00	B95225.0	
30.0	29.7	36.1	400	320	10	24.0	31.50	B95230.0	
40.0	39.7	46.5	430	340	12	32.0	40.00	B95240.0	
50.0	49.7	56.9	460	360	12	39.0	50.00	B95250.0	

7) Straight Flute, form A / Rechtsgedrallt, Form A / Rechte spaangroef, vorm A / / /

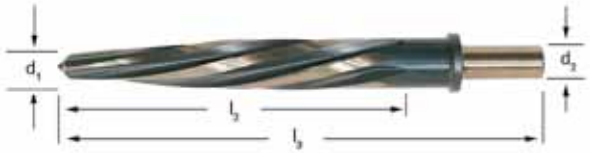
DORMER

B122 HSS ST Bronze ANSI

B122

- Straight Car Reamers, LH Helical Flute
- Zylinderschaft mit Rheibahle
- Recht Machineruimers
- Alésoir cylindrique tôle fine, hélice à gauche
- Escariadores de máquina rectos
- Cilíndrica Mandril

B122																		
▪	1.1	1.2	1.3	1.4	2.1	3.1	4.1	6.2										
●	1.5	1.6	2.2	2.3	3.2	3.3	3.4	4.2	4.3	5.1	6.1	6.3	6.4	7.1	7.2	7.3	7.4	8.2



B122

3/8 - 1.1/16

d_1 Ø Inch	d_1 decimal Inch	d_2 Ø Inch	l_2 Inch	l_1 Inch	B122
3/8	0.3750	1/2	3.5/8	5.15/16	B1223/8
1/2	0.5000	1/2	3.5/8	5.15/16	B1221/2
9/16	0.5625	1/2	3.5/8	5.15/16	B1229/16
5/8	0.6250	1/2	4.1/4	6.9/16	B1225/8
11/16	0.6875	1/2	4.1/4	6.9/16	B12211/16
3/4	0.7500	1/2	4.9/16	7“	B1223/4
13/16	0.8125	1/2	4.9/16	7“	B12213/16
7/8	0.8750	1/2	4.9/16	7.1/4	B1227/8
15/16	0.9375	1/2	4.9/16	7.1/4	B12215/16
1“	1.0000	1/2	4.9/16	7.1/4	B1221
1.1/16	1.0625	1/2	4.9/16	7.1/4	B1221.1/16

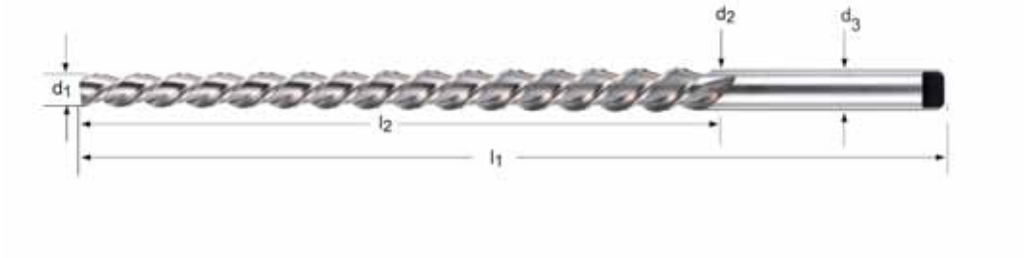
B953 HSS-E DIN 2179 1:50

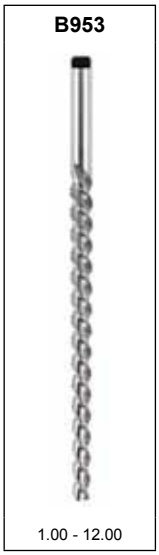
B953

- Machine Reamer for Conical Pin Left Hand Helix 45°
- Maschinen-Kegelreibahle mit 45° Linksdrall
- Machine-pengatruimer met 45° linkse spiraal
- Alésoir Machine pour goupille conique Hélice à gauche à 45°
- Escariador de máquina para pasadores cónicos Hélice a izquierdas 45°
- Mandril de Máquina p/ Cavilhas Cónicas Hélice à Esquerda - 45º

Tang to DIN 1809
mit Mitnehmer DIN 1809
Met lip DIN 1809
Tenon selon la DIN 1809
Lengüeta según DIN 1809
Lingueta DIN 1809

B953	2.1	2.2	2.3	4.1	4.2	4.3	5.1	5.2	5.3	6.1	7.1	7.2	7.3	7.4	8.1
▪	1.1	1.2	1.3	1.4	1.5	1.6	6.2	9.1							





nom Ø	d_1 Ø mm	d_2 Ø mm	l_1 mm	l_2 mm	z	d_3 Øh_9 mm	B953
1.0	0.8	1.46	60	33	2	1.4	B9531.0
1.5	1.4	2.14	70	37	2	2.1	B9531.5
2.0	1.9	2.86	86	48	3	3.15	B9532.0
2.5	2.4	3.36	86	48	3	3.15	B9532.5
3.0	2.9	4.06	100	58	3	4.0	B9533.0
4.0	3.9	5.26	112	68	3	5.0	B9534.0
5.0	4.9	6.36	122	73	3	6.3	B9535.0
6.0	5.9	8.00	160	105	3	8.0	B9536.0
6.5	6.4	8.78	188	119	3	8.5	B9536.5
8.0	7.9	10.80	207	145	3	10.0	B9538.0
10.0	9.9	13.40	245	175	3	12.5	B95310.0
12.0	11.8	16.00	290	210	3	16.0	B95312.0

DORMER

B180 HSS-E DIN 212 DIN 6535HA B H7

B180

- NC - Reamer for High Precision Chucks
- NC-Maschinenreibahle
- Machineruimers met NC-eenheidsschacht
- Alésoir de précision - NC
- NC- Escariador de precisión
- Mandril de Precisão p/ CNC

B180																		
▪	1.1	1.2	1.3	1.4	2.1	4.2	5.1											
●	1.5	1.6	2.2	2.3	2.4	3.1	3.2	3.3	3.4	4.1	4.3	5.2	5.3	6.1	6.2	6.3	6.4	

d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	z	d_2 Øh$_6$ mm	B180
1.5	40	8	18	3	2	B1801.5
1.6	43	9	20	3	2	B1801.6
1.7	43	9	20	3	2	B1801.7
1.8	46	10	22	4	2	B1801.8
1.9	46	10	22	4	2	B1801.9
2.0	49	11	24	4	2	B1802.0
2.1	49	11	24	4	2	B1802.1
2.2	53	12	26	4	3	B1802.2
2.3	53	12	26	4	3	B1802.3
2.4	57	14	28	4	3	B1802.4
2.5	57	14	28	4	3	B1802.5
2.6	57	14	28	4	3	B1802.6
2.7	61	15	32	6	3	B1802.7
2.8	61	15	32	6	3	B1802.8
2.9	61	15	32	6	3	B1802.9
3.0	61	15	32	6	3	B1803.0
3.1	65	16	35	6	4	B1803.1
3.2	65	16	35	6	4	B1803.2
3.3	65	16	35	6	4	B1803.3
3.4	70	18	40	6	4	B1803.4
3.5	70	18	40	6	4	B1803.5
3.6	70	18	40	6	4	B1803.6
3.7	70	18	40	6	4	B1803.7
3.8	75	19	43	6	4	B1803.8
3.9	75	19	43	6	4	B1803.9
4.0	75	19	43	6	4	B1804.0
4.1	75	19	43	6	4	B1804.1
4.2	75	19	43	6	4	B1804.2
4.3	80	21	47	6	5	B1804.3
4.4	80	21	47	6	5	B1804.4
4.5	80	21	47	6	5	B1804.5
4.6	80	21	47	6	5	B1804.6
4.7	80	21	47	6	5	B1804.7
4.8	86	23	52	6	5	B1804.8
4.9	86	23	52	6	5	B1804.9
5.0	86	23	52	6	5	B1805.0

d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	z	d_2 Øh_6 mm	B180
5.1	86	23	52	6	5	B1805.1
5.2	86	23	52	6	5	B1805.2
5.3	86	23	52	6	5	B1805.3
5.4	93	26	57	6	6	B1805.4
5.5	93	26	57	6	6	B1805.5
5.6	93	26	57	6	6	B1805.6
5.7	93	26	57	6	6	B1805.7
5.8	93	26	57	6	6	B1805.8
5.9	93	26	57	6	6	B1805.9
6.0	93	26	57	6	6	B1806.0
6.1	101	28	63	6	6	B1806.1
6.2	101	28	63	6	6	B1806.2
6.3	101	28	63	6	6	B1806.3
6.4	101	28	63	6	6	B1806.4
6.5	101	28	63	6	6	B1806.5
6.6	101	28	63	6	6	B1806.6
6.7	101	28	63	6	6	B1806.7
6.8	109	31	69	6	8	B1806.8
6.9	109	31	69	6	8	B1806.9
7.0	109	31	69	6	8	B1807.0
7.1	109	31	69	6	8	B1807.1
7.2	109	31	69	6	8	B1807.2
7.3	109	31	69	6	8	B1807.3
7.4	109	31	69	6	8	B1807.4
7.5	109	31	69	6	8	B1807.5
7.6	117	33	75	6	8	B1807.6
7.7	117	33	75	6	8	B1807.7
7.8	117	33	75	6	8	B1807.8
7.9	117	33	75	6	8	B1807.9
8.0	117	33	75	6	8	B1808.0
8.1	117	33	75	6	8	B1808.1
8.2	117	33	75	6	8	B1808.2
8.3	117	33	75	6	8	B1808.3
8.4	117	33	75	6	8	B1808.4
8.5	117	33	75	6	8	B1808.5
8.6	125	36	81	6	10	B1808.6
8.7	125	36	81	6	10	B1808.7
8.8	125	36	81	6	10	B1808.8
8.9	125	36	81	6	10	B1808.9
9.0	125	36	81	6	10	B1809.0
9.1	125	36	81	6	10	B1809.1
9.2	125	36	81	6	10	B1809.2
9.3	125	36	81	6	10	B1809.3
9.4	125	36	81	6	10	B1809.4
9.5	125	36	81	6	10	B1809.5
9.6	133	38	87	6	10	B1809.6
9.7	133	38	87	6	10	B1809.7
9.8	133	38	87	6	10	B1809.8
9.9	133	38	87	6	10	B1809.9
10.0	133	38	87	6	10	B18010.0
11.0	142	41	96	6	10	B18011.0
12.0	151	44	105	6	10	B18012.0
13.0	151	44	105	6	10	B18013.0
14.0	160	47	110	8	14	B18014.0
15.0	162	50	112	8	14	B18015.0
16.0	170	52	120	8	14	B18016.0
17.0	175	54	123	8	14	B18017.0
18.0	182	56	130	8	14	B18018.0
19.0	189	58	131	8	16	B18019.0
20.0	195	60	137	8	16	B18020.0

DORMER

B170 HSS-E DIN 212 B Ø.95-5.5 0,+0.004 Ø5.51-12 0,+0.005

B170

- Machine Centesimal Reamer
- 1/100 Maschinenreibahle
- 1/100 Machineruimers
- Alésoir Machine au centième
- Escariador de máquina centesimal
- NC - Mandril de Máquina Centesimal

B170																	
▪	1.1	1.2	1.3	1.4	2.1	4.2	5.1										
▪	1.5	1.6	2.2	2.3	3.1	3.2	3.3	3.4	4.1	4.3	5.2	5.3	6.1	6.2	6.3	6.4	

d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	z	d_2 Øh$_9$ mm	B170
0.98	34	5.5	15	3	1.0	B170.98
0.99	34	5.5	15	3	1.0	B170.99
1.00	34	5.5	15	3	1.0	B1701.0
1.01	34	5.5	15	3	1.0	B1701.01
1.02	34	5.5	15	3	1.0	B1701.02
1.03	34	5.5	15	3	1.0	B1701.03
1.04	34	5.5	15	3	1.0	B1701.04
1.05	34	5.5	15	3	1.0	B1701.05
1.49	40	8.0	18	3	1.5	B1701.49
1.50	40	8.0	18	3	1.5	B1701.5
1.51	43	9.0	20	3	1.6	B1701.51
1.52	43	9.0	20	3	1.6	B1701.52
1.98	49	11.0	24	4	2.0	B1701.98
1.99	49	11.0	24	4	2.0	B1701.99
2.00	49	11.0	24	4	2.0	B1702.0
2.01	49	11.0	24	4	2.0	B1702.01
2.02	49	11.0	24	4	2.0	B1702.02
2.03	49	11.0	24	4	2.0	B1702.03
2.04	49	11.0	24	4	2.0	B1702.04
2.05	49	11.0	24	4	2.0	B1702.05
2.49	57	14.0	28	4	2.5	B1702.49
2.50	57	14.0	28	4	2.5	B1702.5
2.51	57	14.0	28	4	2.5	B1702.51
2.52	57	14.0	28	4	2.5	B1702.52
2.98	61	15.0	32	6	3.0	B1702.98
2.99	61	15.0	32	6	3.0	B1702.99
3.00	61	15.0	32	6	3.0	B1703.0
3.01	65	16.0	35	6	3.2	B1703.01
3.02	65	16.0	35	6	3.2	B1703.02
3.03	65	16.0	35	6	3.2	B1703.03
3.04	65	16.0	35	6	3.2	B1703.04
3.05	65	16.0	35	6	3.2	B1703.05
3.49	70	18.0	40	6	3.5	B1703.49
3.50	70	18.0	40	6	3.5	B1703.5
3.51	70	18.0	40	6	3.5	B1703.51
3.52	70	18.0	40	6	3.5	B1703.52

d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	z	d_2 Øh_9 mm	B170
3.98	75	19.0	43	6	4.0	B1703.98
3.99	75	19.0	43	6	4.0	B1703.99
4.00	75	19.0	43	6	4.0	B1704.0
4.01	75	19.0	43	6	4.0	B1704.01
4.02	75	19.0	43	6	4.0	B1704.02
4.03	75	19.0	43	6	4.0	B1704.03
4.04	75	19.0	43	6	4.0	B1704.04
4.05	75	19.0	43	6	4.0	B1704.05
4.49	80	21.0	47	6	4.5	B1704.49
4.50	80	21.0	47	6	4.5	B1704.5
4.51	80	21.0	47	6	4.5	B1704.51
4.52	80	21.0	47	6	4.5	B1704.52
4.98	86	23.0	52	6	5.0	B1704.98
4.99	86	23.0	52	6	5.0	B1704.99
5.00	86	23.0	52	6	5.0	B1705.0
5.01	86	23.0	52	6	5.0	B1705.01
5.02	86	23.0	52	6	5.0	B1705.02
5.03	86	23.0	52	6	5.0	B1705.03
5.04	86	23.0	52	6	5.0	B1705.04
5.05	86	23.0	52	6	5.0	B1705.05
5.49	93	26.0	57	6	5.6	B1705.49
5.50	93	26.0	57	6	5.6	B1705.5
5.51	93	26.0	57	6	5.6	B1705.51
5.52	93	26.0	57	6	5.6	B1705.52
5.98	93	26.0	57	6	5.6	B1705.98
5.99	93	26.0	57	6	5.6	B1705.99
6.00	93	26.0	57	6	5.6	B1706.0
6.01	101	28.0	63	6	6.3	B1706.01
6.02	101	28.0	63	6	6.3	B1706.02
6.03	101	28.0	63	6	6.3	B1706.03
6.04	101	28.0	63	6	6.3	B1706.04
6.05	101	28.0	63	6	6.3	B1706.05
6.49	101	28.0	63	6	6.3	B1706.49
6.50	101	28.0	63	6	6.3	B1706.5
6.51	101	28.0	63	6	6.3	B1706.51
6.52	101	28.0	63	6	6.3	B1706.52
6.98	109	31.0	69	6	7.1	B1706.98
6.99	109	31.0	69	6	7.1	B1706.99
7.00	109	31.0	69	6	7.1	B1707.0
7.01	109	31.0	69	6	7.1	B1707.01
7.02	109	31.0	69	6	7.1	B1707.02
7.03	109	31.0	69	6	7.1	B1707.03
7.04	109	31.0	69	6	7.1	B1707.04
7.05	109	31.0	69	6	7.1	B1707.05
7.49	109	31.0	69	6	7.1	B1707.49
7.50	109	31.0	69	6	7.1	B1707.5
7.51	117	33.0	75	6	8.0	B1707.51
7.52	117	33.0	75	6	8.0	B1707.52
7.98	117	33.0	75	6	8.0	B1707.98
7.99	117	33.0	75	6	8.0	B1707.99
8.00	117	33.0	75	6	8.0	B1708.0
8.01	117	33.0	75	6	8.0	B1708.01
8.02	117	33.0	75	6	8.0	B1708.02
8.03	117	33.0	75	6	8.0	B1708.03
8.04	117	33.0	75	6	8.0	B1708.04
8.05	117	33.0	75	6	8.0	B1708.05
8.49	117	33.0	75	6	8.0	B1708.49
8.50	117	33.0	75	6	8.0	B1708.5
8.51	125	36.0	81	6	9.0	B1708.51
8.52	125	36.0	81	6	9.0	B1708.52
8.98	125	36.0	81	6	9.0	B1708.98
8.99	125	36.0	81	6	9.0	B1708.99
9.00	125	36.0	81	6	9.0	B1709.0
9.01	125	36.0	81	6	9.0	B1709.01
9.02	125	36.0	81	6	9.0	B1709.02
9.03	125	36.0	81	6	9.0	B1709.03
9.04	125	36.0	81	6	9.0	B1709.04
9.05	125	36.0	81	6	9.0	B1709.05

d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	z	d_2 Øh_9 mm	B170
9.49	125	36.0	81	6	9.0	B1709.49
9.50	125	36.0	81	6	9.0	B1709.5
9.51	133	38.0	87	6	10.0	B1709.51
9.52	133	38.0	87	6	10.0	B1709.52
9.98	133	38.0	87	6	10.0	B1709.98
9.99	133	38.0	87	6	10.0	B1709.99
10.00	133	38.0	87	6	10.0	B17010.0
10.01	133	38.0	87	6	10.0	B17010.01
10.02	133	38.0	87	6	10.0	B17010.02
10.03	133	38.0	87	6	10.0	B17010.03
10.04	133	38.0	87	6	10.0	B17010.04
10.05	133	38.0	87	6	10.0	B17010.05
10.49	133	38.0	87	6	10.0	B17010.49
10.50	133	38.0	87	6	10.0	B17010.5
10.51	133	38.0	87	6	10.0	B17010.51
10.52	133	38.0	87	6	10.0	B17010.52
10.98	142	41.0	96	6	10.0	B17010.98
10.99	142	41.0	96	6	10.0	B17010.99
11.00	142	41.0	96	6	10.0	B17011.0
11.01	142	41.0	96	6	10.0	B17011.01
11.02	142	41.0	96	6	10.0	B17011.02
11.03	142	41.0	96	6	10.0	B17011.03
11.04	142	41.0	96	6	10.0	B17011.04
11.05	142	41.0	96	6	10.0	B17011.05
11.49	142	41.0	96	6	10.0	B17011.49
11.50	142	41.0	96	6	10.0	B17011.5
11.51	142	41.0	96	6	10.0	B17011.51
11.52	142	41.0	96	6	10.0	B17011.52
11.98	151	44.0	105	6	10.0	B17011.98
11.99	151	44.0	105	6	10.0	B17011.99
12.00	151	44.0	105	6	10.0	B17012.0

B157 HSS-E DIN 212 E H7

B157

- Machine Reamer Left Hand Helix 45°
- Maschinenreibahle mit 45° Linksdrall
- Machine-schilruimer met 45° linkse spiraal
- Alésoir Machine Hélice 45° à gauche
- Escariador de máquina Hélice a izquierdas 45°
- Mandril de Máquina Hélice à Esquerda - 45º

B157	1.1	1.2	1.3	1.4	2.1	2.2	2.3	4.1	4.2	4.3	5.1	5.2	5.3	6.1	7.1	7.2	7.3	7.4	8.1
▪	1.5	1.6	6.2	9.1															

B157

2.00 - 20.00

d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	l_4 mm	z	d_2 Øh$_9$ mm	B157
2.0	49	11	3.5	24	3	2.0	B1572.0
3.0	61	15	4.0	32	3	3.0	B1573.0
4.0	75	19	4.0	43	3	4.0	B1574.0
5.0	86	23	4.5	52	3	5.0	B1575.0
6.0	93	26	6.0	57	3	5.6	B1576.0
7.0	109	31	7.0	69	3	7.1	B1577.0
8.0	117	33	9.0	75	3	8.0	B1578.0
9.0	125	36	9.5	81	3	9.0	B1579.0
10.0	133	38	10.0	87	3	10.0	B15710.0
11.0	142	41	10.5	96	3	10.0	B15711.0
12.0	151	44	11.0	105	3	10.0	B15712.0
13.0	151	44	11.5	105	3	10.0	B15713.0
14.0	160	47	12.0	110	3	12.5	B15714.0
15.0	162	50	12.5	112	3	12.5	B15715.0
16.0	170	52	13.0	120	3	12.5	B15716.0
17.0	175	54	13.5	123	3	14.0	B15717.0
18.0	182	56	14.0	130	3	14.0	B15718.0
19.0	189	58	14.5	131	3	16.0	B15719.0
20.0	195	60	15.0	137	3	16.0	B15720.0

B161 HSS-E DIN 208 B H7

B161

- Machine Reamer
- Maschinenreibahle
- Machineruimer
- Alésoir machine
- Escariador de máquina
- Mandril p/ Cavilhas Cónicas

B161																	
▪	1.1	1.2	1.3	1.4	2.1	4.1	5.1										
▪	1.5	1.6	2.2	2.3	3.1	3.2	3.3	3.4	4.2	4.3	5.2	5.3	6.1	6.2	6.3	6.4	

d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	z	MK	B161
3.0	113	15	47.5	6	1	B1613.0
4.0	124	19	58.5	6	1	B1614.0
5.0	133	23	67.5	6	1	B1615.0
6.0	138	26	72.5	6	1	B1616.0
7.0	150	31	84.5	6	1	B1617.0
8.0	156	33	90.5	6	1	B1618.0
9.0	162	36	96.5	6	1	B1619.0
10.0	168	38	102.5	6	1	B16110.0
11.0	175	41	109.5	6	1	B16111.0
12.0	182	44	116.5	6	1	B16112.0
13.0	182	44	116.5	6	1	B16113.0
14.0	189	47	123.5	8	1	B16114.0
15.0	204	50	124	8	2	B16115.0
16.0	210	52	130	8	2	B16116.0
17.0	214	54	134	8	2	B16117.0
18.0	219	56	139	8	2	B16118.0
19.0	223	58	143	8	2	B16119.0
20.0	228	60	148	8	2	B16120.0
21.0	232	62	152	8	2	B16121.0
22.0	237	64	157	8	2	B16122.0
23.0	241	66	161	8	2	B16123.0
24.0	268	68	169	8	3	B16124.0
25.0	268	68	169	8	3	B16125.0
26.0	273	70	174	8	3	B16126.0
27.0	277	71	178	10	3	B16127.0
28.0	277	71	178	10	3	B16128.0
29.0	281	73	182	10	3	B16129.0
30.0	281	73	182	10	3	B16130.0
31.0	285	75	186	10	3	B16131.0
32.0	317	77	193	10	4	B16132.0
33.0	317	77	193	10	4	B16133.0
34.0	321	78	197	10	4	B16134.0
35.0	321	78	197	10	4	B16135.0
36.0	325	79	201	10	4	B16136.0

d_1 Ø	l_1	l_2	l_3			B161
mm	mm	mm	mm	z	MK	
38.0	329	81	205	10	4	B16138.0
40.0	329	81	205	10	4	B16140.0
42.0	333	82	209	12	4	B16142.0
44.0	336	83	212	12	4	B16144.0
45.0	336	83	212	12	4	B16145.0
46.0	340	84	216	12	4	B16146.0
47.0	340	84	216	12	4	B16147.0
48.0	344	86	220	12	4	B16148.0
50.0	344	86	220	12	4	B16150.0

DORMER

B101 HSS ST BS 328 B H7

B101

- Machine Reamer
- Maschinenreibahle
- Machineruimer
- Alésoir machine
- Escariador de máquina
- Mandril p/ Cavilhas Cónicas

B101

■	1.1	1.2	1.3	1.4	2.1	3.1	4.1	6.2								
●	1.5	1.6	3.2	3.3	3.4	4.2	4.3	5.1	5.2	5.3	6.1	6.3	6.4	7.1	7.2	8.2

B101

3.00 - 2"

d_1 Ø Inch	d_1 Ø mm	l_1 mm	l_2 mm	z	MK	B101
	3.00	112	33	4	1	B1013.0
1/8	3.18	112	33	4	1	B1011/8
	3.50	115	35	6	1	B1013.5
5/32	3.97	117	38	6	1	B1015/32
	4.00	117	38	6	1	B1014.0
	4.50	120	41	6	1	B1014.5
3/16	4.76	124	44	6	1	B1013/16
	5.00	124	44	6	1	B1015.0
	5.50	127	47	6	1	B1015.5
7/32	5.56	127	47	6	1	B1017/32
	6.00	127	47	6	1	B1016.0
1/4	6.35	130	50	6	1	B1011/4
	6.50	130	50	6	1	B1016.5
	7.00	134	54	6	1	B1017.0
9/32	7.14	134	54	6	1	B1019/32
	7.50	134	54	6	1	B1017.5
5/16	7.94	138	58	6	1	B1015/16
	8.00	138	58	6	1	B1018.0
	8.50	138	58	6	1	B1018.5
11/32	8.73	142	62	6	1	B10111/32
	9.00	142	62	6	1	B1019.0
	9.50	142	62	6	1	B1019.5
3/8	9.52	146	66	6	1	B1013/8
	10.00	146	66	6	1	B10110.0
13/32	10.32	146	66	6	1	B10113/32
	10.50	146	66	6	1	B10110.5
	11.00	151	71	6	1	B10111.0
7/16	11.11	151	71	6	1	B1017/16
	11.50	151	71	6	1	B10111.5
15/32	11.91	156	76	6	1	B10115/32
	12.00	156	76	6	1	B10112.0
	12.50	156	76	6	1	B10112.5
1/2	12.70	156	76	6	1	B1011/2
	13.00	156	76	6	1	B10113.0

d_1 Ø Inch	d_1 Ø mm	l_1 mm	l_2 mm	z	MK	B101
17/32	13.49	161	81	6	1	B10117/32
	13.50	161	81	6	1	B10113.5
	14.00	161	81	8	1	B10114.0
9/16	14.29	181	81	8	2	B1019/16
	14.50	181	81	8	2	B10114.5
	15.00	181	81	8	2	B10115.0
19/32	15.08	187	87	8	2	B10119/32
	15.50	187	87	8	2	B10115.5
5/8	15.88	187	87	8	2	B1015/8
	16.00	187	87	8	2	B10116.0
	16.50	187	87	8	2	B10116.5
	17.00	187	87	8	2	B10117.0
11/16	17.46	193	93	8	2	B10111/16
	18.00	193	93	8	2	B10118.0
	19.00	193	93	8	2	B10119.0
3/4	19.05	200	100	8	2	B1013/4
	20.00	200	100	8	2	B10120.0
13/16	20.64	200	100	8	2	B10113/16
	21.00	200	100	8	2	B10121.0
	22.00	207	107	8	2	B10122.0
7/8	22.22	207	107	8	2	B1017/8
	23.00	207	107	8	2	B10123.0
15/16	23.81	242	115	8	3	B10115/16
	24.00	242	115	8	3	B10124.0
	25.00	242	115	10	3	B10125.0
1“	25.40	242	115	10	3	B1011
	26.00	242	115	10	3	B10126.0
1.1/16	26.99	251	124	10	3	B1011.1/16
	27.00	251	124	10	3	B10127.0
	28.00	251	124	10	3	B10128.0
1.1/8	28.58	251	124	10	3	B1011.1/8
	29.00	251	124	10	3	B10129.0
	30.00	251	124	10	3	B10130.0
1.3/16	30.16	260	133	10	3	B1011.3/16
	31.00	260	133	10	3	B10131.0
1.1/4	31.75	260	133	10	3	B1011.1/4
	32.00	293	133	10	4	B10132.0
	33.00	293	133	10	4	B10133.0
	34.00	302	142	10	4	B10134.0
1.3/8	34.93	302	142	10	4	B1011.3/8
	35.00	302	142	10	4	B10135.0
	36.00	302	142	10	4	B10136.0
	37.00	302	142	10	4	B10137.0
	38.00	312	152	10	4	B10138.0
1.1/2	38.10	312	152	10	4	B1011.1/2
	39.00	312	152	10	4	B10139.0
	40.00	312	152	10	4	B10140.0
	41.00	312	152	10	4	B10141.0
	42.00	312	152	10	4	B10142.0
	43.00	323	163	10	4	B10143.0
	44.00	323	163	10	4	B10144.0
1.3/4	44.45	323	163	10	4	B1011.3/4
	45.00	323	163	12	4	B10145.0
	46.00	323	163	12	4	B10146.0
	47.00	323	163	12	4	B10147.0
	48.00	334	174	12	4	B10148.0
	50.00	334	174	12	4	B10150.0
2“	50.80	334	174	12	4	B1012

B121 HSS ST DIN 311 k11

B121

- Bridge Reamer
- Nietloch-Reibahle mit Morsekegel
- Klinkgatruimer
- Alésoirs de chaudronnerie queue cône morse
- Escariador de mango cónico Conicidad 1:10
- Mandril de Caldeireiro Haste Cónica

With 1:10 starting taper (l3)
für Kegelstifte 1:10
Coniciteit 1:10
Goupilles cônique 1:10
Incluido cónico 1:10
Conicidade 1:10

B121 ▪ 1.1 1.2 1.3 1.4 3.1 4.1
▪ 1.5 1.6 3.2 3.3 3.4 8.2

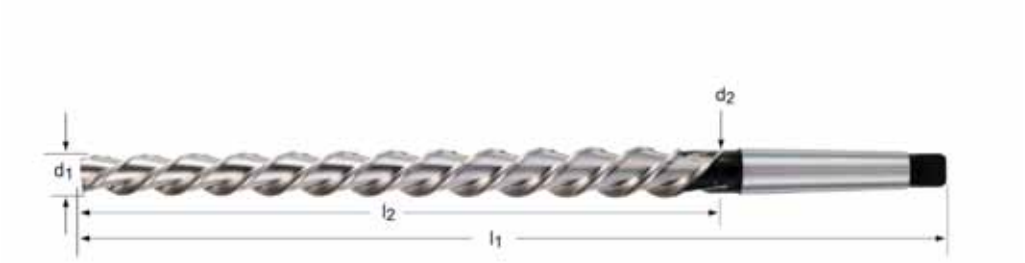
d_1 Ø	l_1	l_2	l_3			B121
mm	mm	Inch	mm	z	MK	
10.0	171	95	30	4	1	B12110.0
11.0	176	100	33	4	1	B12111.0
12.0	199	105	39	4	2	B12112.0
13.0	199	105	39	4	2	B12113.0
14.0	209	115	42	4	2	B12114.0
15.0	219	125	45	4	2	B12115.0
16.0	229	135	48	4	2	B12116.0
17.0	251	135	51	4	3	B12117.0
18.0	261	145	58	4	3	B12118.0
19.0	261	145	58	4	3	B12119.0
20.0	271	155	62	4	3	B12120.0
21.0	271	155	62	4	3	B12121.0
22.0	281	165	66	4	3	B12122.0
23.0	281	165	66	4	3	B12123.0
24.0	296	180	72	4	3	B12124.0
25.0	296	180	72	4	3	B12125.0
26.0	296	180	72	4	3	B12126.0
30.0	311	195	78	5	3	B12130.0

B954 HSS-E DIN 2180 1:50

B954

- Machine Reamer for Conical Pin Left Hand Helix 45°
- Maschinen-Kegelreibahle mit 45° Linksdrall
- Machine-pengatruimer met 45° linkse spiraal
- Alésoir Machine pour goupille conique Hélice à gauche à 45°
- Escariador de máquina para pasadores cónicos Hélice a izquierdas 45°
- Mandril de Máquina p/ Cavilhas Cónicas Hélice à Esquerda - 45º

B954															
▪	2.1	2.2	2.3	4.1	4.2	4.3	5.1	5.2	5.3	6.1	7.1	7.2	7.3	7.4	8.1
▪	1.1	1.2	1.3	1.4	1.5	1.6	6.2	9.1							



B954

5.00 - 30.00

nom Ø	d_1 Ø mm	d_2 Ø mm	l_1 mm	l_2 mm	z	MK	B954
5.0	4.90	6.36	155	73	3	1	B9545.0
6.0	5.90	8.00	187	105	3	1	B9546.0
8.0	7.90	10.80	227	145	3	1	B9548.0
10.0	9.90	13.40	257	175	3	1	B95410.0
12.0	11.80	16.00	315	210	3	2	B95412.0
13.0	12.86	16.74	295	194	3	2	B95413.0
14.0	13.86	17.74	295	194	3	2	B95414.0
16.0	15.80	20.40	335	230	3	2	B95416.0
20.0	19.80	24.80	377	250	3	3	B95420.0
25.0	24.70	30.70	427	300	3	3	B95425.0
30.0	29.70	36.10	475	320	4	4	B95430.0

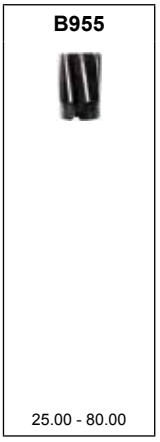
B955 HSS-E ST DIN 219 B H7

B955

- Shell Reamer — d2=Nominal diameter d1 of B956
- Maschinen-Aufsteck-Reibahle — d2=Nom. Durchmesser, d1 von B956
- Opsteekruimer — d2=Nom. diameter d1 van B956
- Alésoir creux machine — d2=Diamètre nominal d1 du B956
- Escariador hueco — d2=Diámetro nominal d1 de B956
- Cabeça de Mandrilar — d2=Diâmetro Nominal d1 de B956

B955 ▪ 1.1 1.2 1.3 1.4 2.1 4.1 5.1

B955 • 1.5 1.6 2.2 2.3 3.1 4.2 4.3 5.2 5.3 6.1 6.2 7.1 7.2 7.3 7.4 8.2



d_1 Ø mm	l_1 mm	l_2 mm	z	d_2 Ø mm	B955
25.0	45	32	8	13	B95525.0
26.0	45	32	8	13	B95526.0
27.0	45	32	8	13	B95527.0
28.0	45	32	8	13	B95528.0
29.0	45	32	8	13	B95529.0
30.0	45	32	8	13	B95530.0
31.0	50	36	10	16	B95531.0
32.0	50	36	10	16	B95532.0
34.0	50	36	10	16	B95534.0
35.0	50	36	10	16	B95535.0
36.0	56	40	10	19	B95536.0
37.0	56	40	10	19	B95537.0
38.0	56	40	10	19	B95538.0
40.0	56	40	10	19	B95540.0
42.0	56	40	10	19	B95542.0
44.0	63	45	12	22	B95544.0
45.0	63	45	12	22	B95545.0
48.0	63	45	12	22	B95548.0
50.0	63	45	12	22	B95550.0
52.0	71	50	12	27	B95552.0
55.0	71	50	12	27	B95555.0
58.0	71	50	12	27	B95558.0
60.0	71	50	12	27	B95560.0
65.0	80	56	14	32	B95565.0
70.0	80	56	14	32	B95570.0
75.0	90	63	14	40	B95575.0
80.0	90	63	14	40	B95580.0

B956 HSS-E DIN 217

B956

- Morse Taper Shank Shell Reamer Arbor (B955)
- MK-Halter für Aufsteck-Reibahle
- Houder met MC voor opsteekruimer
- Queue cône morse Porte-alésoirs creux
- Mango cónico Portaescariadores para escariadores huecos
- Haste CM Haste p/ Cabeças de Mandrilar

B956

13.00 - 40.00

d_1 Ø mm	l_1 mm	l_2 mm	l_3 mm	MK	B956
13.0	250	45	151	3	B95613.0
16.0	261	50	162	3	B95616.0
19.0	298	56	174	4	B95619.0
22.0	312	63	188	4	B95622.0
27.0	359	71	203	5	B95627.0
32.0	376	80	220	5	B95632.0
40.0	396	90	240	5	B95640.0

B957

- Shell Reamer Arbor - Spare Parts (B956)
- Ersatzteile für B956
- Onderdelen voor B956
- Accessoires pour porte-alésoirs creux machine (B956)
- Portaescariadores para escariadores huecos - Accesorios (B956)
- Suplentes p/ (B956)

Nr.	d	B957
3	13.00	B957N3DRIVER
3		B957N3NUT
3		B957N3WASHER
4	16.00	B957N4DRIVER
4		B957N4NUT
4		B957N4WASHER
5	19.00	B957N5DRIVER
5		B957N5NUT
5		B957N5WASHER
6	22.00	B957N6DRIVER
6		B957N6NUT
6		B957N6WASHER
7	27.00	B957N7DRIVER
7		B957N7NUT
7		B957N7WASHER
8	32.00	B957N8DRIVER
8		B957N8NUT
8		B957N8WASHER
9	40.00	B957N9DRIVER
9		B957N9NUT
9		B957N9WASHER

G400 HM DIN 335C 90°

G400

- Countersink for High Precision Chucks
- Senker für Hochgenauigkeitsfutter
- Verzinker met NC-schacht
- Fraise à chanfreiner pour mandrins haute précision
- Avellanadores para portas de alta precisión
- Escaredores p/ buchas de alta precisão

G400															
▪	1.1	1.2	1.3	1.4	1.5	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	
▪	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	6.4	7.1	7.2	7.3	7.4	8.1	8.2

max d mm	min d	l_1 mm	d_2 Øh$_6$ mm	z	G400
6.30	1.5	45	5	3	G4006.3
8.30	2.0	50	6	3	G4008.3
10.40	2.5	50	6	3	G40010.4
12.40	2.8	56	8	3	G40012.4
16.50	3.2	60	10	3	G40016.5
20.50	3.5	63	10	3	G40020.5
25.00	3.8	67	10	3	G40025.0
31.00	4.2	71	12	3	G40031.0

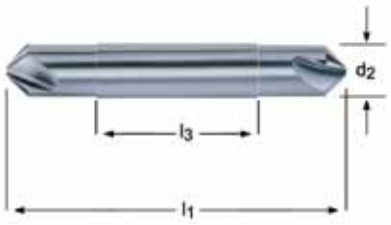
DORMER

G405 HM DIN 335 90°

G405

- Countersink Double Ended
- Senker , 2-seitig
- Verzinkers - dubbelzijdig
- Fraise à chanfreiner - Double
- Avellanadores - Doble punta
- Escareador - Dupla

G405															
■	1.1	1.2	1.3	1.4	1.5	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	
●	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	6.4	7.1	7.2	7.3	7.4	8.1	8.2



max d mm	min d	l_1 mm	l_3 mm	d_2 Øh$_6$ mm	z	G405
8.30	2.0	67	46	10	3	G4058.3
10.40	2.5	74	47	12	3	G40510.4
12.40	2.8	76	45	14	3	G40512.4

G135	HSS		DIN 334C					60°
G335	HSS	TiN	DIN 334C					60°

G135
G335

- Countersink
- Kegelsenker
- Verzinkers
- Fraise à ébavurer et à chanfreiner
- Avellanadores
- Escareador

G135	▪	1.1	1.2	1.3	1.4	1.5	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3
	•	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	6.4	7.1	7.2	7.3	7.4	8.1	8.2
G335	▪	1.1	1.2	1.3	3.1	3.2	3.3	3.4	7.1	7.2	7.3	7.4			
	•	1.4	1.5	1.6	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	8.1	8.2

G135	G335
6.30 - 25.00	6.30 - 25.00

max d mm	min d	l_1 mm	d_2 $Øh_9$ mm	z	G135	G335
6.3	1.6	45	5	3	G1356.3	G3356.3
8.0	2.0	50	6	3	G1358.0	G3358.0
10.0	2.5	50	6	3	G13510.0	G33510.0
12.5	3.2	56	8	3	G13512.5	G33512.5
16.0	4.0	63	10	3	G13516.0	G33516.0
20.0	5.0	67	10	3	G13520.0	G33520.0
25.0	6.3	71	10	3	G13525.0	G33525.0

G137 HSS DIN 334D 60°

G137

- Countersink
- Kegelsenker
- Verzinkers
- Fraise à ébavurer et à chanfreiner
- Avellanadores
- Escareador

G137															
■	1.1	1.2	1.3	1.4	1.5	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	
●	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	6.4	7.1	7.2	7.3	7.4	8.1	8.2

max d mm	min d	l_1 mm	MK	z	G137
16.0	4.0	90	1	3	G13716.0
20.0	5.0	106	2	3	G13720.0
25.0	6.3	112	2	3	G13725.0
31.5	10.0	118	2	3	G13731.5
40.0	12.5	150	3	3	G13740.0
50.0	16.0	160	3	3	G13750.0
63.0	20.0	190	4	3	G13763.0
80.0	25.0	200	4	3	G13780.0

G154 HSS DIN 335C 82°

G154

- Countersink
- Kegelsenker
- Verzinkers
- Fraise à ébavurer et à chanfreiner
- Avellanadores
- Escareador

G154															
▪	1.1	1.2	1.3	1.4	1.5	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	
▪	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	6.4	7.1	7.2	7.3	7.4	8.1	8.2

max d mm	min d	l_1 mm	d_2 Øh$_9$ mm	z	G154
6.3	1.5	45	5	3	G1546.3
8.3	2.0	50	6	3	G1548.3
10.4	2.5	50	6	3	G15410.4
12.4	2.8	56	8	3	G15412.4
16.5	3.2	60	10	3	G15416.5
20.5	3.5	63	10	3	G15420.5
25.0	3.8	67	10	3	G15425.0

DORMER

G129 HSS DORMER 90°

G129

- Countersink
- Kegelsenker
- Verzinkers
- Fraise à ébavurer et à chanfreiner
- Avellanadores
- Escareador

G129																
■	1.1	1.2	1.3	1.4	4.1	4.2	5.1	5.2	6.1	6.2	6.3	7.1	7.2			
●	1.5	1.6	2.1	2.2	3.1	3.2	3.3	3.4	4.3	5.3	6.4	7.3	7.4	8.1	8.2	

G129

6.00 - 31.50

max d mm	l_1 mm	d_2 Øh$_9$ mm	z	G129
6.00	45	6	1	G1296.0
8.00	50	8	1	G1298.0
10.00	49	8	1	G12910.0
12.50	49	8	1	G12912.5
16.00	56	10	1	G12916.0
20.00	60	10	1	G12920.0
25.00	75	12	1	G12925.0
31.50	80	12	1	G12931.5

G149 HSS-E DORMER 90°

G149

- Countersink
- Kegelsenker
- Verzinkers
- Fraise à ébavurer et à chanfreiner
- Avellanadores
- Escareador

G149															
▪	1.1	1.2	1.3	1.4	4.1	4.2	5.1	5.2	6.1	6.2	6.3	7.1	7.2		
▪	1.5	1.6	2.1	2.2	3.1	3.2	3.3	3.4	4.3	5.3	6.4	7.3	7.4	8.1	8.2

G149

5.00 - 50.00

max d mm	min d	l_1 mm	d_2 Ø mm	d_1 Ø mm	z	G149
5	2	45	6	10	1	G1495
10	5	48	8	14	1	G14910
15	10	65	10	21	1	G14915
20	15	84	12	28	1	G14920
25	20	102	15	35	1	G14925
30	25	115	15	44	1	G14930
35	30	127	15	48	1	G14935
40	35	136	15	53	1	G14940
50	40	166	20	60	1	G14950

G136	HSS		DIN 335C				90°	G236 b53	
G142	HSS		DIN 335C				90°		
G560	HSS	TiAlN	DIN 335C				90°		

G136

- Countersink
- Kegelsenker
- Verzinkers
- Fraise à ébavurer et à chanfreiner
- Avellanadores
- Escareador

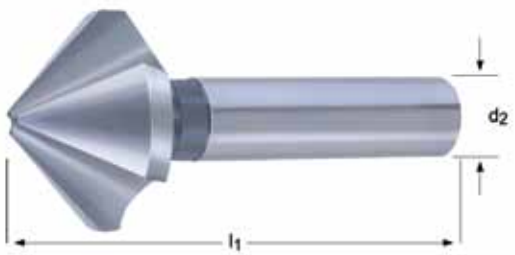
G142

- Countersink with extra radial relief
- Senker, radial hinterschliffen
- Verzinker, radiaal achtergeslepen
- Fraise à chanfreiner avec dépouille accentuée
- Avellanadores com alívio radial extra
- Escareador (extra radial relief)

G560

- Countersink
- Kegelsenker
- Verzinkers
- Fraise à ébavurer et à chanfreiner
- Avellanadores
- Escareador

G136	▪	1.1	1.2	1.3	1.4	1.5	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3
	•	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	6.4	7.1	7.2	7.3	7.4	8.1	8.2
G142	▪	1.1	1.2	2.1	2.2	2.3	4.1	5.1	6.1	6.2	7.1	7.2	8.1	8.2	
	•	1.3	1.4	4.2	5.2	6.3	7.3	7.4							
G560	▪	1.1	1.2	1.3	3.1	3.2	3.3	3.4	7.1	7.2	7.3	7.4			
	•	1.4	1.5	1.6	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	8.1	8.2



G136	G142	G560
4.30 - 31.00	4.80 - 31.00	6.30 - 31.00

max d mm	min d	l_1 mm	d_2 Øh$_9$ mm	z	G136	G142	G560
4.3	1.3	40	4	3	G1364.3		
4.8	1.3	40	4	3		G1424.8	
5.0	1.5	40	4	3	G1365.0	G1425.0	
5.3	1.5	40	4	3	G1365.3		
5.8	1.5	45	5	3	G1365.8		
6.0	1.5	45	4	3		G1426.0	

max d mm	min d	l_1 mm	d_2 $Øh_9$ mm	z	G136	G142	G560
6.0	1.5	45	5	3	G1366.0		
6.3	1.5	45	5	3	G1366.3	G1426.3	G5606.3
7.0	1.8	50	6	3	G1367.0	G1427.0	
7.3	1.8	50	6	3	G1367.3	G1427.3	
8.0	2.0	50	6	3	G1368.0	G1428.0	G5608.0
8.3	2.0	50	6	3	G1368.3	G1428.3	G5608.3
9.4	2.2	50	6	3	G1369.4		
10.0	2.5	50	6	3	G13610.0	G14210.0	G56010.0
10.4	2.5	50	6	3	G13610.4	G14210.4	G56010.4
11.5	2.8	56	8	3	G13611.5	G14211.5	
12.4	2.8	56	8	3	G13612.4	G14212.4	G56012.4
13.4	2.9	56	8	3	G13613.4		
15.0	3.2	60	10	3	G13615.0	G14215.0	
16.5	3.2	60	10	3	G13616.5	G14216.5	G56016.5
19.0	3.5	63	10	3	G13619.0	G14219.0	
20.5	3.5	63	10	3	G13620.5	G14220.5	G56020.5
23.0	3.8	67	10	3	G13623.0	G14223.0	
25.0	3.8	67	10	3	G13625.0	G14225.0	G56025.0
26.0	3.8	67	10	3	G13626.0		
28.0	4.0	71	12	3	G13628.0		
30.0	4.2	71	12	3	G13630.0		
31.0	4.2	71	12	3	G13631.0	G14231.0	G56031.0

G132 HSS DIN 335A 90°

G132

- Countersink
- Kegelsenker
- Verzinkers
- Fraise à ébavurer et à chanfreiner
- Avellanadores
- Escareador

G132								
▪	1.5	1.6	3.4	4.2	4.3	5.2	5.3	6.4
▪	1.3	1.4	2.3	8.3				

max d mm	min d	l_1 mm	d_2 Øh$_9$ mm	z	G132
8.0	-	48	8	5	G1328.0
12.5	2.0	48	8	5	G13212.5
16.0	3.2	56	10	7	G13216.0
20.0	5.0	60	10	7	G13220.0

G138
G338

- Countersink
- Kegelsenker
- Verzinkers
- Fraise à ébavurer et à chanfreiner
- Avellanadores
- Escareador

G138	▪	1.1	1.2	1.3	1.4	1.5	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3
	▪	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	6.4	7.1	7.2	7.3	7.4	8.1	8.2
G338	▪	1.1	1.2	1.3	1.4	1.5	3.1	3.2	3.3	3.4	7.1	7.2	7.3	7.4	
	▪	1.6	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	8.1	8.2	

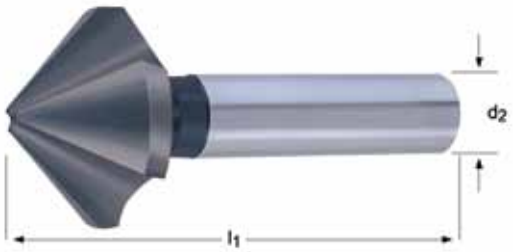
max d mm	min d	l_1 mm	MK	z	G138	G338
25.0	3.8	106	2	3	G13825.0	G33825.0
30.0	4.2	112	2	3	G13830.0	
31.0	4.2	112	2	3	G13831.0	G33831.0
34.0	4.5	118	2	3	G13834.0	
37.0	4.8	118	2	3	G13837.0	G33837.0
40.0	10.0	140	3	3	G13840.0	G33840.0
50.0	14.0	150	3	3	G13850.0	G33850.0
63.0	16.0	180	4	3	G13863.0	G33863.0
80.0	22.0	190	4	3	G13880.0	

G171 HSS TiAlN DIN 335C 100°

G171

- Countersink
- Kegelsenker
- Verzinkers
- Fraise à ébavurer et à chanfreiner
- Avellanadores
- Escareador

G171																
▪	1.1	1.2	1.3	3.1	3.2	3.3	3.4	7.1	7.2	7.3	7.4					
▪	1.4	1.5	1.6	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	8.1	8.2	



max d mm	min d	l_1 mm	d_2 Øh$_9$ mm	z	G171
6.3	1.5	44.0	5.0	3	G1716.3
8.3	2.0	49.0	6.0	3	G1718.3
10.4	2.5	49.0	6.0	3	G17110.4
12.4	2.8	53.0	6.0	3	G17112.4
16.5	3.2	56.0	6.0	3	G17116.5
20.5	3.5	61.0	10.0	3	G17120.5
25.0	3.8	65.0	10.0	3	G17125.0

M138

M138

- Conical Drill
- Konische Bohrer
- Getrapte plaatboren
- Forets multi-diamètres
- Broca Multi-diámetro
- Broca Cónica Multi-Diâmetros

M138																	
▪	1.1	1.2	1.3	1.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.1	7.2	8.1	8.2
▪	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	6.4	7.3	7.4					

M138

No.1 - No.6

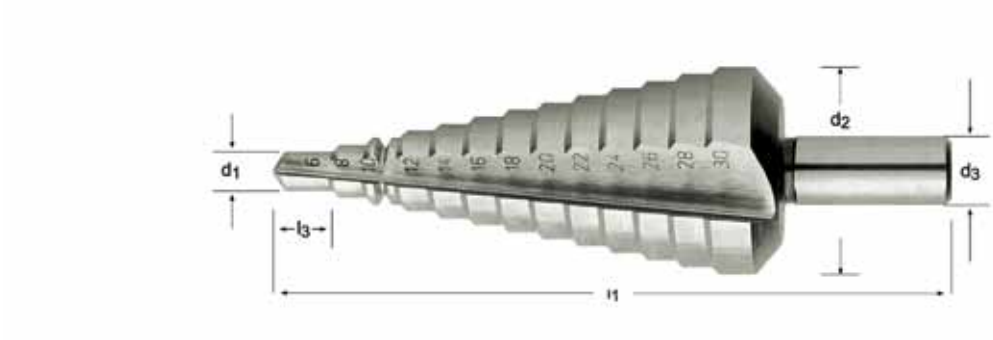
Nr.	max d mm	min d	l_2 mm	l_1 mm	d_2 h11 mm	M138
1	14	3	36	58	6	M1381
2	20	8	40	62	8	M1382
3	30	16	48	70	10	M1383
4	40	26	51	76	10	M1384
5	50	36	54	79	10	M1385
6	60	46	57	82	13	M1386

G314 HSS 20°

G314

- Conical Drill
- Konische Bohrer
- Getrapte plaatboren
- Forets multi-diamètres
- Broca Multi-diámetro
- Broca Cónica Multi-Diâmetros

G314																		
	▪	1.1	1.2	1.3	1.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.1	7.2	8.1	8.2
	▪	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	6.4	7.3	7.4					



G314

4.00 - 9.00

Nr.	d min-max mm	l_3 mm	l_1 mm	d_3 Ø mm	G314
412	4.0 mm ÷ 12.0 mm x 1.0 mm	5.0	80	6.0	G314412
1220	12.0 mm ÷ 20.0 mm x 1.0 mm	4.0	76	9.0	G3141220
2030	20.0 mm ÷ 30.0 mm x 1.0 mm	4.0	88	12.0	G3142030
3040	30.0 mm ÷ 40.0 mm x 1.0 mm	4.0	98	13.0	G3143040
420	4.0 mm ÷ 20.0 mm x 2.0 mm	4.0	76	8.0	G314420
630	6.0 mm ÷ 30.0 mm x 2.0 mm	4.0	98	10.0	G314630
M	9.0 mm ÷ 36.0 mm x 3.0 mm	3.0	86	12.0	G314M

G125 HSS DIN 373 180°

G125

- Counterbore
- Flachsenker
- Kopverzinkers
- Fraises pour logement de tête de vis
- Refrentadores
- Broca de Caixas

G125																			
▪	1.1	1.2	1.3	2.1	3.1	3.2	7.1	7.2	8.1										
▪	1.4	1.5	1.6	2.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.3	7.4	8.2	

G125

6.50 - 20.00

d_1 $Øz_9$ mm	d_3 $Øe_8$ mm	M	l_1 mm	l_2 mm	d_2 $Øh_9$ mm	z	G125	
6.50	2.50	M 3 t	71	14	5.0	3	G1256.5X2.5	1)
6.50	3.20	M 3 f	71	14	5.0	3	G1256.5X3.2	2)
6.50	3.40	M 3 m	71	14	5.0	3	G1256.5X3.4	3)
8.00	3.30	M 4 t	71	14	5.0	3	G1258.0X3.3	1)
8.00	4.30	M 4 f	71	14	5.0	3	G1258.0X4.3	2)
8.00	4.50	M 4 m	71	14	5.0	3	G1258.0X4.5	3)
10.00	4.20	M 5 t	80	18	8.0	3	G12510.0X4.2	1)
10.00	5.30	M 5 f	80	18	8.0	3	G12510.0X5.3	2)
10.00	5.50	M 5 m	80	18	8.0	3	G12510.0X5.5	3)
11.00	5.00	M 6 t	80	18	8.0	3	G12511.0X5.0	1)
11.00	6.40	M 6 f	80	18	8.0	3	G12511.0X6.4	2)
11.00	6.60	M 6 m	80	18	8.0	3	G12511.0X6.6	3)
15.00	6.80	M 8 t	100	22	12.5	3	G12515.0X6.8	1)
15.00	8.40	M 8 f	100	22	12.5	3	G12515.0X8.4	2)
15.00	9.00	M 8 m	100	22	12.5	3	G12515.0X9.0	3)
18.00	8.50	M 10 t	100	22	12.5	3	G12518.0X8.5	1)
18.00	10.50	M 10 f	100	22	12.5	3	G12518.0X10.5	2)
18.00	11.00	M 10 m	100	22	12.5	3	G12518.0X11.0	3)
20.00	10.20	M 12 t	100	22	12.5	3	G12520.0X10.2	1)
20.00	13.00	M 12 f	100	22	12.5	3	G12520.0X13.0	2)
20.00	13.50	M 12 m	100	22	12.5	3	G12520.0X13.5	3)

[1] t= for tap hole / t = für Kernloch / t = voor kerngat / t = pour trou taraudé / t = Para agujero roscado / t = para furo de rosca
[2] f= for through hole fine / f = für Durchgangsloch fein / f = fijnpassing voor doorlopende gaten / f = pour trou de vis précis / f = Para agujero pasante fino / f = para furo passante raso
[3] m= for through hole medium / m= für Durchgangsloch mittel / m= middelpassing voor doorlopende gaten / m = pour trou de vis moyen / m= Para agujero pasante medio / m = para furo passante médio

G236

- Countersink, set
- Kegelsenker-Satz
- Verzinkers in set
- Coffrets de fraises à ébavurer et à chanfreiner
- Juego de Avellanadores
- Jogo de Escareadores

G236

Set

Nr.	A	G236
1	G136 6.3 - 8.3 - 10.4 - 12.4 - 16.5 - 20.5	G2361
2	G136 6.3 - 10.4 - 16.5 - 20.5	G2362

E000	c 26	**E119**	c 85	**E524**	c 65	**EP006H**	c 24
E000TIN	c 26	**E200**	c 14	**E531**	c 74	**EP00TIN**	c 24
E001	c 26	**E201**	c 16	**E533**	c 77	**EP016H**	c 24
E002	c 35	**E207**	c 30	**E534**	c 76	**EP10**	c 48
E002TIN	c 35	**E212**	c 30	**E536**	c 78	**EP10TIN**	c 48
E003	c 35	**E216**	c 29	**E538**	c 81	**EP11**	c 48
E010	c 50	**E225**	c 55	**E539**	c 80	**EP20**	c 58
E011	c 50	**E229**	c 64	**E542**	c 82	**EP21**	c 58
E012	c 53	**E237**	c 14	**E544**	c 84	**EP30**	c 67
E013	c 53	**E242**	c 42	**E545**	c 83	**EP31**	c 67

c1 - c108

E020	c 59	**E243**	c 102	**E547**	c 87	**EP40**	c 88
E021	c 59	**E250**	c 14	**E550**	c 94	**EP41**	c 88
E022	c 61	**E251**	c 14	**E570**	c 72	**EX006G**	c 33
E023	c 61	**E252**	c 16	**E600**	c 22	**EX006H**	c 33
E030	c 68	**E258**	c 30	**E605**	c 37	**EX00TIN**	c 33
E031	c 68	**E263**	c 30	**E606**	c 28	**EX016H**	c 33
E032	c 70	**E266**	c 29	**E610**	c 22	**EX10**	c 51
E033	c 70	**E268**	c 42	**E620**	c 92	**EX10TIN**	c 51
E040	c 89	**E275**	c 55	**E621**	c 93	**EX11**	c 51
E041	c 89	**E278**	c 64	**E650**	c 36	**EX20**	c 60
E042	c 91	**E282**	c 86	**E651**	c 62	**EX21**	c 60
E043	c 91	**E290**	c 42	**E653**	c 98	**EX30**	c 69
E044	c 32	**E303**	c 21	**E654**	c 71	**EX31**	c 69
E052	c 32	**E422**	c 29	**E708**	c 101	**EX40**	c 90
E100	c 11	**E423**	c 29	**E709**	c 100	**EX41**	c 90
E101	c 11	**E500**	c 17	**E710**	c 96	**L110**	c 103
E102	c 11	**E501**	c 17	**E711**	c 97	**L111**	c 104
E105	c 38	**E504**	c 17	**E712**	c 99	**L115**	c 107
E108	c 54	**E510**	c 27	**E714**	c 95	**L119**	c 105
E111	c 63	**E513**	c 44	**E720**	c 100	**L120**	c 108
E115	c 73	**E515**	c 56	**E721**	c 96	**L126**	c 106

	E100	E102	E101	E200	E250	E237	E251	E201	E252	E500	E501	E504	E303	E600	E610	EP006H	EP00TIN
	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	DIN 352	DIN 352	DIN 352	DIN 371	DIN 376	DIN 371	DIN 376	DIN 371	DIN 376	ISO 529	ISO 529	ISO 529	DIN 357	ISO 2283	ISO 2283	DIN 371≤10 376≥12	DIN 371≤10 376≥12
	6H	6HX	6H	6H	6H	6H	6H	6HX	6HX	6H	6H	6H	6H	6H	6H	6H	6H
	1.5XD	1.5XD	1.5XD	1.5XD	1.5XD	1.5XD	1.5XD	2XD	2XD	1.5XD	1.5XD	1.5XD	2XD	1.5XD	1.5XD	2.5XD	2.5XD
	HSS	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
	C 2-3	C 2-3	C 2-3	A 6-8 C 2-3	A 6-8 C 2-3	C 2-3	C 2-3	C 2-3	C 2-3				D 18-20 C 2-3		C 2-3	B 3.5-5	B 3.5-5
		ST						N	N			TiN			TiN		TiN
	M1.6 - M52	M3 - M30	M4 - M16	M2 - M10	M3 - M52	M3 - M10	M12 - M24	M3 - M10	M8 - M24	M1 - M56	M3 - M24	M3 - M24	M3 - M20	M3 - M30	M3 - M16	M2 - M30	M3 - M30
																	NEW
	c 11	c 11	c 11	c 14	c 14	c 14	c 14	c 16	c 16	c 17	c 17	c 17	c 21	c 22	c 22	c 24	c 24
1.1	●	●	●	●12	●12	●12	●12			●7	●7	●14	●12	●7	●14	■25	■40
1.2	●	●	●	●10	●10	●10	●10			●6	●6	●12	●10	●6	●12	■22	■40
1.3	●	●	●	●8	●8	●8	●8			●5	●5	●10	●8	●5	●10	■18	■32
1.4	●	●	●	●6	●6	●6	●6			●4	●4	●8	●6	●4	●8	■16	■27
1.5	●	●	●	●5	●5	●5	●5			●3	●3	●6	●5	●3	●6	■10	■13
1.6																●5	●11
1.7																	
1.8																	
2.1		●															■8
2.2		●															■7
2.3		●															●5
2.4																	
3.1	●	●	●	●14	●14	●14	●14	■15	■15	●12	●12	■18	●14	●12	■18	●15	●22
3.2	●	●	●	●8	●8	●8	●8	■8	■8	●7	●7	■12	●8	●7	■12	●8	●18
3.3	●	●	●	●12	●12	●12	●12	■15	■15	●10	●10	■22	●12	●10	■22	●15	●25
3.4	●	●	●					●8	●8	●5	●5	●12		●5	●12	●8	●18
4.1		●														●10	●15
4.2		●														●5	●7
4.3		●															
5.1		●														●12	●18
5.2		●														●5	●8
5.3		●															
6.1	●	●	●							●4	●4			●4		■12	■18
6.2	●	●	●	●16	●16	●16	●16	●20	●20	●10	●10	●20	●16	●10	●20	●30	●45
6.3	●	●	●	●12	●12	●12	●12			●7	●7	●14	●12	●7	●14	■20	■35
6.4	●	●	●					●5	●5	●2	●2	●4		●2	●4		
7.1																■16	
7.2	●	●	●	●20	●20	●20	●20			●12	●12	●24	●20	●12	●24	■35	
7.3	●	●	●	●12	●12	●12	●12			●7	●7	●14	●12	●7	●14	■20	■30
7.4	●	●	●					●15	●15	●5	●5	●10		●5	●10	■15	■22
8.1																●30	
8.2	●	●	●	●8	●8	●8	●8	■10	■10	●5	●5	●10	●8	●5	●10		●45
8.3	●	●	●							●3	●3	●6		●3	●6		
9.1																	
10.1																	

DORMER

	EP016H	E000	E000TIN	E001	E510	E606	E216	E266	E422	E423	E207	E258	E212	E263	E052	E044	EX006H
	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
	DIN 371≤10 376≥12	ISO 529	ISO 529	ISO 529	ISO 529	ISO 2283	DIN 371	DIN 376	DIN 371	DIN 376	DIN 371	DIN 376	DIN 371	DIN 376	ISO 529	ISO 529	DIN 371≤10 376≥12
	6H	6H	6H	6H	6H	6H	6H	6H	6H	6H	6H	6H	6H	6H	6H	6H	6H
	2.5XD	2.5XD	2.5XD	2.5XD	1XD	2.5XD	3XD	3XD	3XD	3XD	1.5XD	1.5XD	1.5XD	1.5XD	2XD	2XD	2.5XD
	HSS-E	HSS-E	HSS-E	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
	B 3.5-5	B 3.5-5	B 3.5-5	B 3.5-5	B 3.5-5	B 3.5-5	B 3.5-5	B 3.5-5	B 3.5-5	B 3.5-5	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3
											λ15°	λ15°	λ15°	λ15°	λ15°	λ15°	λ45°
	ST		TiN	ST					TiN	TiN			TiN	TiN			
			NEW														
	M2 - M30	M1.6 - M24	M3 - M20	M1.6 - M24	M3 - M12	M3 - M24	M3 - M10	M12 - M24	M3 - M10	M12 - M24	M2 - M10	M4 - M36	M3 - M10	M12 - M36	M3 - M16	M8 - M20	M2 - M64
	c 24	c 26	c 26	c 26	c 27	c 28	c 29	c 29	c 29	c 29	c 30	c 30	c 30	c 30	c 32	c 32	c 33
1.1	■25	■25	■40	■25		●20	●22	●22	●35	●35			●35	●35	●25	●25	■25
1.2	■22	■22	■40	■22		●18	■20	■20	■35	■35	●20	●20	●35	●35	●22	●22	■22
1.3	■18	■18	■32	■18		●14	■16	■16	■28	■28	■16	■16	■28	■28	●18	●18	■18
1.4	■16	■16	■27	■16		●10	■12	■12	■24	■24	■12	■12	■24	■24	■16	■16	■16
1.5	■10	■10	■13	■10	●7	●5	●7	●7	●10	●10	●7	●7	●10	●10	■10	■10	■10
1.6	●5	●5	●11	●5	●4	●3										■5	
1.7																	
1.8																	
2.1	■7		■8	●7	●7	●6											
2.2	■6		■7	●6	●5	●4											
2.3	●4		●5	●4	●7	●3											
2.4																	
3.1	●15	●15	●22	●15	●12		●12	●12	●18	●18							
3.2	●8	●8	●18	●8	●7		●7	●7	●15	●15							
3.3	●15	●15	●25	●15	●10		●10	●10	●20	●20							
3.4	●8	●8	●18	●8			●5	●5	●15	●15							
4.1		●10	●15				●15	●15	●27	●27							●10
4.2		●5	●7										●10	●10		●5	●5
4.3						●3	●4	●4	●5	●5			●7	●7			
5.1		●12	●18			●10	●12	●12	●20	●20							●12
5.2		●5	●8			●4	●5	●5	●8	●8						●5	●5
5.3																	
6.1		■12	■18			●10	●12	●12	●18	●18					●12		
6.2		●30	●45				●30	●30	●45	●45					■30		
6.3		■20	■35			●15	●20	●20	●35	●35					■20		
6.4																	
7.1		■16				●10	●16	●16	●25	●25					●16		■16
7.2		■35				●25	●35	●35	●45	●45	●30	●30	●35	●35	■35		■35
7.3		■20	■30			●13	●20	●20	●30	●30	●15	●15	●20	●20	■20		■20
7.4		■15	■22			●10	●15	●15	●20	●20					■15		■15
8.1		●30				●20	●25	●25	●30	●30							
8.2			●45														
8.3																	
9.1																	
10.1																	

	EX006G	EX00TIN	EX016H	E002	E002TIN	E003	E650	E605	E105	E268	E242	E290	E513	EP10	EP10TIN	EP11	E010
	M3 - M20	M3 - M30	M2 - M64	M2 - M24	M3 - M20	M2 - M24	M3 - M16	M3 - M20	M2.5 - M50	M4 - M50	M8 - M10	M12 - M24	M3 - M50	M4 - M30	M8 - M20	M4 - M30	M4 - M24
		NEW			NEW										NEW		
	c 33	c 33	c 33	c 35	c 35	c 35	c 36	c 37	c 38	c 42	c 42	c 42	c 44	c 48	c 48	c 48	c 50
1.1	■25	■40	■25	■25	■40	■25	●25		●	●12	●12	●12	●7	■25	■40	■25	■25
1.2	■22	■40	■22	■22	■40	■22	●22	●18	●	●10	●10	●10	●6	■22	■40	■22	■22
1.3	■18	■32	■18	■18	■32	■18	●18	●14	●	●8	●8	●8	●5	■18	■32	■18	■18
1.4	■16	■27	■16	■16	■27	■16	●15	●10	●	●6	●6	●6	●4	■16	■27	■16	■16
1.5	■10	■13	■10	■10	■13	■10		●5	●	●5	●5	●5	●3	■10	■13	■10	■10
1.6														●5	●11	●5	●5
1.7																	
1.8																	
2.1		■8	■7		■8	●7		●6							■8	■7	
2.2		■7	■6		■7	●6		●4							■7	■6	
2.3		●5	●4		●5	●4		●3							●5	●4	
2.4																	
3.1		●22			●22				●	●14	●14	●14	●12	●15	●22	●15	●15
3.2		●18			●18		●8		●	●8	●8	●8	●7	●8	●18	●8	●8
3.3		●25			●25				●	●12	●12	●12	●10	●15	●25	●15	●15
3.4		●18			●18				●				●5	●8	●18	●8	●8
4.1	●10	●15		●10	●15									●10	●15		●10
4.2	●5	●7		●5	●7									●5	●7		●5
4.3																	
5.1	●12	●18		●12	●18									●12	●18		●12
5.2	●5	●8		●5	●8			●4						●5	●8		●5
5.3																	
6.1									●				●4	■12	■18		■12
6.2							●30		●	●16	●16	●16	●10	●30	●45		●30
6.3							●20		●	●12	●12	●12	●7	■20	■35		■20
6.4									●				●2				
7.1	■16			■16			●18	●10						■16			■16
7.2	■35			■35			●35	●25	●	●20	●20	●20	●12	■35			■35
7.3	■20	■30		■20	■30			●13	●	●12	●12	●12	●7	■20	■30		■20
7.4	■15	■22		■15	■22			●10	●				●5	■15	■22		■15
8.1							●30							●30			●30
8.2									●	●8	●8	●8	●5		●45		
8.3									●				●3				
9.1																	
10.1																	

DORMER

	E011	EX10	EX10TIN	EX11	E012	E013	E108	E225	E275	E515	EP20	EP21	E020	E021	EX20	EX21	E022
	MF	MF	MF	MF	MF	MF	UNC	UNC	UNC	UNC	UNC	UNC	UNC	UNC	UNC	UNC	UNC
	ISO 529	DIN 374	DIN 374	DIN 374	ISO 529	ISO 529	DIN 352	DIN 371	DIN 376	ISO 529	DIN 2184-1	DIN 2184-1	ISO 529	ISO 529	DIN 2184-1	DIN 2184-1	ISO 529
	6H	6H	6H	6H	6H	6H	2B	2B	2B	2B	2B	2B	2B	2B	2B	2B	2B
	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD	1.5XD	1.5XD	1.5XD	1.5XD	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD
	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS	HSS-E	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
	B 3.5-5	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3		B 3.5-5	B 3.5-5	B 3.5-5	B 3.5-5	C 2-3	C 2-3	C 2-3
		λ45°	λ45°	λ45°	λ45°	λ45°									λ45°	λ45°	λ45°
	5T		TiN	5T		5T						5T		5T		5T	
	M4 - M24	M4 - M30	M8 - M20 NEW	M4 - M30	M4 - M22	M4 - M22	No.5 - 1"	No.2 - 1/4	5/16 - 1.1/2	No.1 - 2"	No.4 - 1"	No.4 - 1"	No.2 - 1"	No.2 - 1"	No.4 - 1"	No.4 - 1"	No.2 - 1"
	c 50	c 51	c 51	c 51	c 53	c 53	c 54	c 55	c 55	c 56	c 58	c 58	c 59	c 59	c 60	c 60	c 61
1.1	■25	■25	■40	■25	■25	■25	●	●12	●12	●7	■25	■25	■25	■25	■25	■25	■25
1.2	■22	■22	■40	■22	■22	■22	●	●10	●10	●6	■22	■22	■22	■22	■22	■22	■22
1.3	■18	■18	■32	■18	■18	■18	●	●8	●8	●5	■18	■18	■18	■18	■18	■18	■18
1.4	■16	■16	■27	■16	■16	■16	●	●6	●6	●4	■16	■16	■16	■16	■16	■16	■16
1.5	■10	■10	■13	■10	■10	■10	●	●5	●5	●3	■10	■10	■10	■10	■10	■10	■10
1.6	●5										●5	●5	●5	●5			
1.7																	
1.8																	
2.1	●7		■8	■7		●7						■7		●7		■7	
2.2	●6		■7	■6		●6						■6		●6		■6	
2.3	●4		●5	●4		●4						●4		●4		●4	
2.4																	
3.1	●15		●22				●	●14	●14	●12	●15	●15	●15	●15			
3.2	●8		●18				●	●8	●8	●7	●8	●8	●8	●8			
3.3	●15		●25				●	●12	●12	●10	●15	●15	●15	●15			
3.4	●8		●18				●			●5	●8	●8	●8	●8			
4.1		●10	●15		●10						●10		●10		●10		●10
4.2		●5	●7		●5						●5		●5		●5		●5
4.3																	
5.1		●12	●18		●12						●12		●12		●12		●12
5.2		●5	●8		●5						●5		●5		●5		●5
5.3																	
6.1							●			●4	■12		■12				■12
6.2							●	●16	●16	●10	●30		●30				●30
6.3							●	●12	●12	●7	■20		■20				■20
6.4							●			●2							
7.1		■16			■16						■16		■16		■16		■16
7.2		■35			■35		●	●20	●20	●12	■35		■35		■35		■35
7.3		■20	■30		■20		●	●12	●12	●7	■20		■20		■20		■20
7.4		■15	■22		■15		●			●5	■15		■15		■15		■15
8.1					●30						●30		●30				●30
8.2							●	●8	●8	●5							
8.3							●			●3							
9.1																	
10.1																	

	UNC	UNC	UNF	UNF	UNF	UNF	UNF	UNF	UNF	UNF	UNF	UNF	UNF	UNF	UNF	UN	BSW	BSW
	ISO 529	DORMER DIN	DIN 2181	DIN 371	DIN 374	ISO 529	DIN 2184-1	DIN 2184-1	ISO 529	ISO 529	DIN 2184-1	DIN 2184-1	ISO 529	ISO 529	DORMER DIN	ISO 529	DIN 351	ISO 529
	2B	2B	2B	2B	2B	2B	2B	2B	2B	2B	2B	2B	2B	2B	Medium	2B	Medium	Medium
	2.5XD	1.5XD	1.5XD	1.5XD	1.5XD	1.5XD	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD	1.5XD	1.5XD	1.5XD	1.5XD
	HSS-E	HSS	HSS	HSS-E	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS	HSS
	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3		C 2-3	C 2-3	B 3.5-5	B 3.5-5	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3	
	λ45°	λ30°									λ45°	λ45°	λ45°	λ45°	λ30°			
	5T	5T						5T		5T		5T			5T			
	E023	E651	E111	E229	E278	E524	EP30	EP31	E030	E031	EX30	EX31	E032	E033	E654	E570	E115	E531
	No.2 - 1"	No.6 - 5/8	No.5 - 1"	No.2 - 1/4	5/16 - 1.1/2	No.0 - 1.1/2	No.8 - 1"	No.8 - 1"	No.8 - 1"	No.8 - 1"	No.8 - 1"	No.8 - 1"	No.8 - 1"	No.8 - 1"	No.8 - 5/8	1/4 - 1.5/16	3/32 - 2"	1/16 - 1.3/4
	c 61	c 62	c 63	c 64	c 64	c 65	c 67	c 67	c 68	c 68	c 69	c 69	c 70	c 70	c 71	c 72	c 73	c 74
1.1	■25	●25	●	●12	●12	●7	■25	■25	■25	■25	■25	■25	■25	■25	●25	●7	●	●7
1.2	■22	●22	●	●10	●10	●6	■22	■22	■22	■22	■22	■22	■22	■22	●22	●6	●	●6
1.3	■18	●18	●	●8	●8	●5	■18	■18	■18	■18	■18	■18	■18	■18	●18	●5	●	●5
1.4	■16	●15	●	●6	●6	●4	■16	■16	■16	■16	■16	■16	■16	■16	●15	●4	●	●4
1.5	■10		●	●5	●5	●3	■10	■10	■10	■10	■10	■10	■10	■10		●3	●	●3
1.6							●5	●5	●5	●5			●5	●5				
1.7																		
1.8																		
2.1	●7							■7		●7		■7		●7				
2.2	●6							■6		●6		■6		●6				
2.3	●4							●4		●4		●4		●4				
2.4																		
3.1			●	●14	●14	●12	●15	●15	●15	●15						●12	●	●12
3.2		●8	●	●8	●8	●7	●8	●8	●8	●8					●8	●7	●	●7
3.3			●	●12	●12	●10	●15	●15	●15	●15						●10	●	●10
3.4			●			●5	●8	●8	●8	●8						●5	●	●5
4.1							●10		●10		●10		●10					
4.2							●5		●5		●5		●5					
4.3																		
5.1							●12		●12		●12		●12					
5.2							●5		●5		●5		●5					
5.3																		
6.1			●			●4	■12		■12							●4	●	●4
6.2		●30	●	●16	●16	●10	●30		●30						●30	●10	●	●10
6.3		●20	●	●12	●12	●7	■20		■20						●20	●7	●	●7
6.4			●			●2										●2	●	●2
7.1		●18					■16		■16		■16		■16		●18			
7.2		●35	●	●20	●20	●12	■35		■35		■35		■35		●35	●12	●	●12
7.3			●	●12	●12	●7	■20		■20		■20		■20			●7	●	●7
7.4			●			●5	■15		■15		■15		■15			●5	●	●5
8.1		●30					●30		●30				●30		●30			
8.2			●	●8	●8	●5										●5	●	●5
8.3			●			●3										●3	●	●3
9.1																		
10.1																		

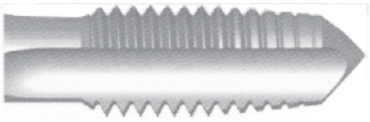
DORMER

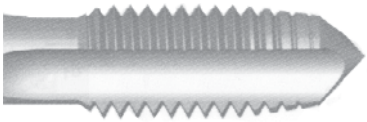
	BSW	BSW	BSF	BSF	BSF	BA	BA	BA	G	G	G	G	G	G	G	G	G
	ISO 529	ISO 529	ISO 529	ISO 529	ISO 529	ISO 529	ISO 529	ISO 529	DIN 5157	DIN 5156	ISO 2284	DIN 5156	DIN 5156	DORMER ISO	DORMER ISO	DIN 5156	DIN 5156
	Medium	Medium	Medium	Medium	Medium	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
	2.5XD	2XD	1.5XD	2.5XD	2XD	1.5XD	2.5XD	2XD	1.5XD	1.5XD	1.5XD	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD	2.5XD
	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E
	B 3.5-5	C 2-3		B 3.5-5	C 2-3		B 3.5-5	C 2-3	C 2-3	C 2-3		B 3.5-5	B 3.5-5	B 3.5-5	B 3.5-5	C 2-3	C 2-3
		λ40°			λ40°			λ40°								λ45°	λ45°
	ST	ST		ST	ST		ST	ST					ST		ST		ST
	E534	E533	E536	E539	E538	E542	E545	E544	E119	E282	E547	EP40	EP41	E040	E041	EX40	EX41
	1/8 - 3/4	1/8 - 3/4	3/16 - 1"	1/4 - 1/2	3/16 - 1/2	No.12 - No.0	No.10 - No.2	No.8 - No.2	1/8 - 3"	1/8 - 1.1/2	1/8 - 3"	1/8 - 1"	1/8 - 1"	1/8 - 3/4	1/8 - 3/4	1/8 - 1.1/2	1/8 - 1.1/2
	c 76	c 76	c 78	c 80	c 81	c 82	c 83	c 84	c 85	c 86	c 87	c 88	c 88	c 89	c 89	c 90	c 90
1.1	■20		●22	■20		●7	■20		●	●12	●7	■25	■25	■25	■25	■25	■25
1.2	■18	■18	●20	■18	■18	●6	■18	■18	●	●10	●6	■22	■22	■22	■22	■22	■22
1.3	■14	■14	●16	■14	■14	●5	■14	■14	●	●8	●5	■18	■18	■18	■18	■18	■18
1.4	■10	■10	●12	■10	■10	●4	■10	■10	●	●6	●4	■16	■16	■16	■16	■16	■16
1.5	●5	●5	●7	●5	●5	●3	●5	●5	●	●5	●3	■10	■10	■10	■10	■10	■10
1.6	●3		●4	●3			●3					●5	●5	●5	●5		
1.7																	
1.8																	
2.1	■6	■6	●7	■6	■6		●6	■6					●7		●7		●7
2.2	■4	■4	●5	■4	■4		●4	■4					●6		●6		●6
2.3	■3	■3	●7	■3	■3		●3	■3					●4		●4		●4
2.4																	
3.1			●12			●12			●	●14	●12	●15	●15	●15	●15		
3.2			●7			●7			●	●8	●7	●8	●8	●8	●8		
3.3			●10			●10			●	●12	●10	●15	●15	●15	●15		
3.4			●5			●5			●		●5	●8	●8	●8	●8		
4.1												●10		●10		●10	
4.2												●5		●5		●5	
4.3	●3			●3			●3										
5.1	●10			●10			●10					●12		●12		●12	
5.2	●4	●4		●4	●4		●4	●4				●5		●5		●5	
5.3																	
6.1	●10		■12	●10		●4	●10		●		●4	■12		■12			
6.2			●30			●10			●	●16	●10	●30		●30			
6.3	●15		●20	●15		●7	●15		●	●12	●7	■20		■20			
6.4			●4			●2			●		●2						
7.1	●10	●10		●10	●10		●10	●10				■16		■16		■16	
7.2	●25	●25	●35	●25	●25	●12	●25	●25	●	●20	●12	■35		■35		■35	
7.3	●13	●13	●20	●13	●13	●7	●13	●13	●	●12	●7	■20		■20		■20	
7.4	●10	●10	●15	●10	●10	●5	●10	●10	●		●5	■15		■15		■15	
8.1	●20			●20			●20					●30		●30		●30	
8.2			●12			●5			●	●8	●5						
8.3			●7			●3			●		●3						
9.1																	
10.1																	

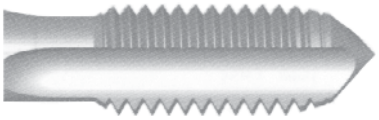
	G	G	EGM	EGM	Rc	NPT	NPT	NPT	NPT	NPT	NPTF	NPSF	NPSF	NPSM	PG		
	DORMER ISO	DORMER ISO	DORMER ISO	DORMER ISO	ISO 2284	DORMER ANSI	ANSI B94.9	ANSI B94.9	ANSI B94.9	ANSI	ANSI B94.9	ANSI B94.9	ANSI B94.9	ANSI B94.9	DIN 40432		
	Normal	Normal	6H	6H	Normal	Normal	Normal	Normal	Normal		Normal	Normal	Normal	Normal	Normal		
	2.5XD	2.5XD	1.5XD	2XD	1.5XD	1.5XD	1.5XD	1.5XD	1.5XD	1.5XD	1.5XD	1.5XD	1.5XD	1.5XD	1.5XD		
	HSS-E	HSS-E	HSS	HSS	HSS	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS		
	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3	C 2-3		C 2-3		C 2-3				
	λ45°	λ45°		λ40°						λ27°							
		ST						TiN					TiN				
	E042	**E043**	**E620**	**E621**	**E550**	**E714**	**E710**	**E721**	**E711**	**E653**	**E712**	**E709**	**E720**	**E708**	**E243**	**L110**	**L111**
	1/8 - 3/4	1/8 - 3/4	M3 - M16	M3 - M16	1/8 - 2"	1/8 - 1"	1/16 - 2"	1/8 - 1"	1/8 - 1.1/2	1/16 - 1"	1/16 - 1.1/4	1/8 - 3/4	1/8 - 3/4	1/8 - 1"	Pg7 - Pg36	16.00 - 4"	No.0 - BT2
	c 91	**c 91**	**c 92**	**c 93**	**c 94**	**c 95**	**c 96**	**c 96**	**c 97**	**c 98**	**c 99**	**c 100**	**c 100**	**c 101**	**c 102**	**c 103**	**c 104**
1.1	■25	■25	●7		●22	●4	●4	●4	●4	●25	●4	●4	●4	●4	●12		
1.2	■22	■22	●6	●18	●20	●4	●4	●4	●4	●22	●4	●4	●4	●4	●10		
1.3	■18	■18	●5	●14	●16	■6	●6	■6	■6	●18	■6	■6	■6	■6	●8		
1.4	■16	■16	●4	●10	●12	■5	●5	■5	■5	●15	■5	■5	■5	■5	●6		
1.5	■10	■10	●3	●5	●7	●3	●3	●3	●3		●3	●3	●3	●3	●5		
1.6		●5			●4												
1.7																	
1.8																	
2.1		●7		●6	●7												
2.2		●6		●4	●5												
2.3		●4		●3	●7												
2.4																	
3.1			●12		■12	●6	●6	■6	●6		●6	●6	■6	●6	●14		
3.2			●7		■7	●4	●4	■4	●4	●8	●4	●4	■4	●4	●8		
3.3			●10		■10	●6	●6	■6	●6		●6	●6	■6	●6	●12		
3.4			●5		■5	●4	●4	■4	●4		●4	●4	■4	●4			
4.1	●10																
4.2	●5																
4.3																	
5.1	●12																
5.2	●5			●4													
5.3																	
6.1			●4		■12												
6.2			●10		●30	●11	●11	●11	●11	●30	●11	●11	●11	●11	●16		
6.3			●7		●20					●20					●12		
6.4			●2		●4												
7.1	■16			●10						●18							
7.2	■35		●12	●25	●35					●35					●20		
7.3	■20		●7	●13	●20	●11	●11	●11	●11		●11	●11	●11	●11	●12		
7.4	■15		●5	●10	●15	●7	●7	●7	●7		●7	●7	●7	●7			
8.1	●30					●4	●4	●4	●4	●30	●4	●4	●4	●4			
8.2			●5		●12										●8		
8.3			●3		●7												
9.1																	
10.1																	

	L119	**L126**	**L115**	**L120**
	c 105	**c 106**	**c 107**	**c 108**
1.1				
1.2				
1.3				
1.4				
1.5				
1.6				
1.7				
1.8				
2.1				
2.2				
2.3				
2.4				
3.1				
3.2				
3.3				
3.4				
4.1				
4.2				
4.3				
5.1				
5.2				
5.3				
6.1				
6.2				
6.3				
6.4				
7.1				
7.2				
7.3				
7.4				
8.1				
8.2				
8.3				
9.1				
10.1				

NO1 - NO9

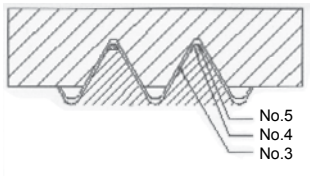
NO1 = 6-8 x P 

NO2 = 4-6 x P 

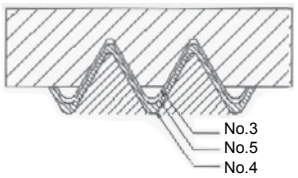
NO3 = 2-3 x P 

NO4 = 6-8 x P

NO5 = 3.5-5 x P



Ø<= M10



Ø>= M12

ISO	NO6 =	NO1 + NO2 + NO3
	NO7 =	NO2 + NO3 *
	NO8 =	NO4 + NO5 + NO3
	NO9 =	NO5 + NO3

DIN	NO8 =	NO3 (Form C) + NO4 (Form A) + NO5 (Form B)
	NO9 =	NO3 (Form C) + NO5 (Form B)

ANSI	NO6 =	NO1 (taper) + NO2 (plug) + NO3 (bottoming)

* E550 E710	NO7 =	NO3 (truncated) + NO3

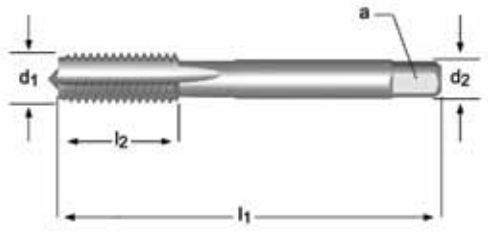
DORMER

E100	M	DIN 352	6H		1.5XD	HSS	C 2-3				L119 c 107 L120 c 109
E102	M	DIN 352	6HX		1.5XD	HSS-E	C 2-3			ST	
E101	M	DIN 352	6H		1.5XD	HSS	C 2-3				

E100
E102
E101

- M Hand Tap Straight Flute
- M Handgewindebohrer, geradegenutet
- M Handtappen met rechte spaangroeven
- M Tarauds à main Goujures droites
- M Machos de mano Estrías rectas
- M Machos Manuais Canais Direitos

E100	•	1.1	1.2	1.3	1.4	1.5	3.1	3.2	3.3	3.4	6.1	6.2	6.3	6.4	7.2	7.3	7.4	8.2	8.3			
E102	•	1.1	1.2	1.3	1.4	1.5	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	6.2	
		6.3	6.4	7.2	7.3	7.4	8.2	8.3														
E101	•	1.1	1.2	1.3	1.4	1.5	3.1	3.2	3.3	3.4	6.1	6.2	6.3	6.4	7.2	7.3	7.4	8.2	8.3			



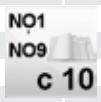
E100	E102	E101
M1.6 - M52	M3 - M30	M4 - M16

M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		E100	E102	E101
1.6	0.35	32	7	2.5	2.1	3	1.25	E100M1.6NO3		
1.6	0.35	32	7	2.5	2.1	3	1.25	E100M1.6NO4		
1.6	0.35	32	7	2.5	2.1	3	1.25	E100M1.6NO5		
1.6	0.35	32	7	2.5	2.1	3	1.25	E100M1.6NO8		
1.8	0.35	32	7	2.5	2.1	3	1.5	E100M1.8NO3		
1.8	0.35	32	7	2.5	2.1	3	1.5	E100M1.8NO4		
1.8	0.35	32	7	2.5	2.1	3	1.5	E100M1.8NO5		
1.8	0.35	32	7	2.5	2.1	3	1.5	E100M1.8NO8		
2	0.4	36	8	2.8	2.1	3	1.6	E100M2NO3		
2	0.4	36	8	2.8	2.1	3	1.6	E100M2NO4		
2	0.4	36	8	2.8	2.1	3	1.6	E100M2NO5		
2	0.4	36	8	2.8	2.1	3	1.6	E100M2NO8		
2.2	0.45	36	9	2.8	2.1	3	1.75	E100M2.2NO3		
2.2	0.45	36	9	2.8	2.1	3	1.75	E100M2.2NO4		
2.2	0.45	36	9	2.8	2.1	3	1.75	E100M2.2NO5		
2.2	0.45	36	9	2.8	2.1	3	1.75	E100M2.2NO8		
2.5	0.45	40	9	2.8	2.1	3	2.05	E100M2.5NO3		
2.5	0.45	40	9	2.8	2.1	3	2.05	E100M2.5NO4		
2.5	0.45	40	9	2.8	2.1	3	2.05	E100M2.5NO5		
2.5	0.45	40	9	2.8	2.1	3	2.05	E100M2.5NO8		
3	0.5	40	10	3.5	2.7	3	2.5	E100M3NO3		
3	0.5	40	10	3.5	2.7	3	2.5	E100M3NO4		
3	0.5	40	10	3.5	2.7	3	2.5	E100M3NO5		
3	0.5	40	10	3.5	2.7	3	2.5	E100M3NO8		

NO1 NO9 c 10

M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		E100	E102	E101
3	0.5	40	9	3.5	2.7	3	2.5		E102M3NO8	
3.5	0.6	45	10	4	3	3	2.9	E100M3.5NO3		
3.5	0.6	45	10	4	3	3	2.9	E100M3.5NO4		
3.5	0.6	45	10	4	3	3	2.9	E100M3.5NO5		
3.5	0.6	45	10	4	3	3	2.9	E100M3.5NO8		
4	0.7	45	12	4.5	3.4	3	3.3	E100M4NO3		E101M4NO3
4	0.7	45	12	4.5	3.4	3	3.3	E100M4NO4		
4	0.7	45	12	4.5	3.4	3	3.3	E100M4NO5		
4	0.7	45	12	4.5	3.4	3	3.3	E100M4NO8		E101M4NO8
4	0.7	45	11	4.5	3.4	3	3.3		E102M4NO8	
4.5	0.75	50	14	6	4.9	3	3.8	E100M4.5NO3		
4.5	0.75	50	14	6	4.9	3	3.8	E100M4.5NO4		
4.5	0.75	50	14	6	4.9	3	3.8	E100M4.5NO5		
4.5	0.75	50	14	6	4.9	3	3.8	E100M4.5NO8		
5	0.8	50	14	6	4.9	3	4.2	E100M5NO3		E101M5NO3
5	0.8	50	14	6	4.9	3	4.2	E100M5NO4		
5	0.8	50	14	6	4.9	3	4.2	E100M5NO5		
5	0.8	50	14	6	4.9	3	4.2	E100M5NO8		E101M5NO8
5	0.8	50	13	6	4.9	3	4.2		E102M5NO8	
6	1	56	16	6	4.9	3	5	E100M6NO3		E101M6NO3
6	1	56	16	6	4.9	3	5	E100M6NO4		
6	1	56	16	6	4.9	3	5	E100M6NO5		
6	1	56	16	6	4.9	3	5	E100M6NO8		E101M6NO8
6	1	56	15	6	4.9	3	5		E102M6NO8	
7	1	56	16	6	4.9	3	6	E100M7NO3		
7	1	56	16	6	4.9	3	6	E100M7NO4		
7	1	56	16	6	4.9	3	6	E100M7NO5		
7	1	56	16	6	4.9	3	6	E100M7NO8		
8	1.25	63	19	6	4.9	3	6.8	E100M8NO3		E101M8NO3
8	1.25	63	19	6	4.9	3	6.8	E100M8NO4		
8	1.25	63	19	6	4.9	3	6.8	E100M8NO5		
8	1.25	63	19	6	4.9	3	6.8	E100M8NO8	E102M8NO8	E101M8NO8
9	1.25	63	20	7	5.5	3	7.8	E100M9NO3		
9	1.25	63	20	7	5.5	3	7.8	E100M9NO4		
9	1.25	63	20	7	5.5	3	7.8	E100M9NO5		
9	1.25	63	20	7	5.5	3	7.8	E100M9NO8		
10	1.5	70	22	7	5.5	3	8.5	E100M10NO3		E101M10NO3
10	1.5	70	22	7	5.5	3	8.5	E100M10NO4		
10	1.5	70	22	7	5.5	3	8.5	E100M10NO5		
10	1.5	70	22	7	5.5	3	8.5	E100M10NO8		E101M10NO8
10	1.5	70	22	7	5.5	4	8.5		E102M10NO8	
11	1.5	70	20	8	6.2	3	9.5	E100M11NO3		
11	1.5	70	20	8	6.2	3	9.5	E100M11NO4		
11	1.5	70	20	8	6.2	3	9.5	E100M11NO5		
11	1.5	70	20	8	6.2	3	9.5	E100M11NO8		
12	1.75	75	25	9	7	4	10.3	E100M12NO3		E101M12NO3
12	1.75	75	25	9	7	4	10.3	E100M12NO4		
12	1.75	75	25	9	7	4	10.3	E100M12NO5		
12	1.75	75	25	9	7	4	10.3	E100M12NO8	E102M12NO8	E101M12NO8
14	2	80	25	11	9	4	12	E100M14NO3		E101M14NO3
14	2	80	25	11	9	4	12	E100M14NO4		
14	2	80	25	11	9	4	12	E100M14NO5		
14	2	80	25	11	9	4	12	E100M14NO8	E102M14NO8	E101M14NO8
16	2	80	25	12	9	4	14	E100M16NO3		E101M16NO3
16	2	80	25	12	9	4	14	E100M16NO4		
16	2	80	25	12	9	4	14	E100M16NO5		
16	2	80	25	12	9	4	14	E100M16NO8	E102M16NO8	E101M16NO8
18	2.5	95	32	14	11	4	15.5	E100M18NO3		
18	2.5	95	32	14	11	4	15.5	E100M18NO4		
18	2.5	95	32	14	11	4	15.5	E100M18NO5		
18	2.5	95	32	14	11	4	15.5	E100M18NO8	E102M18NO8	
20	2.5	95	32	16	12	4	17.5	E100M20NO3		
20	2.5	95	32	16	12	4	17.5	E100M20NO4		
20	2.5	95	32	16	12	4	17.5	E100M20NO5		
20	2.5	95	32	16	12	4	17.5	E100M20NO8	E102M20NO8	
22	2.5	100	34	18	14.5	4	19.5	E100M22NO3		
22	2.5	100	34	18	14.5	4	19.5	E100M22NO4		
22	2.5	100	34	18	14.5	4	19.5	E100M22NO5		

M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z	↔	E100	E102	E101
22	2.5	100	34	18	14.5	4	19.5	E100M22NO8		
24	3	110	38	18	14.5	4	21	E100M24NO3		
24	3	110	38	18	14.5	4	21	E100M24NO4		
24	3	110	38	18	14.5	4	21	E100M24NO5		
24	3	110	38	18	14.5	4	21	E100M24NO8	E102M24NO8	
27	3	110	38	20	16	4	24	E100M27NO3		
27	3	110	38	20	16	4	24	E100M27NO4		
27	3	110	38	20	16	4	24	E100M27NO5		
27	3	110	38	20	16	4	24	E100M27NO8	E102M27NO8	
30	3.5	125	45	22	18	4	26.5	E100M30NO3		
30	3.5	125	45	22	18	4	26.5	E100M30NO4		
30	3.5	125	45	22	18	4	26.5	E100M30NO5		
30	3.5	125	45	22	18	4	26.5	E100M30NO8	E102M30NO8	
33	3.5	125	50	25	20	4	29.5	E100M33NO3		
33	3.5	125	50	25	20	4	29.5	E100M33NO4		
33	3.5	125	50	25	20	4	29.5	E100M33NO5		
33	3.5	125	50	25	20	4	29.5	E100M33NO8		
36	4	150	56	28	22	4	32	E100M36NO3		
36	4	150	56	28	22	4	32	E100M36NO4		
36	4	150	56	28	22	4	32	E100M36NO5		
36	4	150	56	28	22	4	32	E100M36NO8		
39	4	150	60	32	24	4	35	E100M39NO3		
39	4	150	60	32	24	4	35	E100M39NO4		
39	4	150	60	32	24	4	35	E100M39NO5		
39	4	150	60	32	24	4	35	E100M39NO8		
42	4.5	150	60	32	24	4	37.5	E100M42NO3		
42	4.5	150	60	32	24	4	37.5	E100M42NO4		
42	4.5	150	60	32	24	4	37.5	E100M42NO5		
42	4.5	150	60	32	24	4	37.5	E100M42NO8		
45	4.5	160	65	36	29	6	40.5	E100M45NO3		
45	4.5	160	65	36	29	6	40.5	E100M45NO4		
45	4.5	160	65	36	29	6	40.5	E100M45NO5		
45	4.5	160	65	36	29	6	40.5	E100M45NO8		
48	5	180	70	36	29	6	43	E100M48NO3		
48	5	180	70	36	29	6	43	E100M48NO4		
48	5	180	70	36	29	6	43	E100M48NO5		
48	5	180	70	36	29	6	43	E100M48NO8		
52	5	180	70	40	32	6	47	E100M52NO3		
52	5	180	70	40	32	6	47	E100M52NO4		
52	5	180	70	40	32	6	47	E100M52NO5		
52	5	180	70	40	32	6	47	E100M52NO8		

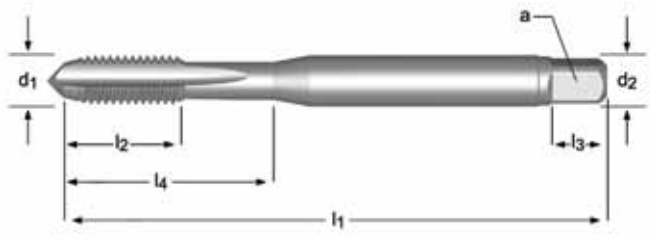


E200	M	DIN 371	6H		1.5XD	HSS-E		A 6-8 C 2-3				
E250	M	DIN 376	6H		1.5XD	HSS-E		A 6-8 C 2-3				
E237	M	DIN 371	6H		1.5XD	HSS-E		C 2-3				
E251	M	DIN 376	6H		1.5XD	HSS-E		C 2-3				

E200
E250
E237
E251

- M Machine Tap Straight Flute
- M Maschinen-Gewindebohrer, geradegenutet
- M Machinetappen met rechte spaangroeven
- M Tarauds machine Goujures droites
- M Machos de máquina Estrías rectas
- M Macho de Máquina Canais Direitos

E200; E250; E237; E251 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 6.2 6.3 7.2 7.3 8.2

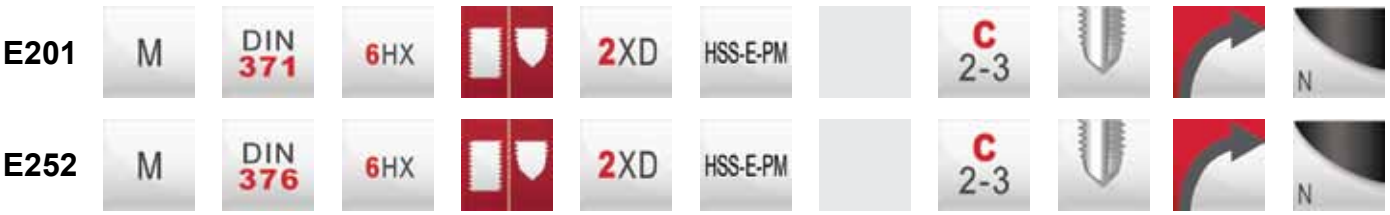


E200	E250	E237	E251
M2 - M10	M3 - M52	M3 - M10	M12 - M24

M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E200	E250	E237	E251
2	0.40	45	6	2.8	2.1	5	3	1.6	9	E200M2			
2.2	0.45	45	7	2.8	2.1	5	3	1.75	12	E200M2.2			
2.5	0.45	50	8	2.8	2.1	5	3	2.05	12.5	E200M2.5			
3	0.50	56	10	2.2	2.1	5	3	2.5			E250M3		
3	0.50	56	10	2.2	2.1	5	3	2.5			E250M3NO1		
3	0.50	56	9	3.5	2.7	6	3	2.5	18	E200M3		E237M3	
3	0.50	56	9	3.5	2.7	6	3	2.5	18	E200M3NO1			
3.5	0.60	56	11	2.5	2.1	5	3	2.9			E250M3.5		
3.5	0.60	56	11	4.0	3.0	6	3	2.9	20	E200M3.5			
4	0.70	63	12	2.8	2.1	5	3	3.3			E250M4		
4	0.70	63	12	2.8	2.1	5	3	3.3			E250M4NO1		
4	0.70	63	12	4.5	3.4	6	3	3.3	21	E200M4		E237M4	
4	0.70	63	12	4.5	3.4	6	3	3.3	21	E200M4NO1			
5	0.80	70	13	3.5	2.7	6	3	4.2			E250M5		
5	0.80	70	13	3.5	2.7	6	3	4.2			E250M5NO1		
5	0.80	70	13	6.0	4.9	8	3	4.2	25	E200M5		E237M5	
5	0.80	70	13	6.0	4.9	8	3	4.2	25	E200M5NO1			
6	1.00	80	15	4.5	3.4	6	3	5			E250M6		
6	1.00	80	15	4.5	3.4	6	3	5			E250M6NO1		
6	1.00	80	15	6.0	4.9	8	3	5	30	E200M6		E237M6	
6	1.00	80	15	6.0	4.9	8	3	5	30	E200M6NO1			
7	1.00	80	15	5.5	4.3	7	3	6			E250M7		

NO1
NO9
c 10

M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E200	E250	E237	E251
7	1.00	80	15	7.0	5.5	8	3	6	30	E200M7			
8	1.25	90	18	6.0	4.9	8	3	6.8			E250M8		
8	1.25	90	18	6.0	4.9	8	3	6.8			E250M8NO1		
8	1.25	90	18	8.0	6.2	9	3	6.8	35	E200M8		E237M8	
8	1.25	90	18	8.0	6.2	9	3	6.8	35	E200M8NO1			
10	1.50	100	20	10.0	8.0	11	3	8.5	39	E200M10		E237M10	
10	1.50	100	20	10.0	8.0	11	3	8.5	39	E200M10NO1			
10	1.50	100	20	7.0	5.5	8	3	8.5			E250M10		
10	1.50	100	20	7.0	5.5	8	3	8.5			E250M10NO1		
12	1.75	110	23	9.0	7.0	10	3	10.3			E250M12		E251M12
12	1.75	110	23	9.0	7.0	10	3	10.3			E250M12NO1		
14	2.00	110	25	11.0	9.0	12	3	12			E250M14		E251M14
14	2.00	110	25	11.0	9.0	12	3	12			E250M14NO1		
16	2.00	110	25	12.0	9.0	12	3	14		NO1	E250M16		E251M16
16	2.00	110	25	12.0	9.0	12	3	14		NO9	E250M16NO1		
18	2.50	125	30	14.0	11.0	14	3	15.5		c 10	E250M18		E251M18
18	2.50	125	30	14.0	11.0	14	3	15.5			E250M18NO1		
20	2.50	140	30	16.0	12.0	15	3	17.5			E250M20		E251M20
20	2.50	140	30	16.0	12.0	15	3	17.5			E250M20NO1		
22	2.50	140	34	18.0	14.5	17	4	19.5			E250M22		E251M22
22	2.50	140	34	18.0	14.5	17	4	19.5			E250M22NO1		
24	3.00	160	38	18.0	14.5	17	4	21			E250M24		E251M24
27	3.00	160	38	20.0	16.0	19	4	24			E250M27		
30	3.50	180	45	22.0	18.0	21	4	26.5			E250M30		
33	3.50	180	50	25.0	20.0	23	4	29.5			E250M33		
36	4.00	200	55	28.0	22.0	25	4	32			E250M36		
39	4.00	200	60	32.0	24.0	27	4	35			E250M39		
42	4.50	200	60	32.0	24.0	27	4	37.5			E250M42		
45	4.50	220	65	36.0	29.0	32	6	40.5			E250M45		
48	5.00	250	70	36.0	29.0	32	6	43			E250M48		
52	5.00	250	70	40.0	32.0	35	6	47			E250M52		



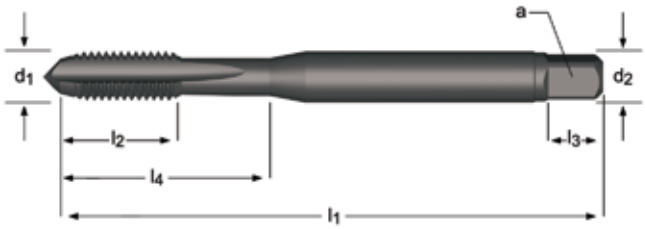
E201
E252

- M Machine Tap Straight Flute
- M Maschinen-Gewindebohrer, geradegenutet
- M Machinetappen met rechte spaangroeven
- M Tarauds machine Goujures droites
- M Machos de máquina Estrías rectas
- M Macho de Máquina Canais Direitos

E201; E252

▪ 3.1 3.2 3.3 8.2

▪ 3.4 6.2 6.4 7.4



M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E201	E252
3	0.50	56	9	3.5	2.7	6	3	2.5	18	E201M3	
4	0.70	63	12	4.5	3.4	6	4	3.3	21	E201M4	
5	0.80	70	13	6.0	4.9	8	4	4.2	25	E201M5	
6	1.00	80	15	6.0	4.9	8	4	5	30	E201M6	
8	1.25	90	18	6	4.9	8	4	6.8			E252M8
8	1.25	90	18	8.0	6.2	9	4	6.8	35	E201M8	
10	1.50	100	20	10.0	8.0	11	4	8.5	39	E201M10	
10	1.50	100	20	7	5.5	8	4	8.5			E252M10
12	1.75	110	23	9	7.0	10	4	10.3			E252M12
14	2.00	110	25	11	9.0	12	4	12			E252M14
16	2.00	110	25	12	9.0	12	4	14			E252M16
18	2.50	125	30	14	11.0	14	4	15.5			E252M18
20	2.50	140	30	16	12.0	15	4	17.5			E252M20
22	2.50	140	34	18	14.5	17	4	19.5			E252M22
24	3.00	160	38	18	14.5	17	4	21			E252M24

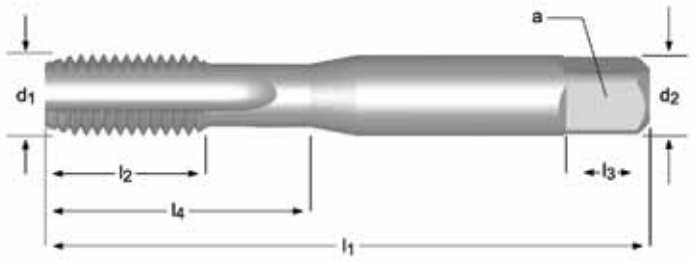
DORMER

E500	M	ISO 529	6H		1.5XD	HSS				L115 c 108	L120 c 109
E501	M	ISO 529	6H		1.5XD	HSS					
E504	M	ISO 529	6H		1.5XD	HSS			TiN		

E500
E501
E504

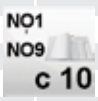
- M Machine Tap Straight Flute
- M Maschinen-Gewindebohrer, geradegenutet
- M Hand-/machinetappen met rechte spaangroeven
- M Tarauds machine Goujures droites
- M Machos de máquina Estrías rectas
- M Macho de Máquina Canais Direitos

E500; E501	▪	1.1	1.2	1.3	1.4	1.5	3.1	3.2	3.3	3.4	6.1	6.2	6.3	6.4	7.2	7.3	7.4	8.2	8.3
E504	▪	3.1	3.2	3.3															
	▪	1.1	1.2	1.3	1.4	1.5	3.4	6.2	6.3	6.4	7.2	7.3	7.4	8.2	8.3				



E500	E501	E504
M1 - M56	M3 - M24	M3 - M24

M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E500	E501	E504
1	0.25	38	4.5	2.5	2	4	2	0.75	4.5	E500M1NO1		
1	0.25	38	4.5	2.5	2	4	2	0.75	4.5	E500M1NO2		
1	0.25	38	4.5	2.5	2	4	2	0.75	4.5	E500M1NO3		
1	0.25	38	4.5	2.5	2					E500M1NO6		
1.2	0.25	38	4.5	2.5	2	4	2	0.95	4.5	E500M1.2NO1		
1.2	0.25	38	4.5	2.5	2	4	2	0.95	4.5	E500M1.2NO2		
1.2	0.25	38	4.5	2.5	2	4	2	0.95	4.5	E500M1.2NO3		
1.2	0.25	38	4.5	2.5	2					E500M1.2NO6		
1.4	0.3	40	6	2.5	2	4	2	1.1	6	E500M1.4NO1		
1.4	0.3	40	6	2.5	2	4	2	1.1	6	E500M1.4NO2		
1.4	0.3	40	6	2.5	2	4	2	1.1	6	E500M1.4NO3		
1.4	0.3	40	6	2.5	2					E500M1.4NO6		
1.6	0.35	41	8	2.5	2	4	2	1.25	8	E500M1.6NO1		
1.6	0.35	41	8	2.5	2	4	2	1.25	8	E500M1.6NO2		
1.6	0.35	41	8	2.5	2	4	2	1.25	8	E500M1.6NO3		
1.6	0.35	41	8	2.5	2	4	2	1.25	8	E500M1.6NO6		
1.6	0.35	41	8	2.5	2	4	2	1.25	8	E500M1.6NO8		
1.7	0.35	41	8	2.5	2	4	2	1.35	8	E500M1.7NO1		
1.7	0.35	41	8	2.5	2	4	2	1.35	8	E500M1.7NO2		
1.7	0.35	41	8	2.5	2	4	2	1.35	8	E500M1.7NO3		
1.7	0.35	41	8	2.5	2	4	2	1.35	8	E500M1.7NO6		
1.7	0.35	41	8	2.5	2	4	2	1.35	8	E500M1.7NO8		
1.8	0.35	41	8	2.5	2	4	2	1.45	8	E500M1.8NO1		
1.8	0.35	41	8	2.5	2	4	2	1.45	8	E500M1.8NO2		
1.8	0.35	41	8	2.5	2	4	2	1.45	8	E500M1.8NO3		
1.8	0.35	41	8	2.5	2	4	2	1.45	8	E500M1.8NO6		



M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E500	E501	E504
1.8	0.35	41	8	2.5	2	4	2	1.45	8	E500M1.8NO8		
2	0.4	41	8	2.5	2	4	3	1.6	8	E500M2NO1		
2	0.4	41	8	2.5	2	4	3	1.6	8	E500M2NO2		
2	0.4	41	8	2.5	2	4	3	1.6	8	E500M2NO3		
2	0.4	41	8	2.5	2	4	3	1.6	8	E500M2NO6		
2	0.4	41	8	2.5	2	4	3	1.6	8	E500M2NO7		
2	0.4	41	8	2.5	2	4	3	1.6	8	E500M2NO8		
2	0.45	41	8	2.5	2	4	3	1.55	8	E500M2X.45NO1		
2	0.45	41	8	2.5	2	4	3	1.55	8	E500M2X.45NO2		
2	0.45	41	8	2.5	2	4	3	1.55	8	E500M2X.45NO3		
2.2	0.45	44.5	9.5	2.8	2.24	5	3	1.75	9.5	E500M2.2NO1		
2.2	0.45	44.5	9.5	2.8	2.24	5	3	1.75	9.5	E500M2.2NO2		
2.2	0.45	44.5	9.5	2.8	2.24	5	3	1.75	9.5	E500M2.2NO3		
2.2	0.45	44.5	9.5	2.8	2.24	5	3	1.75	9.5	E500M2.2NO6		
2.2	0.45	44.5	9.5	2.8	2.24	5	3	1.75	9.5	E500M2.2NO8		
2.3	0.45	44.5	9.5	2.8	2.24	5	3	1.85	9.5	E500M2.3NO1		
2.3	0.45	44.5	9.5	2.8	2.24	5	3	1.85	9.5	E500M2.3NO2		
2.3	0.45	44.5	9.5	2.8	2.24	5	3	1.85	9.5	E500M2.3NO3		
2.3	0.45	44.5	9.5	2.8	2.24	5	3	1.85	9.5	E500M2.3NO6		
2.5	0.45	44.5	9.5	2.8	2.24	5	3	2.05	9.5	E500M2.5NO1		
2.5	0.45	44.5	9.5	2.8	2.24	5	3	2.05	9.5	E500M2.5NO2		
2.5	0.45	44.5	9.5	2.8	2.24	5	3	2.05	9.5	E500M2.5NO3		
2.5	0.45	44.5	9.5	2.8	2.24	5	3	2.05	9.5	E500M2.5NO6		
2.5	0.45	44.5	9.5	2.8	2.24	5	3	2.05	9.5	E500M2.5NO7		
2.5	0.45	44.5	9.5	2.8	2.24	5	3	2.05	9.5	E500M2.5NO8		
2.6	0.45	44.5	9.5	2.8	2.24	5	3	2.15	9.5	E500M2.6NO1		
2.6	0.45	44.5	9.5	2.8	2.24	5	3	2.15	9.5	E500M2.6NO2		
2.6	0.45	44.5	9.5	2.8	2.24	5	3	2.15	9.5	E500M2.6NO3		
2.6	0.45	44.5	9.5	2.8	2.24	5	3	2.15	9.5	E500M2.6NO6		
3	0.5	48	12.5	3.15	2.5	5	3	2.5	12.5	E500M3NO1	E501M3NO1	
3	0.5	48	12.5	3.15	2.5	5	3	2.5	12.5	E500M3NO2	E501M3NO2	E504M3NO2
3	0.5	48	12.5	3.15	2.5	5	3	2.5	12.5	E500M3NO3	E501M3NO3	E504M3NO3
3	0.5	48	12.5	3.15	2.5	5	3	2.5	12.5	E500M3NO6		
3	0.5	48	12.5	3.15	2.5	5	3	2.5	12.5	E500M3NO7		
3	0.5	48	12.5	3.15	2.5	5	3	2.5	12.5	E500M3NO8		
3	0.6	48	12.5	3.15	2.5	5	3	2.4	12.5	E500M3X.6NO1		
3	0.6	48	12.5	3.15	2.5	5	3	2.4	12.5	E500M3X.6NO2		
3	0.6	48	12.5	3.15	2.5	5	3	2.4	12.5	E500M3X.6NO3		
3.5	0.6	50	14	3.55	2.8	5	3	2.9	14	E500M3.5NO1		
3.5	0.6	50	14	3.55	2.8	5	3	2.9	14	E500M3.5NO2		
3.5	0.6	50	14	3.55	2.8	5	3	2.9	14	E500M3.5NO3		
3.5	0.6	50	14	3.55	2.8	5	3	2.9	14	E500M3.5NO6		
3.5	0.6	50	14	3.55	2.8	5	3	2.9	14	E500M3.5NO7		
3.5	0.6	50	14	3.55	2.8	5	3	2.9	14	E500M3.5NO8		
4	0.7	53	14	4	3.15	6	3	3.3	14	E500M4NO1	E501M4NO1	
4	0.7	53	14	4	3.15	6	3	3.3	14	E500M4NO2	E501M4NO2	E504M4NO2
4	0.7	53	14	4	3.15	6	3	3.3	14	E500M4NO3	E501M4NO3	E504M4NO3
4	0.7	53	14	4	3.15	6	3	3.3	14	E500M4NO6		
4	0.7	53	14	4	3.15	6	3	3.3	14	E500M4NO7		
4	0.7	53	14	4	3.15	6	3	3.3	14	E500M4NO8		
4	0.75	53	14	4	3.15	6	3	3.25	14	E500M4X.75NO1		
4	0.75	53	14	4	3.15	6	3	3.25	14	E500M4X.75NO2		
4	0.75	53	14	4	3.15	6	3	3.25	14	E500M4X.75NO3		
4.5	0.75	53	9.5	4.5	3.55	6	3	3.8	18	E500M4.5NO1		
4.5	0.75	53	9.5	4.5	3.55	6	3	3.8	18	E500M4.5NO2		
4.5	0.75	53	9.5	4.5	3.55	6	3	3.8	18	E500M4.5NO3		
4.5	0.75	53	9.5	4.5	3.55	6	3	3.8	18	E500M4.5NO6		
4.5	0.75	53	9.5	4.5	3.55	6	3	3.8	18	E500M4.5NO7		
4.5	0.75	53	9.5	4.5	3.55	6	3	3.8	18	E500M4.5NO8		
5	0.8	58	11	5	4	7	3	4.2	22	E500M5NO1	E501M5NO1	
5	0.8	58	11	5	4	7	3	4.2	22	E500M5NO2	E501M5NO2	E504M5NO2
5	0.8	58	11	5	4	7	3	4.2	22	E500M5NO3	E501M5NO3	E504M5NO3
5	0.8	58	11	5	4	7	3	4.2	22	E500M5NO6		
5	0.8	58	11	5	4	7	3	4.2	22	E500M5NO7		
5	0.8	58	11	5	4	7	3	4.2	22	E500M5NO8		
5	0.9	58	11	5	4	7	3	4.1	22	E500M5X.9NO1		
5	0.9	58	11	5	4	7	3	4.1	22	E500M5X.9NO2		
5	0.9	58	11	5	4	7	3	4.1	22	E500M5X.9NO3		

M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E500	E501	E504
5	0.9	58	11	5	4	7	3	4.1	22	E500M5X.9NO6		
5.5	0.9	62	12	5.6	4.5	7	3	4.6	21	E500M5.5X.9NO1		
5.5	0.9	62	12	5.6	4.5	7	3	4.6	21	E500M5.5X.9NO2		
5.5	0.9	62	12	5.6	4.5	7	3	4.6	21	E500M5.5X.9NO3		
5.5	0.9	62	12	5.6	4.5	7	3	4.6	21	E500M5.5X.9NO6		
6	1	66	13	6.3	5	8	3	5	26	E500M6NO1	E501M6NO1	
6	1	66	13	6.3	5	8	3	5	26	E500M6NO2	E501M6NO2	E504M6NO2
6	1	66	13	6.3	5	8	3	5	26	E500M6NO3	E501M6NO3	E504M6NO3
6	1	66	13	6.3	5	8	3	5	26	E500M6NO6		
6	1	66	13	6.3	5	8	3	5	26	E500M6NO7		
6	1	66	13	6.3	5	8	3	5	26	E500M6NO8		
7	1	66	13	7.1	5.6	8	3	6	26	E500M7NO1		
7	1	66	13	7.1	5.6	8	3	6	26	E500M7NO2		
7	1	66	13	7.1	5.6	8	3	6	26	E500M7NO3		
7	1	66	13	7.1	5.6	8	3	6	26	E500M7NO6		
7	1	66	13	7.1	5.6	8	3	6	26	E500M7NO7		
7	1	66	13	7.1	5.6	8	3	6	26	E500M7NO8		
8	1.25	72	16	8	6.3	9	3	6.8	29	E500M8NO1	E501M8NO1	
8	1.25	72	16	8	6.3	9	3	6.8	29	E500M8NO2	E501M8NO2	E504M8NO2
8	1.25	72	16	8	6.3	9	3	6.8	29	E500M8NO3	E501M8NO3	E504M8NO3
8	1.25	72	16	8	6.3	9	3	6.8	29	E500M8NO6		
8	1.25	72	16	8	6.3	9	3	6.8	29	E500M8NO7		
8	1.25	72	16	8	6.3	9	3	6.8	29	E500M8NO8		
9	1.25	72	16	9	7.1	10	3	7.8	29	E500M9NO1		
9	1.25	72	16	9	7.1	10	3	7.8	29	E500M9NO2		
9	1.25	72	16	9	7.1	10	3	7.8	29	E500M9NO3		
9	1.25	72	16	9	7.1	10	3	7.8	29	E500M9NO6		
9	1.25	72	16	9	7.1	10	3	7.8	29	E500M9NO7		
9	1.25	72	16	9	7.1	10	3	7.8	29	E500M9NO8		
10	1.5	80	18	10	8	11	3	8.5	34	E500M10NO1	E501M10NO1	
10	1.5	80	18	10	8	11	3	8.5	34	E500M10NO2	E501M10NO2	E504M10NO2
10	1.5	80	18	10	8	11	3	8.5	34	E500M10NO3	E501M10NO3	E504M10NO3
10	1.5	80	18	10	8	11	3	8.5	34	E500M10NO6		
10	1.5	80	18	10	8	11	3	8.5	34	E500M10NO7		
10	1.5	80	18	10	8	11	3	8.5	34	E500M10NO8		
11	1.5	85	19	8	6.3	9	3	9.5		E500M11NO1		
11	1.5	85	19	8	6.3	9	3	9.5		E500M11NO2		
11	1.5	85	19	8	6.3	9	3	9.5		E500M11NO3		
11	1.5	85	19	8	6.3	9	3	9.5		E500M11NO6		
11	1.5	85	19	8	6.3	9	3	9.5		E500M11NO8		
12	1.75	89	22	9	7.1	10	3	10.3		E500M12NO1	E501M12NO1	
12	1.75	89	22	9	7.1	10	3	10.3		E500M12NO2	E501M12NO2	E504M12NO2
12	1.75	89	22	9	7.1	10	3	10.3		E500M12NO3	E501M12NO3	E504M12NO3
12	1.75	89	22	9	7.1	10	3	10.3		E500M12NO6		
12	1.75	89	22	9	7.1	10	3	10.3		E500M12NO7		
12	1.75	89	22	9	7.1	10	3	10.3		E500M12NO8		
14	2	95	24	11.2	9	12	4	12		E500M14NO1	E501M14NO1	
14	2	95	24	11.2	9	12	4	12		E500M14NO2	E501M14NO2	
14	2	95	24	11.2	9	12	4	12		E500M14NO3	E501M14NO3	
14	2	95	24	11.2	9	12	4	12		E500M14NO6		
14	2	95	24	11.2	9	12	4	12		E500M14NO7		
14	2	95	24	11.2	9	12	4	12		E500M14NO8		
16	2	102	24	12.5	10	13	4	14		E500M16NO1	E501M16NO1	
16	2	102	24	12.5	10	13	4	14		E500M16NO2	E501M16NO2	E504M16NO2
16	2	102	24	12.5	10	13	4	14		E500M16NO3	E501M16NO3	E504M16NO3
16	2	102	24	12.5	10	13	4	14		E500M16NO6		
16	2	102	24	12.5	10	13	4	14		E500M16NO7		
16	2	102	24	12.5	10	13	4	14		E500M16NO8		
18	2.5	112	29	14	11.2	14	4	15.5		E500M18NO1		
18	2.5	112	29	14	11.2	14	4	15.5		E500M18NO2	E501M18NO2	
18	2.5	112	29	14	11.2	14	4	15.5		E500M18NO3	E501M18NO3	
18	2.5	112	29	14	11.2	14	4	15.5		E500M18NO6		
18	2.5	112	29	14	11.2	14	4	15.5		E500M18NO7		
18	2.5	112	29	14	11.2	14	4	15.5		E500M18NO8		
20	2.5	112	29	14	11.2	14	4	17.5		E500M20NO1	E501M20NO1	
20	2.5	112	29	14	11.2	14	4	17.5		E500M20NO2	E501M20NO2	E504M20NO2
20	2.5	112	29	14	11.2	14	4	17.5		E500M20NO3	E501M20NO3	E504M20NO3
20	2.5	112	29	14	11.2	14	4	17.5		E500M20NO6		

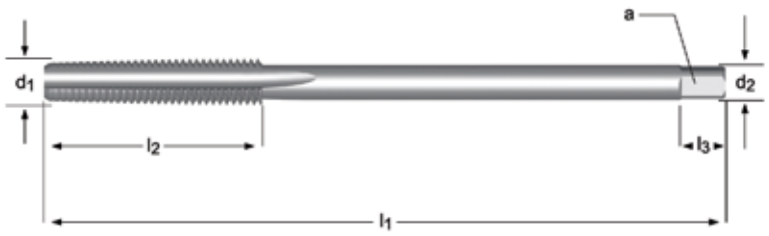
M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E500	E501	E504
20	2.5	112	29	14	11.2	14	4	17.5		E500M20NO7		
20	2.5	112	29	14	11.2	14	4	17.5		E500M20NO8		
22	2.5	118	29	16	12.5	16	4	19.5		E500M22NO1		
22	2.5	118	29	16	12.5	16	4	19.5		E500M22NO2	E501M22NO2	
22	2.5	118	29	16	12.5	16	4	19.5		E500M22NO3	E501M22NO3	
22	2.5	118	29	16	12.5	16	4	19.5		E500M22NO6		
22	2.5	118	29	16	12.5	16	4	19.5		E500M22NO8		
24	3	130	35	18	14	18	4	21		E500M24NO1		
24	3	130	35	18	14	18	4	21		E500M24NO2	E501M24NO2	E504M24NO2
24	3	130	35	18	14	18	4	21		E500M24NO3	E501M24NO3	E504M24NO3
24	3	130	35	18	14	18	4	21		E500M24NO6		
24	3	130	35	18	14	18	4	21		E500M24NO7		
24	3	130	35	18	14	18	4	21		E500M24NO8		
27	3	135	35	20	16	20	4	24		E500M27NO1		
27	3	135	35	20	16	20	4	24		E500M27NO2		
27	3	135	35	20	16	20	4	24		E500M27NO3		
30	3.5	138	41	20	16	20	4	26.5		E500M30NO1		
30	3.5	138	41	20	16	20	4	26.5		E500M30NO2		
30	3.5	138	41	20	16	20	4	26.5		E500M30NO3		
33	3.5	151	41	22.4	18	22	4	29.5		E500M33NO1		
33	3.5	151	41	22.4	18	22	4	29.5		E500M33NO2		
33	3.5	151	41	22.4	18	22	4	29.5		E500M33NO3		
36	4	162	47	25	20	24	4	32		E500M36NO1		
36	4	162	47	25	20	24	4	32		E500M36NO2		
36	4	162	47	25	20	24	4	32		E500M36NO3		
39	4	170	47	28	22.4	26	4	35		E500M39NO1		
39	4	170	47	28	22.4	26	4	35		E500M39NO2		
39	4	170	47	28	22.4	26	4	35		E500M39NO3		
42	4.5	170	53	28	22.4	26	6	37.5		E500M42NO1		
42	4.5	170	53	28	22.4	26	6	37.5		E500M42NO2		
42	4.5	170	53	28	22.4	26	6	37.5		E500M42NO3		
45	4.5	187	54	31.5	25	28	6	40.5		E500M45NO1		
45	4.5	187	54	31.5	25	28	6	40.5		E500M45NO2		
45	4.5	187	54	31.5	25	28	6	40.5		E500M45NO3		
48	5	187	60	31.5	25	28	6	43		E500M48NO1		
48	5	187	60	31.5	25	28	6	43		E500M48NO2		
48	5	187	60	31.5	25	28	6	43		E500M48NO3		
52	5	200	60	35.5	28	31	6	47		E500M52NO1		
52	5	200	60	35.5	28	31	6	47		E500M52NO2		
52	5	200	60	35.5	28	31	6	47		E500M52NO3		
56	5.5	200	60	35.5	28	31	6	50.5		E500M56NO3		

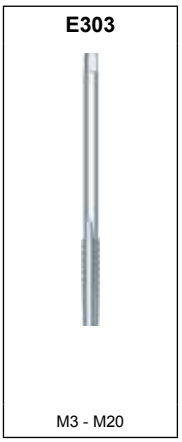
E303 | M | DIN 357 | 6H | 2XD | HSS-E | D18-20 C 2-3

E303

- M Machine Tap Straight Flute
- M Maschinen-Gewindebohrer, geradegenutet
- M Machinetappen, rechte spaangroeven
- M Tarauds machine Goujures droites
- M Machos de máquina Estrías rectas
- M Macho de Máquina Canais Direitos

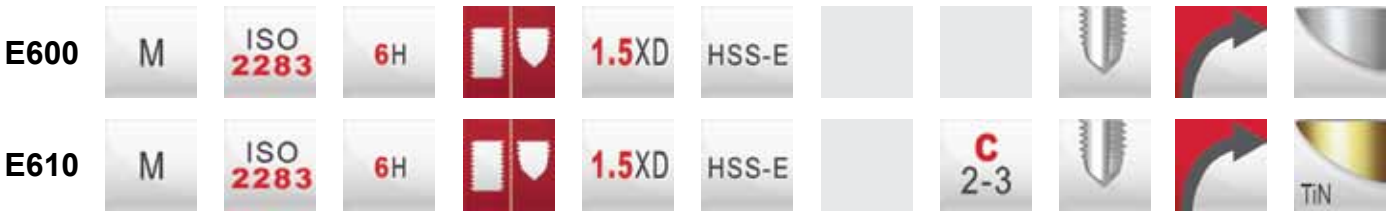
E303 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 6.2 6.3 7.2 7.3 8.2





M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		E303
3	0.50	70	22	2.2	2.1	5	3	2.5	E303M3NO1
3	0.50	70	22	2.2	2.1	5	3	2.5	E303M3NO3
3.5	0.60	80	25	2.5	2.1	5	3	2.9	E303M3.5NO1
3.5	0.60	80	25	2.5	2.1	5	3	2.9	E303M3.5NO3
4	0.70	90	25	2.8	2.1	5	3	3.3	E303M4NO1
4	0.70	90	25	2.8	2.1	5	3	3.3	E303M4NO3
5	0.80	100	28	3.5	2.7	6	3	4.2	E303M5NO1
5	0.80	100	28	3.5	2.7	6	3	4.2	E303M5NO3
6	1.00	110	32	4.5	3.4	6	3	5	E303M6NO1
6	1.00	110	32	4.5	3.4	6	3	5	E303M6NO3
8	1.25	125	40	6.0	4.9	8	3	6.8	E303M8NO1
8	1.25	125	40	6.0	4.9	8	3	6.8	E303M8NO3
10	1.50	140	45	7.0	5.5	8	3	8.5	E303M10NO1
10	1.50	140	45	7.0	5.5	8	3	8.5	E303M10NO3
12	1.75	180	50	9.0	7.0	10	3	10.3	E303M12NO1
12	1.75	180	50	9.0	7.0	10	3	10.3	E303M12NO3
14	2.00	200	56	11.0	9.0	12	3	12	E303M14NO1
14	2.00	200	56	11.0	9.0	12	3	12	E303M14NO3
16	2.00	200	63	12.0	9.0	12	3	14	E303M16NO1
16	2.00	200	63	12.0	9.0	12	3	14	E303M16NO3
18	2.50	220	63	14.0	11.0	14	3	15.5	E303M18NO1
18	2.50	220	63	14.0	11.0	14	3	15.5	E303M18NO3
20	2.50	250	70	16.0	12.0	15	3	17.5	E303M20NO1
20	2.50	250	70	16.0	12.0	15	3	17.5	E303M20NO3

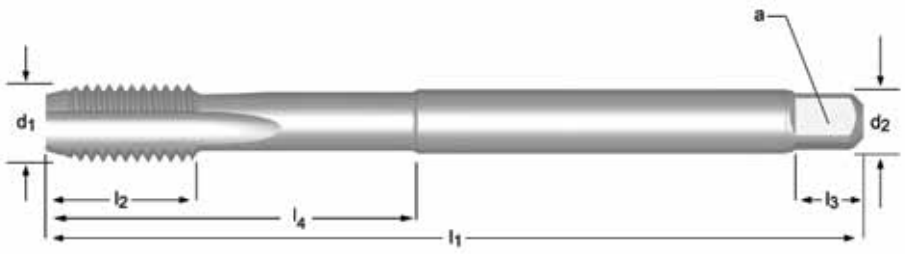
NO1
NO9
c 10

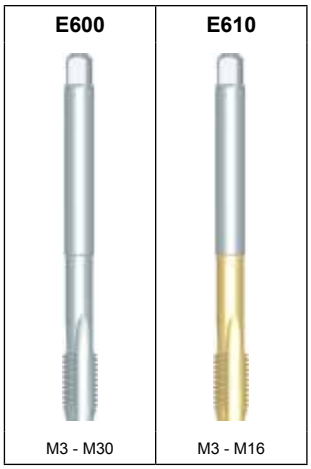


E600
E610

- M Machine Tap, Extra Long Straight Flute
- M Maschinen-Gewindebohrer, extra lang, geradegenutet
- M Machinetappen, extra lang met rechte spaangroeven
- M Tarauds machine, Extra Long Goujures droites
- M Machos de máquina Extra largo Estrías rectas
- M Macho de Máq., Extra Longa Canais Direitos

E600	•	1.1	1.2	1.3	1.4	1.5	3.1	3.2	3.3	3.4	6.1	6.2	6.3	6.4	7.2	7.3	7.4	8.2	8.3
E610	▪	3.1	3.2	3.3															
	•	1.1	1.2	1.3	1.4	1.5	3.4	6.2	6.3	6.4	7.2	7.3	7.4	8.2	8.3				



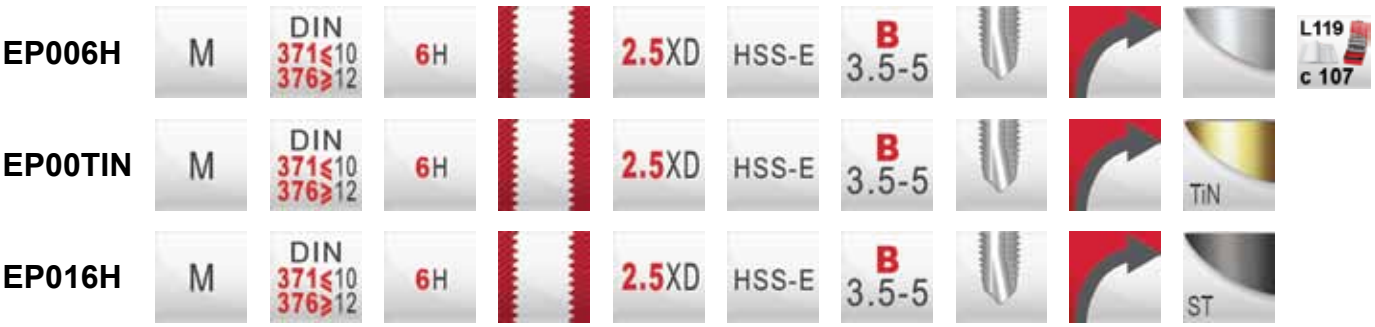


M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E600	E610
3	0.5	66	9	3.15	2.5	5	3	2.5	18	E600M3NO1	
3	0.5	66	9	3.15	2.5	5	3	2.5	18	E600M3NO2	
3	0.5	66	9	3.15	2.5	5	3	2.5	18	E600M3NO3	E610M3NO3
4	0.7	73	12	3.15	2.5	5	3	3.3		E600M4NO1	
4	0.7	73	12	3.15	2.5	5	3	3.3		E600M4NO2	
4	0.7	73	12	3.15	2.5	5	3	3.3		E600M4NO3	E610M4NO3
5	0.8	79	12	4	3.15	6	3	4.2		E600M5NO1	
5	0.8	79	12	4	3.15	6	3	4.2		E600M5NO2	
5	0.8	79	12	4	3.15	6	3	4.2		E600M5NO3	E610M5NO3
6	1	89	14	4.5	3.55	6	3	5		E600M6NO1	
6	1	89	14	4.5	3.55	6	3	5		E600M6NO2	
6	1	89	14	4.5	3.55	6	3	5		E600M6NO3	E610M6NO3
8	1.25	97	17	6.3	5	8	3	6.8		E600M8NO1	
8	1.25	97	17	6.3	5	8	3	6.8		E600M8NO2	
8	1.25	97	17	6.3	5	8	3	6.8		E600M8NO3	E610M8NO3
10	1.5	108	19	8	6.3	9	3	8.5		E600M10NO1	
10	1.5	108	19	8	6.3	9	3	8.5		E600M10NO2	
10	1.5	108	19	8	6.3	9	3	8.5		E600M10NO3	E610M10NO3
12	1.75	119	23	9	7.1	10	3	10.3		E600M12NO1	
12	1.75	119	23	9	7.1	10	3	10.3		E600M12NO2	
12	1.75	119	23	9	7.1	10	3	10.3		E600M12NO3	E610M12NO3
14	2	127	25	11.2	9	12	4	12		E600M14NO1	
14	2	127	25	11.2	9	12	4	12		E600M14NO2	
14	2	127	25	11.2	9	12	4	12		E600M14NO3	E610M14NO3
16	2	137	25	12.5	10	13	4	14		E600M16NO1	
16	2	137	25	12.5	10	13	4	14		E600M16NO2	
16	2	137	25	12.5	10	13	4	14		E600M16NO3	E610M16NO3
20	2.5	149	30	14	11.2	14	4	17.5		E600M20NO1	

NO1
NO9
c 10

DORMER

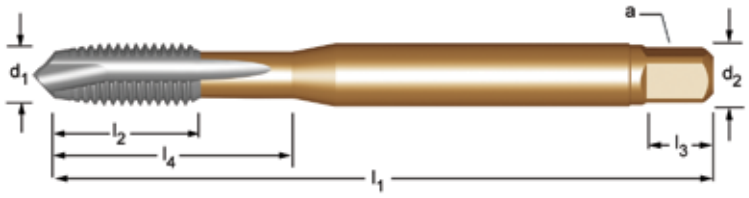
M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E600	E610
20	2.5	149	30	14	11.2	14	4	17.5		E600M20NO2	
20	2.5	149	30	14	11.2	14	4	17.5		E600M20NO3	
24	3	172	36	18	14	18	4	21		E600M24NO1	NO1
24	3	172	36	18	14	18	4	21		E600M24NO2	NO9
24	3	172	36	18	14	18	4	21		E600M24NO3	c 10
30	3.5	183	42	20	16	20	4	26.5		E600M30NO1	
30	3.5	183	42	20	16	20	4	26.5		E600M30NO2	
30	3.5	183	42	20	16	20	4	26.5		E600M30NO3	



EP006H
EP00TIN
EP016H

- M Machine Tap Spiral Point
- M Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- M Machinetappen met schilaansnijding
- M Tarauds machine Coupe gun
- M Machos de máquina Entrada en hélice
- M Macho de Máquina Entrada Helicoidal

EP006H	▪	1.1	1.2	1.3	1.4	1.5	6.1	6.3	7.1	7.2	7.3	7.4
	▪	1.6	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.2	8.1
EP00TIN	▪	1.1	1.2	1.3	1.4	1.5	2.1	2.2	6.1	6.3	7.3	7.4
	▪	1.6	2.3	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.2	8.2
EP016H	▪	1.1	1.2	1.3	1.4	1.5	2.1	2.2				
	▪	1.6	2.3	3.1	3.2	3.3	3.4					



EP006H	EP00TIN	EP016H
M2 - M30	M3 - M30	M2 - M30

M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	EP006H	EP00TIN	EP016H
2	0.40	50	6	2.8	2.1	5	3	1.6	9	EP00M2		EP01M2
2.5	0.45	50	8	2.8	2.1	5	3	2.1	12.5	EP00M2.5		EP01M2.5
3	0.50	56	10	2.2	1.8	4	3	2.5		EP00M3DIN376		EP01M3DIN376
3	0.50	56	9	3.5	2.7	6	3	2.5	18	EP00M3	EP00TINM3	EP01M3
3.5	0.60	56	11	4.0	3.0	6	3	2.9	20	EP00M3.5		EP01M3.5
4	0.70	63	12	2.8	2.1	5	3	3.3		EP00M4DIN376		EP01M4DIN376
4	0.70	63	12	4.5	3.4	6	3	3.3	21	EP00M4	EP00TINM4	EP01M4
4.5	0.75	70	13	6.0	4.9	8	3	3.8	25	EP00M4.5		EP01M4.5
5	0.80	70	13	3.5	2.7	6	3	4.2		EP00M5DIN376		EP01M5DIN376
5	0.80	70	13	6.0	4.9	8	3	4.2	25	EP00M5	EP00TINM5	EP01M5
6	1.00	80	15	4.5	3.4	6	3	5		EP00M6DIN376		EP01M6DIN376
6	1.00	80	15	6.0	4.9	8	3	5	30	EP00M6	EP00TINM6	EP01M6
7	1.00	80	15	7.0	5.5	8	3	6	30	EP00M7		EP01M7
8	1.25	90	18	6.0	4.9	8	3	6.8		EP00M8DIN376		EP01M8DIN376
8	1.25	90	18	8.0	6.2	9	3	6.8	35	EP00M8	EP00TINM8	EP01M8
10	1.50	100	20	7.0	5.5	8	3	8.5		EP00M10DIN376		EP01M10DIN376
10	1.50	100	20	10.0	8.0	11	3	8.5	39	EP00M10	EP00TINM10	EP01M10
12	1.75	110	23	9.0	7.0	10	3	10.3		EP00M12	EP00TINM12	EP01M12
14	2.00	110	25	11.0	9.0	12	3	12		EP00M14	EP00TINM14	EP01M14
16	2.00	110	25	12.0	9.0	12	3	14		EP00M16	EP00TINM16	EP01M16

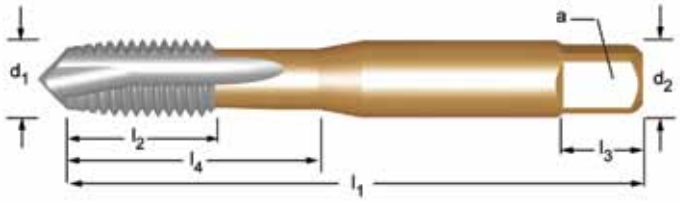
M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	EP006H	EP00TIN	EP016H
18	2.50	125	30	14.0	11.0	14	4	15.5		EP00M18	EP00TINM18	EP01M18
20	2.50	140	30	16.0	12.0	15	4	17.5		EP00M20	EP00TINM20	EP01M20
22	2.50	140	34	18.0	14.5	17	4	19.5		EP00M22	EP00TINM22	EP01M22
24	3.00	160	38	18.0	14.5	17	4	21		EP00M24	EP00TINM24	EP01M24
27	3.00	160	38	20.0	16.0	19	4	24		EP00M27	EP00TINM27	EP01M27
30	3.50	180	45	22.0	18.0	21	4	26.5		EP00M30	EP00TINM30	EP01M30

E000	M	ISO 529	6H		2.5XD	HSS-E		B 3.5-5			
E000TIN	M	ISO 529	6H		2.5XD	HSS-E		B 3.5-5			TiN
E001	M	ISO 529	6H		2.5XD	HSS-E		B 3.5-5			ST

E000
E000TIN
E001

- M Machine Tap Spiral Point
- M Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- M Machinetappen met schilaansnijding
- M Tarauds machine Coupe gun
- M Machos de máquina Entrada en hélice
- M Macho de Máquina Entrada Helicoidal

E000	▪	1.1	1.2	1.3	1.4	1.5	6.1	6.3	7.1	7.2	7.3	7.4
	▪	1.6	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.2	8.1
E000TIN	▪	1.1	1.2	1.3	1.4	1.5	2.1	2.2	6.1	6.3	7.3	7.4
	▪	1.6	2.3	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.2	8.2
E001	▪	1.1	1.2	1.3	1.4	1.5						
	▪	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4			



E000	E000TIN	E001
M1.6 - M24	M3 - M20	M1.6 - M24

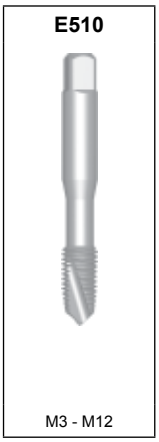
M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E000	E000TIN	E001
1.6	0.35	41	7	2.50	2.00	4	3	1.25	7	E000M1.6		E001M1.6
2	0.40	41	8	2.50	2.00	4	3	1.6	8	E000M2		E001M2
2.5	0.45	44.5	9.5	2.80	2.24	5	3	2.05	9.5	E000M2.5		E001M2.5
3	0.50	48	15	3.15	2.50	5	3	2.5	15	E000M3	E000TINM3	E001M3
3.5	0.60	50	16	3.55	2.80	5	3	2.9	16	E000M3.5		E001M3.5
4	0.70	53	17	4.00	3.15	6	3	3.3	17	E000M4	E000TINM4	E001M4
5	0.80	58	11	5.00	4.00	7	3	4.2	22	E000M5	E000TINM5	E001M5
6	1.00	66	13	6.30	5.00	8	3	5.0	26	E000M6	E000TINM6	E001M6
7	1.00	66	13	7.10	5.60	8	3	6,0	26	E000M7		E001M7
8	1.25	72	16	8.00	6.30	9	3	6.8	29	E000M8	E000TINM8	E001M8
10	1.50	80	18	10.00	8.00	11	3	8.5	34	E000M10	E000TINM10	E001M10
12	1.75	89	22	9.00	7.10	10	3	10.3		E000M12	E000TINM12	E001M12
14	2.00	95	24	11.20	9.00	12	3	12.0		E000M14		E001M14
16	2.00	102	24	12.50	10.00	13	3	14.0		E000M16	E000TINM16	E001M16
18	2.50	112	29	14.00	11.20	14	4	15.5		E000M18		E001M18
20	2.50	112	29	14.00	11.20	14	4	17.5		E000M20	E000TINM20	E001M20
22	2.50	118	29	16.00	12.50	16	4	19.5		E000M22		E001M22
24	3.00	130	35	18.00	14.00	18	4	21.0		E000M24		E001M24

E510 M ISO 529 6H 1XD HSS B 3.5-5

E510

- M Machine Tap Spiral Point
- M Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- M Machinetappen met schilaansnijding zonder spaangroeven
- M Tarauds machine Coupe gun
- M Machos de máquina Entrada en hélice
- M Macho de Máquina Entrada Helicoidal

E510 • 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3



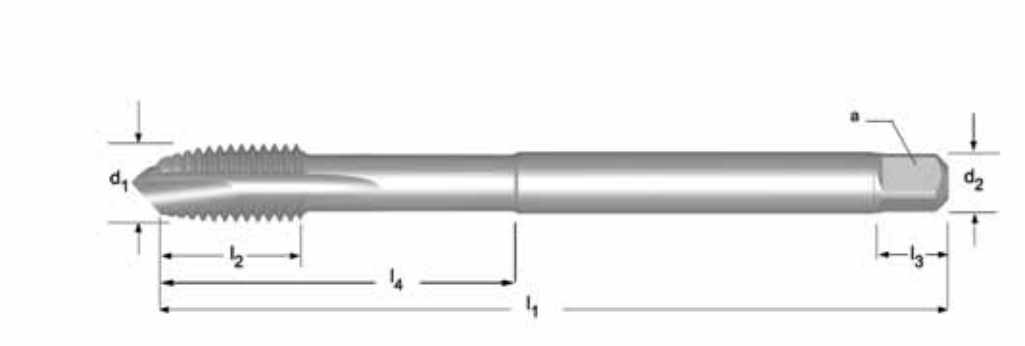
M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E510
3	0.50	48	12.5	3.15	2.50	5	2	2.5	12.5	E510M3
3.5	0.60	50	14	3.55	2.80	5	2	2.9	14	E510M3.5
4	0.70	53	14	4.00	3.15	6	2	3.3	14	E510M4
5	0.80	58	11	5.00	4.00	7	2	4.2	22	E510M5
6	1.00	66	13	6.30	5.00	8	3	5	26	E510M6
8	1.25	72	16	8.00	6.30	9	3	6.8	29	E510M8
10	1.50	80	18	10.00	8.00	11	3	8.5	34	E510M10
12	1.75	89	22	9.00	7.10	10	3	10.3		E510M12

E606 M ISO 2283 6H 2.5XD HSS-E B 3.5-5

E606

- M Machine Tap, Extra Long, Spiral Point
- M Maschinen-Gewindebohrer, extra lang, geradegenutet mit Schälanschnitt
- M Machinetappen, extra lang met schilaansnijding
- M Tarauds machine, Extra Long, Coupe gun
- M Machos de máquina Extra largo Entrada en hélice
- M Macho de Máq., Extra Longa, Entrada Helicoidal

E606 • 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 4.3 5.1 5.2 6.1 6.3 7.1 7.2 7.3 7.4 8.1



E606

M3 - M24

M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E606
3	0.50	66	9	3.15	2.50	5	3	2.5	18	E606M3
4	0.70	73	12	3.15	2.50	5	3	3.3		E606M4
5	0.80	79	12	4.00	3.15	6	3	4.2		E606M5
6	1.00	89	14	4.50	3.55	6	3	5		E606M6
8	1.25	97	17	6.30	5.00	8	3	6.8		E606M8
10	1.50	108	19	8.00	6.30	9	3	8.5		E606M10
12	1.75	119	23	9.00	7.10	10	3	10.3		E606M12
14	2.00	127	25	11.20	9.00	12	3	12		E606M14
16	2.00	137	25	12.50	10.00	13	3	14		E606M16
20	2.50	149	30	14.00	11.20	14	4	17.5		E606M20
24	3.00	172	36	18.00	14.00	18	4	21		E606M24

E216	M	DIN 371	6H		3XD	HSS-E		B 3.5-5			
E266	M	DIN 376	6H		3XD	HSS-E		B 3.5-5			
E422	M	DIN 371	6H		3XD	HSS-E		B 3.5-5			TiN
E423	M	DIN 376	6H		3XD	HSS-E		B 3.5-5			TiN

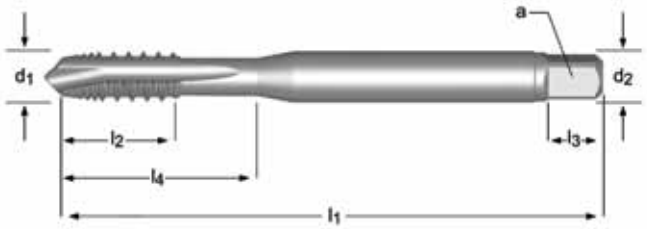
E216
E266
E422
E423

- M Machine Tap, Interrupted Threads Spiral Point
- M Maschinen-Gewindebohrer, ausgesetzte Zähne, geradegenutet mit Schälanschnitt
- M Machinetappen met schilaansnijding en onderbroken vertanding
- M Tarauds machine Coupe gun
- M Machos de máquina, dientes alternos Entrada en hélice
- M Macho de Máq., Filetes Interrompidos Entrada Helicoidal

E216; E266; E422; E423

▪ 1.2 1.3 1.4

• 1.1 1.5 3.1 3.2 3.3 3.4 4.1 4.3 5.1 5.2 6.1 6.2 6.3 7.1 7.2 7.3 7.4 8.1



E216	E266	E422	E423
M3 - M10	M12 - M24	M3 - M10	M12 - M24

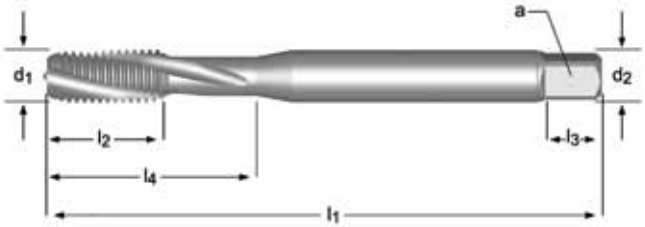
M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E216	E266	E422	E423
3	0.50	56	9	3.5	2.7	6	3	2.5	18	E216M3		E422M3	
4	0.70	63	12	4.5	3.4	6	3	3.3	21	E216M4		E422M4	
5	0.80	70	13	6.0	4.9	8	3	4.2	25	E216M5		E422M5	
6	1.00	80	15	6.0	4.9	8	3	5	30	E216M6		E422M6	
8	1.25	90	18	8.0	6.2	9	3	6.8	35	E216M8		E422M8	
10	1.50	100	20	10.0	8.0	11	3	8.5	39	E216M10		E422M10	
12	1.75	110	23	9	7.0	10	3	10.3			E266M12		E423M12
14	2.00	110	25	11	9.0	12	3	12			E266M14		E423M14
16	2.00	110	25	12	9.0	12	3	14			E266M16		E423M16
18	2.50	125	30	14	11.0	14	3	15.5			E266M18		E423M18
20	2.50	140	30	16	12.0	15	3	17.5			E266M20		E423M20
22	2.50	140	34	18	14.5	17	4	19.5			E266M22		E423M22
24	3.00	160	38	18	14.5	17	4	21			E266M24		E423M24

E207	M	DIN 371	6H		1.5XD	HSS-E		C 2-3	λ15°		
E258	M	DIN 376	6H		1.5XD	HSS-E		C 2-3	λ15°		
E212	M	DIN 371	6H		1.5XD	HSS-E		C 2-3	λ15°		TiN
E263	M	DIN 376	6H		1.5XD	HSS-E		C 2-3	λ15°		TiN

E207
E258
E212
E263

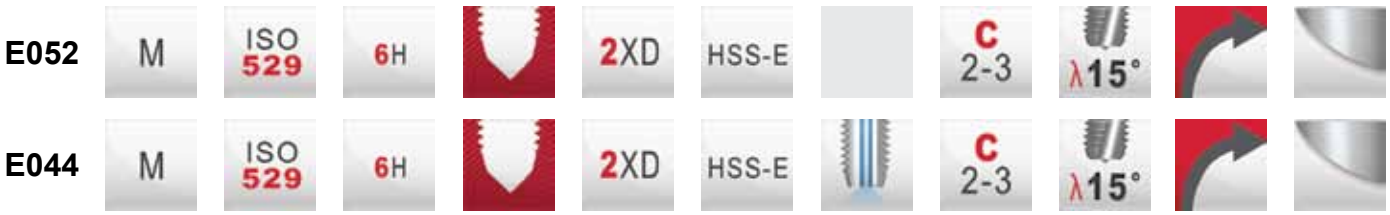
- M Machine Tap Spiral Flute 15º
- M Maschinen-Gewindebohrer, rechtsgedrallte Nuten
- M Machinetappen met gespiraliseerde spaangroeven 15°
- M Tarauds machine goujures hélicoidales 15º
- M Machos de máquina Estrías helicoidales a 15º
- M Macho de Máquina Canal Helicoidal 15º

E207; E258	▪	1.3 1.4
	•	1.2 1.5 7.2 7.3
E212; E263	▪	1.3 1.4
	•	1.1 1.2 1.5 4.2 4.3 7.2 7.3



M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E207	E258	E212	E263
2	0.40	45	4	2.8	2.1	5	3	1.6	9	E207M2			
2.5	0.45	50	4	2.8	2.1	5	3	2.05	12.5	E207M2.5			
3	0.50	56	9	3.5	2.7	6	3	2.5	18	E207M3		E212M3	
3.5	0.60	56	11	4.0	3.0	6	3	2.9	20	E207M3.5			
4	0.70	63	11	4.5	3.4	6	3	3.3	21			E212M4	
4	0.70	63	12	2.8	2.1	5	3	3.3			E258M4		
4	0.70	63	12	4.5	3.4	6	3	3.3	21	E207M4			
5	0.80	70	13	3.5	2.7	6	3	4.2			E258M5		
5	0.80	70	13	6.0	4.9	8	3	4.2	25	E207M5		E212M5	
6	1.00	80	15	4.5	3.4	6	3	5			E258M6		
6	1.00	80	15	6.0	4.9	8	3	5	30	E207M6		E212M6	
7	1.00	80	15	7.0	5.5	8	3	6	30	E207M7			
8	1.25	90	18	6.0	4.9	8	3	6.8			E258M8		
8	1.25	90	18	8.0	6.2	9	3	6.8	35	E207M8		E212M8	
10	1.50	100	20	10.0	8.0	11	3	8.5	39	E207M10		E212M10	
10	1.50	100	20	7.0	5.5	8	3	8.5			E258M10		
12	1.75	110	23	9.0	7.0	10	3	10.3			E258M12		E263M12

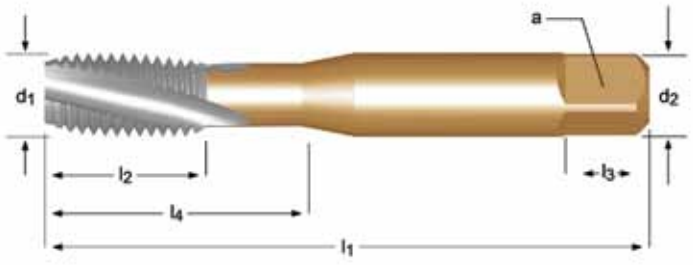
M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E207	E258	E212	E263
14	2.00	110	25	11.0	9.0	12	3	12			E258M14		E263M14
16	2.00	110	25	12.0	9.0	12	3	14			E258M16		E263M16
18	2.50	125	30	14.0	11.0	14	3	15.5			E258M18		E263M18
20	2.50	140	30	16.0	12.0	15	3	17.5			E258M20		E263M20
22	2.50	140	34	18.0	14.5	17	4	19.5			E258M22		E263M22
24	3.00	160	38	18.0	14.5	17	4	21			E258M24		E263M24
27	3.00	160	38	20.0	16.0	19	4	24			E258M27		E263M27
30	3.50	180	45	22.0	18.0	21	4	26.5			E258M30		E263M30
33	3.50	180	50	25.0	20.0	23	4	29.5			E258M33		E263M33
36	4.00	200	55	28.0	22.0	25	4	32			E258M36		E263M36

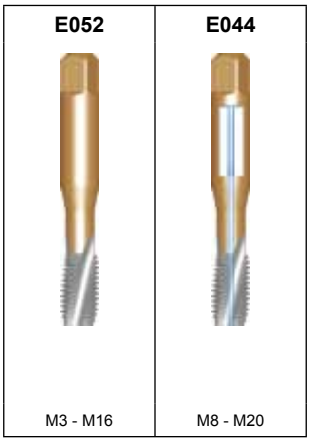


E052
E044

- M Machine Tap Spiral Flute 15º
- M Maschinen-Gewindebohrer, rechtsgedrallte Nuten
- M Machinetappen met gespiraliseerde spaangroeven 15°
- M Tarauds machine goujures hélicoidales 15º
- M Machos de máquina Estrías helicoidales a 15º
- M Macho de Máquina Canal Helicoidal 15º

E052	▪	1.4	1.5	6.2	6.3	7.2	7.3	7.4
	▪	1.1	1.2	1.3	6.1	7.1		
E044	▪	1.4	1.5	1.6				
	▪	1.1	1.2	1.3	4.2	5.2		





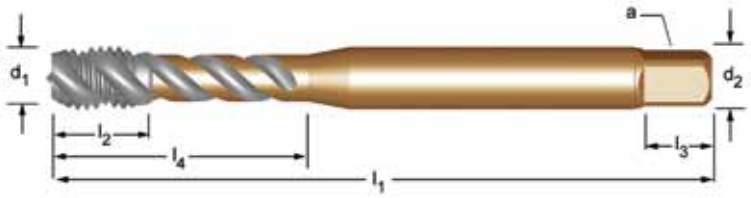
M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E052	E044
3	0.50	48	12.5	3.15	2.50	5	3	2.5	12.5	E052M3	
4	0.70	53	14	4.00	3.15	6	3	3.3	14	E052M4	
5	0.80	58	11	5.00	4.00	7	3	4.2	22	E052M5	
6	1.00	66	13	6.30	5.00	8	3	5	26	E052M6	
8	1.25	72	16	8.00	6.30	9	3	6.8	29	E052M8	
8	1.25	72	17	8.00	6.30	8	3	6.8	32		E044M8
10	1.50	80	18	10.00	8.00	11	3	8.5	34	E052M10	
10	1.50	80	20	10.00	8.00	9	3	8.5	36		E044M10
12	1.75	89	22	9.00	7.10	10	3	10.3		E052M12	E044M12
16	2.00	102	24	12.50	10.00	13	4	14		E052M16	E044M16
20	2.50	112	29	14.00	11.20	14	4	17.5			E044M20

EX006H	M	DIN 371≤10 376≥12	6H		2.5XD	HSS-E	C 2-3	λ45°			L119 c 107
EX006G	M	DIN 371≤10 376≥12	6G		2.5XD	HSS-E	C 2-3	λ45°			
EX00TIN	M	DIN 371≤10 376≥12	6H		2.5XD	HSS-E	C 2-3	λ45°		TiN	
EX016H	M	DIN 371≤10 376≥12	6H		2.5XD	HSS-E	C 2-3	λ45°		ST	

EX006H
EX006G
EX00TIN
EX016H

- M Machine Tap Spiral Flute 45º
- M Maschinen-Gewindebohrer, rechtsgedrallte Nuten 45º
- M Machinetappen met gespiraliseerde spaangroeven 45°
- M Tarauds machine goujures hélicoidales 45º
- M Machos de máquina Estrías helicoidales a 45º
- M Macho de Máquina Canal Helicoidal 45º

EX006H; EX006G	▪	1.1 1.2 1.3 1.4 1.5 7.1 7.2 7.3 7.4
	•	4.1 4.2 5.1 5.2
EX00TIN	▪	1.1 1.2 1.3 1.4 1.5 2.1 2.2 7.3 7.4
	•	1.6 2.3 3.1 3.2 3.3 3.4 4.1 4.2 5.1 5.2
EX016H	▪	1.1 1.2 1.3 1.4 1.5 2.1 2.2
	•	2.3

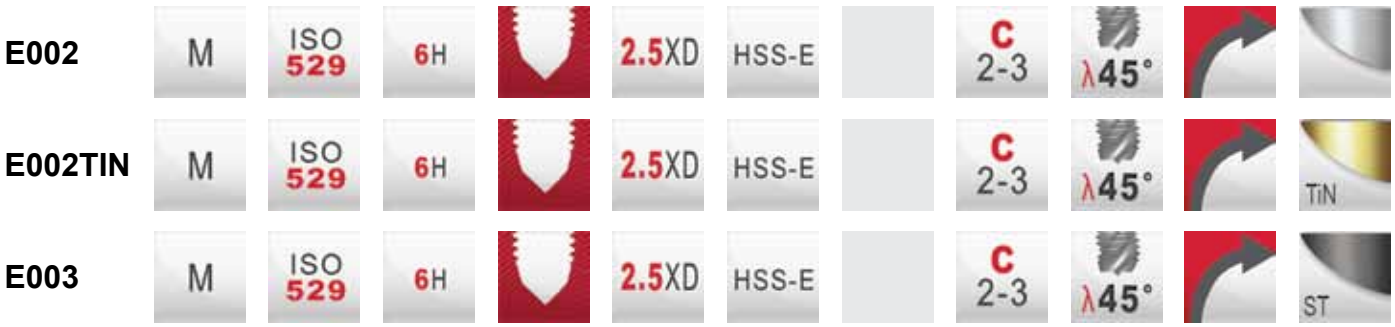


EX006H	EX006G	EX00TIN	EX016H
M2 - M64	M3 - M20	M3 - M30	M2 - M64

M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	EX006H	EX006G	EX00TIN	EX016H
2	0.40	45	4	2.8	2.1	5	3	1.6	9	EX00M2			EX01M2
2.5	0.45	50	4	2.8	2.1	5	3	2.05	12.5	EX00M2.5			EX01M2.5
3	0.50	56	6	3.5	2.7	6	3	2.5	18	EX00M3	EX00M36G	EX00TINM3	EX01M3
3.5	0.60	56	7	4.0	3.0	6	3	2.9	20	EX00M3.5			EX01M3.5
4	0.70	63	7	4.5	3.4	6	3	3.3	21	EX00M4	EX00M46G	EX00TINM4	EX01M4
5	0.80	70	8	6.0	4.9	8	3	4.2	25	EX00M5	EX00M56G	EX00TINM5	EX01M5
6	1.00	80	10	6.0	4.9	8	3	5	31	EX00M6	EX00M66G	EX00TINM6	EX01M6
6	1.00	80	10	4.5	3.4	6	3	5		EX00M6DIN376			EX01M6DIN376
7	1.00	80	10	7.0	5.5	8	3	6	31	EX00M7			EX01M7
8	1.25	90	12	8.0	6.2	9	3	6.8	35	EX00M8	EX00M86G	EX00TINM8	EX01M8
8	1.25	90	13	6.0	4.9	8	3	6.8		EX00M8DIN376			EX01M8DIN376
10	1.50	100	15	10.0	8.0	11	3	8.5	39	EX00M10	EX00M106G	EX00TINM10	EX01M10
10	1.50	100	15	7.0	5.5	8	3	8.5		EX00M10DIN376			EX01M10DIN376
12	1.75	110	16	9.0	7.0	10	3	10.3		EX00M12	EX00M126G	EX00TINM12	EX01M12
14	2.00	110	20	11.0	9.0	12	3	12		EX00M14	EX00M146G	EX00TINM14	EX01M14
16	2.00	110	20	12.0	9.0	12	4	14		EX00M16	EX00M166G	EX00TINM16	EX01M16

M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	EX006H	EX006G	EX00TIN	EX016H
18	2.50	125	25	14.0	11.0	14	4	15.5		EX00M18		EX00TINM18	EX01M18
20	2.50	140	25	16.0	12.0	15	4	17.5		EX00M20	EX00M206G	EX00TINM20	EX01M20
22	2.50	140	25	18.0	14.5	17	4	19.5		EX00M22		EX00TINM22	EX01M22
24	3.00	160	30	18.0	14.5	17	4	21		EX00M24		EX00TINM24	EX01M24
27	3.00	160	30	20.0	16.0	19	4	24		EX00M27		EX00TINM27	EX01M27
30	3.50	180	36	22.0	18.0	21	4	26.5		EX00M30		EX00TINM30	EX01M30
33	3.50	180	36	25.0	20.0	23	4	29.5		EX00M33			EX01M33
36	4.00	200	40	28.0	22.0	25	4	32		EX00M36			EX01M36
39	4.00	200	40	32.0	24.0	27	4	35		EX00M39			EX01M39
42	4.50	200	45	32.0	24.0	27	4	37.5		EX00M42			EX01M42
48	5.00	250	50	36.0	29.0	32	4	43		EX00M48			EX01M48
52	5.00	250	50	40.0	32.0	35	5	47		EX00M52			EX01M52
56	5.50	250	55	40.0	32.0	35	5	50.5		EX00M56			EX01M56
64	6.00	315	60	50.0	39.0	42	6	58		EX00M64			EX01M64

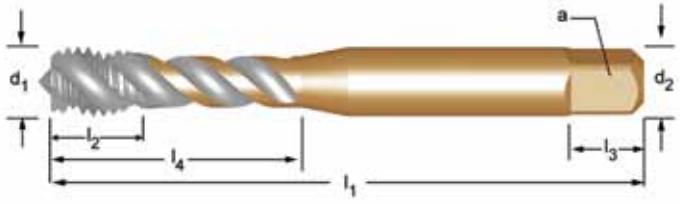
DORMER



E002
E002TIN
E003

- M Machine Tap Spiral Flute 45º
- M Maschinen-Gewindebohrer, rechtsgedrallte Nuten 45º
- M Machinetappen met gespiraliseerde spaangroeven 45°
- M Tarauds machine goujures hélicoidales 45º
- M Machos de máquina Estrías helicoidales a 45º
- M Macho de Máquina Canal Helicoidal 45º

E002	▪	1.1	1.2	1.3	1.4	1.5	7.1	7.2	7.3	7.4
	•	4.1	4.2	5.1	5.2					
E002TIN	▪	1.1	1.2	1.3	1.4	1.5	2.1	2.2	7.3	7.4
	•	1.6	2.3	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2
E003	▪	1.1	1.2	1.3	1.4	1.5				
	•	2.1	2.2	2.3						



E002	E002TIN	E003
M2 - M24	M3 - M20	M2 - M24

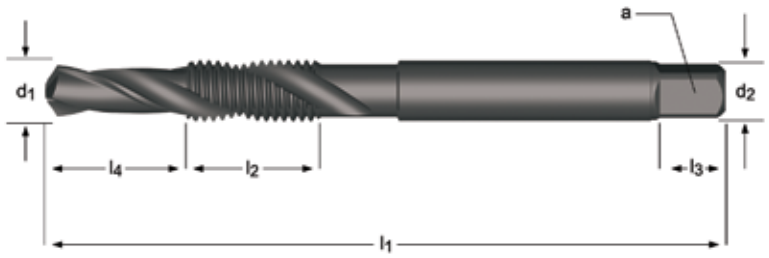
M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E002	E002TIN	E003
2	0.40	41	8	2.50	2.00	4	3	1.6	8	E002M2		E003M2
2.5	0.45	44.5	9.5	2.80	2.24	5	3	2.05	9.5	E002M2.5		E003M2.5
3	0.50	48	6	3.15	2.50	5	3	2.5	12.5	E002M3	E002TINM3	E003M3
3.5	0.60	50	16	3.55	2.80	5	3	2.9	16	E002M3.5		E003M3.5
4	0.70	53	7	4.00	3.15	6	3	3.3	19	E002M4	E002TINM4	E003M4
5	0.80	58	8	5.00	4.00	7	3	4.2	22	E002M5	E002TINM5	E003M5
6	1.00	66	10	6.30	5.00	8	3	5.0	27	E002M6	E002TINM6	E003M6
7	1.00	66	13	7.10	5.60	8	3	6	26	E002M7		E003M7
8	1.25	72	12	8.00	6.30	9	3	6.8	31	E002M8	E002TINM8	E003M8
10	1.50	80	15	10.00	8.00	11	3	8.5	35	E002M10	E002TINM10	E003M10
12	1.75	89	16	9.00	7.10	10	3	10.3		E002M12	E002TINM12	E003M12
14	2.00	95	18	11.20	9.00	12	3	12.0		E002M14		E003M14
16	2.00	102	18	12.50	10.00	13	4	14.0		E002M16	E002TINM16	E003M16
18	2.50	112	29	14.00	11.20	14	4	15.5		E002M18		E003M18
20	2.50	112	29	14.00	11.20	14	4	17.5		E002M20	E002TINM20	E003M20
22	2.50	118	29	16.00	12.50	16	4	19.5		E002M22		E003M22
24	3.00	130	35	18.00	14.00	18	4	21.0		E002M24		E003M24

E650 M | DORMER ISO | 6H | 1.5XD | HSS | C 2-3 | λ30° | ST | L126 c 107

E650

- M Combi Taps Spiral Flute 30º
- M Kombination Bohrer-Gewindebohrer, rechtsgedrallte Nuten 30º
- M Combi boortappen met gespiraliseerde spaangroeven 30°
- M Foret taraudeur goujures hélicoidales 30º
- M Combinación broca-macho Estrías helicoidales a 30º
- M Macho Broca Canal Helicoidal 30º

E650 • 1.1 1.2 1.3 1.4 3.2 6.2 6.3 7.1 7.2 8.1



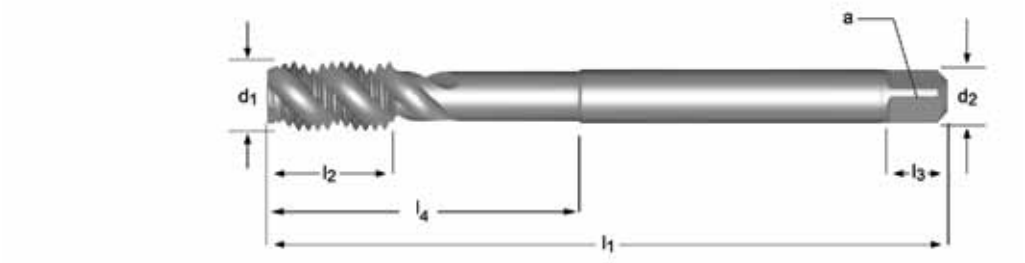
M	P mm	d_1 Ø mm	l_1 mm	l_2 mm	l_4 mm	d_2 Ø mm	▨ a mm	l_3 mm	z	E650
3	0.50	2.5	56	10	6	3.15	2.5	5.0	2	E650M3
4	0.70	3.3	65	12	8	4.0	3.15	6.0	2	E650M4
5	0.80	4.2	69	15	10	5.0	4.00	7.0	2	E650M5
6	1.00	5.0	84	18	12	6.3	5.00	8.0	2	E650M6
8	1.25	6.8	96	21	16	8.0	6.30	9.0	2	E650M8
10	1.50	8.5	108	22	20	10.0	8.00	11.0	2	E650M10
12	1.75	10.2	113	29	24	9.0	7.10	10.0	2	E650M12
14	2.00	12.0	123	30	28	11.2	9.00	12.0	2	E650M14
16	2.00	14.0	134	32	32	12.5	10.00	13.0	2	E650M16

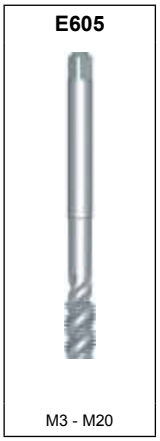
E605 M ISO 2283 6H 2XD HSS-E C 2-3 λ40°

E605

- M Machine Tap, Extra Long Spiral Flute 40º
- M Maschinen-Gewindebohrer, extra lang, rechtsgedrallte Nuten 40º
- M Machinetappen, extra lang met gespiraliseerde spaangroeven 40°
- M Tarauds machine, Extra Long goujures hélicoidales 40º
- M Machos de máquina Extra largo Estrías helicoidales a 40º
- M Macho de Máq., Extra Longa Canal Helicoidal 40º

E605 • 1.2 1.3 1.4 1.5 2.1 2.2 2.3 5.2 7.1 7.2 7.3 7.4





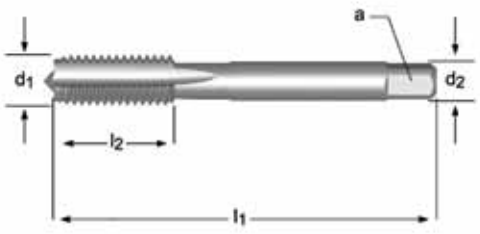
M	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E605
3	0.50	66	9	3.15	2.50	5	2	2.5	21	E605M3
4	0.70	73	9	4.00	3.15	6	2	3.3	22	E605M4
5	0.80	79	12	5.00	4.00	7	3	4.2	26	E605M5
6	1.00	89	12	6.30	5.00	8	3	5	29	E605M6
8	1.25	97	12	6.30	5.00	8	3	6.8		E605M8
10	1.50	108	14	8.00	6.30	9	3	8.5		E605M10
12	1.75	119	23	9.00	7.10	10	3	10.3		E605M12
14	2.00	127	25	11.20	9.00	12	3	12		E605M14
16	2.00	137	25	12.50	10.00	13	3	14		E605M16
20	2.50	149	30	14.00	11.20	14	3	17.5		E605M20

E105 | MF | DIN 2181 | 6H | 1.5XD | HSS | C 2-3

E105

- MF Hand Tap Straight Flute
- MF Handgewindebohrer, geradegenutet
- MF Handtappen met rechte spaangroeven
- MF Tarauds à main Goujures droites
- MF Machos de mano Estrías rectas
- MF Machos Manuais Canais Direitos

E105 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 3.4 6.1 6.2 6.3 6.4 7.2 7.3 7.4 8.2 8.3



MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		E105
2.5	0.35	40	9	2.8	2.1	3	2.15	E105M2.5X.35NO3
2.5	0.35	40	9	2.8	2.1	3	2.15	E105M2.5X.35NO5
2.5	0.35	40	9	2.8	2.1	3	2.15	E105M2.5X.35NO9
3	0.35	40	9	3.5	2.7	3	2.65	E105M3X.35NO3
3	0.35	40	9	3.5	2.7	3	2.65	E105M3X.35NO5
3	0.35	40	9	3.5	2.7	3	2.65	E105M3X.35NO9
3.5	0.35	45	10	4.0	3.0	3	3.2	E105M3.5X.35NO3
3.5	0.35	45	10	4.0	3.0	3	3.2	E105M3.5X.35NO5
3.5	0.35	45	10	4.0	3.0	3	3.2	E105M3.5X.35NO9
4	0.50	45	12	4.5	3.4	3	3.5	E105M4X.5NO3
4	0.50	45	12	4.5	3.4	3	3.5	E105M4X.5NO5
4	0.50	45	12	4.5	3.4	3	3.5	E105M4X.5NO9
5	0.50	50	14	6.0	4.9	3	4.5	E105M5X.5NO3
5	0.50	50	14	6.0	4.9	3	4.5	E105M5X.5NO5
5	0.50	50	14	6.0	4.9	3	4.5	E105M5X.5NO9
5.5	0.50	56	16	6.0	4.9	3	5	E105M5.5X.5NO9
6	0.75	56	16	6.0	4.9	3	5.3	E105M6X.75NO3
6	0.75	56	16	6.0	4.9	3	5.3	E105M6X.75NO5
6	0.75	56	16	6.0	4.9	3	5.3	E105M6X.75NO9
7	0.75	56	16	6.0	4.9	3	6.3	E105M7X.75NO3
7	0.75	56	16	6.0	4.9	3	6.3	E105M7X.75NO5
7	0.75	56	16	6.0	4.9	3	6.3	E105M7X.75NO9
8	0.75	56	16	6.0	4.9	3	7.3	E105M8X.75NO3
8	0.75	56	16	6.0	4.9	3	7.3	E105M8X.75NO5
8	0.75	56	16	6.0	4.9	3	7.3	E105M8X.75NO9
8	1.00	63	19	6.0	4.9	3	7	E105M8X1.0NO3
8	1.00	63	19	6.0	4.9	3	7	E105M8X1.0NO5
8	1.00	63	19	6.0	4.9	3	7	E105M8X1.0NO9
9	0.75	63	19	7.0	5.5	3	8.3	E105M9X.75NO3
9	0.75	63	19	7.0	5.5	3	8.3	E105M9X.75NO5
9	0.75	63	19	7.0	5.5	3	8.3	E105M9X.75NO9
9	1.00	63	19	7.0	5.5	3	8	E105M9X1.0NO3
9	1.00	63	19	7.0	5.5	3	8	E105M9X1.0NO5
9	1.00	63	19	7.0	5.5	3	8	E105M9X1.0NO9
10	0.75	63	16	7.0	5.5	3	9.3	E105M10X.75NO3
10	0.75	63	16	7.0	5.5	3	9.3	E105M10X.75NO5

NO1 NO9 C 10

DORMER

MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		E105
10	0.75	63	16	7.0	5.5	3	9.3	E105M10X.75NO9
10	1.00	63	16	7.0	5.5	3	9	E105M10X1.0NO3
10	1.00	63	16	7.0	5.5	3	9	E105M10X1.0NO5
10	1.00	63	16	7.0	5.5	3	9	E105M10X1.0NO9
10	1.25	70	22	7.0	5.5	3	8.8	E105M10X1.25NO3
10	1.25	70	22	7.0	5.5	3	8.8	E105M10X1.25NO5
10	1.25	70	22	7.0	5.5	3	8.8	E105M10X1.25NO9
11	0.75	63	15	8.0	6.2	3	10.3	E105M11X.75NO3
11	0.75	63	15	8.0	6.2	3	10.3	E105M11X.75NO5
11	0.75	63	15	8.0	6.2	3	10.3	E105M11X.75NO9
11	1.00	63	15	8.0	6.2	3	10	E105M11X1.0NO3
11	1.00	63	15	8.0	6.2	3	10	E105M11X1.0NO5
11	1.00	63	15	8.0	6.2	3	10	E105M11X1.0NO9
12	1.00	70	16	9.0	7.0	3	11	E105M12X1.0NO3
12	1.00	70	16	9.0	7.0	3	11	E105M12X1.0NO5
12	1.00	70	16	9.0	7.0	3	11	E105M12X1.0NO9
12	1.25	70	16	9.0	7.0	3	10.8	E105M12X1.25NO3
12	1.25	70	16	9.0	7.0	3	10.8	E105M12X1.25NO5
12	1.25	70	16	9.0	7.0	3	10.8	E105M12X1.25NO9
12	1.50	70	16	9.0	7.0	3	10.5	E105M12X1.5NO3
12	1.50	70	16	9.0	7.0	3	10.5	E105M12X1.5NO5
12	1.50	70	16	9.0	7.0	3	10.5	E105M12X1.5NO9
14	1.00	70	16	11.0	9.0	4	13	E105M14X1.0NO3
14	1.00	70	16	11.0	9.0	4	13	E105M14X1.0NO5
14	1.00	70	16	11.0	9.0	4	13	E105M14X1.0NO9
14	1.25	70	16	11.0	9.0	4	12.8	E105M14X1.25NO3
14	1.25	70	16	11.0	9.0	4	12.8	E105M14X1.25NO5
14	1.25	70	16	11.0	9.0	4	12.8	E105M14X1.25NO9
14	1.50	70	16	11.0	9.0	4	12.5	E105M14X1.5NO3
14	1.50	70	16	11.0	9.0	4	12.5	E105M14X1.5NO5
14	1.50	70	16	11.0	9.0	4	12.5	E105M14X1.5NO9
15	1.00	70	16	12.0	9.0	4	14	E105M15X1.0NO3
15	1.00	70	16	12.0	9.0	4	14	E105M15X1.0NO5
15	1.00	70	16	12.0	9.0	4	14	E105M15X1.0NO9
15	1.50	70	16	12.0	9.0	4	13.5	E105M15X1.5NO3
15	1.50	70	16	12.0	9.0	4	13.5	E105M15X1.5NO5
15	1.50	70	16	12.0	9.0	4	13.5	E105M15X1.5NO9
16	1.00	70	16	12.0	9.0	4	15	E105M16X1.0NO3
16	1.00	70	16	12.0	9.0	4	15	E105M16X1.0NO5
16	1.00	70	16	12.0	9.0	4	15	E105M16X1.0NO9
16	1.50	70	16	12.0	9.0	4	14.5	E105M16X1.5NO3
16	1.50	70	16	12.0	9.0	4	14.5	E105M16X1.5NO5
16	1.50	70	16	12.0	9.0	4	14.5	E105M16X1.5NO9
18	1.00	80	18	14.0	11.0	4	17	E105M18X1.0NO3
18	1.00	80	18	14.0	11.0	4	17	E105M18X1.0NO5
18	1.00	80	18	14.0	11.0	4	17	E105M18X1.0NO9
18	1.50	80	18	14.0	11.0	4	16.5	E105M18X1.5NO3
18	1.50	80	18	14.0	11.0	4	16.5	E105M18X1.5NO5
18	1.50	80	18	14.0	11.0	4	16.5	E105M18X1.5NO9
20	1.00	80	18	16.0	12.0	4	19	E105M20X1.0NO3
20	1.00	80	18	16.0	12.0	4	19	E105M20X1.0NO5
20	1.00	80	18	16.0	12.0	4	19	E105M20X1.0NO9
20	1.50	80	18	16.0	12.0	4	18.5	E105M20X1.5NO3
20	1.50	80	18	16.0	12.0	4	18.5	E105M20X1.5NO5
20	1.50	80	18	16.0	12.0	4	18.5	E105M20X1.5NO9
22	1.00	80	22	18.0	14.5	4	21	E105M22X1.0NO3
22	1.00	80	22	18.0	14.5	4	21	E105M22X1.0NO5
22	1.00	80	22	18.0	14.5	4	21	E105M22X1.0NO9
22	1.50	80	22	18.0	14.5	4	20.5	E105M22X1.5NO3
22	1.50	80	22	18.0	14.5	4	20.5	E105M22X1.5NO5
22	1.50	80	22	18.0	14.5	4	20.5	E105M22X1.5NO9
24	1.00	90	22	18.0	14.5	4	23	E105M24X1.0NO3
24	1.00	90	22	18.0	14.5	4	23	E105M24X1.0NO5
24	1.00	90	22	18.0	14.5	4	23	E105M24X1.0NO9
24	1.50	90	22	18.0	14.5	4	22.5	E105M24X1.5NO3
24	1.50	90	22	18.0	14.5	4	22.5	E105M24X1.5NO5
24	1.50	90	22	18.0	14.5	4	22.5	E105M24X1.5NO9
24	2.00	90	22	18.0	14.5	4	22	E105M24X2.0NO3
24	2.00	90	22	18.0	14.5	4	22	E105M24X2.0NO5
24	2.00	90	22	18.0	14.5	4	22	E105M24X2.0NO9

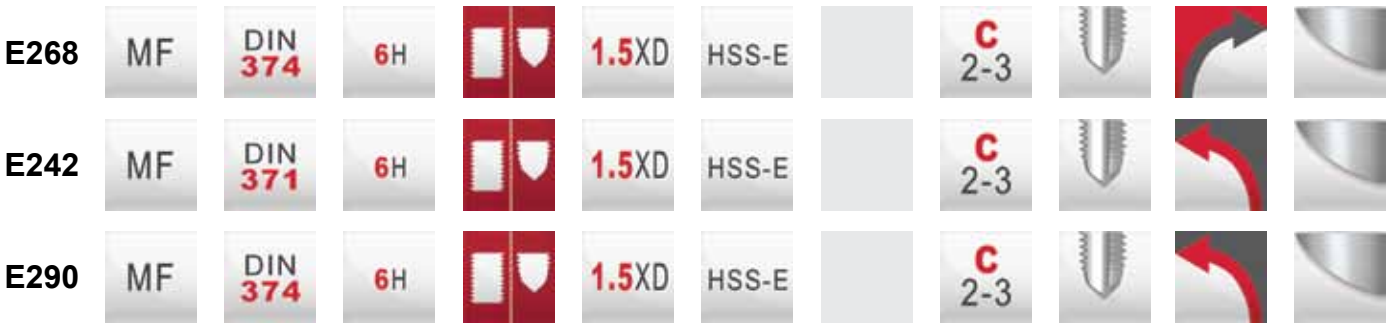
c 10

MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		E105
25	1.50	90	22	18.0	14.5	4	23.5	E105M25X1.5NO3
25	1.50	90	22	18.0	14.5	4	23.5	E105M25X1.5NO5
25	1.50	90	22	18.0	14.5	4	23.5	E105M25X1.5NO9
25	2.00	90	22	18.0	14.5	4	23	E105M25X2.0NO3
25	2.00	90	22	18.0	14.5	4	23	E105M25X2.0NO9
25	2.00	90	22	18.0	14.5	4	23	E105M25X2.0NO5
27	1.50	90	22	20.0	16.0	4	25.5	E105M27X1.5NO3
27	1.50	90	22	20.0	16.0	4	25.5	E105M27X1.5NO5
27	1.50	90	22	20.0	16.0	4	25.5	E105M27X1.5NO9
27	2.00	90	22	20.0	16.0	4	25	E105M27X2.0NO3
27	2.00	90	22	20.0	16.0	4	25	E105M27X2.0NO5
27	2.00	90	22	20.0	16.0	4	25	E105M27X2.0NO9
28	1.50	90	22	20.0	16.0	4	26.5	E105M28X1.5NO3
28	1.50	90	22	20.0	16.0	4	26.5	E105M28X1.5NO5
28	1.50	90	22	20.0	16.0	4	26.5	E105M28X1.5NO9
28	2.00	90	22	20.0	16.0	4	26	E105M28X2.0NO3
28	2.00	90	22	20.0	16.0	4	26	E105M28X2.0NO5
28	2.00	90	22	20.0	16.0	4	26	E105M28X2.0NO9
30	1.50	90	22	22.0	18.0	4	28.5	E105M30X1.5NO3
30	1.50	90	22	22.0	18.0	4	28.5	E105M30X1.5NO5
30	1.50	90	22	22.0	18.0	4	28.5	E105M30X1.5NO9
30	2.00	90	22	22.0	18.0	4	28	E105M30X2.0NO3
30	2.00	90	22	22.0	18.0	4	28	E105M30X2.0NO5
30	2.00	90	22	22.0	18.0	4	28	E105M30X2.0NO9
32	1.50	90	22	22.0	18.0	4	30.5	E105M32X1.5NO3
32	1.50	90	22	22.0	18.0	4	30.5	E105M32X1.5NO5
32	1.50	90	22	22.0	18.0	4	30.5	E105M32X1.5NO9
32	2.00	90	22	22.0	18.0	4	30	E105M32X2.0NO3
32	2.00	90	22	22.0	18.0	4	30	E105M32X2.0NO5
32	2.00	90	22	22.0	18.0	4	30	E105M32X2.0NO9
36	1.50	100	25	28.0	22.0	4	34.5	E105M36X1.5NO3
36	1.50	100	25	28.0	22.0	4	34.5	E105M36X1.5NO5
36	1.50	100	25	28.0	22.0	4	34.5	E105M36X1.5NO9
36	2.00	125	40	28.0	22.0	4	34	E105M36X2.0NO3
36	2.00	125	40	28.0	22.0	4	34	E105M36X2.0NO5
36	2.00	125	40	28.0	22.0	4	34	E105M36X2.0NO9
36	3.00	125	40	28.0	22.0	4	33	E105M36X3.0NO3
36	3.00	125	40	28.0	22.0	4	33	E105M36X3.0NO5
36	3.00	125	40	28.0	22.0	4	33	E105M36X3.0NO9
40	1.50	110	25	32.0	24.0	4	38.5	E105M40X1.5NO3
40	1.50	110	25	32.0	24.0	4	38.5	E105M40X1.5NO5
40	1.50	110	25	32.0	24.0	4	38.5	E105M40X1.5NO9
40	2.00	125	40	32.0	24.0	4	38	E105M40X2.0NO3
40	2.00	125	40	32.0	24.0	4	38	E105M40X2.0NO5
40	2.00	125	40	32.0	24.0	4	38	E105M40X2.0NO9
40	3.00	125	40	32.0	24.0	4	37	E105M40X3.0NO3
40	3.00	125	40	32.0	24.0	4	37	E105M40X3.0NO5
40	3.00	125	40	32.0	24.0	4	37	E105M40X3.0NO9
42	1.50	110	25	32.0	24.0	4	40.5	E105M42X1.5NO3
42	1.50	110	25	32.0	24.0	4	40.5	E105M42X1.5NO5
42	1.50	110	25	32.0	24.0	4	40.5	E105M42X1.5NO9
42	2.00	125	40	32.0	24.0	4	40	E105M42X2.0NO3
42	2.00	125	40	32.0	24.0	4	40	E105M42X2.0NO5
42	2.00	125	40	32.0	24.0	4	40	E105M42X2.0NO9
42	3.00	125	40	32.0	24.0	4	39	E105M42X3.0NO3
42	3.00	125	40	32.0	24.0	4	39	E105M42X3.0NO5
42	3.00	125	40	32.0	24.0	4	39	E105M42X3.0NO9
45	1.50	110	25	36.0	29.0	6	43.5	E105M45X1.5NO3
45	1.50	110	25	36.0	29.0	6	43.5	E105M45X1.5NO5
45	1.50	110	25	36.0	29.0	6	43.5	E105M45X1.5NO9
45	2.00	125	40	36.0	29.0	6	43	E105M45X2.0NO3
45	2.00	125	40	36.0	29.0	6	43	E105M45X2.0NO5
45	2.00	125	40	36.0	29.0	6	43	E105M45X2.0NO9
45	3.00	125	40	36.0	29.0	6	42	E105M45X3.0NO3
45	3.00	125	40	36.0	29.0	6	42	E105M45X3.0NO5
45	3.00	125	40	36.0	29.0	6	42	E105M45X3.0NO9
48	1.50	140	40	36.0	29.0	6	46.5	E105M48X1.5NO3
48	1.50	140	40	36.0	29.0	6	46.5	E105M48X1.5NO5

DORMER

MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		E105
48	1.50	140	40	36.0	29.0	6	46.5	E105M48X1.5NO9
48	2.00	140	40	36.0	29.0	6	46	E105M48X2.0NO3
48	2.00	140	40	36.0	29.0	6	46	E105M48X2.0NO5
48	2.00	140	40	36.0	29.0	6	46	E105M48X2.0NO9
48	3.00	140	40	36.0	29.0	6	45	E105M48X3.0NO3
48	3.00	140	40	36.0	29.0	6	45	E105M48X3.0NO5
48	3.00	140	40	36.0	29.0	6	45	E105M48X3.0NO9
50	1.50	140	40	36.0	29.0	6	48.5	E105M50X1.5NO3
50	1.50	140	40	36.0	29.0	6	48.5	E105M50X1.5NO5
50	1.50	140	40	36.0	29.0	6	48.5	E105M50X1.5NO9
50	2.00	140	40	36.0	29.0	6	48	E105M50X2.0NO3
50	2.00	140	40	36.0	29.0	6	48	E105M50X2.0NO5
50	2.00	140	40	36.0	29.0	6	48	E105M50X2.0NO9
50	3.00	140	40	36.0	29.0	6	47	E105M50X3.0NO3
50	3.00	140	40	36.0	29.0	6	47	E105M50X3.0NO5
50	3.00	140	40	36.0	29.0	6	47	E105M50X3.0NO9

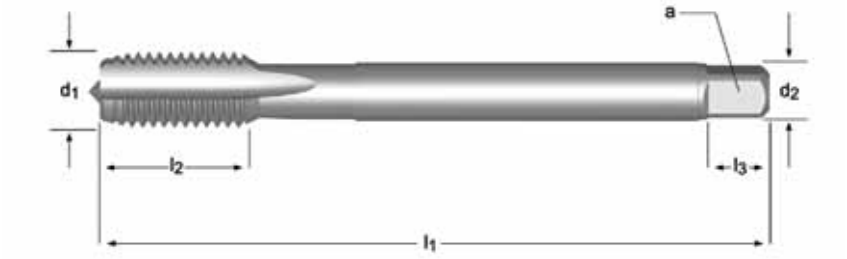
NO1
NO9
c 10

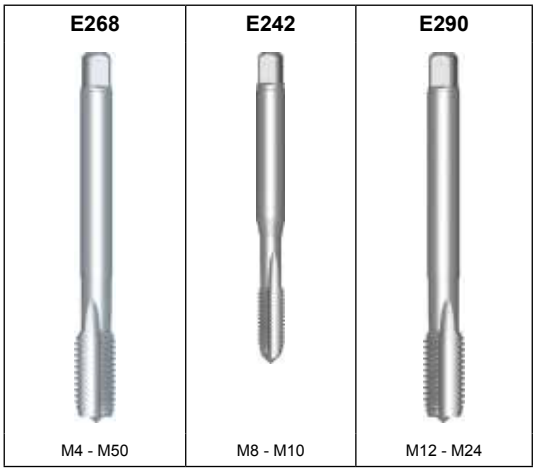


E268
E242
E290

- MF Machine Tap Straight Flute
- MF Maschinen-Gewindebohrer, geradegenutet
- MF Machinetappen met rechte spaangroeven
- MF Tarauds machine Goujures droites
- MF Machos de máquina Estrías rectas
- MF Macho de Máquina Canais Direitos

E268; E242; E290 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 6.2 6.3 7.2 7.3 8.2





MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E268	E242	E290
4	0.50	63	10	2.8	2.1	5	3	3.5		E268M4X.5		
5	0.50	70	13	3.5	2.7	6	3	4.5		E268M5X.5		
6	0.75	80	15	4.5	3.4	6	3	5.3		E268M6X.75		
7	0.75	80	15	5.5	4.3	7	3	6.3		E268M7X.75		
8	0.75	80	15	6.0	4.9	8	3	7.3		E268M8X.75		
8	1.00	90	18	6.0	4.9	8	3	7		E268M8X1.0		
8	1.00	90	18	8.0	6.2	9	3	7	35		E242M8X1.0	
9	1.00	90	18	6.0	4.9	8	3	8		E268M9X1.0		
10	0.75	90	20	7.0	5.5	8	3	9.3		E268M10X.75		
10	1.00	100	20	10.0	8.0	11	3	9	39		E242M10X1.0	
10	1.00	90	20	7.0	5.5	8	3	9		E268M10X1.0		
10	1.25	100	20	7.0	5.5	8	3	8.8		E268M10X1.25		
11	1.00	90	20	8.0	6.2	9	3	10		E268M11X1.0		
12	1.00	100	21	9.0	7.0	10	4	11		E268M12X1.0		E290M12X1.0
12	1.25	100	21	9.0	7.0	10	4	10.8		E268M12X1.25		
12	1.50	100	21	9.0	7.0	10	4	10.5		E268M12X1.5		E290M12X1.5
14	1.00	100	21	11.0	9.0	12	4	13		E268M14X1.0		E290M14X1.0
14	1.25	100	21	11.0	9.0	12	4	12.8		E268M14X1.25		
14	1.50	100	21	11.0	9.0	12	4	12.5		E268M14X1.5		E290M14X1.5
15	1.50	100	21	12.0	9.0	12	4	13.5		E268M15X1.5		
16	1.00	100	21	12.0	9.0	12	4	15		E268M16X1.0		E290M16X1.0
16	1.50	100	21	12.0	9.0	12	4	14.5		E268M16X1.5		E290M16X1.5
18	1.00	110	24	14.0	11.0	14	4	17		E268M18X1.0		
18	1.50	110	24	14.0	11.0	14	4	16.5		E268M18X1.5		E290M18X1.5
20	1.00	125	24	16.0	12.0	15	4	19		E268M20X1.0		
20	1.50	125	24	16.0	12.0	15	4	18.5		E268M20X1.5		E290M20X1.5
22	1.00	125	25	18.0	14.5	17	4	21		E268M22X1.0		
22	1.50	125	25	18.0	14.5	17	4	20.5		E268M22X1.5		E290M22X1.5

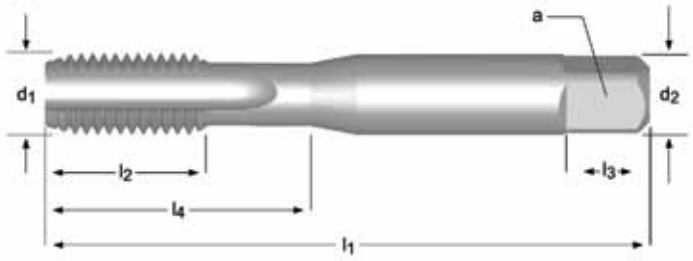
MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E268	E242	E290
24	1.00	140	28	18.0	14.5	17	4	23		E268M24X1.0		
24	1.50	140	28	18.0	14.5	17	4	22.5		E268M24X1.5		E290M24X1.5
24	2.00	140	28	18.0	14.5	17	4	22		E268M24X2.0		
25	1.50	140	28	18.0	14.5	17	4	23.5		E268M25X1.5		
25	2.00	140	28	18.0	14.5	17	4	23		E268M25X2.0		
26	1.50	140	28	18.0	14.5	17	4	24.5		E268M26X1.5		
26	2.00	140	28	18.0	14.5	17	4	24		E268M26X2.0		
27	1.50	140	28	20.0	16.0	19	4	25.5		E268M27X1.5		
27	2.00	140	28	20.0	16.0	19	4	25		E268M27X2.0		
28	1.50	140	28	20.0	16.0	19	4	26.5		E268M28X1.5		
28	2.00	140	28	20.0	16.0	19	4	26		E268M28X2.0		
30	1.50	150	28	22.0	18.0	21	4	28.5		E268M30X1.5		
30	2.00	150	28	22.0	18.0	21	4	28		E268M30X2.0		
32	1.50	150	28	22.0	18.0	21	4	30.5		E268M32X1.5		
32	2.00	150	28	22.0	18.0	21	4	30		E268M32X2.0		
33	1.50	160	30	25.0	20.0	23	4	31.5		E268M33X1.5		
34	1.50	170	30	28.0	22.0	25	4	32.5		E268M34X1.5		
35	1.50	170	30	28.0	22.0	25	4	33.5		E268M35X1.5		
36	1.50	170	30	28.0	22.0	25	4	34.5		E268M36X1.5		
36	2.00	170	30	28.0	22.0	25	4	34		E268M36X2.0		
36	3.00	200	55	28.0	22.0	25	4	33		E268M36X3.0		
40	1.50	170	30	32.0	24.0	27	4	38.5		E268M40X1.5		
40	2.00	170	30	32.0	24.0	27	4	38		E268M40X2.0		
40	3.00	200	60	32.0	24.0	27	4	37		E268M40X3.0		
42	1.50	170	30	32.0	24.0	27	4	40.5		E268M42X1.5		
42	2.00	170	30	32.0	24.0	27	4	40		E268M42X2.0		
42	3.00	200	60	32.0	24.0	27	4	39		E268M42X3.0		
45	1.50	180	32	36.0	29.0	32	6	43.5		E268M45X1.5		
45	2.00	180	32	36.0	29.0	32	6	43		E268M45X2.0		
45	3.00	200	42	36.0	29.0	32	6	42		E268M45X3.0		
48	1.50	190	32	36.0	29.0	32	6	46.5		E268M48X1.5		
48	2.00	190	32	36.0	29.0	32	6	46		E268M48X2.0		
48	3.00	225	50	36.0	29.0	32	6	45		E268M48X3.0		
50	1.50	190	32	36.0	29.0	32	6	48.5		E268M50X1.5		
50	2.00	190	30	36.0	29.0	32	6	48		E268M50X2.0		
50	3.00	225	50	36.0	29.0	32	6	47		E268M50X3.0		

E513 MF ISO 529 6H 1.5XD HSS

E513

- MF Machine Tap Straight Flute
- MF Maschinen-Gewindebohrer. geradegenutet
- MF Hand-/machinetappen met rechte spaangroeven
- MF Tarauds machine Goujures droites
- MF Machos de máquina Estrías rectas
- MF Macho de Máquina Canais Direitos

E513 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 3.4 6.1 6.2 6.3 6.4 7.2 7.3 7.4 8.2 8.3



E513

M3 - M50

MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E513
3	0.35	48	12.5	3.15	2.50	5	3	2.65	12.5	E513M3X.35NO1
3	0.35	48	12.5	3.15	2.50	5	3	2.65	12.5	E513M3X.35NO2
3	0.35	48	12.5	3.15	2.50	5	3	2.65	12.5	E513M3X.35NO3
3.5	0.35	48	12.5	3.15	2.50	5	3	3.2	12.5	E513M3.5X.35NO3
4	0.50	53	14	4.00	3.15	6	3	3.5	14	E513M4X.5NO1
4	0.50	53	14	4.00	3.15	6	3	3.5	14	E513M4X.5NO2
4	0.50	53	14	4.00	3.15	6	3	3.5	14	E513M4X.5NO3
4	0.50	53	14	4.00	3.15	6	3	3.5	14	E513M4X.5NO7
5	0.50	58	11	5.00	4.00	7	3	4.5	22	E513M5X.5NO1
5	0.50	58	11	5.00	4.00	7	3	4.5	22	E513M5X.5NO2
5	0.50	58	11	5.00	4.00	7	3	4.5	22	E513M5X.5NO3
5	0.50	58	11	5.00	4.00	7	3	4.5	22	E513M5X.5NO7
5	0.75	58	11	5.00	4.00	7	3	4.3	22	E513M5X.75NO1
5	0.75	58	11	5.00	4.00	7	3	4.3	22	E513M5X.75NO2
5	0.75	58	11	5.00	4.00	7	3	4.3	22	E513M5X.75NO3
6	0.50	66	13	6.30	5.00	8	3	5.5	26	E513M6X.5NO1
6	0.50	66	13	6.30	5.00	8	3	5.5	26	E513M6X.5NO2
6	0.50	66	13	6.30	5.00	8	3	5.5	26	E513M6X.5NO3
6	0.75	66	13	6.30	5.00	8	3	5.3	26	E513M6X.75NO1
6	0.75	66	13	6.30	5.00	8	3	5.3	26	E513M6X.75NO2
6	0.75	66	13	6.30	5.00	8	3	5.3	26	E513M6X.75NO3
6	0.75	66	13	6.30	5.00	8	3	5.3	26	E513M6X.75NO7
7	0.75	66	13	7.10	5.60	8	3	6.3	26	E513M7X.75NO1
7	0.75	66	13	7.10	5.60	8	3	6.3	26	E513M7X.75NO2
7	0.75	66	13	7.10	5.60	8	3	6.3	26	E513M7X.75NO3
8	0.50	72	16	8.00	6.30	9	3	7.5	29	E513M8X.5NO1
8	0.50	72	16	8.00	6.30	9	3	7.5	29	E513M8X.5NO2
8	0.50	72	16	8.00	6.30	9	3	7.5	29	E513M8X.5NO3
8	0.75	72	16	8.00	6.30	9	3	7.3	29	E513M8X.75NO1
8	0.75	72	16	8.00	6.30	9	3	7.3	29	E513M8X.75NO2
8	0.75	72	16	8.00	6.30	9	3	7.3	29	E513M8X.75NO3
8	0.75	72	16	8.00	6.30	9	3	7.3	29	E513M8X.75NO7
8	1.00	72	16	8.00	6.30	9	3	7	29	E513M8X1.0NO1
8	1.00	72	16	8.00	6.30	9	3	7	29	E513M8X1.0NO2
8	1.00	72	16	8.00	6.30	9	3	7	29	E513M8X1.0NO3
8	1.00	72	16	8.00	6.30	9	3	7	29	E513M8X1.0NO7

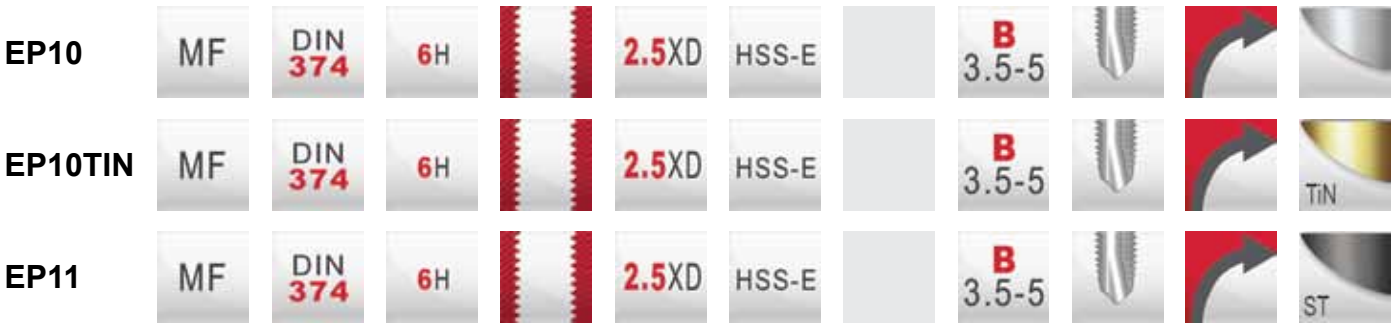
NO1 NO9 C 10

MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E513
9	0.75	72	16	9.00	7.10	10	3	8.3	29	E513M9X.75NO3
9	1.00	72	16	9.00	7.10	10	3	8	29	E513M9X1.0NO1
9	1.00	72	16	9.00	7.10	10	3	8	29	E513M9X1.0NO2
9	1.00	72	16	9.00	7.10	10	3	8	29	E513M9X1.0NO3
10	0.50	80	18	10.00	8.00	11	3	9.5	34	E513M10X.5NO3
10	0.75	80	18	10.00	8.00	11	3	9.3	34	E513M10X.75NO1
10	0.75	80	18	10.00	8.00	11	3	9.3	34	E513M10X.75NO2
10	0.75	80	18	10.00	8.00	11	3	9.3	34	E513M10X.75NO3
10	1.00	80	18	10.00	8.00	11	3	9	34	E513M10X1.0NO1
10	1.00	80	18	10.00	8.00	11	3	9	34	E513M10X1.0NO2
10	1.00	80	18	10.00	8.00	11	3	9	34	E513M10X1.0NO3
10	1.00	80	18	10.00	8.00	11	3	9	34	E513M10X1.0NO6
10	1.00	80	18	10.00	8.00	11	3	9	34	E513M10X1.0NO7
10	1.25	80	18	10.00	8.00	11	3	8.8	34	E513M10X1.25NO1
10	1.25	80	18	10.00	8.00	11	3	8.8	34	E513M10X1.25NO2
10	1.25	80	18	10.00	8.00	11	3	8.8	34	E513M10X1.25NO3
10	1.25	80	18	10.00	8.00	11	3	8.8	34	E513M10X1.25NO6
10	1.25	80	18	10.00	8.00	11	3	8.8	34	E513M10X1.25NO7
11	0.75	85	19	8.00	6.30	9	3	10.3		E513M11X.75NO1
11	0.75	85	19	8.00	6.30	9	3	10.3		E513M11X.75NO2
11	0.75	85	19	8.00	6.30	9	3	10.3		E513M11X.75NO3
11	1.00	85	19	8.00	6.30	9	3	10		E513M11X1.0NO1
11	1.00	85	19	8.00	6.30	9	3	10		E513M11X1.0NO2
11	1.00	85	19	8.00	6.30	9	3	10		E513M11X1.0NO3
11	1.25	85	19	8.00	6.30	9	3	9.8		E513M11X1.25NO3
12	0.75	89	22	9.00	7.10	10	3	11.3		E513M12X.75NO3
12	1.00	89	22	9.00	7.10	10	3	11		E513M12X1.0NO1
12	1.00	89	22	9.00	7.10	10	3	11		E513M12X1.0NO2
12	1.00	89	22	9.00	7.10	10	3	11		E513M12X1.0NO3
12	1.00	89	22	9.00	7.10	10	3	11		E513M12X1.0NO7
12	1.25	89	22	9.00	7.10	10	3	10.8		E513M12X1.25NO1
12	1.25	89	22	9.00	7.10	10	3	10.8		E513M12X1.25NO2
12	1.25	89	22	9.00	7.10	10	3	10.8		E513M12X1.25NO3
12	1.25	89	22	9.00	7.10	10	3	10.8		E513M12X1.25NO6
12	1.25	89	22	9.00	7.10	10	3	10.8		E513M12X1.25NO7
12	1.50	89	22	9.00	7.10	10	3	10.5		E513M12X1.5NO1
12	1.50	89	22	9.00	7.10	10	3	10.5		E513M12X1.5NO2
12	1.50	89	22	9.00	7.10	10	3	10.5		E513M12X1.5NO3
12	1.50	89	22	9.00	7.10	10	3	10.5		E513M12X1.5NO6
12	1.50	89	22	9.00	7.10	10	3	10.5		E513M12X1.5NO7
13	1.50	89	22	9.00	7.10	10	3	11.5		E513M13X1.5NO3
14	1.00	95	24	11.20	9.00	12	4	13		E513M14X1.0NO1
14	1.00	95	24	11.20	9.00	12	4	13		E513M14X1.0NO2
14	1.00	95	24	11.20	9.00	12	4	13		E513M14X1.0NO3
14	1.00	95	24	11.20	9.00	12	4	13		E513M14X1.0NO7
14	1.25	95	24	11.20	9.00	12	4	12.8		E513M14X1.25NO1
14	1.25	95	24	11.20	9.00	12	4	12.8		E513M14X1.25NO2
14	1.25	95	24	11.20	9.00	12	4	12.8		E513M14X1.25NO3
14	1.25	95	24	11.20	9.00	12	4	12.8		E513M14X1.25NO6
14	1.25	95	24	11.20	9.00	12	4	12.8		E513M14X1.25NO7
14	1.50	95	24	11.20	9.00	12	4	12.5		E513M14X1.5NO1
14	1.50	95	24	11.20	9.00	12	4	12.5		E513M14X1.5NO2
14	1.50	95	24	11.20	9.00	12	4	12.5		E513M14X1.5NO3
14	1.50	95	24	11.20	9.00	12	4	12.5		E513M14X1.5NO6
14	1.50	95	24	11.20	9.00	12	4	12.5		E513M14X1.5NO7
15	1.50	95	24	11.20	9.00	12	4	13.5		E513M15X1.5NO2
15	1.50	95	24	11.20	9.00	12	4	13.5		E513M15X1.5NO3
15	1.50	95	24	11.20	9.00	12	4	13.5		E513M15X1.5NO7
16	1.00	102	24	12.50	10.00	13	4	15		E513M16X1.0NO1
16	1.00	102	24	12.50	10.00	13	4	15		E513M16X1.0NO2
16	1.00	102	24	12.50	10.00	13	4	15		E513M16X1.0NO3
16	1.00	102	24	12.50	10.00	13	4	15		E513M16X1.0NO7
16	1.25	102	24	12.50	10.00	13	4	14.8		E513M16X1.25NO3
16	1.50	102	24	12.50	10.00	13	4	14.5		E513M16X1.5NO1
16	1.50	102	24	12.50	10.00	13	4	14.5		E513M16X1.5NO2
16	1.50	102	24	12.50	10.00	13	4	14.5		E513M16X1.5NO3
16	1.50	102	24	12.50	10.00	13	4	14.5		E513M16X1.5NO6
16	1.50	102	24	12.50	10.00	13	4	14.5		E513M16X1.5NO7

MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E513
18	1.00	112	29	14.00	11.20	14	4	17		E513M18X1.0NO1
18	1.00	112	29	14.00	11.20	14	4	17		E513M18X1.0NO2
18	1.00	112	29	14.00	11.20	14	4	17		E513M18X1.0NO3
18	1.00	112	29	14.00	11.20	14	4	17		E513M18X1.0NO7
18	1.50	112	29	14.00	11.20	14	4	16.5		E513M18X1.5NO1
18	1.50	112	29	14.00	11.20	14	4	16.5		E513M18X1.5NO2
18	1.50	112	29	14.00	11.20	14	4	16.5		E513M18X1.5NO3
18	1.50	112	29	14.00	11.20	14	4	16.5		E513M18X1.5NO6
18	1.50	112	29	14.00	11.20	14	4	16.5		E513M18X1.5NO7
18	2.00	112	29	14.00	11.20	14	4	16		E513M18X2.0NO1
18	2.00	112	29	14.00	11.20	14	4	16		E513M18X2.0NO2
18	2.00	112	29	14.00	11.20	14	4	16		E513M18X2.0NO3
18	2.00	112	29	14.00	11.20	14	4	16		E513M18X2.0NO7
20	1.00	112	29	14.00	11.20	14	4	19		E513M20X1.0NO1
20	1.00	112	29	14.00	11.20	14	4	19		E513M20X1.0NO2
20	1.00	112	29	14.00	11.20	14	4	19		E513M20X1.0NO3
20	1.00	112	29	14.00	11.20	14	4	19		E513M20X1.0NO7
20	1.50	112	29	14.00	11.20	14	4	18.5		E513M20X1.5NO1
20	1.50	112	29	14.00	11.20	14	4	18.5		E513M20X1.5NO2
20	1.50	112	29	14.00	11.20	14	4	18.5		E513M20X1.5NO3
20	1.50	112	29	14.00	11.20	14	4	18.5		E513M20X1.5NO6
20	1.50	112	29	14.00	11.20	14	4	18.5		E513M20X1.5NO7
20	2.00	112	29	14.00	11.20	14	4	18		E513M20X2.0NO1
20	2.00	112	29	14.00	11.20	14	4	18		E513M20X2.0NO2
20	2.00	112	29	14.00	11.20	14	4	18		E513M20X2.0NO3
20	2.00	112	29	14.00	11.20	14	4	18		E513M20X2.0NO7
22	1.00	118	29	16.00	12.50	16	4	21		E513M22X1.0NO2
22	1.00	118	29	16.00	12.50	16	4	21		E513M22X1.0NO3
22	1.00	118	29	16.00	12.50	16	4	21		E513M22X1.0NO7
22	1.50	118	29	16.00	12.50	16	4	20.5		E513M22X1.5NO1
22	1.50	118	29	16.00	12.50	16	4	20.5		E513M22X1.5NO2
22	1.50	118	29	16.00	12.50	16	4	20.5		E513M22X1.5NO3
22	1.50	118	29	16.00	12.50	16	4	20.5		E513M22X1.5NO7
22	2.00	118	29	16.00	12.50	16	4	20		E513M22X2.0NO1
22	2.00	118	29	16.00	12.50	16	4	20		E513M22X2.0NO2
22	2.00	118	29	16.00	12.50	16	4	20		E513M22X2.0NO3
22	2.00	118	29	16.00	12.50	16	4	20		E513M22X2.0NO7
24	1.00	130	35	18.00	14.00	18	4	23		E513M24X1.0NO2
24	1.00	130	35	18.00	14.00	18	4	23		E513M24X1.0NO3
24	1.50	130	35	18.00	14.00	18	4	22.5		E513M24X1.5NO1
24	1.50	130	35	18.00	14.00	18	4	22.5		E513M24X1.5NO2
24	1.50	130	35	18.00	14.00	18	4	22.5		E513M24X1.5NO3
24	1.50	130	35	18.00	14.00	18	4	22.5		E513M24X1.5NO7
24	2.00	130	35	18.00	14.00	18	4	22		E513M24X2.0NO1
24	2.00	130	35	18.00	14.00	18	4	22		E513M24X2.0NO2
24	2.00	130	35	18.00	14.00	18	4	22		E513M24X2.0NO3
24	2.00	130	35	18.00	14.00	18	4	22		E513M24X2.0NO7
25	1.50	130	35	18.00	14.00	18	4	23.5		E513M25X1.5NO1
25	1.50	130	35	18.00	14.00	18	4	23.5		E513M25X1.5NO2
25	1.50	130	35	18.00	14.00	18	4	23.5		E513M25X1.5NO3
25	1.50	130	35	18.00	14.00	18	4	23.5		E513M25X1.5NO6
25	1.50	130	35	18.00	14.00	18	4	23.5		E513M25X1.5NO7
26	1.50	130	35	18.00	14.00	18	4	24.5		E513M26X1.5NO2
26	1.50	130	35	18.00	14.00	18	4	24.5		E513M26X1.5NO3
27	1.50	135	35	20.00	16.00	20	4	25.5		E513M27X1.5NO2
27	1.50	135	35	20.00	16.00	20	4	25.5		E513M27X1.5NO3
27	2.00	135	35	20.00	16.00	20	4	25		E513M27X2.0NO3
28	1.50	138	35	20.00	16.00	20	4	26.5		E513M28X1.5NO2
28	1.50	138	35	20.00	16.00	20	4	26.5		E513M28X1.5NO3
30	1.50	138	41	20.00	16.00	20	4	28.5		E513M30X1.5NO2
30	1.50	138	41	20.00	16.00	20	4	28.5		E513M30X1.5NO3
30	2.00	138	41	20.00	16.00	20	4	28		E513M30X2.0NO2
30	2.00	138	41	20.00	16.00	20	4	28		E513M30X2.0NO3
32	1.50	151	41	22.40	18.00	22	4	30.5		E513M32X1.5NO1
32	1.50	151	41	22.40	18.00	22	4	30.5		E513M32X1.5NO2
32	1.50	151	41	22.40	18.00	22	4	30.5		E513M32X1.5NO3
33	2.00	151	41	22.40	18.00	22	4	31		E513M33X2.0NO2
33	2.00	151	41	22.40	18.00	22	4	31		E513M33X2.0NO3

MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E513
35	1.50	162	47	25.00	20.00	24	4	33.5		E513M35X1.5NO2
35	1.50	162	47	25.00	20.00	24	4	33.5		E513M35X1.5NO3
36	1.50	162	47	25.00	20.00	24	4	34.5		E513M36X1.5NO3
36	2.00	162	47	25.00	20.00	24	4	34		E513M36X2.0NO2
36	2.00	162	47	25.00	20.00	24	4	34		E513M36X2.0NO3
36	3.00	162	47	25.00	20.00	24	4	33		E513M36X3.0NO2
36	3.00	162	47	25.00	20.00	24	4	33		E513M36X3.0NO3
39	3.00	170	47	28.00	22.40	26	4	36		E513M39X3.0NO2
39	3.00	170	47	28.00	22.40	26	4	36		E513M39X3.0NO3
40	1.50	170	53	28.00	22.40	26	6	38.5		E513M40X1.5NO2
40	1.50	170	53	28.00	22.40	26	6	38.5		E513M40X1.5NO3
42	1.50	170	53	28.00	22.40	26	6	40.5		E513M42X1.5NO2
42	1.50	170	53	28.00	22.40	26	6	40.5		E513M42X1.5NO3
42	3.00	170	53	28.00	22.40	26	6	39		E513M42X3.0NO3
45	1.50	187	54	31.50	25.00	28	6	43.5		E513M45X1.5NO2
45	1.50	187	54	31.50	25.00	28	6	43.5		E513M45X1.5NO3
48	1.50	187	60	31.50	25.00	28	6	46.5		E513M48X1.5NO3
48	2.00	187	60	31.50	25.00	28	6	46		E513M48X2.0NO3
48	3.00	187	60	31.50	25.00	28	6	45		E513M48X3.0NO3
50	1.50	187	60	31.50	25.00	28	6	48.5		E513M50X1.5NO2
50	1.50	187	60	31.50	25.00	28	6	48.5		E513M50X1.5NO3

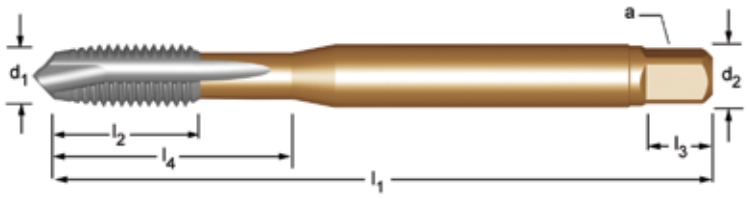
NO1
NO9
c 10

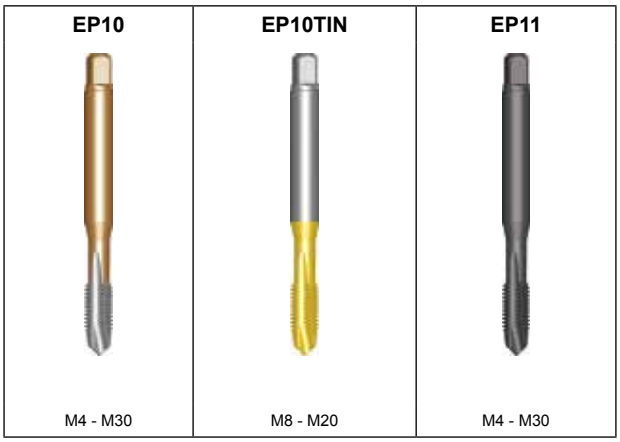


EP10
EP10TIN
EP11

- MF Machine Tap Spiral Point
- MF Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- MF Machinetappen met schilaansnijding
- MF Tarauds machine Coupe gun
- MF Machos de máquina Entrada en hélice
- MF Macho de Máquina Entrada Helicoidal

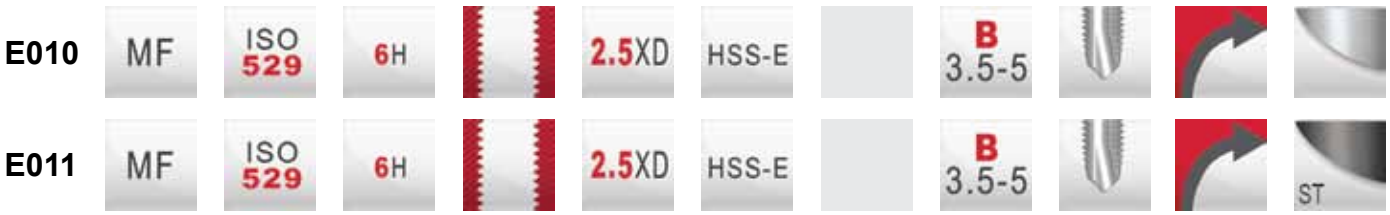
EP10	▪	1.1	1.2	1.3	1.4	1.5	6.1	6.3	7.1	7.2	7.3	7.4
	•	1.6	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.2	8.1
EP10TIN	▪	1.1	1.2	1.3	1.4	1.5	2.1	2.2	6.1	6.3	7.3	7.4
	•	1.6	2.3	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.2	8.2
EP11	▪	1.1	1.2	1.3	1.4	1.5	2.1	2.2				
	•	1.6	2.3	3.1	3.2	3.3	3.4					





MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		EP10	EP10TIN	EP11
4	0.50	63	12	2.8	2.1	5	3	3.5	EP10M4X.5		EP11M4X.5
5	0.50	70	13	3.5	2.7	6	3	4.5	EP10M5X.5		EP11M5X.5
6	0.75	80	15	4.5	3.4	6	3	5.3	EP10M6X.75		EP11M6X.75
8	0.75	80	15	6.0	4.9	8	3	7.3	EP10M8X.75		EP11M8X.75
8	1.00	90	18	6.0	4.9	8	3	7	EP10M8X1.0	EP10TINM8X1.0	EP11M8X1.0
10	0.75	90	18	7.0	5.5	8	3	9.3	EP10M10X.75		EP11M10X.75
10	1.00	90	18	7.0	5.5	8	3	9	EP10M10X1.0	EP10TINM10X1.0	EP11M10X1.0
10	1.25	100	20	7.0	5.5	8	3	8.8	EP10M10X1.25	EP10TINM10X1.25	EP11M10X1.25
12	1.00	100	21	9.0	7.0	10	3	11	EP10M12X1.0	EP10TINM12X1.0	EP11M12X1.0
12	1.25	100	21	9.0	7.0	10	3	10.8	EP10M12X1.25	EP10TINM12X1.25	EP11M12X1.25
12	1.50	100	21	9.0	7.0	10	3	10.5	EP10M12X1.5	EP10TINM12X1.5	EP11M12X1.5
14	1.00	100	21	11.0	9.0	12	3	13	EP10M14X1.0		EP11M14X1.0
14	1.25	100	21	11.0	9.0	12	3	13	EP10M14X1.25		EP11M14X1.25
14	1.50	100	21	11.0	9.0	12	3	12.5	EP10M14X1.5	EP10TINM14X1.5	EP11M14X1.5
16	1.00	100	21	12.0	9.0	12	3	15	EP10M16X1.0		EP11M16X1.0
16	1.50	100	21	12.0	9.0	12	3	14.5	EP10M16X1.5	EP10TINM16X1.5	EP11M16X1.5
18	1.00	110	24	14.0	11.0	14	4	17	EP10M18X1.0		EP11M18X1.0
18	1.50	110	24	14.0	11.0	14	4	16.5	EP10M18X1.5	EP10TINM18X1.5	EP11M18X1.5
20	1.00	125	24	16.0	12.0	15	4	19	EP10M20X1.0		EP11M20X1.0
20	1.50	125	24	16.0	12.0	15	4	18.5	EP10M20X1.5	EP10TINM20X1.5	EP11M20X1.5

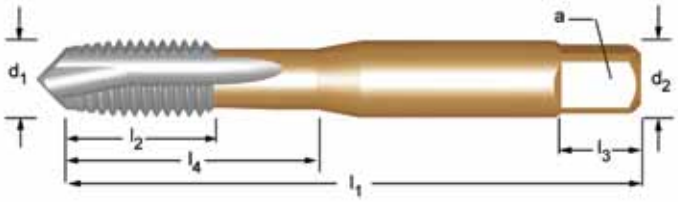
MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		EP10	EP10TIN	EP11
22	1.50	125	25	18.0	14.5	17	4	20.5	EP10M22X1.5		EP11M22X1.5
24	1.50	140	28	18.0	14.5	17	4	22.5	EP10M24X1.5		EP11M24X1.5
24	2.00	140	28	18.0	14.5	17	4	22	EP10M24X2.0		EP11M24X2.0
25	1.50	140	28	18.0	14.5	17	4	23.5	EP10M25X1.5		EP11M25X1.5
26	1.50	140	28	18.0	14.5	17	4	24.5	EP10M26X1.5		EP11M26X1.5
27	1.50	140	28	20.0	16.0	19	4	25.5	EP10M27X1.5		EP11M27X1.5
27	2.00	140	28	20.0	16.0	19	4	25	EP10M27X2.0		EP11M27X2.0
28	1.50	140	28	20.0	16.0	19	4	26.5	EP10M28X1.5		EP11M28X1.5
30	1.50	150	28	22.0	18.0	21	4	28.5	EP10M30X1.5		EP11M30X1.5
30	2.00	150	28	22.0	18.0	21	4	28	EP10M30X2.0		EP11M30X2.0

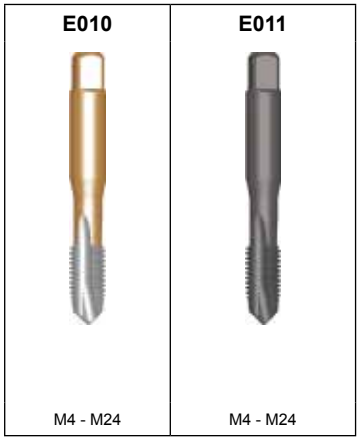


E010
E011

- MF Machine Tap Spiral Point
- MF Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- MF Machinetappen met schilaansnijding
- MF Tarauds machine Coupe gun
- MF Machos de máquina Entrada en hélice
- MF Macho de Máquina Entrada Helicoidal

E010	▪	1.1	1.2	1.3	1.4	1.5	6.1	6.3	7.1	7.2	7.3	7.4
	▪	1.6	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.2	8.1
E011	▪	1.1	1.2	1.3	1.4	1.5						
	▪	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4			





MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E010	E011
4	0.50	53	17	4.00	3.15	6	3	3.5	17	E010M4X.5	E011M4X.5
5	0.50	58	11	5.00	4.00	7	3	4.5	22	E010M5X.5	E011M5X.5
6	0.50	66	13	6.30	5.00	8	3	5.5	26	E010M6X.5	E011M6X.5
6	0.75	66	13	6.30	5.00	8	3	5.3	26	E010M6X.75	E011M6X.75
8	0.75	72	16	8.00	6.30	9	3	7.3	29	E010M8X.75	E011M8X.75
8	1.00	72	16	8.00	6.30	9	3	7.0	29	E010M8X1.0	E011M8X1.0
10	1.00	80	18	10.00	8.00	11	3	9.0	34	E010M10X1.0	E011M10X1.0
10	1.25	80	18	10.00	8.00	11	3	8.8	34	E010M10X1.25	E011M10X1.25
12	1.00	89	22	9.00	7.10	10	3	11.0		E010M12X1.0	E011M12X1.0
12	1.25	89	22	9.00	7.10	10	3	10.8		E010M12X1.25	E011M12X1.25
12	1.50	89	22	9.00	7.10	10	3	10.5		E010M12X1.5	E011M12X1.5
14	1.00	95	24	11.20	9.00	12	3	13.0		E010M14X1.0	E011M14X1.0
14	1.25	95	24	11.20	9.00	12	3	12.8		E010M14X1.25	E011M14X1.25
14	1.50	95	24	11.20	9.00	12	3	12.5		E010M14X1.5	E011M14X1.5
16	1.00	102	24	12.50	10.00	13	3	15.0		E010M16X1.0	E011M16X1.0
16	1.50	102	24	12.50	10.00	13	3	14.5		E010M16X1.5	E011M16X1.5
18	1.00	112	29	14.00	11.20	14	4	17.0		E010M18X1.0	E011M18X1.0
18	1.50	112	29	14.00	11.20	14	4	16.5		E010M18X1.5	E011M18X1.5
20	1.00	112	29	14.00	11.20	14	4	19.0		E010M20X1.0	E011M20X1.0
20	1.50	112	29	14.00	11.20	14	4	18.5		E010M20X1.5	E011M20X1.5
20	2.00	112	29	14.00	11.20	14	4	18.0		E010M20X2.0	E011M20X2.0
22	1.50	118	29	16.00	12.50	16	4	20.5		E010M22X1.5	E011M22X1.5
24	1.50	130	35	18.00	14.00	18	4	22.5		E010M24X1.5	E011M24X1.5
24	2.00	130	35	18.00	14.00	18	4	22.0		E010M24X2.0	E011M24X2.0

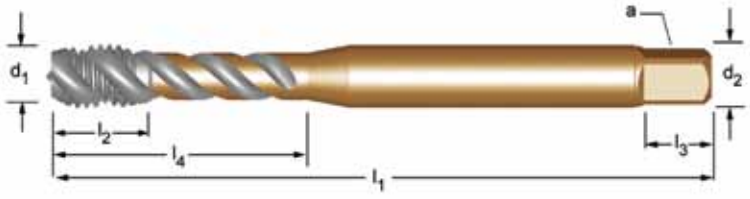
DORMER

EX10	MF	DIN 374	6H		2.5XD	HSS-E		C 2-3	λ45°		
EX10TIN	MF	DIN 374	6H		2.5XD	HSS-E		C 2-3	λ45°		TiN
EX11	MF	DIN 374	6H		2.5XD	HSS-E		C 2-3	λ45°		ST

EX10
EX10TIN
EX11

- MF Machine Tap Spiral Flute 45º
- MF Maschinen-Gewindebohrer, rechtsgedrallte Nuten 45º
- MF Machinetappen met gespiraliseerde spaangroeven 45°
- MF Tarauds machine goujures hélicoidales 45º
- MF Machos de máquina Estrías helicoidales a 45º
- MF Macho de Máquina Canal Helicoidal 45º

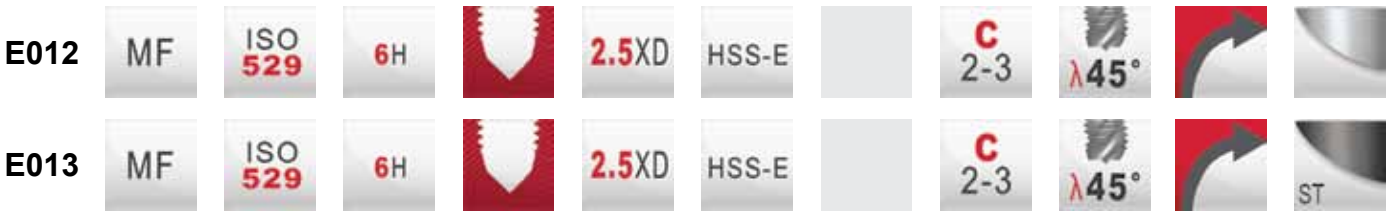
EX10	▪	1.1	1.2	1.3	1.4	1.5	7.1	7.2	7.3	7.4
	▪	4.1	4.2	5.1	5.2					
EX10TIN	▪	1.1	1.2	1.3	1.4	1.5	2.1	2.2	7.3	7.4
	▪	1.6	2.3	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2
EX11	▪	1.1	1.2	1.3	1.4	1.5	2.1	2.2		
	▪	2.3								



EX10	EX10TIN	EX11
M4 - M30	M8 - M20	M4 - M30

MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	EX10	EX10TIN	EX11
4	0.50	63	7	2.8	2.1	5	3	3.5	EX10M4X.50		EX11M4X.50
5	0.50	70	8	3.5	2.7	6	3	4.5	EX10M5X.50		EX11M5X.50
6	0.75	80	10	4.5	3.4	6	3	5.3	EX10M6X.75		EX11M6X.75
8	0.75	80	13	6.0	4.9	8	3	7.3	EX10M8X.75		EX11M8X.75
8	1.00	90	13	6.0	4.9	8	3	7	EX10M8X1.0	EX10TINM8X1.0	EX11M8X1.0
10	0.75	90	13	7.0	5.5	8	3	9.3	EX10M10X.75		EX11M10X.75
10	1.00	90	13	7.0	5.5	8	3	9	EX10M10X1.0	EX10TINM10X1.0	EX11M10X1.0
10	1.25	100	15	7.0	5.5	8	3	8.8	EX10M10X1.25	EX10TINM10X1.25	EX11M10X1.25
12	1.00	100	15	9.0	7.0	10	3	11	EX10M12X1.0	EX10TINM12X1.0	EX11M12X1.0
12	1.25	100	15	9.0	7.0	10	3	10.8	EX10M12X1.25	EX10TINM12X1.25	EX11M12X1.25
12	1.50	100	15	9.0	7.0	10	3	10.5	EX10M12X1.5	EX10TINM12X1.5	EX11M12X1.5
14	1.00	100	15	11.0	9.0	12	3	13	EX10M14X1.0		EX11M14X1.0
14	1.25	100	15	11.0	9.0	12	3	12.8	EX10M14X1.25		EX11M14X1.25
14	1.50	100	15	11.0	9.0	12	3	12.5	EX10M14X1.5	EX10TINM14X1.5	EX11M14X1.5
16	1.00	100	15	12.0	9.0	12	4	15	EX10M16X1.0		EX11M16X1.0
16	1.50	100	15	12.0	9.0	12	4	14.5	EX10M16X1.5	EX10TINM16X1.5	EX11M16X1.5
18	1.00	110	17	14.0	11.0	14	4	17	EX10M18X1.0		EX11M18X1.0
18	1.50	110	17	14.0	11.0	14	4	16.5	EX10M18X1.5	EX10TINM18X1.5	EX11M18X1.5
20	1.00	125	17	16.0	12.0	15	4	19	EX10M20X1.0		EX11M20X1.0
20	1.50	125	17	16.0	12.0	15	4	18.5	EX10M20X1.5	EX10TINM20X1.5	EX11M20X1.5

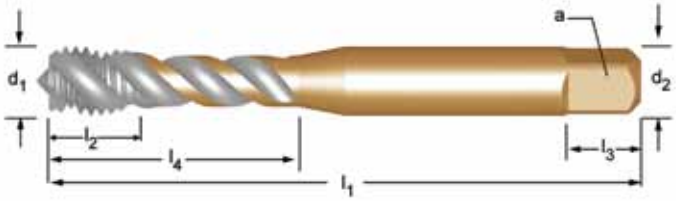
MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		EX10	EX10TIN	EX11
22	1.50	125	17	18.0	14.5	17	4	20.5	EX10M22X1.5		EX11M22X1.5
24	1.50	140	20	18.0	14.5	17	4	22.5	EX10M24X1.5		EX11M24X1.5
24	2.00	140	20	18.0	14.5	17	4	22	EX10M24X2.0		EX11M24X2.0
25	1.50	140	20	18.0	14.5	17	4	23.5	EX10M25X1.5		EX11M25X1.5
26	1.50	140	20	18.0	14.5	17	4	24.5	EX10M26X1.5		EX11M26X1.5
27	1.50	140	20	20.0	16.0	19	4	25.5	EX10M27X1.5		EX11M27X1.5
27	2.00	140	20	20.0	16.0	19	4	25	EX10M27X2.0		EX11M27X2.0
28	1.50	140	20	20.0	16.0	19	4	26.5	EX10M28X1.5		EX11M28X1.5
30	1.50	150	20	22.0	18.0	21	4	28.5	EX10M30X1.5		EX11M30X1.5
30	2.00	150	20	22.0	18.0	21	4	28	EX10M30X2.0		EX11M30X2.0

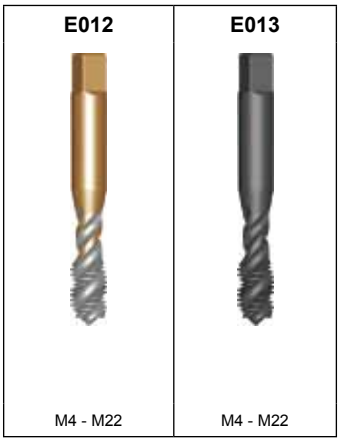


E012
E013

- MF Machine Tap Spiral Flute 45º
- MF Maschinen-Gewindebohrer, rechtsgedrallte Nuten 45º
- MF Machinetappen met gespiraliseerde spaangroeven 45°
- MF Tarauds machine goujures hélicoidales 45º
- MF Machos de máquina Estrías helicoidales a 45º
- MF Macho de Máquina Canal Helicoidal 45º

E012	▪	1.1 1.2 1.3 1.4 1.5 7.1 7.2 7.3 7.4
	▪	4.1 4.2 5.1 5.2 8.1
E013	▪	1.1 1.2 1.3 1.4 1.5
	▪	2.1 2.2 2.3





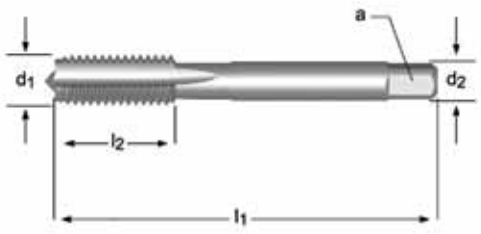
MF	P mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E012	E013
4	0.50	53	7	4.0	3.15	6	3	3.5	19	E012M4X.5	E013M4X.5
5	0.50	58	8	5.0	4.0	7	3	4.5	22	E012M5X.5	E013M5X.5
6	0.50	66	10	6.3	5.0	8	3	5.5	27	E012M6X.5	E013M6X.5
6	0.75	66	10	6.3	5.0	8	3	5.3	27	E012M6X.75	E013M6X.75
8	0.75	72	12	8.0	6.3	9	3	7.3	31	E012M8X.75	E013M8X.75
8	1.00	72	12	8.0	6.3	9	3	7.0	31	E012M8X1.0	E013M8X1.0
10	1.00	80	15	10.0	8.0	11	3	9.0	35	E012M10X1.0	E013M10X1.0
10	1.25	80	15	10.0	8.0	11	3	8.8	35	E012M10X1.25	E013M10X1.25
12	1.00	89	16	9.0	7.1	10	3	11.0		E012M12X1.0	E013M12X1.0
12	1.25	89	16	9.0	7.1	10	3	10.8		E012M12X1.25	E013M12X1.25
12	1.50	89	16	9.0	7.1	10	3	10.5		E012M12X1.5	E013M12X1.5
14	1.50	95	18	11.2	9.0	12	3	12.5		E012M14X1.5	E013M14X1.5
16	1.00	102	18	12.5	10.0	13	4	15.0		E012M16X1.0	E013M16X1.0
16	1.50	102	18	12.5	10.0	13	4	14.5		E012M16X1.5	E013M16X1.5
18	1.50	112	29	14.0	11.2	14	4	16.5		E012M18X1.5	E013M18X1.5
20	1.50	112	29	14.0	11.2	14	4	18.5		E012M20X1.5	E013M20X1.5
22	1.50	118	29	16.0	12.5	16	4	20.5		E012M22X1.5	E013M22X1.5

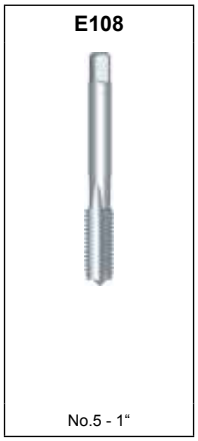
E108 UNC DIN 352 2B 1.5XD HSS C 2-3

E108

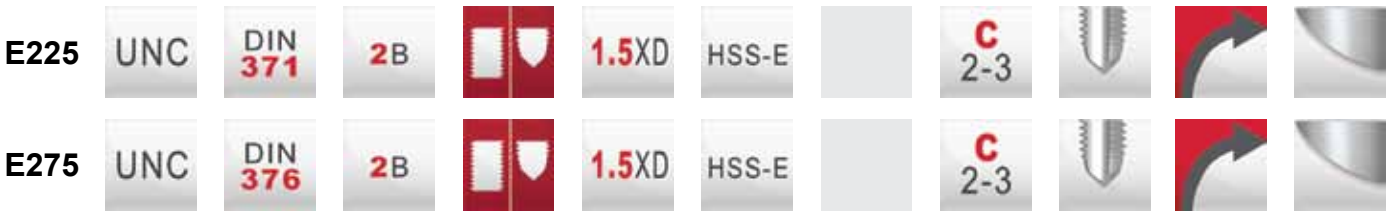
- UNC Hand Tap Straight Flute
- UNC Handgewindebohrer, geradegenutet
- UNC Handtappen met rechte spaangroeven
- UNC Tarauds à main Goujures droites
- UNC Machos de mano Estrías rectas
- UNC Machos Manuais Canais Direitos

E108 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 3.4 6.1 6.2 6.3 6.4 7.2 7.3 7.4 8.2 8.3





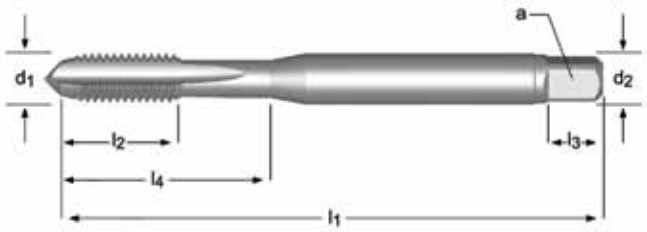
UNC	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		E108
5	40	3.18	45	13	4.0	3.0	3	2.65	E1085-40NO3
5	40	3.18	45	13	4.0	3.0	3	2.65	E1085-40NO8
6	32	3.51	45	10	4.0	3.0	3	2.85	E1086-32NO3
6	32	3.51	45	10	4.0	3.0	3	2.85	E1086-32NO8
8	32	4.17	50	14	6.0	4.9	3	3.5	E1088-32NO3
8	32	4.17	50	14	6.0	4.9	3	3.5	E1088-32NO8
10	24	4.83	50	14	6.0	4.9	3	3.9	E10810-24NO3
10	24	4.83	50	14	6.0	4.9	3	3.9	E10810-24NO8
12	24	5.49	56	16	6.0	4.9	3	4.5	E10812-24NO3
12	24	5.49	56	16	6.0	4.9	3	4.5	E10812-24NO8
1/4	20	6.35	56	17	6.0	4.9	3	5.1	E1081/4NO3
1/4	20	6.35	56	17	6.0	4.9	3	5.1	E1081/4NO8
5/16	18	7.94	63	19	6.0	4.9	3	6.6	E1085/16NO3
5/16	18	7.94	63	19	6.0	4.9	3	6.6	E1085/16NO8
3/8	16	9.53	70	22	7.0	5.5	3	8	E1083/8NO3
3/8	16	9.53	70	22	7.0	5.5	3	8	E1083/8NO8
7/16	14	11.11	75	30	8.0	6.2	3	9.4	E1087/16NO3
7/16	14	11.11	75	30	8.0	6.2	3	9.4	E1087/16NO8
1/2	13	12.70	75	27	9.0	7.0	3	10.8	E1081/2NO3
1/2	13	12.70	75	27	9.0	7.0	3	10.8	E1081/2NO8
9/16	12	14.29	80	30	11.0	9.0	4	12.2	E1089/16NO3
9/16	12	14.29	80	30	11.0	9.0	4	12.2	E1089/16NO8
5/8	11	15.88	80	32	12.0	9.0	4	13.5	E1085/8NO3
5/8	11	15.88	80	32	12.0	9.0	4	13.5	E1085/8NO8
3/4	10	19.05	95	34	14.0	11.0	4	16.5	E1083/4NO3
3/4	10	19.05	95	34	14.0	11.0	4	16.5	E1083/4NO8
7/8	9	22.23	110	38	18.0	14.5	4	19.5	E1087/8NO3
7/8	9	22.23	110	38	18.0	14.5	4	19.5	E1087/8NO8
1“	8	25.40	110	38	20.0	16.0	4	22.25	E1081NO8

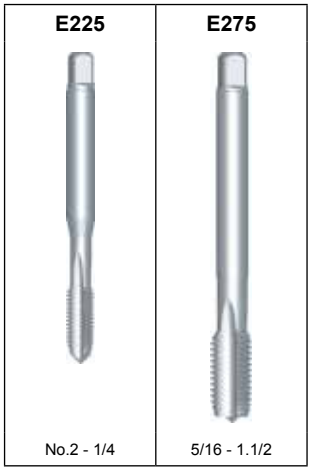


E225
E275

- UNC Machine Tap Straight Flute
- UNC Maschinen-Gewindebohrer, geradegenutet
- UNC Machinetappen met rechte spaangroeven
- UNC Tarauds machine Goujures droites
- UNC Machos de máquina Estrías rectas
- UNC Macho de Máquina Canais Direitos

E225; E275 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 6.2 6.3 7.2 7.3 8.2





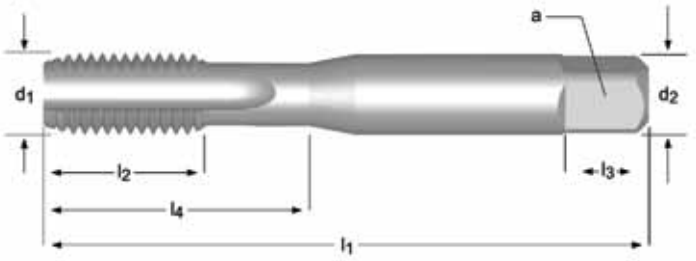
UNC	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E225	E275
2	56	2.184	45	7	2.8	2.1	5	3	1.9	12	E2252-56	
3	48	2.515	50	8	2.8	2.1	5	3	2.1	12.5	E2253-48NO3	
4	40	2.845	56	9	3.5	2.7	6	3	2.35	18	E2254-40	
5	40	3.175	56	10	3.5	2.7	6	3	2.65	18	E2255-40	
6	32	3.505	56	11	4.0	3.0	6	3	2.85	20	E2256-32	
8	32	4.166	63	12	4.5	3.4	8	3	3.5	21	E2258-32	
10	24	4.826	70	13	6.0	4.9	8	3	3.9	25	E22510-24	
12	24	5.486	80	15	6.0	4.9	8	3	4.5	30	E22512-24	
1/4	20	6.350	80	16	7.0	5.5	8	3	5.1	30	E2251/4	
5/16	18	7.94	90	18	6.0	4.9	8	3	6.6			E2755/16
3/8	16	9.53	100	24	7.0	5.5	8	3	8			E2753/8
7/16	14	11.11	110	23	9.0	7.0	10	3	9.4			E2757/16
1/2	13	12.7	110	23	9.0	7.0	10	3	10.8			E2751/2
9/16	12	14.29	110	25	11.0	9.0	12	3	12.2			E2759/16
5/8	11	15.88	110	25	12.0	9.0	12	4	13.5			E2755/8
3/4	10	19.05	140	34	14.0	11.0	14	4	16.5			E2753/4
7/8	9	22.23	140	34	18.0	14.5	17	4	19.5			E2757/8
1“	8	25.40	160	38	20.0	16.0	19	4	22.25			E2751
1.1/8	7	28.58	180	45	22.0	18.0	21	4	25			E2751.1/8
1.1/4	7	31.75	180	50	25.0	20.0	23	4	28			E2751.1/4
1.1/2	6	38.10	200	60	32.0	24.0	27	4	34			E2751.1/2

E515 UNC ISO 529 2B 1.5XD HSS L120 c 109

E515

- UNC Machine Tap Straight Flute
- UNC Maschinen-Gewindebohrer, geradegenutet
- UNC Hand-/machinetappen met rechte spaangroeven
- UNC Tarauds machine Goujures droites
- UNC Machos de máquina Estrías rectas
- UNC Macho de Máquina Canais Direitos

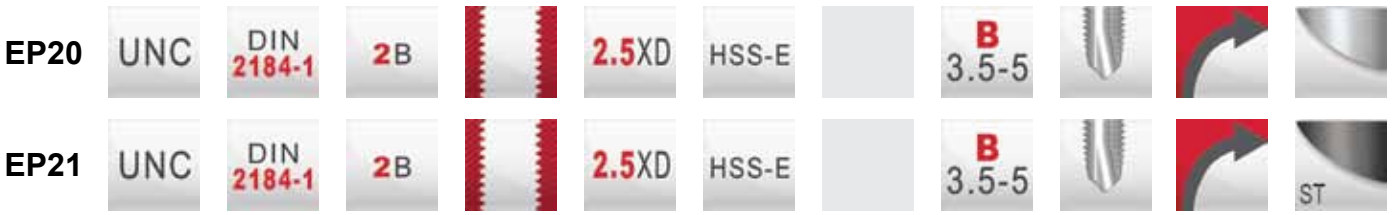
E515 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 3.4 6.1 6.2 6.3 6.4 7.2 7.3 7.4 8.2 8.3



UNC	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E515
1	64	1.854	41	8	2.50	2.00	4	2	1.55	8	E5151-64NO1
1	64	1.854	41	8	2.50	2.00	4	2	1.55	8	E5151-64NO2
1	64	1.854	41	8	2.50	2.00	4	2	1.55	8	E5151-64NO3
1	64	1.854	41	8	2.50	2.00	4	2	1.55	8	E5151-64NO6
2	56	2.184	44.5	9.5	2.80	2.24	5	3	1.85	9.5	E5152-56NO1
2	56	2.184	44.5	9.5	2.80	2.24	5	3	1.85	9.5	E5152-56NO2
2	56	2.184	44.5	9.5	2.80	2.24	5	3	1.85	9.5	E5152-56NO3
2	56	2.184	44.5	9.5	2.80	2.24	5	3	1.85	9.5	E5152-56NO6
3	48	2.515	44.5	9.5	2.80	2.24	5	3	2.1	9.5	E5153-48NO1
3	48	2.515	44.5	9.5	2.80	2.24	5	3	2.1	9.5	E5153-48NO2
3	48	2.515	44.5	9.5	2.80	2.24	5	3	2.1	9.5	E5153-48NO3
3	48	2.515	44.5	9.5	2.80	2.24	5	3	2.1	9.5	E5153-48NO6
4	40	2.845	48	12.5	3.15	2.50	5	3	2.35	12.5	E5154-40NO1
4	40	2.845	48	12.5	3.15	2.50	5	3	2.35	12.5	E5154-40NO2
4	40	2.845	48	12.5	3.15	2.50	5	3	2.35	12.5	E5154-40NO3
4	40	2.845	48	12.5	3.15	2.50	5	3	2.35	12.5	E5154-40NO6
5	40	3.175	48	12.5	3.15	2.50	5	3	2.65	12.5	E5155-40NO1
5	40	3.175	48	12.5	3.15	2.50	5	3	2.65	12.5	E5155-40NO2
5	40	3.175	48	12.5	3.15	2.50	5	3	2.65	12.5	E5155-40NO3
5	40	3.175	48	12.5	3.15	2.50	5	3	2.65	12.5	E5155-40NO6
6	32	3.505	50	14	3.55	2.80	5	3	2.85	14	E5156-32NO1
6	32	3.505	50	14	3.55	2.80	5	3	2.85	14	E5156-32NO2
6	32	3.505	50	14	3.55	2.80	5	3	2.85	14	E5156-32NO3
6	32	3.505	50	14	3.55	2.80	5	3	2.85	14	E5156-32NO6
8	32	4.166	53	9.5	4.50	3.55	6	3	3.5	17	E5158-32NO1
8	32	4.166	53	9.5	4.50	3.55	6	3	3.5	17	E5158-32NO2
8	32	4.166	53	9.5	4.50	3.55	6	3	3.5	17	E5158-32NO3
8	32	4.166	53	9.5	4.50	3.55	6	3	3.5	17	E5158-32NO6
10	24	4.826	58	11	5.00	4.00	7	3	3.9	20	E51510-24NO1
10	24	4.826	58	11	5.00	4.00	7	3	3.9	20	E51510-24NO2
10	24	4.826	58	11	5.00	4.00	7	3	3.9	20	E51510-24NO3
10	24	4.826	58	11	5.00	4.00	7	3	3.9	20	E51510-24NO6
12	24	5.486	62	12	5.60	4.50	7	3	4.5	21	E51512-24NO1
12	24	5.486	62	12	5.60	4.50	7	3	4.5	21	E51512-24NO2

NO1 NO9 c 10

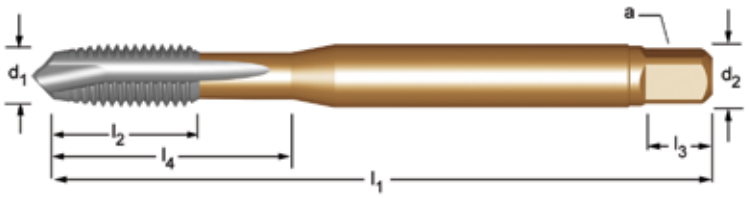
UNC	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	▨ a mm	l_3 mm	z	↔	l_4 mm	E515
12	24	5.486	62	12	5.60	4.50	7	3	4.5	21	E51512-24NO3
12	24	5.486	62	12	5.60	4.50	7	3	4.5	21	E51512-24NO6
1/4	20	6.350	66	13	6.30	5.00	8	3	5.1	26	E5151/4NO1
1/4	20	6.350	66	13	6.30	5.00	8	3	5.1	26	E5151/4NO2
1/4	20	6.350	66	13	6.30	5.00	8	3	5.1	26	E5151/4NO3
1/4	20	6.350	66	13	6.30	5.00	8	3	5.1	26	E5151/4NO6
5/16	18	7.938	72	16	8.00	6.30	9	3	6.6	29	E5155/16NO1
5/16	18	7.938	72	16	8.00	6.30	9	3	6.6	29	E5155/16NO2
5/16	18	7.938	72	16	8.00	6.30	9	3	6.6	29	E5155/16NO3
5/16	18	7.938	72	16	8.00	6.30	9	3	6.6	29	E5155/16NO6
3/8	16	9.525	80	18	10.00	8.00	11	3	8	32	E5153/8NO1
3/8	16	9.525	80	18	10.00	8.00	11	3	8	32	E5153/8NO2
3/8	16	9.525	80	18	10.00	8.00	11	3	8	32	E5153/8NO3
3/8	16	9.525	80	18	10.00	8.00	11	3	8	32	E5153/8NO6
7/16	14	11.112	85	19	8.00	6.30	9	3	9.4		E5157/16NO1
7/16	14	11.112	85	19	8.00	6.30	9	3	9.4		E5157/16NO2
7/16	14	11.112	85	19	8.00	6.30	9	3	9.4		E5157/16NO3
7/16	14	11.112	85	19	8.00	6.30	9	3	9.4		E5157/16NO6
1/2	13	12.700	89	22	9.00	7.10	10	3	10.8		E5151/2NO1
1/2	13	12.700	89	22	9.00	7.10	10	3	10.8		E5151/2NO2
1/2	13	12.700	89	22	9.00	7.10	10	3	10.8		E5151/2NO3
1/2	13	12.700	89	22	9.00	7.10	10	3	10.8		E5151/2NO6
9/16	12	14.288	95	24	11.20	9.00	12	4	12.2		E5159/16NO1
9/16	12	14.288	95	24	11.20	9.00	12	4	12.2		E5159/16NO2
9/16	12	14.288	95	24	11.20	9.00	12	4	12.2		E5159/16NO3
9/16	12	14.288	95	24	11.20	9.00	12	4	12.2		E5159/16NO6
5/8	11	15.875	102	24	12.50	10.00	13	4	13.5		E5155/8NO1
5/8	11	15.875	102	24	12.50	10.00	13	4	13.5		E5155/8NO2
5/8	11	15.875	102	24	12.50	10.00	13	4	13.5		E5155/8NO3
5/8	11	15.875	102	24	12.50	10.00	13	4	13.5		E5155/8NO6
3/4	10	19.050	112	29	14.00	11.20	14	4	16.5		E5153/4NO1
3/4	10	19.050	112	29	14.00	11.20	14	4	16.5		E5153/4NO2
3/4	10	19.050	112	29	14.00	11.20	14	4	16.5		E5153/4NO3
3/4	10	19.050	112	29	14.00	11.20	14	4	16.5		E5153/4NO6
7/8	9	22.225	118	29	16.00	12.50	16	4	19.5		E5157/8NO1
7/8	9	22.225	118	29	16.00	12.50	16	4	19.5		E5157/8NO2
7/8	9	22.225	118	29	16.00	12.50	16	4	19.5		E5157/8NO3
7/8	9	22.225	118	29	16.00	12.50	16	4	19.5		E5157/8NO6
1“	8	25.400	130	35	18.00	14.00	18	4	22.25		E5151NO1
1“	8	25.400	130	35	18.00	14.00	18	4	22.25		E5151NO2
1“	8	25.400	130	35	18.00	14.00	18	4	22.25		E5151NO3
1“	8	25.400	130	35	18.00	14.00	18	4	22.25		E5151NO6
1.1/8	7	28.575	138	35	20.00	16.00	20	4	25		E5151.1/8NO1
1.1/8	7	28.575	138	35	20.00	16.00	20	4	25		E5151.1/8NO2
1.1/8	7	28.575	138	35	20.00	16.00	20	4	25		E5151.1/8NO3
1.1/4	7	31.750	151	41	22.40	18.00	22	4	28		E5151.1/4NO1
1.1/4	7	31.750	151	41	22.40	18.00	22	4	28		E5151.1/4NO2
1.1/4	7	31.750	151	41	22.40	18.00	22	4	28		E5151.1/4NO3
1.3/8	6	34.925	162	47	25.00	20.00	24	4	30.75		E5151.3/8NO1
1.3/8	6	34.925	162	47	25.00	20.00	24	4	30.75		E5151.3/8NO2
1.3/8	6	34.925	162	47	25.00	20.00	24	4	30.75		E5151.3/8NO3
1.1/2	6	38.100	170	47	28.00	22.40	26	4	34		E5151.1/2NO1
1.1/2	6	38.100	170	47	28.00	22.40	26	4	34		E5151.1/2NO2
1.1/2	6	38.100	170	47	28.00	22.40	26	4	34		E5151.1/2NO3
1.3/4	5	44.450	187	54	31.50	25.00	28	6	39.5		E5151.3/4NO1
1.3/4	5	44.450	187	54	31.50	25.00	28	6	39.5		E5151.3/4NO2
1.3/4	5	44.450	187	54	31.50	25.00	28	6	39.5		E5151.3/4NO3
2“	4.5	50.800	200	60	35.50	28.00	31	6	45		E5152NO1
2“	4.5	50.800	200	60	35.50	28.00	31	6	45		E5152NO2
2“	4.5	50.800	200	60	35.50	28.00	31	6	45		E5152NO3

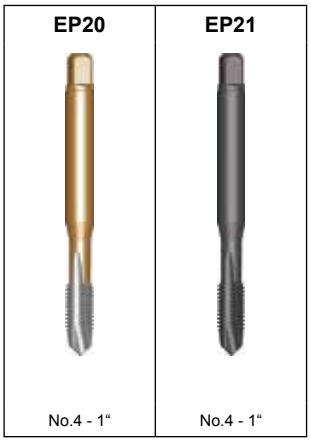


EP20
EP21

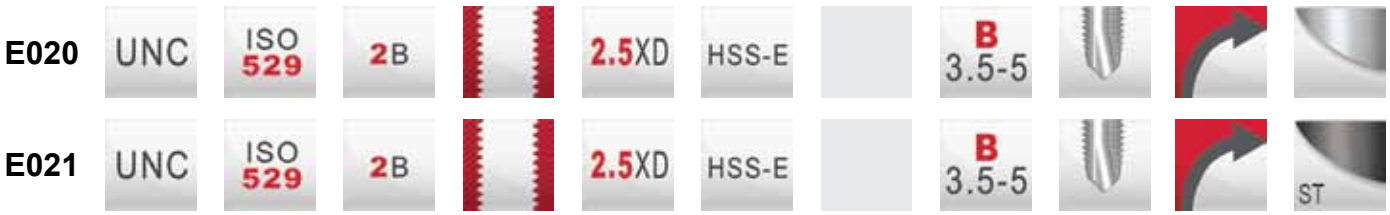
- UNC Machine Tap Spiral Point
- UNC Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- UNC Machinetappen met schilaansnijding
- UNC Tarauds machine Coupe gun
- UNC Machos de máquina Entrada en hélice
- UNC Macho de Máquina Entrada Helicoidal

EP20	▪	1.1	1.2	1.3	1.4	1.5	6.1	6.3	7.1	7.2	7.3	7.4
	▪	1.6	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.2	8.1
EP21	▪	1.1	1.2	1.3	1.4	1.5	2.1	2.2				
	▪	1.6	2.3	3.1	3.2	3.3	3.4					





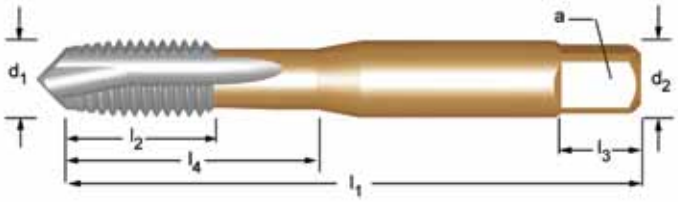
UNC	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	EP20	EP21
4	40	2.845	56	9	3.5	2.7	6	3	2.35	18	EP204-40	EP214-40
5	40	3.175	56	10	3.5	2.7	6	3	2.65	18	EP205-40	EP215-40
6	32	3.505	56	11	4.0	3.0	6	3	2.85	20	EP206-32	EP216-32
8	32	4.166	63	12	4.5	3.4	8	3	3.5	21	EP208-32	EP218-32
10	24	4.826	70	13	6.0	4.9	8	3	3.9	25	EP2010-24	EP2110-24
12	24	5.486	80	15	6.0	4.9	8	3	4.5	30	EP2012-24	EP2112-24
1/4	20	6.350	80	15	7.0	5.5	8	3	5.1	30	EP201/4	EP211/4
5/16	18	7.938	90	18	8.0	6.2	9	3	6.6	35	EP205/16	EP215/16
3/8	16	9.525	100	20	10.0	8.0	11	3	8	39	EP203/8	EP213/8
7/16	14	11.112	100	20	8.0	6.2	9	3	9.4		EP207/16	EP217/16
1/2	13	12.700	110	23	9.0	7.0	10	3	10.8		EP201/2	EP211/2
5/8	11	15.875	110	25	12.0	9.0	12	3	13.5		EP205/8	EP215/8
3/4	10	19.050	125	30	14.0	11.0	14	4	16.5		EP203/4	EP213/4
7/8	9	22.225	140	34	18.0	14.5	17	4	19.5		EP207/8	EP217/8
1“	8	25.400	160	38	18.0	14.5	17	4	22.25		EP201	EP211

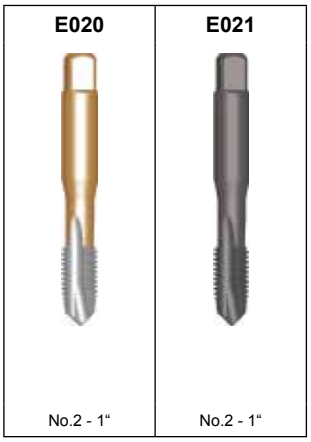


E020
E021

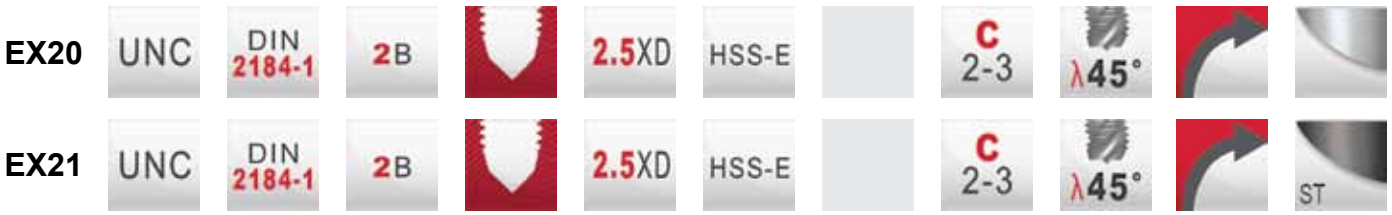
- UNC Machine Tap Spiral Point
- UNC Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- UNC Machinetappen met schilaansnijding
- UNC Tarauds machine Coupe gun
- UNC Machos de máquina Entrada en hélice
- UNC Macho de Máquina Entrada Helicoidal

E020	▪	1.1	1.2	1.3	1.4	1.5	6.1	6.3	7.1	7.2	7.3	7.4
	▪	1.6	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.2	8.1
E021	▪	1.1	1.2	1.3	1.4	1.5						
	▪	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4			





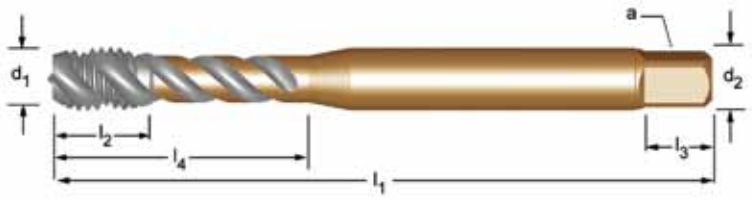
UNC	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	▨ a mm	l_3 mm	z	↔	l_4 mm	E020	E021
2	56	2.184	44.5	9.5	2.80	2.24	5	3	1.85	9.5	E0202-56	E0212-56
4	40	2.845	48	14	3.15	2.50	5	3	2.35	14	E0204-40	E0214-40
5	40	3.175	48	12.5	3.15	2.50	5	3	2.65	12.5	E0205-40	E0215-40
6	32	3.505	50	16	3.55	2.80	5	3	2.85	16	E0206-32	E0216-32
8	32	4.166	53	9.5	4.50	3.55	6	3	3.50	17	E0208-32	E0218-32
10	24	4.826	58	11	5.00	4.00	7	3	3.90	20	E02010-24	E02110-24
12	24	5.486	62	12	5.60	4.50	7	3	4.50	21	E02012-24	E02112-24
1/4	20	6.350	66	13	6.30	5.00	8	3	5.10	26	E0201/4	E0211/4
5/16	18	7.938	72	16	8.00	6.30	9	3	6.60	29	E0205/16	E0215/16
3/8	16	9.525	80	18	10.00	8.00	11	3	8.00	32	E0203/8	E0213/8
7/16	14	11.112	85	19	8.00	6.30	9	3	9.40		E0207/16	E0217/16
1/2	13	12.700	89	22	9.00	7.10	10	3	10.80		E0201/2	E0211/2
5/8	11	15.875	102	24	12.50	10.00	13	3	13.50		E0205/8	E0215/8
3/4	10	19.050	112	29	14.00	11.20	14	4	16.50		E0203/4	E0213/4
7/8	9	22.225	118	29	16.00	12.50	16	4	19.50		E0207/8	E0217/8
1“	8	25.400	130	35	18.00	14.00	18	4	22.25		E0201	E0211



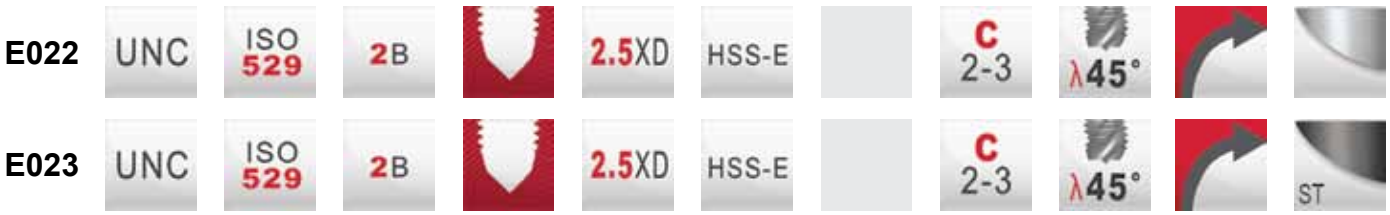
EX20
EX21

- UNC Machine Tap Spiral Flute 45º
- UNC Maschinen-Gewindebohrer, rechtsgedrallte Nuten 45º
- UNC Machinetappen met gespiraliseerde spaangroeven 45°
- UNC Tarauds machine goujures hélicoidales 45º
- UNC Machos de máquina Estrías helicoidales a 45º
- UNC Macho de Máquina Canal Helicoidal 45º

EX20	▪	1.1 1.2 1.3 1.4 1.5 7.1 7.2 7.3 7.4
	•	4.1 4.2 5.1 5.2
EX21	▪	1.1 1.2 1.3 1.4 1.5 2.1 2.2
	•	2.3



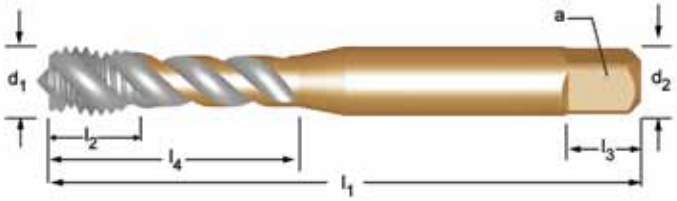
UNC	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	EX20	EX21
4	40	2.845	56	6	3.5	2.7	6	3	2.35	18	EX204-40	EX214-40
5	40	3.175	56	6	3.5	2.7	6	3	2.65	18	EX205-40	EX215-40
6	32	3.505	56	7	4.0	3.0	6	3	2.85	20	EX206-32	EX216-32
8	32	4.166	63	7	4.5	3.4	8	3	3.5	21	EX208-32	EX218-32
10	24	4.826	70	8	6.0	4.9	8	3	3.9	25	EX2010-24	EX2110-24
12	24	5.486	80	10	6.0	4.9	8	3	4.5	30	EX2012-24	EX2112-24
1/4	20	6.350	80	10	7.0	5.5	8	3	5.1	30	EX201/4	EX211/4
5/16	18	7.938	90	12	8.0	6.2	9	3	6.6	35	EX205/16	EX215/16
3/8	16	9.525	100	15	10.0	8.0	11	3	8	39	EX203/8	EX213/8
7/16	14	11.112	100	15	8.0	6.2	9	3	9.4		EX207/16	EX217/16
1/2	13	12.700	110	18	9.0	7.0	10	3	10.8		EX201/2	EX211/2
5/8	11	15.875	110	20	12.0	9.0	12	4	13.5		EX205/8	EX215/8
3/4	10	19.050	125	25	14.0	11.0	14	4	16.5		EX203/4	EX213/4
7/8	9	22.225	140	25	18.0	14.5	17	4	19.5		EX207/8	EX217/8
1“	8	25.400	160	30	18.0	14.5	17	4	22.25		EX201	EX211

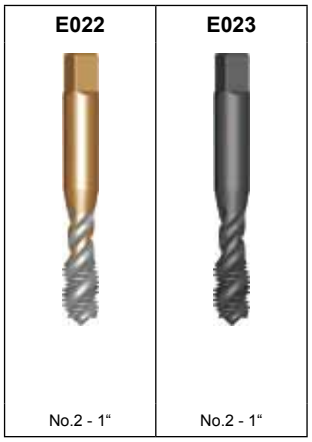


E022
E023

- UNC Machine Tap Spiral Flute 45º
- UNC Maschinen-Gewindebohrer, rechtsgedrallte Nuten 45º
- UNC Machinetappen met gespiraliseerde spaangroeven 45°
- UNC Tarauds machine goujures hélicoidales 45º
- UNC Machos de máquina Estrías helicoidales a 45º
- UNC Macho de Máquina Canal Helicoidal 45º

E022	▪	1.1 1.2 1.3 1.4 1.5 6.1 6.3 7.1 7.2 7.3 7.4
	▪	4.1 4.2 5.1 5.2 6.2 8.1
E023	▪	1.1 1.2 1.3 1.4 1.5
	▪	2.1 2.2 2.3





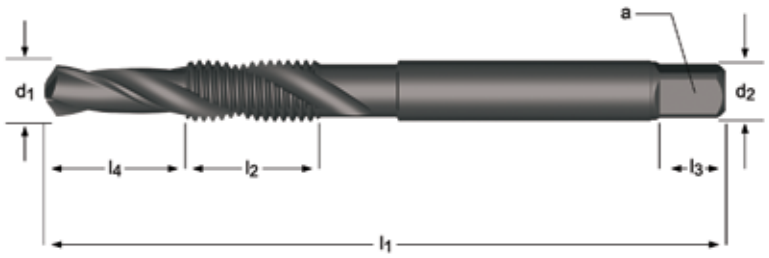
UNC	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E022	E023
2	56	2.184	44.5	9.5	2.80	2.24	5	2	1.85	9.5	E0222-56	E0232-56
4	40	2.845	48	6	3.15	2.50	5	3	2.35	14	E0224-40	E0234-40
5	40	3.175	48	6	3.15	2.50	5	3	2.65	12.5	E0225-40	E0235-40
6	32	3.505	50	6	3.55	2.80	5	3	2.85	16	E0226-32	E0236-32
8	32	4.166	53	7	4.50	3.55	6	3	3.50	17	E0228-32	E0238-32
10	24	4.826	58	8	5.00	4.00	7	3	3.90	20	E02210-24	E02310-24
12	24	5.486	62	12	5.60	4.50	7	3	4.50	21	E02212-24	E02312-24
1/4	20	6.350	66	10	6.30	5.00	8	3	5.10	28	E0221/4	E0231/4
5/16	18	7.938	72	12	8.00	6.30	9	3	6.60	31	E0225/16	E0235/16
3/8	16	9.525	80	15	10.00	8.00	11	3	8.00	34	E0223/8	E0233/8
7/16	14	11.112	85	19	8.00	6.30	9	3	9.40		E0227/16	E0237/16
1/2	13	12.700	89	19	9.00	7.10	10	3	10.80		E0221/2	E0231/2
5/8	11	15.875	102	24	12.50	10.00	13	4	13.50		E0225/8	E0235/8
3/4	10	19.050	112	29	14.00	11.20	14	4	16.50		E0223/4	E0233/4
7/8	9	22.225	118	29	16.00	12.50	16	4	19.50		E0227/8	E0237/8
1"	8	25.400	130	35	18.00	14.00	18	4	22.25		E0221	E0231

E651 | UNC | DORMER DIN | 2B | 1.5XD | HSS | C 2-3 | λ30° | ST

E651

- UNC Combi Taps Spiral Flute 30º
- UNC Kombination Bohrer-Gewindebohrer, rechtsgedrallte Nuten 30º
- UNC Combi boortappen met gespiraliseerde spaangroeven 30°
- UNC Foret taraudeur goujures hélicoidales 30º
- UNC Combinación broca-macho Estrías helicoidales a 30º
- UNC Macho Broca Canal Helicoidal 30º

E651 • 1.1 1.2 1.3 1.4 3.2 6.2 6.3 7.1 7.2 8.1



UNC	TPI	d_1 nom mm	d_2 Ø mm	l_1 mm	l_4 mm	l_2 mm	a mm		E651
6	32	2.80	3.5	56.9	6	12	2.90	5.00	E6516-32
8	32	3.50	4.50	64	8	12	3.55	6.00	E6518-32
10	24	3.90	5.00	72	10	15	4.00	7.00	E65110-24
12	24	4.50	5.60	77	11	15	4.50	7.00	E65112-24
1/4	20	5.20	6.30	83	13	17	5.00	8.00	E6511/4
5/16	18	6.60	8.00	94	16	21	6.30	9.00	E6515/16
3/8	16	8.00	10.00	104	19	23	8.00	11.00	E6513/8
7/16	14	9.40	8.00	107	22	25	6.30	9.00	E6517/16
1/2	13	10.80	9.00	114	25	29	7.10	10.00	E6511/2
9/16	12	12.20	11.20	124	28	29	9.00	12.00	E6519/16
5/8	11	13.50	12.50	134	32.5	31	10.00	13.00	E6515/8

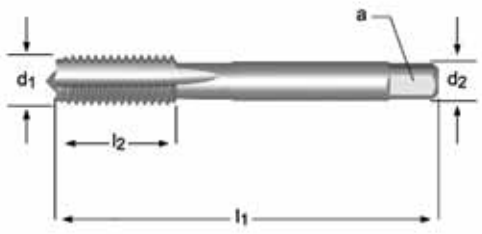
DORMER

E111 UNF DIN 2181 2B 1.5XD HSS C 2-3

E111

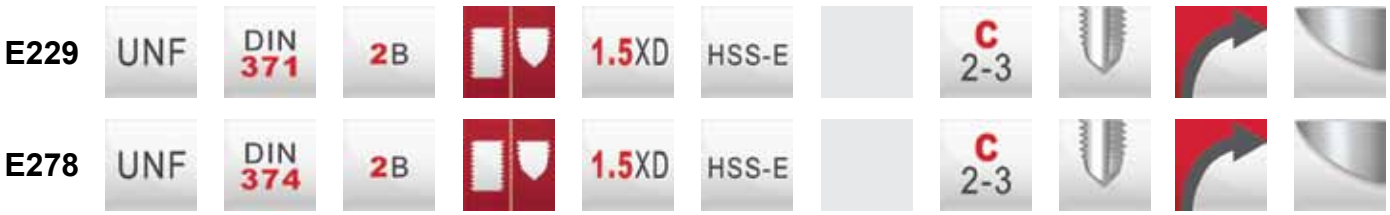
- UNF Hand Tap Straight Flute
- UNF Handgewindebohrer, geradegenutet
- UNF Handtappen met rechte spaangroeven
- UNF Tarauds à main Goujures droites
- UNF Machos de mano Estrías rectas
- UNF Machos Manuais Canais Direitos

E111 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 3.4 6.1 6.2 6.3 6.4 7.2 7.3 7.4 8.2 8.3



UNF	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		E111
5	44	3.18	45	13	4.0	3.0	3	2.7	E1115-44NO3
5	44	3.18	45	13	4.0	3.0	3	2.7	E1115-44NO9
6	40	3.51	45	10	4.0	3.0	3	2.95	E1116-40NO3
6	40	3.51	45	10	4.0	3.0	3	2.95	E1116-40NO9
8	36	4.17	50	14	6.0	4.9	3	3.5	E1118-36NO3
8	36	4.17	50	14	6.0	4.9	3	3.5	E1118-36NO9
10	32	4.82	50	14	6.0	4.9	3	4.1	E11110-32NO3
10	32	4.82	50	14	6.0	4.9	3	4.1	E11110-32NO9
1/4	28	6.35	56	17	6.0	4.9	3	5.5	E1111/4NO3
1/4	28	6.35	56	17	6.0	4.9	3	5.5	E1111/4NO9
5/16	24	7.94	63	19	6.0	4.9	3	6.9	E1115/16NO3
5/16	24	7.94	63	19	6.0	4.9	3	6.9	E1115/16NO9
3/8	24	9.53	63	16	7.0	5.5	3	8.5	E1113/8NO3
3/8	24	9.53	63	16	7.0	5.5	3	8.5	E1113/8NO9
7/16	20	11.11	63	15	8.0	6.2	3	9.9	E1117/16NO3
7/16	20	11.11	63	15	8.0	6.2	3	9.9	E1117/16NO9
1/2	20	12.70	70	22	9.0	7.0	3	11.5	E1111/2NO3
1/2	20	12.70	70	22	9.0	7.0	3	11.5	E1111/2NO9
9/16	18	14.29	70	16	11.0	9.0	4	12.9	E1119/16NO3
9/16	18	14.29	70	16	11.0	9.0	4	12.9	E1119/16NO9
5/8	18	15.88	70	16	12.0	9.0	4	14.5	E1115/8NO3
5/8	18	15.88	70	16	12.0	9.0	4	14.5	E1115/8NO9
3/4	16	19.05	80	22	14.0	11.0	4	17.5	E1113/4NO3
3/4	16	19.05	80	22	14.0	11.0	4	17.5	E1113/4NO9
7/8	14	22.23	90	22	18.0	14.5	4	20.4	E1117/8NO3
7/8	14	22.23	90	22	18.0	14.5	4	20.4	E1117/8NO9
1“	12	25.40	90	22	20.0	16.0	4	23.25	E1111NO3
1“	12	25.40	90	22	20.0	16.0	4	23.25	E1111NO9

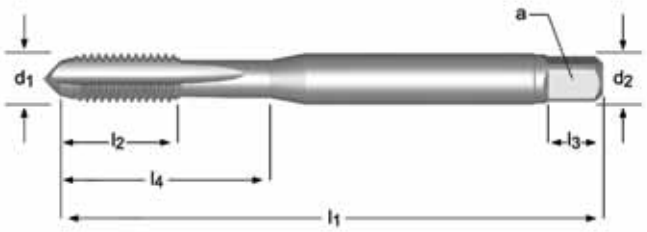
NO1
NO9
c 10

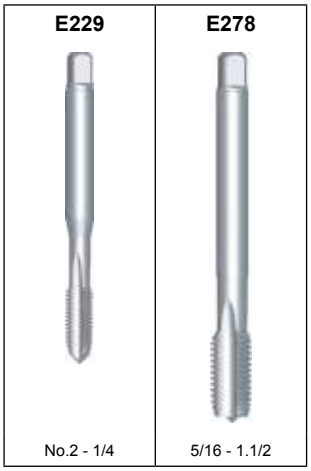


E229
E278

- UNF Machine Tap Straight Flute
- UNF Maschinen-Gewindebohrer, geradegenutet
- UNF Machinetappen met rechte spaangroeven
- UNF Tarauds machine Goujures droites
- UNF Machos de máquina Estrías rectas
- UNF Macho de Máquina Canais Direitos

E229; E278 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 6.2 6.3 7.2 7.3 8.2





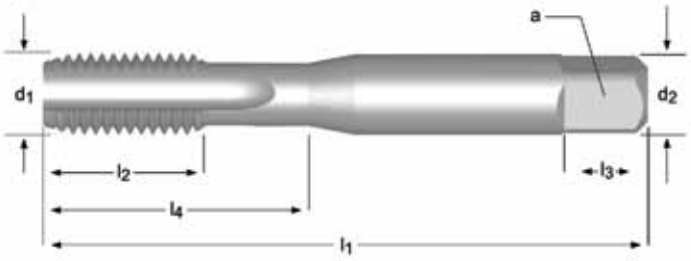
UNF	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E229	E278
2	64	2.184	45	7	2.8	2.1	5	3	1.9	12	E2292-64	
3	56	2.515	50	8	2.8	2.1	5	3	2.15	12.5	E2293-56	
4	48	2.845	56	9	3.5	2.7	6	3	2.4	18	E2294-48	
5	44	3.175	56	10	3.5	2.7	6	3	2.7	18	E2295-44	
6	40	3.505	56	11	4.0	3.0	6	3	2.95	20	E2296-40	
8	36	4.166	63	12	4.5	3.4	6	3	3.5	21	E2298-36	
10	32	4.826	70	13	6.0	4.9	8	3	4.1	25	E22910-32	
12	28	5.486	80	15	6.0	4.9	8	3	4.7	30	E22912-28	
1/4	28	6.350	80	15	7.0	5.5	8	3	5.5	30	E2291/4	
5/16	24	7.94	90	18	6.0	4.9	8	3	6.9			E2785/16
3/8	24	9.53	100	24	7.0	5.5	8	3	8.5			E2783/8
7/16	20	11.11	100	22	9.0	7.0	10	3	9.9			E2787/16
1/2	20	12.70	100	21	9.0	7.0	10	3	11.5			E2781/2
9/16	18	14.29	100	21	11.0	9.0	12	4	12.9			E2789/16
5/8	18	15.88	100	21	12.0	9.0	12	4	14.5			E2785/8
3/4	16	19.05	125	25	14.0	11.0	14	4	17.5			E2783/4
7/8	14	22.23	140	28	18.0	14.5	17	4	20.4			E2787/8
1“	12	25.40	140	26	18.0	14.5	17	4	23.25			E2781
1.1/8	12	28.58	150	28	22.0	18.0	21	4	26.5			E2781.1/8
1.1/4	12	31.75	150	28	25.0	20.0	23	4	29.5			E2781.1/4
1.3/8	12	34.93	170	30	28.0	22.0	25	4	32.75			E2781.3/8
1.1/2	12	38.10	170	30	32.0	24.0	27	4	36			E2781.1/2

E524 UNF ISO 529 2B 1.5XD HSS L120 c 109

E524

- UNF Machine Tap Straight Flute
- UNF Maschinen-Gewindebohrer, geradegenutet
- UNF Hand-/machinetappen met rechte spaangroeven
- UNF Tarauds machine Goujures droites
- UNF Machos de máquina Estrías rectas
- UNF Macho de Máquina Canais Direitos

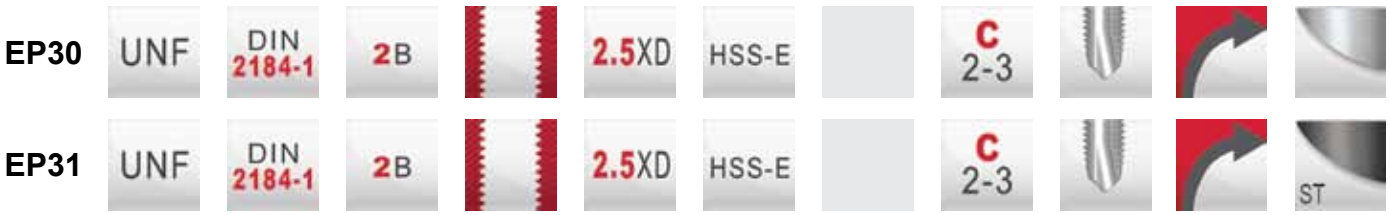
E524	•	1.1	1.2	1.3	1.4	1.5	3.1	3.2	3.3	3.4	6.1	6.2	6.3	6.4	7.2	7.3	7.4	8.2	8.3



UNF	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E524
0	80	1.524	41	7	2.50	2.00	4	2	1.25	7	E5240-80NO1
0	80	1.524	41	7	2.50	2.00	4	2	1.25	7	E5240-80NO2
0	80	1.524	41	7	2.50	2.00	4	2	1.25	7	E5240-80NO3
0	80	1.524	41	7	2.50	2.00	4	2	1.25	7	E5240-80NO6
1	72	1.854	41	8	2.50	2.00	4	2	1.55	8	E5241-72NO1
1	72	1.854	41	8	2.50	2.00	4	2	1.55	8	E5241-72NO2
1	72	1.854	41	8	2.50	2.00	4	2	1.55	8	E5241-72NO3
1	72	1.854	41	8	2.50	2.00	4	2	1.55	8	E5241-72NO6
2	64	2.184	44.5	9.5	2.80	2.24	5	3	1.9	9.5	E5242-64NO1
2	64	2.184	44.5	9.5	2.80	2.24	5	3	1.9	9.5	E5242-64NO2
2	64	2.184	44.5	9.5	2.80	2.24	5	3	1.9	9.5	E5242-64NO3
2	64	2.184	44.5	9.5	2.80	2.24	5	3	1.9	9.5	E5242-64NO6
4	48	2.845	48	12.5	3.15	2.50	5	3	2.4	12.5	E5244-48NO1
4	48	2.845	48	12.5	3.15	2.50	5	3	2.4	12.5	E5244-48NO2
4	48	2.845	48	12.5	3.15	2.50	5	3	2.4	12.5	E5244-48NO3
4	48	2.845	48	12.5	3.15	2.50	5	3	2.4	12.5	E5244-48NO6
5	44	3.175	48	12.5	3.15	2.50	5	3	2.7	12.5	E5245-44NO1
5	44	3.175	48	12.5	3.15	2.50	5	3	2.7	12.5	E5245-44NO2
5	44	3.175	48	12.5	3.15	2.50	5	3	2.7	12.5	E5245-44NO3
5	44	3.175	48	12.5	3.15	2.50	5	3	2.7	12.5	E5245-44NO6
6	40	3.505	50	14	3.55	2.80	5	3	2.95	14	E5246-40NO1
6	40	3.505	50	14	3.55	2.80	5	3	2.95	14	E5246-40NO2
6	40	3.505	50	14	3.55	2.80	5	3	2.95	14	E5246-40NO3
6	40	3.505	50	14	3.55	2.80	5	3	2.95	14	E5246-40NO6
8	36	4.166	53	9.5	4.50	3.55	6	3	3.5	17	E5248-36NO1
8	36	4.166	53	9.5	4.50	3.55	6	3	3.5	17	E5248-36NO2
8	36	4.166	53	9.5	4.50	3.55	6	3	3.5	17	E5248-36NO3
8	36	4.166	53	9.5	4.50	3.55	6	3	3.5	17	E5248-36NO6
10	32	4.826	58	11	5.00	4.00	7	3	4.1	20	E52410-32NO1
10	32	4.826	58	11	5.00	4.00	7	3	4.1	20	E52410-32NO2
10	32	4.826	58	11	5.00	4.00	7	3	4.1	20	E52410-32NO3
10	32	4.826	58	11	5.00	4.00	7	3	4.1	20	E52410-32NO6

NO1 NO9 c 10

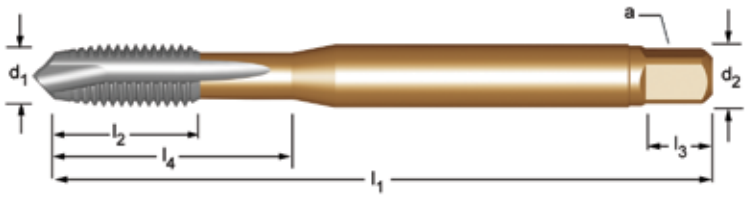
UNF	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E524
12	28	5.486	62	12	5.60	4.50	7	3	4.7	21	E52412-28NO1
12	28	5.486	62	12	5.60	4.50	7	3	4.7	21	E52412-28NO2
12	28	5.486	62	12	5.60	4.50	7	3	4.7	21	E52412-28NO3
12	28	5.486	62	12	5.60	4.50	7	3	4.7	21	E52412-28NO6
1/4	28	6.350	66	13	6.30	5.00	8	3	5.5	26	E5241/4NO1
1/4	28	6.350	66	13	6.30	5.00	8	3	5.5	26	E5241/4NO2
1/4	28	6.350	66	13	6.30	5.00	8	3	5.5	26	E5241/4NO3
1/4	28	6.350	66	13	6.30	5.00	8	3	5.5	26	E5241/4NO6
5/16	24	7.938	72	16	8.00	6.30	9	3	6.9	29	E5245/16NO1
5/16	24	7.938	72	16	8.00	6.30	9	3	6.9	29	E5245/16NO2
5/16	24	7.938	72	16	8.00	6.30	9	3	6.9	29	E5245/16NO3
5/16	24	7.938	72	16	8.00	6.30	9	3	6.9	29	E5245/16NO6
3/8	24	9.525	80	18	10.00	8.00	11	3	8.5	32	E5243/8NO1
3/8	24	9.525	80	18	10.00	8.00	11	3	8.5	32	E5243/8NO2
3/8	24	9.525	80	18	10.00	8.00	11	3	8.5	32	E5243/8NO3
3/8	24	9.525	80	18	10.00	8.00	11	3	8.5	32	E5243/8NO6
7/16	20	11.112	85	19	8.00	6.30	9	3	9.9		E5247/16NO1
7/16	20	11.112	85	19	8.00	6.30	9	3	9.9		E5247/16NO2
7/16	20	11.112	85	19	8.00	6.30	9	3	9.9		E5247/16NO3
7/16	20	11.112	85	19	8.00	6.30	9	3	9.9		E5247/16NO6
1/2	20	12.700	89	22	9.00	7.10	10	3	11.5		E5241/2NO1
1/2	20	12.700	89	22	9.00	7.10	10	3	11.5		E5241/2NO2
1/2	20	12.700	89	22	9.00	7.10	10	3	11.5		E5241/2NO3
1/2	20	12.700	89	22	9.00	7.10	10	3	11.5		E5241/2NO6
9/16	18	14.288	95	24	11.20	9.00	12	4	12.9		E5249/16NO1
9/16	18	14.288	95	24	11.20	9.00	12	4	12.9		E5249/16NO2
9/16	18	14.288	95	24	11.20	9.00	12	4	12.9		E5249/16NO3
9/16	18	14.288	95	24	11.20	9.00	12	4	12.9		E5249/16NO6
5/8	18	15.875	102	24	12.50	10.00	13	4	14.5		E5245/8NO1
5/8	18	15.875	102	24	12.50	10.00	13	4	14.5		E5245/8NO2
5/8	18	15.875	102	24	12.50	10.00	13	4	14.5		E5245/8NO3
5/8	18	15.875	102	24	12.50	10.00	13	4	14.5		E5245/8NO6
3/4	16	19.050	112	29	14.00	11.20	14	4	17.5		E5243/4NO1
3/4	16	19.050	112	29	14.00	11.20	14	4	17.5		E5243/4NO2
3/4	16	19.050	112	29	14.00	11.20	14	4	17.5		E5243/4NO3
3/4	16	19.050	112	29	14.00	11.20	14	4	17.5		E5243/4NO6
7/8	14	22.225	118	29	16.00	12.50	16	4	20.4		E5247/8NO1
7/8	14	22.225	118	29	16.00	12.50	16	4	20.4		E5247/8NO2
7/8	14	22.225	118	29	16.00	12.50	16	4	20.4		E5247/8NO3
7/8	14	22.225	118	29	16.00	12.50	16	4	20.4		E5247/8NO6
1“	12	25.400	130	35	18.00	14.00	18	4	23.25		E5241NO1
1“	12	25.400	130	35	18.00	14.00	18	4	23.25		E5241NO2
1“	12	25.400	130	35	18.00	14.00	18	4	23.25		E5241NO3
1“	12	25.400	130	35	18.00	14.00	18	4	23.25		E5241NO6
1.1/8	12	28.575	138	35	20.00	16.00	20	4	26.5		E5241.1/8NO1
1.1/8	12	28.575	138	35	20.00	16.00	20	4	26.5		E5241.1/8NO2
1.1/8	12	28.575	138	35	20.00	16.00	20	4	26.5		E5241.1/8NO3
1.1/4	12	31.750	151	41	22.40	18.00	22	4	29.5		E5241.1/4NO1
1.1/4	12	31.750	151	41	22.40	18.00	22	4	29.5		E5241.1/4NO2
1.1/4	12	31.750	151	41	22.40	18.00	22	4	29.5		E5241.1/4NO3
1.3/8	12	34.925	162	47	25.00	20.00	24	4	32.75		E5241.3/8NO1
1.3/8	12	34.925	162	47	25.00	20.00	24	4	32.75		E5241.3/8NO2
1.3/8	12	34.925	162	47	25.00	20.00	24	4	32.75		E5241.3/8NO3
1.1/2	12	38.100	170	47	28.00	22.40	26	4	36		E5241.1/2NO1
1.1/2	12	38.100	170	47	28.00	22.40	26	4	36		E5241.1/2NO2
1.1/2	12	38.100	170	47	28.00	22.40	26	4	36		E5241.1/2NO3

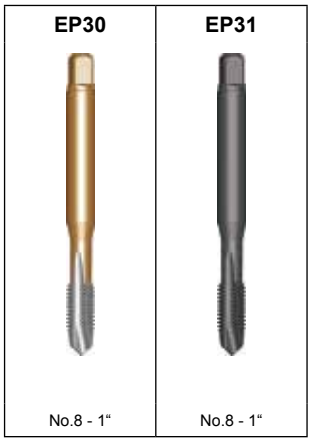


EP30
EP31

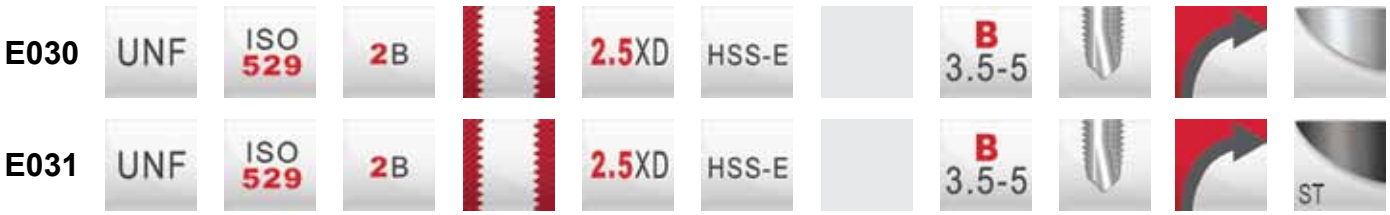
- UNF Machine Tap Spiral Point
- UNF Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- UNF Machinetappen met schilaansnijding
- UNF Tarauds machine Coupe gun
- UNF Machos de máquina Entrada en hélice
- UNF Macho de Máquina Entrada Helicoidal

EP30	▪	1.1	1.2	1.3	1.4	1.5	6.1	6.3	7.1	7.2	7.3	7.4
	▪	1.6	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.2	8.1
EP31	▪	1.1	1.2	1.3	1.4	1.5	2.1	2.2				
	▪	1.6	2.3	3.1	3.2	3.3	3.4					





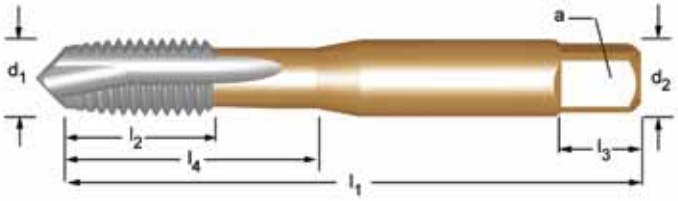
UNF	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	EP30	EP31
8	36	4.166	63	12	4.5	3.4	8	3	3.5	21	EP308-36	EP318-36
10	32	4.826	70	13	6.0	4.9	8	3	4.1	25	EP3010-32	EP3110-32
1/4	28	6.350	80	15	7.0	5.5	8	3	5.5	30	EP301/4	EP311/4
5/16	24	7.938	90	18	8.0	6.2	9	3	6.9	35	EP305/16	EP315/16
3/8	24	9.525	100	20	10.0	8.0	11	3	8.5	39	EP303/8	EP313/8
7/16	20	11.112	100	20	8.0	6.2	9	3	9.9		EP307/16	EP317/16
1/2	20	12.700	110	23	9.0	7.0	10	3	11.5		EP301/2	EP311/2
5/8	18	15.875	110	25	12.0	9.0	12	3	14.5		EP305/8	EP315/8
3/4	16	19.050	125	30	14.0	11.0	14	4	17.5		EP303/4	EP313/4
7/8	14	22.225	140	34	18.0	14.5	17	4	20.4		EP307/8	EP317/8
1“	12	25.400	160	38	18.0	14.5	17	4	23.25		EP301	EP311

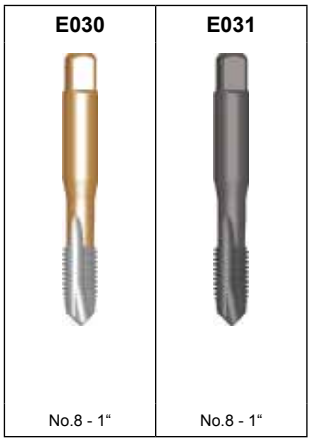


E030
E031

- UNF Machine Tap Spiral Point
- UNF Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- UNF Machinetappen met schilaansnijding
- UNF Tarauds machine Coupe gun
- UNF Machos de máquina Entrada en hélice
- UNF Macho de Máquina Entrada Helicoidal

E030	▪	1.1	1.2	1.3	1.4	1.5	6.1	6.3	7.1	7.2	7.3	7.4
	▪	1.6	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.2	8.1
E031	▪	1.1	1.2	1.3	1.4	1.5						
	▪	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4			





UNF	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E030	E031
8	36	4.166	53	9.5	4.50	3.55	6	3	3.50	17	E0308-36	E0318-36
10	32	4.826	58	11	5.00	4.00	7	3	4.10	20	E03010-32	E03110-32
1/4	28	6.350	66	13	6.30	5.00	8	3	5.50	26	E0301/4	E0311/4
5/16	24	7.938	72	16	8.00	6.30	9	3	6.90	29	E0305/16	E0315/16
3/8	24	9.525	80	18	10.00	8.00	11	3	8.50	32	E0303/8	E0313/8
7/16	20	11.112	85	19	8.00	6.30	9	3	9.90		E0307/16	E0317/16
1/2	20	12.700	89	22	9.00	7.10	10	3	11.50		E0301/2	E0311/2
9/16	18	14.288	95	24	11.20	9.00	12	3	12.90		E0309/16	E0319/16
5/8	18	15.875	102	24	12.50	10.00	13	3	14.50		E0305/8	E0315/8
3/4	16	19.050	112	29	14.00	11.20	14	4	17.50		E0303/4	E0313/4
7/8	14	22.225	118	29	16.00	12.50	16	4	20.40		E0307/8	E0317/8
1“	12	25.400	130	35	18.00	14.00	18	4	23.25		E0301	E0311

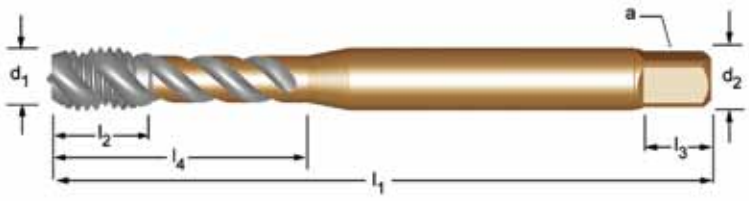
EX30 UNF | DIN 2184-1 | 2B | 2.5XD | HSS-E | C 2-3 | λ45°

EX31 UNF | DIN 2184-1 | 2B | 2.5XD | HSS-E | C 2-3 | λ45° | ST

EX30
EX31

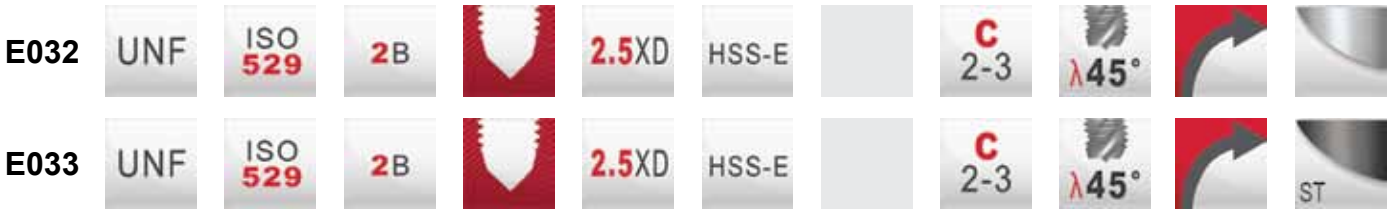
- UNF Machine Tap Spiral Flute 45º
- UNF Maschinen-Gewindebohrer, rechtsgedrallte Nuten 45º
- UNF Machinetappen met gespiraliseerde spaangroeven 45°
- UNF Tarauds machine goujures hélicoidales 45º
- UNF Machos de máquina Estrías helicoidales a 45º
- UNF Macho de Máquina Canal Helicoidal 45º

EX20	▪	1.1 1.2 1.3 1.4 1.5 7.1 7.2 7.3 7.4
	▪	4.1 4.2 5.1 5.2
EX21	▪	1.1 1.2 1.3 1.4 1.5 2.1 2.2
	▪	2.3



EX30	EX31
No.8 - 1“	No.8 - 1“

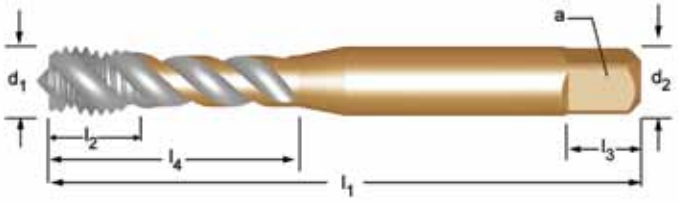
UNF	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	EX30	EX31
8	36	4.166	63	7	4.5	3.4	8	3	3.5	21	EX308-36	EX318-36
10	32	4.826	70	8	6.0	4.9	8	3	4.1	25	EX3010-32	EX3110-32
1/4	28	6.350	80	10	7.0	5.5	8	3	5.5	30	EX301/4	EX311/4
5/16	24	7.938	90	12	8.0	6.2	9	3	6.9	35	EX305/16	EX315/16
3/8	24	9.525	100	15	10.0	8.0	11	3	8.5	39	EX303/8	EX313/8
7/16	20	11.112	100	15	8.0	6.2	9	3	9.9		EX307/16	EX317/16
1/2	20	12.700	110	18	9.0	7.0	10	3	11.5		EX301/2	EX311/2
5/8	18	15.875	110	20	12.0	9.0	12	4	14.5		EX305/8	EX315/8
3/4	16	19.050	125	25	14.0	11.0	14	4	17.5		EX303/4	EX313/4
7/8	14	22.225	140	25	18.0	14.5	17	4	20.4		EX307/8	EX317/8
1“	12	25.400	160	30	18.0	14.5	17	4	23.25		EX301	EX311

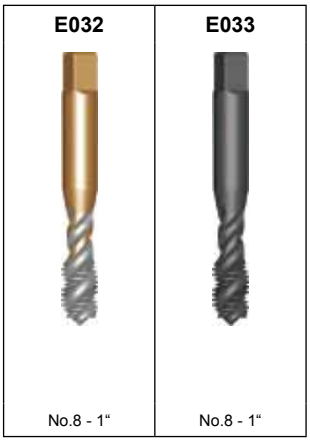


E032
E033

- UNF Machine Tap Spiral Flute 45º
- UNF Maschinen-Gewindebohrer, rechtsgedrallte Nuten 45º
- UNF Machinetappen met gespiraliseerde spaangroeven 45°
- UNF Tarauds machine goujures hélicoidales 45º
- UNF Machos de máquina Estrías helicoidales a 45º
- UNF Macho de Máquina Canal Helicoidal 45º

E032	▪	1.1	1.2	1.3	1.4	1.5	7.1	7.2	7.3	7.4
	•	1.6	4.1	4.2	5.1	5.2	8.1			
E033	▪	1.1	1.2	1.3	1.4	1.5				
	•	1.6	2.1	2.2	2.3					





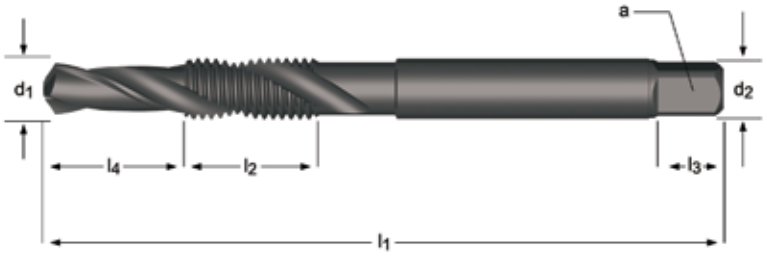
UNF	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	▨ a mm	l_3 mm	z	↔	l_4 mm	E032	E033
8	36	4.166	53	7	4.50	3.55	6	3	3.50	17	E0328-36	E0338-36
10	32	4.826	58	8	5.00	4.00	7	3	4.10	20	E03210-32	E03310-32
1/4	28	6.350	66	10	6.30	5.00	8	3	5.50	28	E0321/4	E0331/4
5/16	24	7.938	72	12	8.00	6.30	9	3	6.90	31	E0325/16	E0335/16
3/8	24	9.525	80	15	10.00	8.00	11	3	8.50	34	E0323/8	E0333/8
7/16	20	11.112	85	19	8.00	6.30	9	3	9.90		E0327/16	E0337/16
1/2	20	12.700	89	22	9.00	7.10	10	3	11.50		E0321/2	E0331/2
9/16	18	14.288	95	24	11.20	9.00	12	3	12.90		E0329/16	E0339/16
5/8	18	15.875	102	24	12.50	10.00	13	4	14.50		E0325/8	E0335/8
3/4	16	19.050	112	29	14.00	11.20	14	4	17.50		E0323/4	E0333/4
7/8	14	22.225	118	29	16.00	12.50	16	4	20.40		E0327/8	E0337/8
1“	12	25.400	130	35	18.00	14.00	18	4	23.25		E0321	E0331

E654 UNF | DORMER DIN | Medium | 1.5XD | HSS | C 2-3 | λ30° | ST

E654

- UNF Combi Taps Spiral Flute 30º
- UNF Kombination Bohrer-Gewindebohrer, rechtsgedrallte Nuten 30º
- UNF Combi boortappen met gespiraliseerde spaangroeven 30°
- UNF Foret taraudeur goujures hélicoidales 30º
- UNF Combinación broca-macho Estrías helicoidales a 30º
- UNF Macho Broca Canal Helicoidal 30º

E654 • 1.1 1.2 1.3 1.4 3.2 6.2 6.3 7.1 7.2 8.1



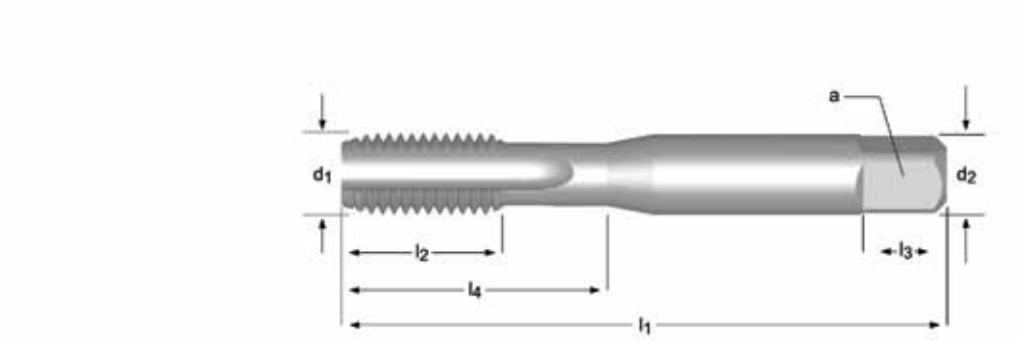
UNF	TPI	d_1 nom mm	d_2 Ø mm	L	l_1 mm	l_2 mm	▨ a mm	↔	E654
8	36	3.50	4.50	64	8	13	3.55	6.00	E6548-36
10	32	4.10	5.00	72	10	16	4.00	7.00	E65410-32
12	28	4.70	5.60	77	11	17	4.50	7.00	E65412-28
1/4	28	5.50	6.30	83	13	19	5.00	8.00	E6541/4
5/16	24	6.90	8.00	94	16	22	6.30	9.00	E6545/16
3/8	24	8.50	10.00	104	19	24	8.00	11.00	E6543/8
7/16	20	9.90	8.00	107	22	25	6.30	9.00	E6547/16
1/2	20	11.50	9.00	114	25	29	7.10	10.00	E6541/2
9/16	18	12.90	11.20	124	28	30	9.00	12.00	E6549/16
5/8	18	14.50	12.50	134	32	32	10.00	13.00	E6545/8

E570 UN ISO 529 2B 1.5XD HSS C 2-3

E570

- UN Machine Tap Straight Flute
- UN Maschinen-Gewindebohrer, geradegenutet
- UN Machinetappen met rechte spaangroeven
- UN Tarauds machine Goujures droites
- UN Machos de máquina Estrías rectas
- UN Macho de Máquina Canais Direitos

E570 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 3.4 6.1 6.2 6.3 6.4 7.2 7.3 7.4 8.2 8.3



UN	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		l_4 mm	E570
1/4	32	6.350	66	13	6.30	5.00	3	5.6	26	E5701/4X32NO3
1/4	36	6.350	66	13	6.30	5.00	3	5.7	26	E5701/4X36NO3
1/4	40	6.350	66	13	6.30	5.00	3	5.7	26	E5701/4X40NO3
5/16	32	7.938	72	16	8.00	6.30	3	7.2	29	E5705/16X32NO3
3/8	32	9.525	80	18	10.00	8.00	3	8.8	32	E5703/8X32NO3
7/16	24	11.112	85	19	8.00	6.30	3	10		E5707/16X24NO3
7/16	28	11.112	85	19	8.00	6.30	3	10.2		E5707/16X28NO3
1/2	28	12.700	89	22	9.00	7.10	3	11.8		E5701/2X28NO3
9/16	24	14.288	95	24	11.20	9.00	4	13.25		E5709/16X24NO3
5/8	24	15.875	102	24	12.50	10.00	4	14.8		E5705/8X24NO3
3/4	20	19.050	112	29	14.00	11.20	4	17.8		E5703/4X20NO3
7/8	20	22.225	118	30	16.00	12.50	4	21		E5707/8X20NO3
1“	14	25.400	130	36	18.00	14.00	4	23.5		E5701X14NO3
1.1/16	12	26.988	127	37	20.00	16.00	4	24.75		E5701.1/16X12NO3
1.1/8	8	28.575	138	35	20.00	16.00	4	25.5		E5701.1/8X8NO3
1.3/16	12	30.163	137	37	22.40	18.00	4	28		E5701.3/16X12NO3
1.1/4	8	31.750	151	41	22.40	18.00	4	28.5		E5701.1/4X8NO3
1.5/16	12	33.338	137	37	22.40	18.00	4	31.25		E5701.5/16X12NO3

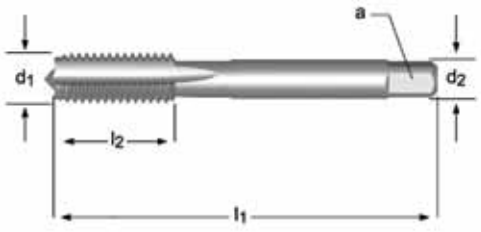
DORMER

E115 BSW DIN 351 Medium 1.5XD HSS C 2-3

E115

- BSW Hand Tap Straight Flute
- BSW Handgewindebohrer, geradegenutet
- BSW Handtappen met rechte spaangroeven
- BSW Tarauds à main Goujures droites
- BSW Machos de mano Estrías rectas
- BSW Machos Manuais Canais Direitos

E115 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 3.4 6.1 6.2 6.3 6.4 7.2 7.3 7.4 8.2 8.3



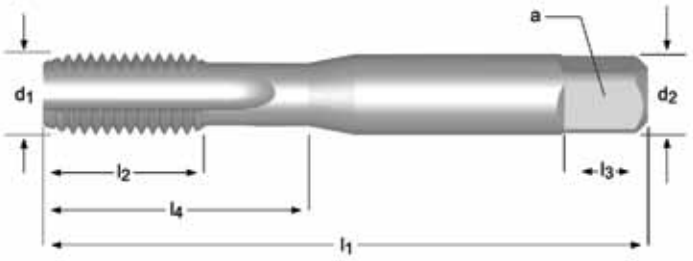
BSW	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		E115
1/8	40	3.18	40	10	3.5	2.7	3	2.55	E1151/8NO3
1/8	40	3.18	40	10	3.5	2.7	3	2.55	E1151/8NO8
5/32	32	3.97	45	12	4.5	3.4	3	3.2	E1155/32NO3
5/32	32	3.97	45	12	4.5	3.4	3	3.2	E1155/32NO8
3/16	24	4.76	50	16	5.5	4.3	3	3.7	E1153/16NO3
3/16	24	4.76	50	16	5.5	4.3	3	3.7	E1153/16NO8
1/4	20	6.35	56	17	6.0	4.9	3	5.1	E1151/4NO3
1/4	20	6.35	56	17	6.0	4.9	3	5.1	E1151/4NO8
5/16	18	7.94	63	25	6.0	4.9	3	6.5	E1155/16NO3
5/16	18	7.94	63	25	6.0	4.9	3	6.5	E1155/16NO8
3/8	16	9.53	70	22	7.0	5.5	3	7.9	E1153/8NO3
3/8	16	9.53	70	22	7.0	5.5	3	7.9	E1153/8NO8
7/16	14	11.11	75	30	8.0	6.2	3	9.2	E1157/16NO3
7/16	14	11.11	75	30	8.0	6.2	3	9.2	E1157/16NO8
1/2	12	12.70	80	30	9.0	7.0	3	10.5	E1151/2NO3
1/2	12	12.70	80	30	9.0	7.0	3	10.5	E1151/2NO8
9/16	12	14.288	80	30	11.0	9.0	4	12	E1159/16NO3
9/16	12	14.288	80	30	11.0	9.0	4	12	E1159/16NO8
5/8	11	15.88	90	36	12.0	9.0	4	13.5	E1155/8NO3
5/8	11	15.88	90	36	12.0	9.0	4	13.5	E1155/8NO8
3/4	10	19.05	105	40	14.0	11.0	4	16.5	E1153/4NO3
3/4	10	19.05	105	40	14.0	11.0	4	16.5	E1153/4NO8
7/8	9	22.23	110	45	18.0	14.5	4	19.25	E1157/8NO3
7/8	9	22.23	110	45	18.0	14.5	4	19.25	E1157/8NO8
1“	8	25.40	110	50	20.0	16.0	4	22	E1151NO3
1“	8	25.40	110	50	20.0	16.0	4	22	E1151NO8

E531 BSW ISO 529 Medium 1.5XD HSS

E531

- BSW Machine Tap Straight Flute
- BSW Maschinen-Gewindebohrer, geradegenutet
- BSW Hand-/machinetappen met rechte spaangroeven
- BSW Tarauds machine Goujures droites
- BSW Machos de máquina Estrías rectas
- BSW Macho de Máquina Canais Direitos

E531 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 3.4 6.1 6.2 6.3 6.4 7.2 7.3 7.4 8.2 8.3



E531

1/8 - 1"

BSW	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		l_4 mm	E531
1/8	40	3.175	48	12.5	3.15	2.50	3	2.55	12.5	E5311/8NO1
1/8	40	3.175	48	12.5	3.15	2.50	3	2.55	12.5	E5311/8NO2
1/8	40	3.175	48	12.5	3.15	2.50	3	2.55	12.5	E5311/8NO3
1/8	40	3.175	48	12.5	3.15	2.50	3	2.55	12.5	E5311/8NO6
5/32	32	3.969	53	14	4.00	3.15	3	3.2	14	E5315/32NO1
5/32	32	3.969	53	14	4.00	3.15	3	3.2	14	E5315/32NO2
5/32	32	3.969	53	14	4.00	3.15	3	3.2	14	E5315/32NO3
5/32	32	3.969	53	14	4.00	3.15	3	3.2	14	E5315/32NO6
3/16	24	4.763	58	11	5.00	4.00	3	3.7	20	E5313/16NO1
3/16	24	4.763	58	11	5.00	4.00	3	3.7	20	E5313/16NO2
3/16	24	4.763	58	11	5.00	4.00	3	3.7	20	E5313/16NO3
3/16	24	4.763	58	11	5.00	4.00	3	3.7	20	E5313/16NO6
1/4	20	6.350	66	13	6.30	5.00	3	5.1	26	E5311/4NO1
1/4	20	6.350	66	13	6.30	5.00	3	5.1	26	E5311/4NO2
1/4	20	6.350	66	13	6.30	5.00	3	5.1	26	E5311/4NO3
1/4	20	6.350	66	13	6.30	5.00	3	5.1	26	E5311/4NO6
5/16	18	7.938	72	16	8.00	6.30	3	6.5	29	E5315/16NO1
5/16	18	7.938	72	16	8.00	6.30	3	6.5	29	E5315/16NO2
5/16	18	7.938	72	16	8.00	6.30	3	6.5	29	E5315/16NO3
5/16	18	7.938	72	16	8.00	6.30	3	6.5	29	E5315/16NO6
3/8	16	9.525	80	18	10.00	8.00	3	7.9	32	E5313/8NO1
3/8	16	9.525	80	18	10.00	8.00	3	7.9	32	E5313/8NO2
3/8	16	9.525	80	18	10.00	8.00	3	7.9	32	E5313/8NO3
3/8	16	9.525	80	18	10.00	8.00	3	7.9	32	E5313/8NO6
7/16	14	11.112	85	19	8.00	6.30	3	9.2		E5317/16NO1
7/16	14	11.112	85	19	8.00	6.30	3	9.2		E5317/16NO2
7/16	14	11.112	85	19	8.00	6.30	3	9.2		E5317/16NO3
7/16	14	11.112	85	19	8.00	6.30	3	9.2		E5317/16NO6
1/2	12	12.700	89	22	9.00	7.10	3	10.5		E5311/2NO1
1/2	12	12.700	89	22	9.00	7.10	3	10.5		E5311/2NO2
1/2	12	12.700	89	22	9.00	7.10	3	10.5		E5311/2NO3
1/2	12	12.700	89	22	9.00	7.10	3	10.5		E5311/2NO6

NO1
NO9
c 10

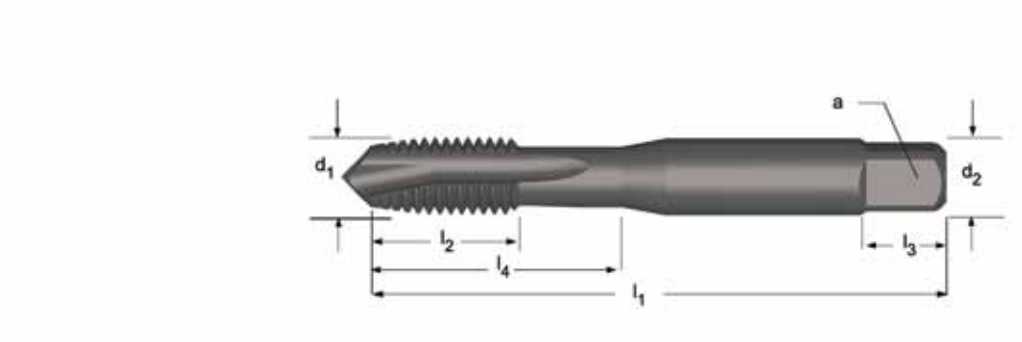
BSW	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		l_4 mm	E531
5/8	11	15.875	102	24	12.50	10.00	4	13.5		E5315/8NO1
5/8	11	15.875	102	24	12.50	10.00	4	13.5		E5315/8NO2
5/8	11	15.875	102	24	12.50	10.00	4	13.5		E5315/8NO3
5/8	11	15.875	102	24	12.50	10.00	4	13.5		E5315/8NO6
3/4	10	19.050	112	29	14.00	11.20	4	16.5		E5313/4NO1
3/4	10	19.050	112	29	14.00	11.20	4	16.5		E5313/4NO2
3/4	10	19.050	112	29	14.00	11.20	4	16.5		E5313/4NO3
3/4	10	19.050	112	29	14.00	11.20	4	16.5		E5313/4NO6
1“	8	25.400	130	35	18.00	14.00	4	22		E5311NO1
1“	8	25.400	130	35	18.00	14.00	4	22		E5311NO2
1“	8	25.400	130	35	18.00	14.00	4	22		E5311NO3
1“	8	25.400	130	35	18.00	14.00	4	22		E5311NO6

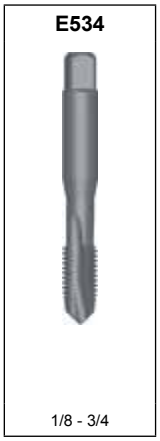
E534 BSW ISO 529 Medium 2.5XD HSS B 3.5-5 ST

E534

- BSW Machine Tap Spiral Point
- BSW Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- BSW Machinetappen met schilaansnijding
- BSW Tarauds machine Coupe gun
- BSW Machos de máquina Entrada en hélice
- BSW Macho de Máquina Entrada Helicoidal

E534 ▪ 1.1 1.2 1.3 1.4 2.1 2.2 2.3
▪ 1.5 1.6 4.3 5.1 5.2 6.1 6.3 7.1 7.2 7.3 7.4 8.1





BSW	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		l_4 mm	E534
1/8	40	3.175	48	12.5	3.15	2.50	3	2.55	12.5	E5341/8
5/32	32	3.969	53	14	4.00	3.15	3	3.2	14	E5345/32
3/16	24	4.763	58	11	5.00	4.00	3	3.7	20	E5343/16
1/4	20	6.350	66	13	6.30	5.00	3	5.1	26	E5341/4
5/16	18	7.938	72	16	8.00	6.30	3	6.5	29	E5345/16
3/8	16	9.525	80	18	10.00	8.00	3	7.9	32	E5343/8
7/16	14	11.112	85	19	8.00	6.30	3	9.2		E5347/16
1/2	12	12.700	89	22	9.00	7.10	3	10.5		E5341/2
5/8	11	15.875	102	24	12.50	10.00	3	13.5		E5345/8
3/4	10	19.050	112	29	14.00	11.20	4	16.5		E5343/4

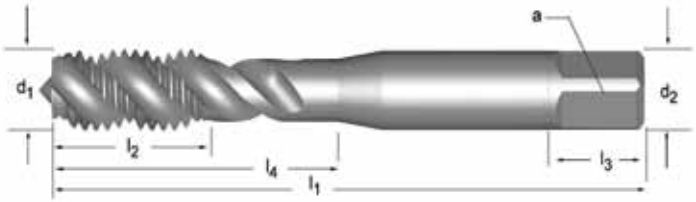
DORMER

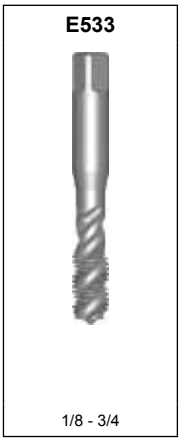
E533 BSW ISO 529 Medium 2XD HSS C 2-3 λ40° ST

E533

- BSW Machine Tap Spiral Flute 40º
- BSW Maschinen-Gewindebohrer, rechtsgedrallte Nuten 40º
- BSW Machinetappen met gespiraliseerde spaangroeven 40°
- BSW Tarauds machine goujures hélicoidales 40º
- BSW Machos de máquina Estrías helicoidales a 40º
- BSW Macho de Máquina Canal Helicoidal 40º

E533								
■	1.2	1.3	1.4	2.1	2.2	2.3		
●	1.5	5.2	7.1	7.2	7.3	7.4		





BSW	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		l_4 mm	E533
1/8	40	3.175	48	12.5	3.15	2.50	3	2.55	12.5	E5331/8
1/8	40	3.175	48	12.5	3.15	2.50	3	2.55	12.5	E5331/8BLUE
3/16	24	4.763	58	11	5.00	4.00	3	3.7	20	E5333/16
3/16	24	4.763	58	11	5.00	4.00	3	3.7	20	E5333/16BLUE
1/4	20	6.350	66	13	6.30	5.00	3	5.1	26	E5331/4
1/4	20	6.350	66	13	6.30	5.00	3	5.1	26	E5331/4BLUE
5/16	18	7.938	72	16	8.00	6.30	3	6.5	31	E5335/16
5/16	18	7.938	72	16	8.00	6.30	3	6.5	31	E5335/16BLUE
3/8	16	9.525	80	18	10.00	8.00	3	7.9	34	E5333/8
3/8	16	9.525	80	18	10.00	8.00	3	7.9	34	E5333/8BLUE
1/2	12	12.700	89	22	9.00	7.10	3	10.5		E5331/2
1/2	12	12.700	89	22	9.00	7.10	3	10.5		E5331/2BLUE
5/8	11	15.875	102	24	12.50	10.00	3	13.5		E5335/8
5/8	11	15.875	102	24	12.50	10.00	3	13.5		E5335/8BLUE
3/4	10	19.050	112	29	14.00	11.20	3	16.5		E5333/4
3/4	10	19.050	112	29	14.00	11.20	3	16.5		E5333/4BLUE

E536 BSF ISO 529 Medium 1.5XD HSS

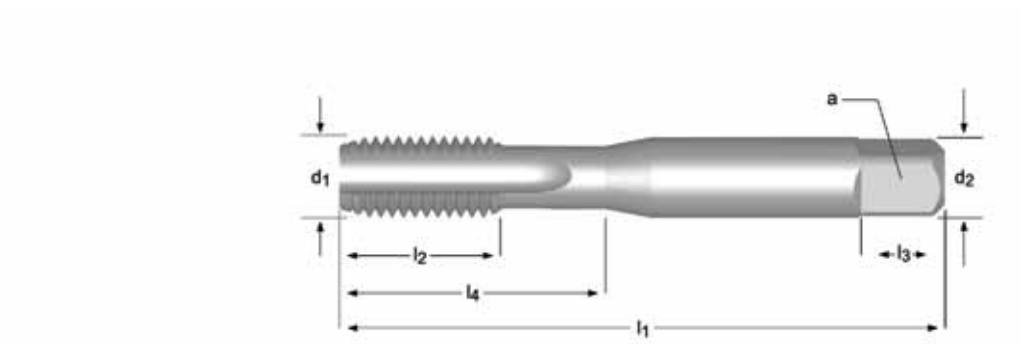
E536

- BSF Machine Tap Straight Flute
- BSF Maschinen-Gewindebohrer, geradegenutet
- BSF Hand-/machinetappen met rechte spaangroeven
- BSF Tarauds machine Goujures droites
- BSF Machos de máquina Estrías rectas
- BSF Macho de Máquina Canais Direitos

E536

▪ 6.1

▪ 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 6.2 6.3 6.4 7.2 7.3 7.4 8.2 8.3



BSF	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		l_4 mm	E536
3/16	32	4.76	58	12	5	4	3	4	20	E5363/16NO1
3/16	32	4.76	58	12	5	4	3	4	20	E5363/16NO2
3/16	32	4.76	58	12	5	4	3	4	20	E5363/16NO3
3/16	32	4.76	58	12	5	4	3	4	20	E5363/16NO6
1/4	26	6.35	66	14	6.3	5	3	5.3	26	E5361/4NO1
1/4	26	6.35	66	14	6.3	5	3	5.3	26	E5361/4NO2
1/4	26	6.35	66	14	6.3	5	3	5.3	26	E5361/4NO3
1/4	26	6.35	66	14	6.3	5	3	5.3	26	E5361/4NO6
5/16	22	7.94	72	18	8	6.3	3	6.8	29	E5365/16NO1
5/16	22	7.94	72	18	8	6.3	3	6.8	29	E5365/16NO2
5/16	22	7.94	72	18	8	6.3	3	6.8	29	E5365/16NO3
5/16	22	7.94	72	18	8	6.3	3	6.8	29	E5365/16NO6
3/8	20	9.53	80	20	10	8	3	8.3	32	E5363/8NO1
3/8	20	9.53	80	20	10	8	3	8.3	32	E5363/8NO2
3/8	20	9.53	80	20	10	8	3	8.3	32	E5363/8NO3
3/8	20	9.53	80	20	10	8	3	8.3	32	E5363/8NO6
7/16	18	11.11	85	20	8	6.3	3	9.7		E5367/16NO1
7/16	18	11.11	85	20	8	6.3	3	9.7		E5367/16NO2
7/16	18	11.11	85	20	8	6.3	3	9.7		E5367/16NO3
7/16	18	11.11	85	20	8	6.3	3	9.7		E5367/16NO6
1/2	16	12.7	89	23	9	7.1	3	11		E5361/2NO1
1/2	16	12.7	89	23	9	7.1	3	11		E5361/2NO2
1/2	16	12.7	89	23	9	7.1	3	11		E5361/2NO3
1/2	16	12.7	89	23	9	7.1	3	11		E5361/2NO6
9/16	16	14.28	95	25	11.2	9	4	12.7		E5369/16NO1
9/16	16	14.28	95	25	11.2	9	4	12.7		E5369/16NO2
9/16	16	14.28	95	25	11.2	9	4	12.7		E5369/16NO3
9/16	16	14.28	95	25	11.2	9	4	12.7		E5369/16NO6
5/8	14	15.88	102	25	12.5	10	4	14		E5365/8NO1
5/8	14	15.88	102	25	12.5	10	4	14		E5365/8NO2

NO1 NO9 c 10

DORMER

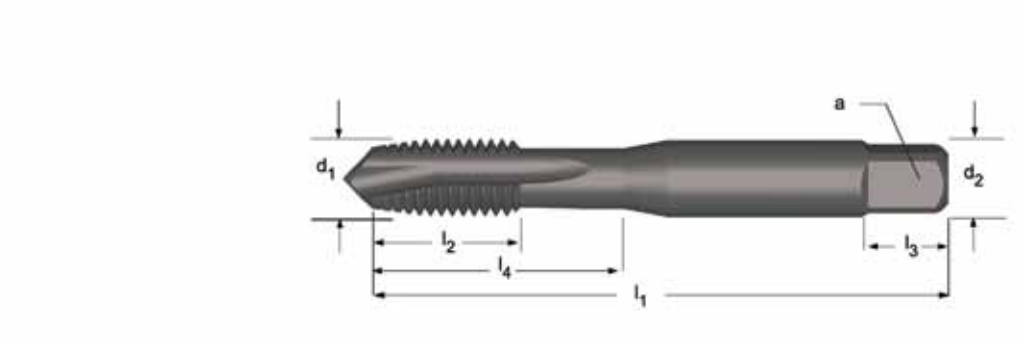
BSF	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		l_4 mm	E536
5/8	14	15.88	102	25	12.5	10	4	14		E5365/8NO3
5/8	14	15.88	102	25	12.5	10	4	14		E5365/8NO6
3/4	12	19.05	112	30	14	11.2	4	17		E5363/4NO1
3/4	12	19.05	112	30	14	11.2	4	17		E5363/4NO2
3/4	12	19.05	112	30	14	11.2	4	17		E5363/4NO3
3/4	12	19.05	112	30	14	11.2	4	17		E5363/4NO6
7/8	11	22.23	118	30	16	12.5	4	19.75		E5367/8NO1
7/8	11	22.23	118	30	16	12.5	4	19.75		E5367/8NO2
7/8	11	22.23	118	30	16	12.5	4	19.75		E5367/8NO3
7/8	11	22.23	118	30	16	12.5	4	19.75		E5367/8NO6
1“	10	25.4	130	36	18	14	4	22.75		E5361NO1
1“	10	25.4	130	36	18	14	4	22.75		E5361NO2
1“	10	25.4	130	36	18	14	4	22.75		E5361NO3
1“	10	25.4	130	36	18	14	4	22.75		E5361NO6

E539 BSF ISO 529 Medium 2.5XD HSS B 3.5-5 ST

E539

- BSF Machine Tap Spiral Point
- BSF Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- BSF Machinetappen met schilaansnijding
- BSF Tarauds machine Coupe gun
- BSF Machos de máquina Entrada en hélice
- BSF Macho de Máquina Entrada Helicoidal

E539													
▪	1.1	1.2	1.3	1.4	2.1	2.2	2.3						
▪	1.5	1.6	4.3	5.1	5.2	6.1	6.3	7.1	7.2	7.3	7.4	8.1	



BSF	TPI	d_1 nom Inch	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		l_4 mm	E539
1/4	26	6.35	66	14	6.3	5.0	3	5.3	26	E5391/4
5/16	22	7.94	72	18	8.0	6.3	3	6.8	29	E5395/16
3/8	20	9.53	80	20	10.0	8.0	3	8.3	32	E5393/8
1/2	16	12.70	89	23	9.0	7.1	3	11		E5391/2

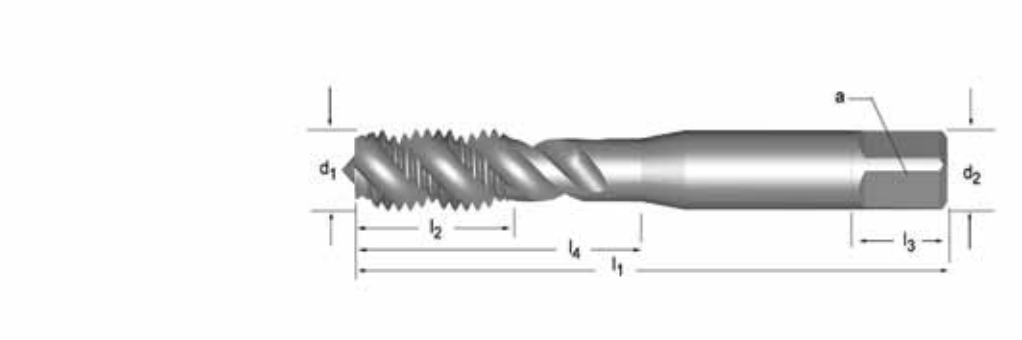
DORMER

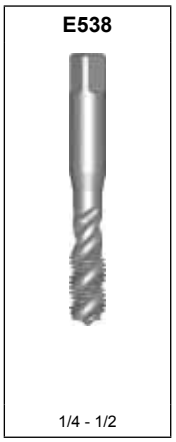
E538 BSF ISO 529 Medium 2XD HSS C 2-3 λ40° ST

E538

- BSF Machine Tap Spiral Flute 40º
- BSF Maschinen-Gewindebohrer, rechtsgedrallte Nuten 40º
- BSF Machinetappen met gespiraliseerde spaangroeven 40°
- BSF Tarauds machine goujures hélicoidales 40º
- BSF Machos de máquina Estrías helicoidales a 40º
- BSF Macho de Máquina Canal Helicoidal 40º

E538							
■	1.2	1.3	1.4	2.1	2.2	2.3
●	1.5	5.2	7.1	7.2	7.3	7.4





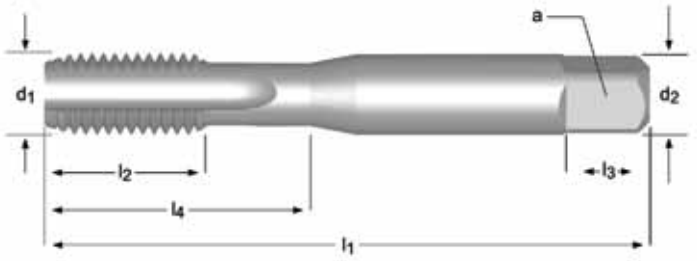
BSF	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z	↔	l_4 mm	E538
1/4	26	6.350	66	13	6.30	5.00	3	5.3	26	E5381/4
1/4	26	6.350	66	13	6.30	5.00	3	5.3	26	E5381/4BLUE
5/16	22	7.938	72	16	8.00	6.30	3	6.8	31	E5385/16
5/16	22	7.938	72	16	8.00	6.30	3	6.8	31	E5385/16BLUE
3/8	20	9.525	80	18	10.00	8.00	3	8.3	34	E5383/8
3/8	20	9.525	80	18	10.00	8.00	3	8.3	34	E5383/8BLUE
1/2	16	12.700	89	22	9.00	7.10	3	11		E5381/2
1/2	16	12.700	89	22	9.00	7.10	3	11		E5381/2BLUE

E542 BA ISO 529 Normal 1.5XD HSS

E542

- BA Machine Tap Straight Flute
- BA Maschinen-Gewindebohrer, geradegenutet
- BA Machinetappen met rechte spaangroeven
- BA Tarauds machine Goujures droites
- BA Machos de máquina Estrías rectas
- BA Macho de Máquina Canais Direitos

E542 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 3.4 6.1 6.2 6.3 6.4 7.2 7.3 7.4 8.2 8.3



E542

No.10 - No.0

BA	P mm	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E542
BA10	0.35	1.70	41	7.0	2.50	2.0	4	2	1.3	7	E542BA10NO1
BA10	0.35	1.70	41	7.0	2.50	2.0	4	2	1.3	7	E542BA10NO2
BA10	0.35	1.70	41	7.0	2.50	2.0	4	2	1.3	7	E542BA10NO3
BA10	0.35	1.70	41	7.0	2.50	2.0	4	2	1.3	7	E542BA10NO6
BA 8	0.43	2.20	44.5	9.5	2.80	2.2	5	3	1.8	9.5	E542BA8NO1
BA 8	0.43	2.20	44.5	9.5	2.80	2.2	5	3	1.8	9.5	E542BA8NO2
BA 8	0.43	2.20	44.5	9.5	2.80	2.2	5	3	1.8	9.5	E542BA8NO3
BA 8	0.43	2.20	44.5	9.5	2.80	2.2	5	3	1.8	9.5	E542BA8NO6
BA 6	0.53	2.80	44.5	9.5	2.80	2.2	5	3	2.3	9.5	E542BA6NO1
BA 6	0.53	2.80	44.5	9.5	2.80	2.2	5	3	2.3	9.5	E542BA6NO2
BA 6	0.53	2.80	44.5	9.5	2.80	2.2	5	3	2.3	9.5	E542BA6NO3
BA 6	0.53	2.80	44.5	9.5	2.80	2.2	5	3	2.3	9.5	E542BA6NO6
BA 5	0.59	3.20	48	14.5	3.15	2.5	5	3	2.65	14.5	E542BA5NO1
BA 5	0.59	3.20	48	14.5	3.15	2.5	5	3	2.65	14.5	E542BA5NO2
BA 5	0.59	3.20	48	14.5	3.15	2.5	5	3	2.65	14.5	E542BA5NO3
BA 5	0.59	3.20	48	14.5	3.15	2.5	5	3	2.65	14.5	E542BA5NO6
BA 4	0.66	3.60	50	16.5	3.55	2.8	5	3	3	16.5	E542BA4NO1
BA 4	0.66	3.60	50	16.5	3.55	2.8	5	3	3	16.5	E542BA4NO2
BA 4	0.66	3.60	50	16.5	3.55	2.8	5	3	3	16.5	E542BA4NO3
BA 4	0.66	3.60	50	16.5	3.55	2.8	5	3	3	16.5	E542BA4NO6
BA 3	0.73	4.10	53	10.0	4.50	3.5	6	3	3.4	17	E542BA3NO1
BA 3	0.73	4.10	53	10.0	4.50	3.5	6	3	3.4	17	E542BA3NO2
BA 3	0.73	4.10	53	10.0	4.50	3.5	6	3	3.4	17	E542BA3NO3
BA 3	0.73	4.10	53	10.0	4.50	3.5	6	3	3.4	17	E542BA3NO6
BA 2	0.81	4.70	58	12.0	5.00	4.0	7	3	4	20	E542BA2NO1
BA 2	0.81	4.70	58	12.0	5.00	4.0	7	3	4	20	E542BA2NO2
BA 2	0.81	4.70	58	12.0	5.00	4.0	7	3	4	20	E542BA2NO3
BA 2	0.81	4.70	58	12.0	5.00	4.0	7	3	4	20	E542BA2NO6
BA 0	1.00	6.00	66	14.0	6.30	5.0	8	3	5.1	26	E542BA0NO1
BA 0	1.00	6.00	66	14.0	6.30	5.0	8	3	5.1	26	E542BA0NO2
BA 0	1.00	6.00	66	14.0	6.30	5.0	8	3	5.1	26	E542BA0NO3
BA 0	1.00	6.00	66	14.0	6.30	5.0	8	3	5.1	26	E542BA0NO6

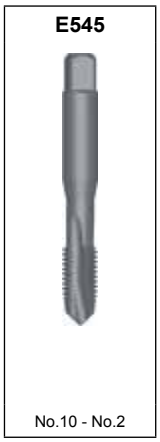
NO1
NO9
c 10

E545 BA ISO 529 Normal 2.5XD HSS B 3.5-5 ST

E545

- BA Machine Tap Spiral Point
- BA Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- BA Machinetappen met schilaansnijding
- BA Tarauds machine Coupe gun
- BA Machos de máquina Entrada en hélice
- BA Macho de Máquina Entrada Helicoidal

E545															
	■	1.1	1.2	1.3	1.4										
	●	1.5	1.6	2.1	2.2	2.3	4.3	5.1	5.2	6.1	6.3	7.1	7.2	7.3	7.4	8.1



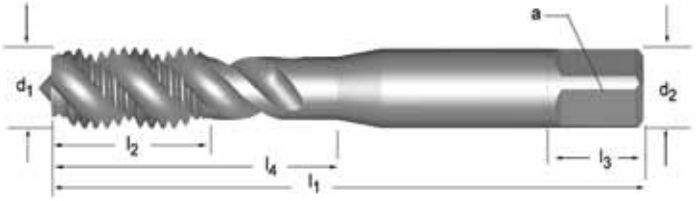
BA	P mm	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E545
BA10	0.35	1.70	41	7.0	2.50	2.0	4	2	1.3	7	E545BA10
BA 8	0.43	2.20	44.5	9.5	2.80	2.2	5	3	1.8	9.5	E545BA8
BA 6	0.53	2.80	44.5	9.5	2.80	2.2	5	3	2.3	9.5	E545BA6
BA 4	0.66	3.60	50	16.5	3.55	2.8	5	3	3	16.5	E545BA4
BA 2	0.81	4.70	58	12.0	5.00	4.0	7	3	4	20	E545BA2

E544 BA ISO 529 Normal 2XD HSS C 2-3 λ40° ST

E544

- BA Machine Tap Spiral Flute 40º
- BA Maschinen-Gewindebohrer, rechtsgedrallte Nuten 40º
- BA Machinetappen met gespiraliseerde spaangroeven 40°
- BA Tarauds machine goujures hélicoidales 40º
- BA Machos de máquina Estrías helicoidales a 40º
- BA Macho de Máquina Canal Helicoidal 40º

E544 ▪ 1.2 1.3 1.4 2.1 2.2 2.3
▪ 1.5 5.2 7.1 7.2 7.3 7.4



E544

No.8 - No.2

BA	P mm	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	l_4 mm	E544
BA 8	0.43	2.20	44.5	9.5	2.80	2.2	5	3	1.8	9.5	E544BA8
BA 8	0.43	2.20	44.5	9.5	2.80	2.2	5	3	1.8	9.5	E544BA8BLUE
BA 6	0.53	2.80	44.5	9.5	2.80	2.2	5	3	2.3	9.5	E544BA6
BA 6	0.53	2.80	44.5	9.5	2.80	2.2	5	3	2.3	9.5	E544BA6BLUE
BA 4	0.66	3.60	50	16.5	3.55	2.8	5	3	3	16.5	E544BA4
BA 4	0.66	3.60	50	16.5	3.55	2.8	5	3	3	16.5	E544BA4BLUE
BA 2	0.81	4.70	58	12.0	5.00	4.0	7	3	4	20	E544BA2
BA 2	0.81	4.70	58	12.0	5.00	4.0	7	3	4	20	E544BA2BLUE

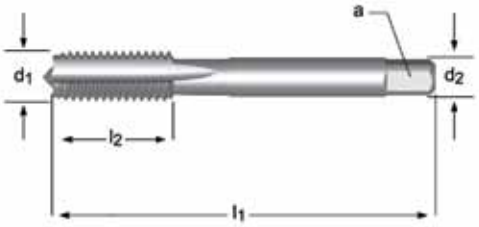
DORMER

E119 | G | DIN 5157 | Normal | 1.5XD | HSS | C 2-3

E119

- G(BSP) Hand Tap Straight Flute
- G(BSP) Handgewindebohrer, geradegenutet
- G(BSP) Handtappen met rechte spaangroeven
- G(BSP) Tarauds à main Goujures droites
- G(BSP) Machos de mano Estrías rectas
- G(BSP) Machos Manuais Canais Direitos

E119	•	1.1	1.2	1.3	1.4	1.5	3.1	3.2	3.3	3.4	6.1	6.2	6.3	6.4	7.2	7.3	7.4	8.2	8.3



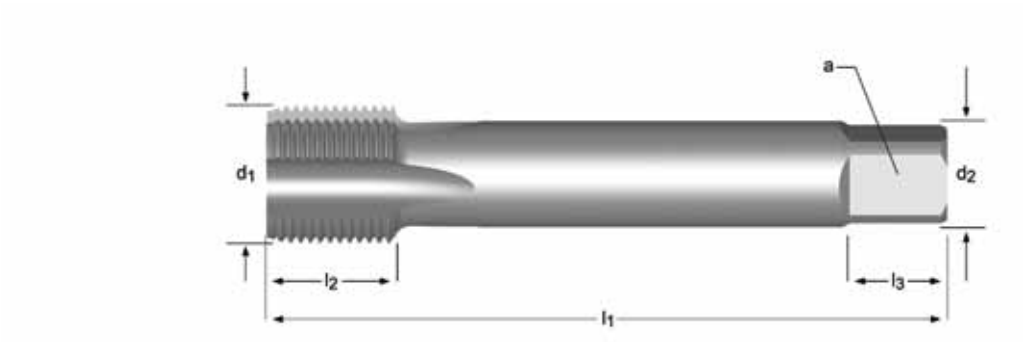
G(BSP)	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	z		E119
1/8	28	9.73	63	15	7	5.5	3	8.8	E1191/8NO3
1/8	28	9.73	63	15	7	5.5	3	8.8	E1191/8NO9
1/4	19	13.16	70	16	11	9.0	4	11.8	E1191/4NO3
1/4	19	13.16	70	16	11	9.0	4	11.8	E1191/4NO9
3/8	19	16.66	70	16	12	9.0	4	15.25	E1193/8NO3
3/8	19	16.66	70	16	12	9.0	4	15.25	E1193/8NO9
1/2	14	20.96	80	18	16	12.0	4	19	E1191/2NO3
1/2	14	20.96	80	18	16	12.0	4	19	E1191/2NO9
5/8	14	22.91	80	22	18	14.5	4	21	E1195/8NO3
5/8	14	22.91	80	22	18	14.5	4	21	E1195/8NO9
3/4	14	26.44	90	22	20	16.0	4	24.5	E1193/4NO3
3/4	14	26.44	90	22	20	16.0	4	24.5	E1193/4NO9
7/8	14	30.20	90	22	22	18.0	6	28.25	E1197/8NO3
7/8	14	30.20	90	22	22	18.0	6	28.25	E1197/8NO9
1“	11	33.25	100	25	25	20.0	6	30.75	E1191NO3
1“	11	33.25	100	25	25	20.0	6	30.75	E1191NO9
1.1/8	11	37.90	125	40	28	22.0	6	35	E1191.1/8NO3
1.1/8	11	37.90	125	40	28	22.0	6	35	E1191.1/8NO9
1.1/4	11	41.91	125	40	32	24.0	6	39.5	E1191.1/4NO3
1.1/4	11	41.91	125	40	32	24.0	6	39.5	E1191.1/4NO9
1.1/2	11	47.80	140	40	36	29.0	6	45	E1191.1/2NO3
1.1/2	11	47.80	140	40	36	29.0	6	45	E1191.1/2NO9
1.3/4	11	53.75	140	40	40	32.0	6	51	E1191.3/4NO3
1.3/4	11	53.75	140	40	40	32.0	6	51	E1191.3/4NO9
2“	11	59.61	160	40	45	35.0	6	57	E1192NO3
2“	11	59.61	160	40	45	35.0	6	57	E1192NO9
2.1/4	11	65.71	160	40	50	39.0	6	63	E1192.1/4NO3
2.1/4	11	65.71	160	40	50	39.0	6	63	E1192.1/4NO9
2.1/2	11	75.18	160	40	50	39.0	6	72.5	E1192.1/2NO3
2.1/2	11	75.18	160	40	50	39.0	6	72.5	E1192.1/2NO9
2.3/4	11	81.53	160	40	50	39.0	8	79	E1192.3/4NO3
2.3/4	11	81.53	160	40	50	39.0	8	79	E1192.3/4NO9
3“	11	87.88	160	40	50	39.0	8	85.5	E1193NO3
3“	11	87.88	160	40	50	39.0	8	85.5	E1193NO9

E282 G | DIN 5156 | Normal | 1.5XD | HSS-E | C 2-3

E282

- G(BSP) Machine Tap Straight Flute
- G(BSP) Maschinen-Gewindebohrer, geradegenutet
- G(BSP) Machinetappen met rechte spaangroeven
- G(BSP) Tarauds machine Goujures droites
- G(BSP) Machos de máquina Estrías rectas
- G(BSP) Macho de Máquina Canais Direitos

E282 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 6.2 6.3 7.2 7.3 8.2



E282

1/8 - 1.1/2

G(BSP)	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		E282
1/8	28	9.73	90	20	7	5.5	8	3	8.8	E2821/8
1/4	19	13.16	100	21	11	9.0	12	4	11.8	E2821/4
3/8	19	16.66	100	21	12	9.0	12	4	15.25	E2823/8
1/2	14	20.96	125	24	16	12.0	15	4	19	E2821/2
5/8	14	22.91	125	25	18	14.5	17	4	21	E2825/8
3/4	14	26.44	140	28	20	16.0	19	4	24.5	E2823/4
7/8	14	30.20	150	28	22	18.0	21	4	28.25	E2827/8
1“	11	33.25	160	30	25	20.0	23	4	30.75	E2821
1.1/8	11	37.90	170	28	28	22.0	25	4	35	E2821.1/8
1.1/4	11	41.91	170	30	32	24.0	27	4	39.5	E2821.1/4
1.1/2	11	47.80	190	32	36	29.0	32	6	45	E2821.1/2

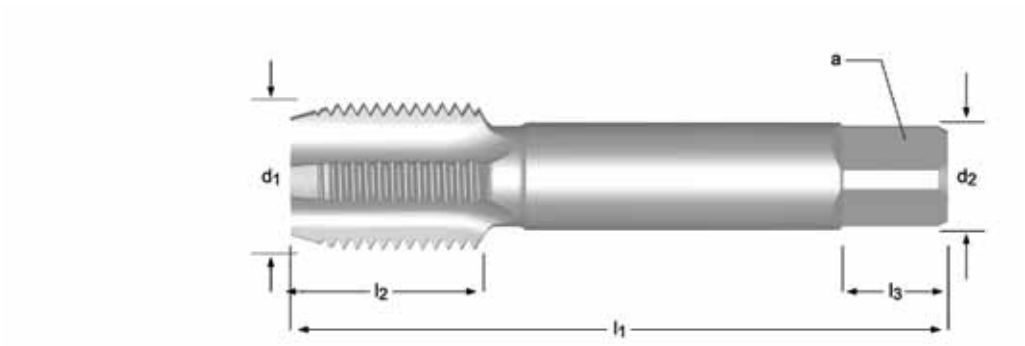
DORMER

E547 | G | ISO 2284 | Normal | 1.5XD | HSS

E547

- G(BSP) Machine Tap Straight Flute
- G(BSP) Maschinen-Gewindebohrer, geradegenutet
- G(BSP) Hand-/machinetappen met rechte spaangroeven
- G(BSP) Tarauds machine Goujures droites
- G(BSP) Machos de máquina Estrías rectas
- G(BSP) Macho de Máquina Canais Direitos

E547 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 3.4 6.1 6.2 6.3 6.4 7.2 7.3 7.4 8.2 8.3

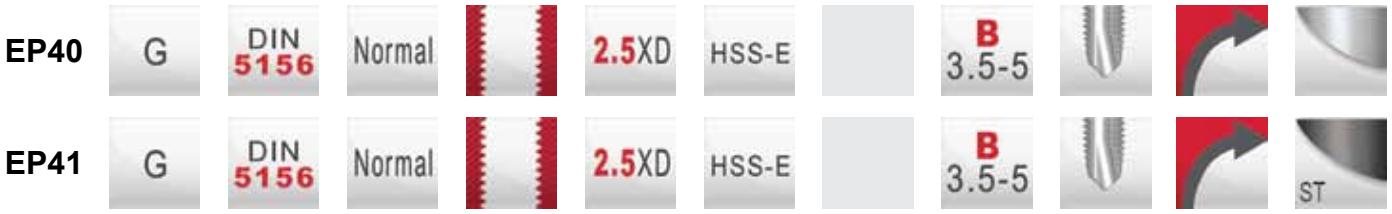


E547

1/8 - 2"

G(BSP)	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		E547
1/8	28	9.728	59	15	8.0	8.0	9	4	8.8	E5471/8NO1
1/8	28	9.728	59	15	8.0	6.3	9	4	8.8	E5471/8NO2
1/8	28	9.728	59	15	8.0	6.3	9	4	8.8	E5471/8NO3
1/8	28	9.728	59	15	8.0	6.3	9	4	8.8	E5471/8NO7
1/4	19	13.157	67	19	10.0	8.0	11	4	11.8	E5471/4NO1
1/4	19	13.157	67	19	10.0	8.0	11	4	11.8	E5471/4NO2
1/4	19	13.157	67	19	10.0	8.0	11	4	11.8	E5471/4NO3
1/4	19	13.157	67	19	10.0	8.0	11	4	11.8	E5471/4NO7
3/8	19	16.662	75	21	12.5	10.0	13	4	15.25	E5473/8NO1
3/8	19	16.662	75	21	12.5	10.0	13	4	15.25	E5473/8NO2
3/8	19	16.662	75	21	12.5	10.0	13	4	15.25	E5473/8NO3
3/8	19	16.662	75	21	12.5	10.0	13	4	15.25	E5473/8NO7
1/2	14	20.955	87	26	16.0	12.5	16	4	19	E5471/2NO1
1/2	14	20.955	87	26	16.0	12.5	16	4	19	E5471/2NO2
1/2	14	20.955	87	26	16.0	12.5	16	4	19	E5471/2NO3
1/2	14	20.955	87	26	16.0	12.5	16	4	19	E5471/2NO7
5/8	14	22.911	91	26	18.0	14.0	18	4	21	E5475/8NO1
5/8	14	22.911	91	26	18.0	14.0	18	4	21	E5475/8NO2
5/8	14	22.911	91	26	18.0	14.0	18	4	21	E5475/8NO3
5/8	14	22.911	91	26	18.0	14.0	18	4	21	E5475/8NO7
3/4	14	26.441	96	28	20.0	16.0	20	4	24.5	E5473/4NO1
3/4	14	26.441	96	28	20.0	16.0	20	4	24.5	E5473/4NO2
3/4	14	26.441	96	28	20.0	16.0	20	4	24.5	E5473/4NO3
3/4	14	26.441	96	28	20.0	16.0	20	4	24.5	E5473/4NO7
7/8	14	30.201	102	29	22.4	18.0	22	4	28.25	E5477/8NO1
7/8	14	30.201	102	29	22.4	18.0	22	4	28.25	E5477/8NO2
7/8	14	30.201	102	29	22.4	18.0	22	4	28.25	E5477/8NO3
1"	11	33.249	109	33	25.0	20.0	24	4	30.75	E5471NO1
1"	11	33.249	109	33	25.0	20.0	24	4	30.75	E5471NO2
1"	11	33.249	109	33	25.0	20.0	24	4	30.75	E5471NO3
1.1/4	11	41.910	119	36	31.5	25.0	28	6	39.5	E5471.1/4NO1
1.1/4	11	41.910	119	36	31.5	25.0	28	6	39.5	E5471.1/4NO2
1.1/4	11	41.910	119	36	31.5	25.0	28	6	39.5	E5471.1/4NO3
1.1/2	11	47.803	125	37	35.5	28.0	31	6	45	E5471.1/2NO1
1.1/2	11	47.803	125	37	35.5	28.0	31	6	45	E5471.1/2NO2
1.1/2	11	47.803	125	37	35.5	28.0	31	6	45	E5471.1/2NO3
2"	11	59.614	140	41	40.0	31.5	34	6	57	E5472NO1
2"	11	59.614	140	41	40.0	31.5	34	6	57	E5472NO2
2"	11	59.614	140	41	40.0	31.5	34	6	57	E5472NO3

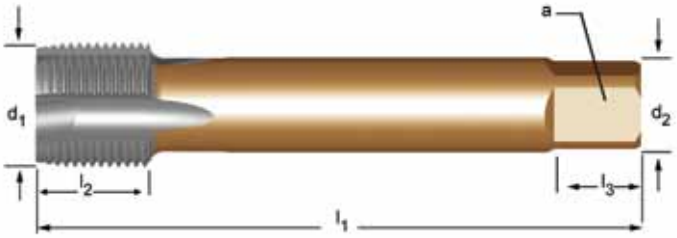
NO1 NO9 c 10



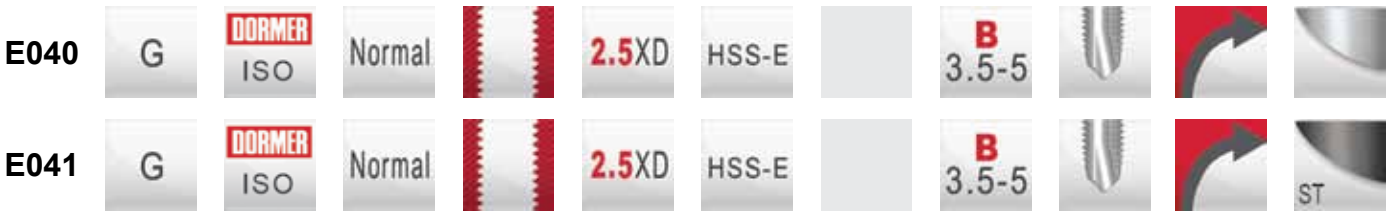
EP40
EP41

- G(BSP) Machine Tap Spiral Point
- G(BSP) Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- G(BSP) Machinetappen met schilaansnijding
- G(BSP) Tarauds machine Coupe gun
- G(BSP) Machos de máquina Entrada en hélice
- G(BSP) Macho de Máquina Entrada Helicoidal

EP40	▪	1.1	1.2	1.3	1.4	1.5	6.1	6.3	7.1	7.2	7.3	7.4
	●	1.6	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.2	8.1
EP41	▪	1.1	1.2	1.3	1.4	1.5	2.1	2.2				
	●	1.6	2.3	3.1	3.2	3.3	3.4					



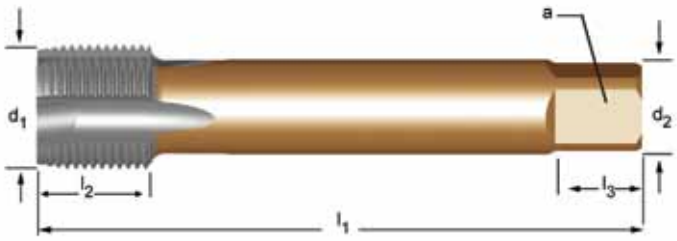
G(BSP)	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		EP40	EP41
1/8	28	9.728	90	18	7	5.5	8	3	8.8	EP401/8	EP411/8
1/4	19	13.157	100	21	11	9.0	12	3	11.8	EP401/4	EP411/4
3/8	19	16.662	100	21	12	9.0	12	4	15.25	EP403/8	EP413/8
1/2	14	20.955	125	24	16	12.0	15	4	19	EP401/2	EP411/2
5/8	14	22.911	125	24	18	14.5	17	4	21	EP405/8	EP415/8
3/4	14	26.441	140	28	20	16.0	19	4	24.5	EP403/4	EP413/4
7/8	14	30.201	150	28	22	18.0	21	4	28.25	EP407/8	EP417/8
1“	11	33.249	160	30	25	20.0	23	4	30.75	EP401	EP411



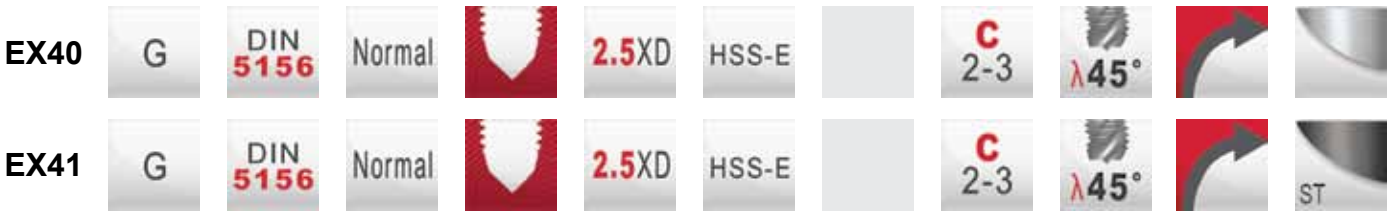
E040
E041

- G(BSP) Machine Tap Spiral Point
- G(BSP) Maschinen-Gewindebohrer, geradegenutet mit Schälanschnitt
- G(BSP) Machinetappen met schilaansnijding
- G(BSP) Tarauds machine Coupe gun
- G(BSP) Machos de máquina Entrada en hélice
- G(BSP) Macho de Máquina Entrada Helicoidal

E040	▪	1.1	1.2	1.3	1.4	1.5	6.1	6.3	7.1	7.2	7.3	7.4
	▪	1.6	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.2	8.1
E041	▪	1.1	1.2	1.3	1.4	1.5						
	▪	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4			



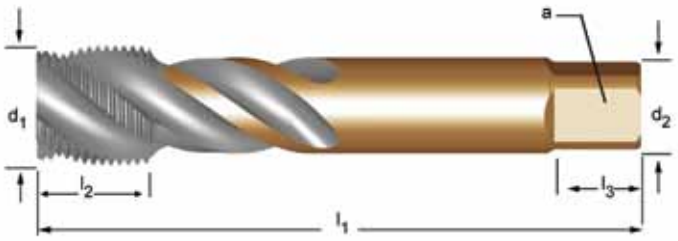
G(BSP)	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	▨ a mm	l_3 mm	z	↔	E040	E041
1/8	28	9.728	90	15	8	6.3	9	3	8.80	E0401/8	E0411/8
1/4	19	13.157	100	19	10	8	11	3	11.80	E0401/4	E0411/4
3/8	19	16.662	100	21	12.5	10	13	3	15.25	E0403/8	E0413/8
1/2	14	20.955	125	26	16	12.5	16	4	19.00	E0401/2	E0411/2
3/4	14	26.441	140	28	20	16	20	4	24.50	E0403/4	E0413/4



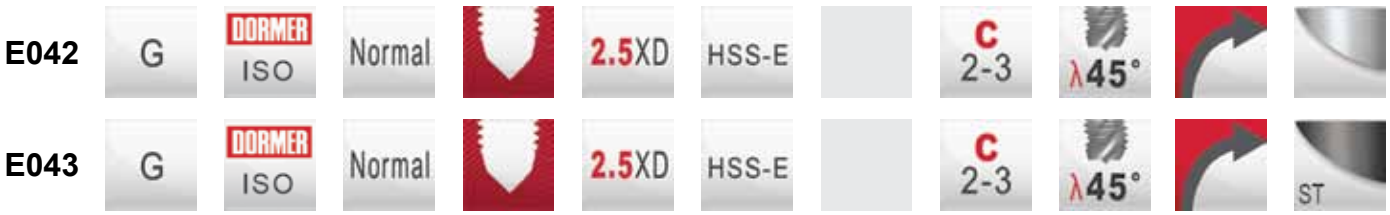
EX40
EX41

- G(BSP) Machine Tap Spiral Flute 45º
- G(BSP) Maschinen-Gewindebohrer, rechtsgedrallte Nuten 45º
- G(BSP) Machinetappen met gespiraliseerde spaangroeven 45°
- G(BSP) Tarauds machine goujures hélicoidales 45º
- G(BSP) Machos de máquina Estrías helicoidales a 45º
- G(BSP) Macho de Máquina Canal Helicoidal 45º

EX40	▪	1.1 1.2 1.3 1.4 1.5 7.1 7.2 7.3 7.4
	▪	4.1 4.2 5.1 5.2 8.1
EX41	▪	1.1 1.2 1.3 1.4 1.5 2.1 2.2
	▪	2.3



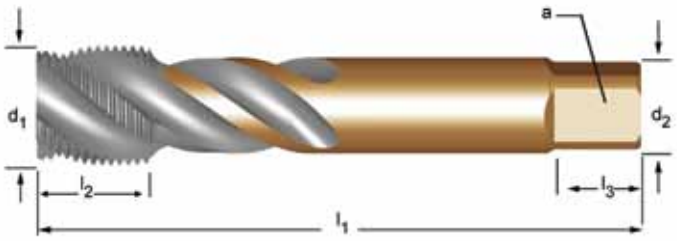
G(BSP)	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		EX40	EX41
1/8	28	9.728	90	13	7	5.5	8	3	8.8	EX401/8	EX411/8
1/4	19	13.157	100	15	11	9.0	12	3	11.8	EX401/4	EX411/4
3/8	19	16.662	100	15	12	9.0	12	4	15.25	EX403/8	EX413/8
1/2	14	20.955	125	18	16	12.0	15	4	19	EX401/2	EX411/2
5/8	14	22.911	125	18	18	14.5	17	4	21	EX405/8	EX415/8
3/4	14	26.441	140	20	20	16.0	19	4	24.5	EX403/4	EX413/4
7/8	14	30.201	150	20	22	18.0	21	4	28.25	EX407/8	EX417/8
1“	11	33.249	160	22	25	20.0	23	4	30.75	EX401	EX411
1.1/8	11	37.897	170	22	28	22.0	25	4	35	EX401.1/8	EX411.1/8
1.1/4	11	41.910	170	22	32	24.0	27	4	39.5	EX401.1/4	EX411.1/4
1.1/2	11	47.803	190	23	36	29.0	32	4	45	EX401.1/2	EX411.1/2



E042
E043

- G(BSP) Machine Tap Spiral Flute 45º
- G(BSP) Maschinen-Gewindebohrer, rechtsgedrallte Nuten 45º
- G(BSP) Machinetappen met gespiraliseerde spaangroeven 45°
- G(BSP) Tarauds machine goujures hélicoidales 45º
- G(BSP) Machos de máquina Estrías helicoidales a 45º
- G(BSP) Macho de Máquina Canal Helicoidal 45º

E042	▪	**1.1**	**1.2**	**1.3**	**1.4**	**1.5**	**7.1**	**7.2**	**7.3**	**7.4**
	▪	**4.1**	**4.2**	**5.1**	**5.2**	**8.1**				
E043	▪	**1.1**	**1.2**	**1.3**	**1.4**	**1.5**				
	▪	**1.6**	**2.1**	**2.2**	**2.3**					



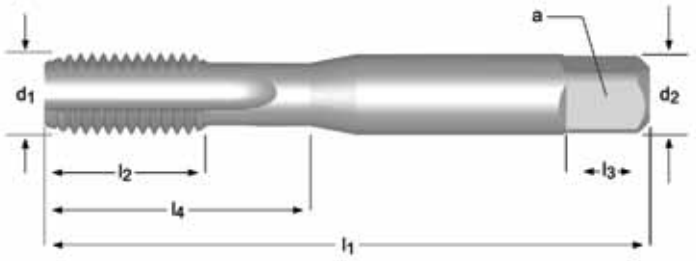
G(BSP)	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	▨ a mm	l_3 mm	z	↔	E042	E043
1/8	28	9.728	90	15	8	6.3	9	3	8.80	E0421/8	E0431/8
1/4	19	13.157	100	19	10	8	11	3	11.80	E0421/4	E0431/4
3/8	19	16.662	100	21	12.5	10	13	4	15.25	E0423/8	E0433/8
1/2	14	20.955	125	26	16	12.5	16	4	19.00	E0421/2	E0431/2
3/4	14	26.441	140	28	20	16	20	4	24.50	E0423/4	E0433/4

E620 EGM DORMER ISO 6H 1.5XD HSS C 2-3

E620

- EGM Machine Tap Straight Flute
- EGM Maschinen-Gewindebohrer, geradegenutet
- EGM Machinetappen met rechte spaangroeven
- EGM Tarauds machine Goujures droites
- EGM Machos de máquina Estrías rectas
- EGM Macho de Máquina Canais Direitos

E620 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 3.4 6.1 6.2 6.3 6.4 7.2 7.3 7.4 8.2 8.3



E620

M3 - M16

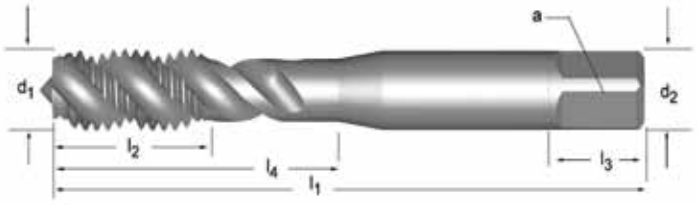
M	P mm	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E620
3	0.50	3.65	53	14	4.00	3.15	6	3	3.2	14	E620M3
4	0.70	4.91	58	11	5.00	4.00	7	3	4.2	20	E620M4
5	0.80	6.04	66	13	6.30	5.00	8	3	5.2	26	E620M5
6	1.00	7.3	72	16	8.00	6.30	9	3	6.3	29	E620M6
8	1.25	9.62	80	18	10.00	8.00	11	3	8.4	32	E620M8
10	1.50	11.95	89	22	9.00	7.10	10	3	10.5		E620M10
12	1.75	14.27	95	24	11.20	9.00	12	4	12.5		E620M12
14	2.00	16.6	112	29	14.00	11.20	14	4	14.5		E620M14
16	2.00	18.6	112	29	14.00	11.20	14	4	16.5		E620M16

E621 EGM DORMER ISO 6H 2XD HSS C 2-3 λ40°

E621

- EGM Machine Tap Spiral Flute 40º
- EGM Maschinen-Gewindebohrer, rechtsgedrallte Nuten 40º
- EGM Machinetappen met gespiraliseerde spaangroeven 40°
- EGM Tarauds machine goujures hélicoidales 40º
- EGM Machos de máquina Estrías helicoidales a 40º
- EGM Macho de Máquina Canal Helicoidal 40º

E621 • 1.2 1.3 1.4 1.5 2.1 2.2 2.3 5.2 7.1 7.2 7.3 7.4



E621

M3 - M16

M	P mm	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		l_4 mm	E621
3	0.50	3.65	53	14	4.00	3.15	6	3	3.2	14	E621M3
4	0.70	4.91	58	11	5.00	4.00	7	3	4.2	20	E621M4
5	0.80	6.04	66	13	6.30	5.00	8	3	5.2	26	E621M5
6	1.00	7.3	72	16	8.00	6.30	9	3	6.3	31	E621M6
8	1.25	9.62	80	18	10.00	8.00	11	3	8.4	34	E621M8
10	1.50	11.95	89	22	9.00	7.10	10	3	10.5		E621M10
12	1.75	14.27	95	24	11.20	9.00	12	3	12.5		E621M12
14	2.00	16.6	112	29	14.00	11.20	14	3	14.5		E621M14
16	2.00	18.6	112	29	14.00	11.20	14	3	16.5		E621M16

E550 Rc ISO 2284 Normal 1.5XD HSS C 2-3

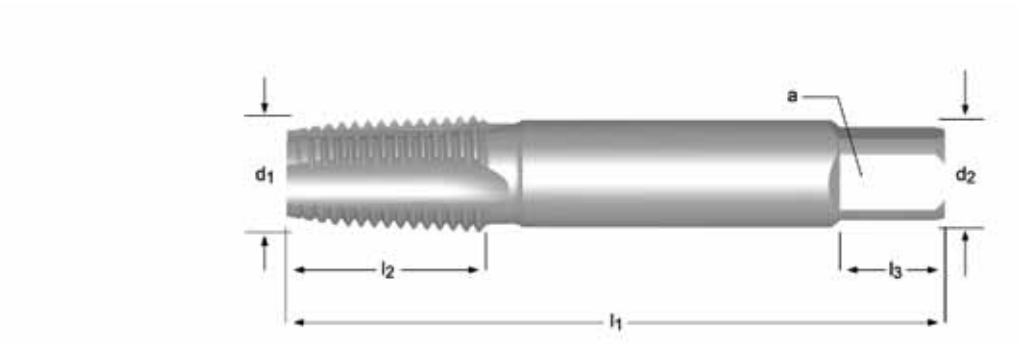
E550

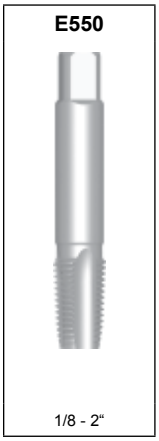
- Rc Machine Tap Straight Flute
- Rc Maschinen-Gewindebohrer, geradegenutet
- Rc Hand-/machinetappen met rechte spaangroeven
- Rc Tarauds machine Goujures droites
- Rc Machos de máquina Estrías rectas
- Rc Macho de Máquina Canais Direitos

E550

▪ 3.1 3.2 3.3 3.4 6.1

• 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 6.2 6.3 6.4 7.2 7.3 7.4 8.2 8.3





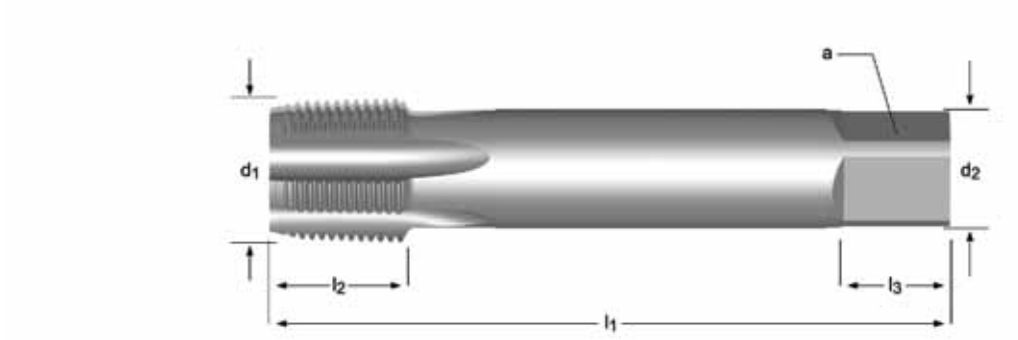
Rc	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	E550
1/8	28	9.728	59	15	8.0	6.3	9	3	8.4	E5501/8
1/8	28	9.728	59	15	8.0	6.3	9	3	8.4	E5501/8NO7
1/4	19	13.157	67	19	10.0	8.0	11	3	11.2	E5501/4
1/4	19	13.157	67	19	10.0	8.0	11	3	11.2	E5501/4NO7
3/8	19	16.662	75	21	12.5	10.0	13	3	14.75	E5503/8
3/8	19	16.662	75	21	12.5	10.0	13	3	14.75	E5503/8NO7
1/2	14	20.955	87	26	16.0	12.5	16	5	18.25	E5501/2
1/2	14	20.955	87	26	16.0	12.5	16	5	18.25	E5501/2NO7
3/4	14	26.441	96	28	20.0	16.0	20	5	23.75	E5503/4
3/4	14	26.441	96	28	20.0	16.0	20	5	23.75	E5503/4NO7
1“	11	33.249	109	33	25.0	20.0	24	5	30	E5501
1.1/4	11	41.910	119	36	31.5	25.0	28	5	38.5	E5501.1/4
1.1/2	11	47.803	125	37	35.5	28.0	31	7	44.5	E5501.1/2
2“	11	59.614	140	41	40.0	31.5	34	7	56	E5502

E714 | NPT | DORMER ANSI | Normal | 1.5XD | HSS-E | C 2-3

E714

- NPT Machine Tap Straight Flute
- NPT Maschinen-Gewindebohrer, geradegenutet
- NPT Machinetappen met rechte spaangroeven
- NPT Tarauds machine Goujures droites
- NPT Machos de máquina Estrías rectas
- NPT Macho de Máquina Canais Direitos

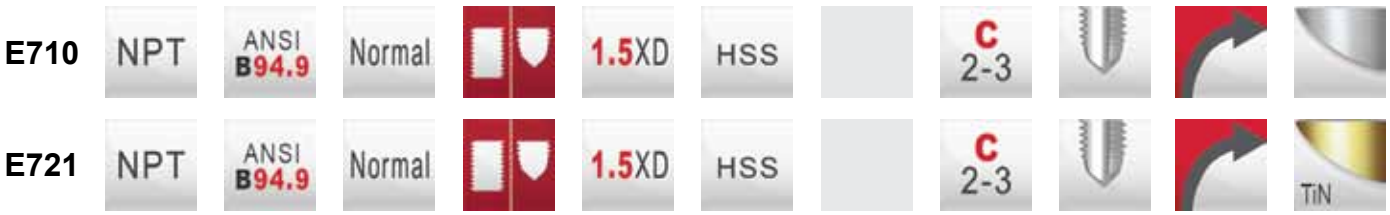
E714												
	■	1.3	1.4									
	●	1.1	1.2	1.5	3.1	3.2	3.3	3.4	6.2	7.3	7.4	8.1



E714

1/8 - 1“

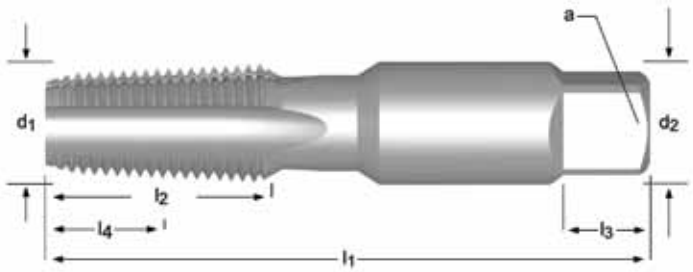
NPT	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z		E714
1/8	27	10.23	90	14	11.0	9.0	12	3	8.5	E7141/8
1/4	18	13.60	100	20	14.0	11.0	14	3	11	E7141/4
3/8	18	17.04	110	20	16.0	12.0	15	4	14.5	E7143/8
1/2	14	21.20	125	26	18.0	14.5	17	4	18	E7141/2
3/4	14	26.54	140	26	22.0	18.0	21	5	23	E7143/4
1“	11.5	33.20	150	31	28.0	22.0	25	5	29	E7141

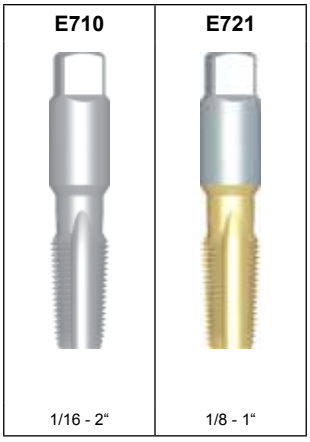


E710
E721

- NPT Machine Tap Straight Flute
- NPT Maschinen-Gewindebohrer, geradegenutet
- NPT Hand-/machinetappen met rechte spaangroeven
- NPT Tarauds machine Goujures droites
- NPT Machos de máquina Estrías rectas
- NPT Macho de Máquina Canais Direitos

E710	•	1.1	1.2	1.3	1.4	1.5	3.1	3.2	3.3	3.4	6.2	7.3	7.4	8.1
E721	▪	1.3	1.4	3.1	3.2	3.3	3.4							
	•	1.1	1.2	1.5	6.2	7.3	7.4	8.1						





NPT	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm		z	l_4 mm	E710	E721
1/16	27	7.94	65	17	8.1	6	8	6.3	4	11.7	E7101/16NO3	
1/8	27	10.29	70	19	11.1	8.3	10	8.5	4	11.9	E7101/8	E7211/8
1/8	27	10.29	70	19	11.1	8.3	10	8.5	4	11.9	E7101/8NO7	
1/4	18	13.72	75	27	14.3	10.7	11	11	4	17.6	E7101/4	E7211/4
1/4	18	13.72	75	27	14.3	10.7	11	11	4	17.6	E7101/4NO7	
3/8	18	17.15	80	27	17.8	13.5	13	14.5	4	19.5	E7103/8	E7213/8
3/8	18	17.15	80	27	17.8	13.5	13	14.5	4	19.5	E7103/8NO7	
1/2	14	21.34	100	35	17.5	13.1	16	18	4	22.7	E7101/2	E7211/2
1/2	14	21.34	100	35	17.5	13.1	16	18	4	22.7	E7101/2NO7	
3/4	14	26.67	105	35	23	17.2	17	23	5	24.4	E7103/4	E7213/4
3/4	14	26.67	105	35	23	17.2	17	23	5	24.4	E7103/4NO7	
1“	11.5	33.4	115	43	28.6	21.4	21	29	5	29.4	E7101	E7211
1.1/4	11.5	42.16	125	43	33.3	25	24	38	5	27.7	E7101.1/4	
1.1/2	11.5	48.26	135	43	38.1	28.6	25	44	7	28.9	E7101.1/2	
2“	11.5	60.33	145	43	47.6	35.7	29	56	7	26.6	E7102	

E711 NPT ANSI B94.9 Normal 1.5XD HSS C 2-3

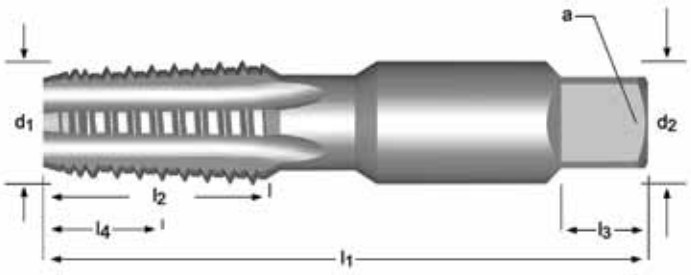
E711

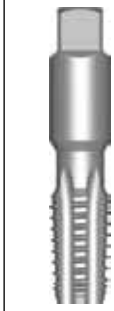
- NPT Machine Tap, Interrupted Threads Straight Flute
- NPT Maschinen-Gewindebohrer, ausgesetzte Zähne, geradegenutet
- NPT Machinetappen met rechte spaangroeven en onderbroken vertanding
- NPT Tarauds machine Goujures droites
- NPT Machos de máquina, dientes alternos Estrías rectas
- NPT Macho de Máq., Filetes Interrompidos Canais Direitos

E711

▪ 1.3 1.4

• 1.1 1.2 1.5 3.1 3.2 3.3 3.4 6.2 7.3 7.4 8.1





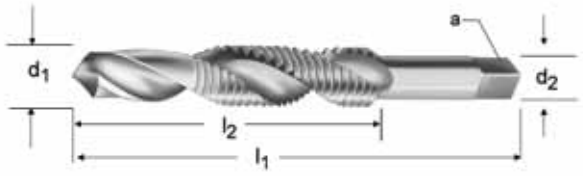
NPT	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	↔	z	l_4 mm	E711
1/8	27	10.29	70	19	11.1	8.3	10	8.5	5	11.9	E7111/8
1/4	18	13.72	75	27	14.3	10.7	11	11	5	17.6	E7111/4
3/8	18	17.15	80	27	17.8	13.5	13	14.5	5	19.5	E7113/8
1/2	14	21.33	100	35	17.5	13.1	16	18	5	22.7	E7111/2
3/4	14	26.67	105	35	23.0	17.2	17	23	5	24.4	E7113/4
1“	11.5	33.40	115	43	28.6	21.4	21	29	5	29.4	E7111
1.1/2	11.5	48.26	135	43	38.1	28.6	25	44	7	28.9	E7111.1/2

E653 NPT ANSI 1.5XD HSS λ27°

E653

- NPT Combi Taps Spiral Flute 27º
- NPT Kombination Bohrer-Gewindebohrer, rechtsgedrallte Nuten 27º
- NPT Combi boortappen met gespiraliseerde spaangroeven 27°
- NPT Foret taraudeur goujures hélicoidales 27º
- NPT Combinación broca-macho Estrías helicoidales a 27º
- NPT Macho Broca Canal Helicoidal 27º

E653 • 1.1 1.2 1.3 1.4 3.2 6.2 6.3 7.1 7.2 8.1



d_1 Ø Inch	TPI	l_1 Inch	l_2 Inch	d_2 Ø Inch	a Inch	z	Stock Code	E653
1/16	27	2.13/16	11/16	0.3120	0.2340	4	52788	E6531/16
1/8	27	2.7/8	3/4	0.4370	0.3280	4	52791	E6531/8
1/4	18	3.5/16	1.1/16	0.5620	0.4210	4	52794	E6531/4
3/8	18	3.1/2	1.1/16	0.7000	0.5310	4	52797	E6533/8
1/2	14	4.3/8	1.3/8	0.6870	0.5150	4	52800	E6531/2
3/4	14	4.9/16	1.3/8	0.9060	0.6790	5	52803	E6533/4
1“	11.5	5.3/8	1.3/4	1.1250	0.8430	5	52806	E6531

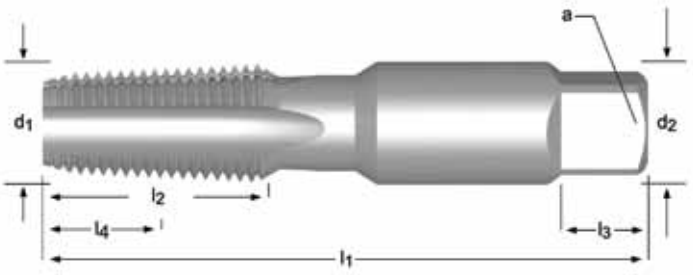
DORMER

E712 | NPTF | ANSI B94.9 | Normal | 1.5XD | HSS | C 2-3

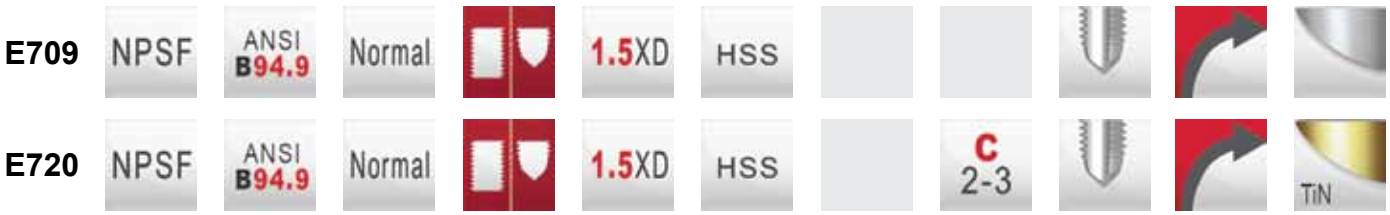
E712

- NPTF Machine Tap Straight Flute
- NPTF Maschinen-Gewindebohrer, geradegenutet
- NPTF Machinetappen met rechte spaangroeven
- NPTF Tarauds machine Goujures droites
- NPTF Machos de máquina Estrías rectas
- NPTF Macho de Máquina Canais Direitos

E712											
■	1.3	1.4									
●	1.1	1.2	1.5	3.1	3.2	3.3	3.4	6.2	7.3	7.4	8.1



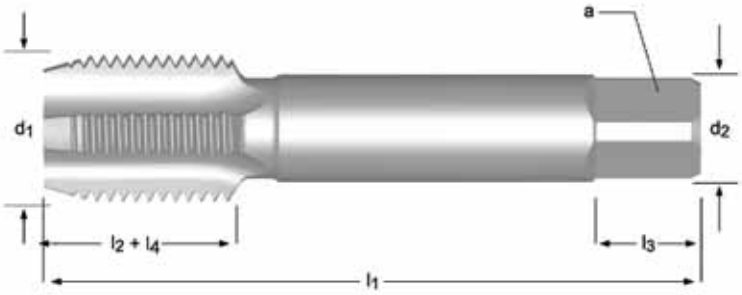
NPTF	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	↔	z	l_4 mm	E712
1/16	27	7.94	65	17	8.1	6.0	8	6.2	4	11.7	E7121/16
1/8	27	10.29	70	19	11.1	8.3	10	8.4	4	11.9	E7121/8
1/4	18	13.72	75	27	14.3	10.7	11	10.9	4	17.6	E7121/4
3/8	18	17.15	80	27	17.8	13.5	13	14.25	4	19.5	E7123/8
1/2	14	21.34	100	35	17.5	13.1	16	17.75	4	22.7	E7121/2
3/4	14	26.67	105	35	23.0	17.2	17	23	5	24.4	E7123/4
1“	11.5	33.40	115	43	28.6	21.4	21	29	5	29.4	E7121
1.1/4	11.5	42.16	125	43	33.4	24.9	23	37.75	5	27.7	E7121.1/4

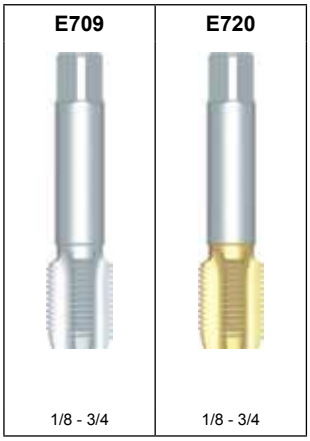


E709
E720

- NPSF Machine Tap Straight Flute
- NPSF Maschinen-Gewindebohrer, geradegenutet
- NPSF Hand-/machinetappen met rechte spaangroeven
- NPSF Tarauds machine Goujures droites
- NPSF Machos de máquina Estrías rectas
- NPSF Macho de Máquina Canais Direitos

E709	▪	1.3 1.4
	▪	1.1 1.2 1.5 3.1 3.2 3.3 3.4 6.2 7.3 7.4 8.1
E720	▪	1.3 1.4 3.1 3.2 3.3 3.4
	▪	1.1 1.2 1.5 6.2 7.3 7.4 8.1





NPSF	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	↔	l_4 mm	z	E709	E720
1/8	27	10.29	70	19	11.1	8.3	10	8.7	19	4	E7091/8NO2	
1/8	27	10.29	70	19	11.1	8.3	10	8.7	19	4	E7091/8	E7201/8NO3
1/4	18	13.72	75	27	14.3	10.7	11	11.3	27	4	E7091/4NO2	
1/4	18	13.72	75	27	14.3	10.7	11	11.3	27	4	E7091/4	E7201/4NO3
3/8	18	17.15	80	27	17.8	13.5	13	14.75	27	4	E7093/8NO2	
3/8	18	17.15	80	27	17.8	13.5	13	14.75	27	4	E7093/8	E7203/8NO3
1/2	14	21.34	100	35	17.5	13.1	16	18.25		4	E7091/2NO2	
1/2	14	21.34	100	35	17.5	13.1	16	18.25		4	E7091/2	E7201/2NO3
3/4	14	26.67	105	35	23	17.2	17	23.5		5	E7093/4	E7203/4NO3

E708 NPSM ANSI B94.9 Normal 1.5XD HSS

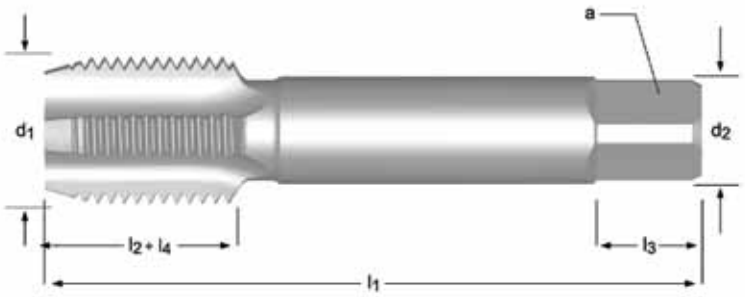
E708

- NPSM Machine Tap Straight Flute
- NPSM Maschinen-Gewindebohrer, geradegenutet
- NPSM Machinetappen met rechte spaangroeven
- NPSM Tarauds machine Goujures droites
- NPSM Machos de máquina Estrías rectas
- NPSM Macho de Máquina Canais Direitos

E708

▪ 1.3 1.4

• 1.1 1.2 1.5 3.1 3.2 3.3 3.4 6.2 7.3 7.4 8.1



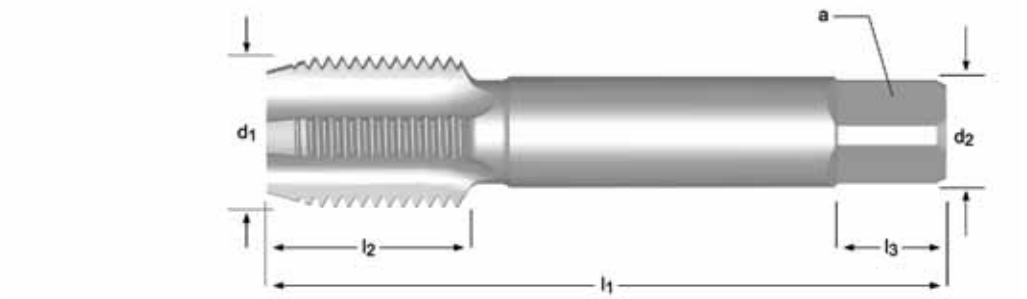
NPSM	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm		l_4 mm	z	E708
1/8	27	10.29	70	19	11.1	8.3	10	9.1	19	4	E7081/8
1/4	18	13.72	75	27	14.3	10.7	11	12	27	4	E7081/4
3/8	18	17.15	80	27	17.8	13.5	13	15.5	27	4	E7083/8
1/2	14	21.33	100	35	17.5	13.1	16	19		4	E7081/2
3/4	14	26.67	105	35	23.0	17.2	17	24.5		5	E7083/4
1“	11.5	33.40	115	43	28.6	21.4	21	30.5		5	E7081

E243 PG DIN 40432 Normal 1.5XD HSS

E243

- PG Machine Tap Straight Flute
- PG Maschinen-Gewindebohrer, geradegenutet
- PG Machinetappen met rechte spaangroeven
- PG Tarauds machine Goujures droites
- PG Machos de máquina Estrías rectas
- PG Macho de Máquina Canais Direitos

E243 • 1.1 1.2 1.3 1.4 1.5 3.1 3.2 3.3 6.2 6.3 7.2 7.3 8.2



Pg7 - Pg36

PG	TPI	d_1 nom mm	l_1 mm	l_2 mm	d_2 Ø mm	a mm	l_3 mm	z	↔	E243
7	20	12.5	70	22	9	7	10	4	11.4	E243PG7NO2
7	20	12.5	70	22	9	7	10	4	11.4	E243PG7NO3
9	18	15.2	70	22	12	9	12	4	13.9	E243PG9NO2
9	18	15.2	70	22	12	9	12	4	13.9	E243PG9NO3
11	18	18.6	80	22	14	11	14	4	17.25	E243PG11NO2
11	18	18.6	80	22	14	11	14	4	17.25	E243PG11NO3
13.5	18	20.4	80	22	16	12	15	4	19	E243PG13.5NO2
13.5	18	20.4	80	22	16	12	15	4	19	E243PG13.5NO3
16	18	22.5	80	22	18	14.5	17	4	21.25	E243PG16NO2
16	18	22.5	80	22	18	14.5	17	4	21.25	E243PG16NO3
21	16	28.3	90	22	22	18	21	4	27	E243PG21NO2
21	16	28.3	90	22	22	18	21	4	27	E243PG21NO3
29	16	37.0	100	25	28	22	25	6	35.5	E243PG29NO2
29	16	37.0	100	25	28	22	25	6	35.5	E243PG29NO3
36	16	47.0	140	32	36	29	32	6	45.5	E243PG36NO2
36	16	47.0	140	32	36	29	32	6	45.5	E243PG36NO3

L110

- Die Stocks
- Schneideisenhalter
- Snijplaathouder
- Porte filières
- Maneta para Terrajas “ Portaterrajas”
- Desandador p/ Caçonetes Circulares

Nr.	Ø x H	L110
1“	16 x 5	L1101
2a	20 x 5	L1102A
2b	20 x 7	L1102B
3	25 x 9	L1103
4“	30 x 11	L1104
5	38 x 14	L1105
5f	38 x 10	L1105F
6	45 x 18	L1106
6f	45 x 14	L1106F
7	55 x 22	L1107
7f	55 x 16	L1107F
8	65 x 25	L1108
8f	65 x 18	L1108F
9	75 x 30	L1109
9f	75 x 20	L1109F
10	90 x 36	L11010
10f	90 x 22	L11010F
	13/16 x 1/4	L11013/16
	1 x 3/8	L1101INCH
	1.5/16 x 7/16	L1101.5/16
	1.1/2 x 1/2	L1101.1/2
	2 x 5/8	L1102INCH
	2.1/4 x 11/16	L1102.1/4
	3 x 7/8	L1103INCH
	4 x 1	L1104INCH

L111

- Tap Wrenches
- Verstellbares Windeisen
- Wringijzers, verstelbaar
- Tourne à gauche
- Portamachos regulable
- Desandador Ajustável

L111

No.0 - BT2

Nr.	▨	L111
0	2.0 - 5.0	L111NO0
1	2.1 - 8.0	L111NO1
2	4.9 - 12.0	L111NO2
3	5.5 - 16.0	L111NO3
4	11.0 - 24.0	L111NO4
5	16.0 - 32.0	L111NO5
BT1	1.0 - 6.5	L111BT1
BT2	1.0 - 10.0	L111BT2

L119

- Metric Coarse Taps, metal case
- Gewindebohrer in Metallkassette
- Metrische tappen, metalen cassette
- Coffret métallique de tarauds pas métrique
- Machos de rosca Métrica, estuche metálico
- Machos Métricos, cx. Metálica

L119

Nr.	A	M	DIN	L119
Nr.17	E100 setN8	M3- M4-M5-M6-M8-M10-M12	352	L11917
Nr.00	EP006H	M3- M4-M5-M6-M8-M10-M12	371 - M12 376	L11900
Nr.02	EX006H	M3- M4-M5-M6-M8-M10-M12	371 M12 376	L11902

L126

- Drill-Tap set in metal case
- Kombi-Gewindebohrer in Metallkassette
- Combi boortappen set
- Jeu de forets taraudeurs
- Juego de Broca-Macho en caja metalica
- Conjunto de Macho Broca

L126

Set

Nr.	A	B	M	L126
650	E650	6	4.0, 5.0, 6.0, 8.0, 10.0, 12.0	L126650

L115

- Taps, E500/Drills A120, Metal Case
- Handgewindebohrersatz, E500/Kernlochbohrer A120, Metallkassette
- Handtappen + voorboordiameters in set
- Coffret métallique de tarauds E500/ forets A120
- Machos E500/Brocas A120, Estuche metálico
- Machos E500/ Brocas A120, Cx. Metálica

L115

No.100

Nr.	A	M	B	d_1 Ø mm	L115
Nr.100	E500 No2,No3	M3 - 12	A120 DIN1897RN	2,5,3,3,4,2,5,0 6,8 8,5 10, 2	L115100

L120

- Threading Equipment, Metal Case
- Gewinde- Schneidsätze, Metallkassette
- Draadsnijgereedschap, metalen cassette
- Coffret métallique d'équipements de taraudage
- Juegos de machos de mano y terrajas mano, estuche metálico
- Estojo de Roscagem, Cx. Metálica

L120

Set

Nr.	A	L111	L110	L120
Nr.21	E100 + F100 M 3, 4, 5, 6, 8, 10, 12	No 1 + No 2	20 x 5, 20 x 7, 25 x 9, 30 x 11, 38 x 14	L12021
Nr.30	E100 + F100 M 3, 4, 5, 6, 8, 10, 12, 14, 16, 18, 20	No 1 + No 3	20 x 5, 20 x 7, 25 x 9, 30 x 11, 38 x 14, 45 x 18	L12030
HS-2M	E500 + F300 M2, 2,5, 3, 3,5, 4, 5, 6	BT1	13/16 x 1/4	L1202M
HS-4M	E500 + F300 M 5, 6, 7, 8, 9, 10, 11, 12	BT2	13/16 x 1/4 + 1.5/16 x 7/16	L1204M
HS-8M	E500 + F300 M 2, 3, 4, 5, 6	BT1	13/16 x 1/4	L1208M
HS-10M	E500 + F300 M 3, 4, 5, 6, 7, 8, 9, 10	BT2	13/16 x 1/4 + 1. x 3/8	L12010M
HS-12M	E500 + F300 M 2, 3, 4, 5, 6, 7, 8, 9, 10, 12	BT1 + BT2	13/16 x 1/4 + 1. x 3/8 + 1.5/16	L12012M
HS-14M	E500 + F300 M 6, 7, 8, 9, 10, 12, 14, 16, 18, 20	No 2	1. x 3/8 + 1.5/16 x 7/16 + 1.1/2 x 1/2	L12014M
HS-30UNC	E515 + F320 1/4, 5/16, 3/8, 7/16, 1/2	BT2	1. x 3/8 + 1.5/16 x 7/16	L12030UNC
HS-32UNC	E515 + F320 1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4	BT2 + No 2	1. x 3/8 + 1.1/2 x 1/2	L12032UNC
HS-24UNF	E524 + F330 1/4, 5/16, 3/8, 7/16, 1/2	BT2	1. x 3/8 + 1.5/16 x 7/16	L12024UNF
HS-26UNF	E524 + F330 1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4	BT2 + No 2	1. x 3/8 + 1.1/2 x 1/2	L12026UNF

F100	d 4	**F201**	d 4
F108	d 4	**F202**	d 19
F110	d 6	**F272**	d 22
F120	d 7	**F300**	d 14
F130	d 8	**F302**	d 20
F140	d 9	**F310**	d 15
F150	d 10	**F312**	d 21
F170	d 11	**F320**	d 16
F180	d 12	**F330**	d 17
F190	d 13	**F370**	d 18

d1 - d22

	F100	F201	F108	F110	F120	F130	F140	F150	F170	F180	F190
	M	M	M	MF	UNC	UNF	BSW	BSF	G	NPT	PG
	ISO 2568	ISO 2568	ISO 2568	ISO 2568	ISO 2568	ISO 2568	ISO 2568	ISO 2568	ISO 2568	ISO 2568	ISO 2568
	6g	6g	6g	6g	2A	2A	Medium	Medium	Class A	Normal	Normal
	1.75XP	1.75XP	2.25XP	1.75XP	1.75XP	1.75XP	1.75XP	1.75XP	1.75XP	1.75XP	1.75XP
	HSS	HSS	HSS-E	HSS	HSS	HSS	HSS	HSS	HSS	HSS	HSS
	M2 - M42	M3 - M20	M2 - M20	M4 - M40	No.8 - 1"	No.10 - 1"	1/8 - 1"	3/16 - 1/2	1/8 - 2"	1/8 - 1"	M7 - M36
	d 4	d 4	d 4	d 6	d 7	d 8	d 9	d 10	d 11	d 12	d 13
1.1	■8	■8	●8	■8	■8	■8	■8	■8	■8	■8	■8
1.2	■7	■7	●7	■7	■7	■7	■7	■7	■7	■7	■7
1.3	■6	■6	■6	■6	■6	■6	■6	■6	■6	■6	■6
1.4	●5	●5	■5	●5	●5	●5	●5	●5	●5	●5	●5
1.5			●4								
1.6											
1.7											
1.8											
2.1	●4	●4	■4	●4	●4	●4	●4	●4	●4	●4	●4
2.2	●2	●2	■2	●2	●2	●2	●2	●2	●2	●2	●2
2.3			●1								
2.4											
3.1	■8	■8	■8	■8	■8	■8	■8	■8	■8	■8	■8
3.2	■7	■7	■7	■7	■7	■7	■7	■7	■7	■7	■7
3.3	■6	■6	■6	■6	■6	■6	■6	■6	■6	■6	■6
3.4	●5	●5	■5	●5	●5	●5	●5	●5	●5	●5	●5
4.1			●2								
4.2											
4.3	●2	●2	●2	●2	●2	●2	●2	●2	●2	●2	●2
5.1	●9	●9	●9	●9	●9	●9	●9	●9	●9	●9	●9
5.2	●2	●2	●2	●2	●2	●2	●2	●2	●2	●2	●2
5.3	●2	●2	●2	●2	●2	●2	●2	●2	●2	●2	●2
6.1	●9	●9	●9	●9	●9	●9	●9	●9	●9	●9	●9
6.2	●8	●8	●8	●8	●8	●8	●8	●8	●8	●8	●8
6.3	●7	●7	●7	●7	●7	●7	●7	●7	●7	●7	●7
6.4			●2								
7.1	■10	■10	■10	■10	■10	■10	■10	■10	■10	■10	■10
7.2	■15	■15	■15	■15	■15	■15	■15	■15	■15	■15	■15
7.3	■15	■15	■15	■15	■15	■15	■15	■15	■15	■15	■15
7.4	●10	●10	●10	●10	●10	●10	●10	●10	●10	●10	●10
8.1	●15	●15	●15	●15	●15	●15	●15	●15	●15	●15	●15
8.2	●10	●10	●10	●10	●10	●10	●10	●10	●10	●10	●10
8.3	●5	●5	●5	●5	●5	●5	●5	●5	●5	●5	●5
9.1											
10.1											

DORMER

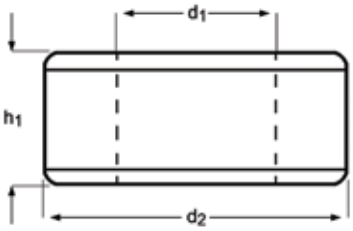
	F300	F310	F320	F330	F370	F202	F302	F312	F272
	M2 - M36	M3 - M30	No.4 - 1.1/4	No.4 - 1.1/2	1/8 - 1.1/2	M3 - M36	M3 - M36	M8 - M24	1/8 - 1.1/2
	d 14	**d 15**	**d 16**	**d 17**	**d 18**	**d 19**	**d 20**	**d 21**	**d 22**
1.1	■8	■8	■8	■8	■8	■8	■8	■8	■8
1.2	■7	■7	■7	■7	■7	■7	■7	■7	■7
1.3	■6	■6	■6	■6	■6	■6	■6	■6	■6
1.4	●5	●5	●5	●5	●5	●5	●5	●5	●5
1.5									
1.6									
1.7									
1.8									
2.1	●4	●4	●4	●4	●4	●4	●4	●4	●4
2.2	●2	●2	●2	●2	●2	●2	●2	●2	●2
2.3									
2.4									
3.1	■8	■8	■8	■8	■8	■8	■8	■8	■8
3.2	■7	■7	■7	■7	■7	■7	■7	■7	■7
3.3	■6	■6	■6	■6	■6	■6	■6	■6	■6
3.4	●5	●5	●5	●5	●5	●5	●5	●5	●5
4.1									
4.2									
4.3	●2	●2	●2	●2	●2	●2	●2	●2	●2
5.1	●9	●9	●9	●9	●9	●9	●9	●9	●9
5.2	●2	●2	●2	●2	●2	●2	●2	●2	●2
5.3	●2	●2	●2	●2	●2	●2	●2	●2	●2
6.1	●9	●9	●9	●9	●9	●9	●9	●9	●9
6.2	●8	●8	●8	●8	●8	●8	●8	●8	●8
6.3	●7	●7	●7	●7	●7	●7	●7	●7	●7
6.4									
7.1	■10	■10	■10	■10	■10	■10	■10	■10	■10
7.2	■15	■15	■15	■15	■15	■15	■15	■15	■15
7.3	■15	■15	■15	■15	■15	■15	■15	■15	■15
7.4	●10	●10	●10	●10	●10	●10	●10	●10	●10
8.1	●15	●15	●15	●15	●15	●15	●15	●15	●15
8.2	●10	●10	●10	●10	●10	●10	●10	●10	●10
8.3	●5	●5	●5	●5	●5	●5	●5	●5	●5
9.1									
10.1									

F100	M	HSS		ISO 2568		6g	1.75XP	L120 c 109
F201	M	HSS		ISO 2568		6g	1.75XP	
F108	M	HSS-E		ISO 2568		6g	2.25XP	

F100
F201
F108

- M Gun Nosed Die
- M Schneideisen, Schälanschnitt
- M Snijplaten met schilaansnijding
- M Filières
- M Terrajas de roscar
- M Caçonete

F100; F201	▪	1.1	1.2	1.3	3.1	3.2	3.3	7.1	7.2	7.3								
	•	1.4	2.1	2.2	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.4	8.1	8.2	8.3		
F108	▪	1.3	1.4	2.1	2.2	3.1	3.2	3.3	7.1	7.2	7.3							
	•	1.1	1.2	1.5	2.3	3.4	4.1	4.3	5.1	5.2	5.3	6.1	6.2	6.3	6.4	7.4	8.1	8.2	8.3



F100	F201	F108
M2 - M42	M3 - M20	M2 - M20

M	P mm	d_2 Ø mm	h_1 mm	F100	F201	F108
2	0.40	16	5	F100M2 [1]		F108M2 [1]
2.5	0.45	16	5	F100M2.5 [1]		F108M2.5 [1]
2.6	0.45	16	5	F100M2.6 [1]		
3	0.50	20	5	F100M3	F201M3	F108M3
3.5	0.60	20	5	F100M3.5		F108M3.5
4	0.70	20	5	F100M4	F201M4	F108M4
4.5	0.75	20	7	F100M4.5		
5	0.80	20	7	F100M5	F201M5	F108M5
6	1.00	20	7	F100M6	F201M6	F108M6
7	1.00	25	9	F100M7		F108M7
8	1.25	25	9	F100M8	F201M8	F108M8
9	1.25	25	9	F100M9		F108M9
10	1.50	30	11	F100M10	F201M10	F108M10
11	1.50	30	11	F100M11		
12	1.75	38	14	F100M12	F201M12	F108M12
14	2.00	38	14	F100M14	F201M14	F108M14
16	2.00	45	14		F201M16	
16	2.00	45	18	F100M16		F108M16
18	2.50	45	18	F100M18	F201M18	F108M18
20	2.50	45	18	F100M20	F201M20	F108M20
22	2.50	55	22	F100M22		
24	3.00	55	22	F100M24		

[1] Without gun-nose / ohne Schälanschnitt / Zonder schilaansnijding / Sans entrée gun / Sin entrada en hélice / Sem entrada

M	P mm	d_2 Ø mm	h_1 mm	F100	F201	F108
27	3.00	65	25	F100M27		
30	3.50	65	25	F100M30		
33	3.50	65	25	F100M33		
36	4.00	65	25	F100M36		
39	4.00	75	30	F100M39		
42	4.50	75	30	F100M42		

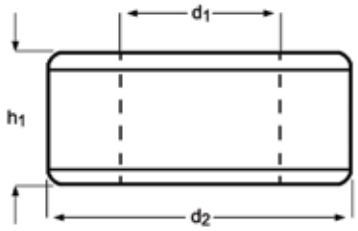
F110 MF HSS ISO 2568 6g 1.75XP

F110

- MF Gun Nosed Die
- MF Schneideisen, Schälanschnitt
- MF Snijplaten met schilaansnijding
- MF Filières
- MF Terrajas de roscar
- MF Caçonete

F110 ▪ 1.1 1.2 1.3 3.1 3.2 3.3 7.1 7.2 7.3

▪ 1.4 2.1 2.2 3.4 4.3 5.1 5.2 5.3 6.1 6.2 6.3 7.4 8.1 8.2 8.3



F110

M4 - M40

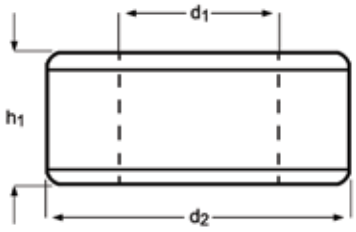
MF	P mm	d_2 Ø mm	h_1 mm	F110
4	0.50	20	5	F110M4X.5
5	0.50	20	5	F110M5X.5
6	0.75	20	7	F110M6X.75
7	0.75	25	9	F110M7X.75
8	0.75	25	9	F110M8X.75
8	1.00	25	9	F110M8X1.0
9	1.00	25	9	F110M9X1.0
10	0.75	30	11	F110M10X.75
10	1.00	30	11	F110M10X1.0
10	1.25	30	11	F110M10X1.25
11	1.00	30	11	F110M11X1.0
12	1.00	38	10	F110M12X1.0
12	1.25	38	10	F110M12X1.25
12	1.50	38	10	F110M12X1.5
13	1.00	38	10	F110M13X1.0
14	1.00	38	10	F110M14X1.0
14	1.25	38	10	F110M14X1.25
14	1.50	38	10	F110M14X1.5
15	1.00	38	10	F110M15X1.0
15	1.50	38	10	F110M15X1.5
16	1.00	45	14	F110M16X1.0
16	1.50	45	14	F110M16X1.5
18	1.00	45	14	F110M18X1.0
18	1.50	45	14	F110M18X1.5
20	1.00	45	14	F110M20X1.0
20	1.50	45	14	F110M20X1.5
22	1.00	55	16	F110M22X1.0
22	1.50	55	16	F110M22X1.5
24	1.00	55	16	F110M24X1.0
24	1.50	55	16	F110M24X1.5
24	2.00	55	16	F110M24X2.0
25	1.50	55	16	F110M25X1.5
26	1.50	55	16	F110M26X1.5
27	1.50	65	18	F110M27X1.5
27	2.00	65	18	F110M27X2.0
28	1.50	65	18	F110M28X1.5
30	1.50	65	18	F110M30X1.5
32	1.50	65	18	F110M32X1.5
35	1.50	65	18	F110M35X1.5
36	1.50	65	18	F110M36X1.5
40	1.50	75	20	F110M40X1.5

F120 UNC HSS ISO 2568 2A 1.75XP

F120

- UNC Gun Nosed Die
- UNC Schneideisen, Schälanschnitt
- UNC Snijplaten met schilaansnijding
- UNC Filières
- UNC Terrajas de roscar
- UNC Caçonete

F120																
■	1.1	1.2	1.3	3.1	3.2	3.3	7.1	7.2	7.3							
●	1.4	2.1	2.2	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.4	8.1	8.2	8.3	



F120

No.8 - 1“

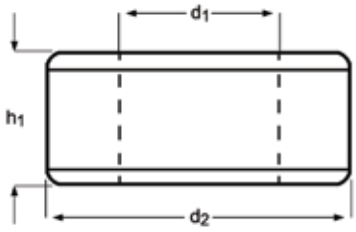
UNC	TPI	d_1 nom mm	d_2 Ø mm	h_1 mm	F120
8	32	4.17	20	7	F1208-32
10	24	4.83	20	7	F12010-24
1/4	20	6.35	20	7	F1201/4
5/16	18	7.94	25	9	F1205/16
3/8	16	9.53	30	11	F1203/8
7/16	14	11.11	30	11	F1207/16
1/2	13	12.70	38	14	F1201/2
9/16	12	14.29	38	14	F1209/16
5/8	11	15.88	45	18	F1205/8
3/4	10	19.05	45	18	F1203/4
7/8	9	22.23	55	22	F1207/8
1“	8	25.40	55	22	F1201

F130 UNF HSS ISO 2568 2A 1.75XP

F130

- UNF Gun Nosed Die
- UNF Schneideisen, Schälanschnitt
- UNF Snijplaten met schilaansnijding
- UNF Filières
- UNF Terrajas de roscar
- UNF Caçonete

F130															
▪	1.1	1.2	1.3	3.1	3.2	3.3	7.1	7.2	7.3						
▪	1.4	2.1	2.2	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.4	8.1	8.2	8.3



F130

No.10 - 1"

UNF	TPI	d_1 nom mm	d_2 Ø mm	h_1 mm	F130
10	32	4.83	20	7	F13010-32
1/4	28	6.35	20	7	F1301/4
5/16	24	7.94	25	9	F1305/16
3/8	24	9.53	30	11	F1303/8
7/16	20	11.11	30	11	F1307/16
1/2	20	12.70	38	10	F1301/2
9/16	18	14.29	38	10	F1309/16
5/8	18	15.88	45	14	F1305/8
3/4	16	19.05	45	14	F1303/4
7/8	14	22.23	55	16	F1307/8
1“	12	25.40	55	16	F1301

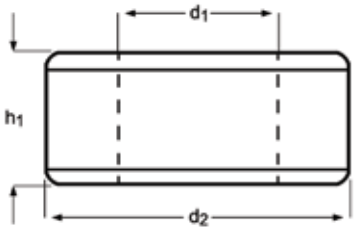
DORMER

F140 BSW HSS ISO 2568 Medium 1.75XP

F140

- BSW Gun Nosed Die
- BSW Schneideisen, Schälanschnitt
- BSW Snijplaten met schilaansnijding
- BSW Filières
- BSW Terrajas de roscar
- BSW Caçonete

F140																
■	1.1	1.2	1.3	3.1	3.2	3.3	7.1	7.2	7.3							
●	1.4	2.1	2.2	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.4	8.1	8.2	8.3	



F140

1/8 - 1“

BSW	TPI	d_1 nom mm	d_2 Ø mm	h_1 mm	F140
1/8	40	3.17	20	5	F1401/8
3/16	24	4.76	20	7	F1403/16
1/4	20	6.35	20	7	F1401/4
5/16	18	7.94	25	9	F1405/16
3/8	16	9.53	30	11	F1403/8
7/16	14	11.11	30	11	F1407/16
1/2	12	12.70	38	14	F1401/2
5/8	11	15.88	45	18	F1405/8
3/4	10	19.05	45	18	F1403/4
7/8	9	22.23	55	22	F1407/8
1“	8	25.40	55	22	F1401

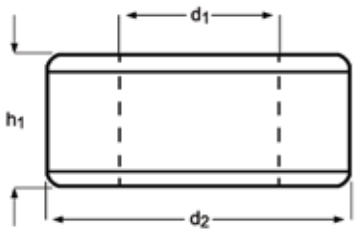
F150 BSF HSS ISO 2568 Medium 1.75XP

F150

- BSF Gun Nosed Die
- BSF Schneideisen, Schälanschnitt
- BSF Snijplaten met schilaansnijding
- BSF Filières
- BSF Terrajas de roscar
- BSF Caçonete

F150

▪	1.1	1.2	1.3	3.1	3.2	3.3	7.1	7.2	7.3						
▪	1.4	2.1	2.2	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.4	8.1	8.2	8.3



F150

3/16 - 1/2

BSF	TPI	d_1 nom mm	d_2 Ø mm	h_1 mm	F150
3/16	32	4.76	20	7	F1503/16
1/4	26	6.35	20	7	F1501/4
5/16	22	7.94	25	9	F1505/16
3/8	20	9.53	30	11	F1503/8
7/16	18	11.11	30	11	F1507/16
1/2	16	12.70	38	10	F1501/2

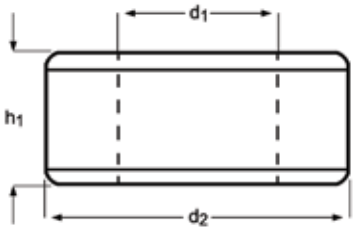
DORMER

F170 G HSS ISO 2568 Class A 1.75XP

F170

- G(BSP) Gun Nosed Die
- G(BSP) Schneideisen, Schälanschnitt
- G(BSP) Snijplaten met schilaansnijding
- G(BSP) Filières
- G(BSP) Terrajas de roscar
- G(BSP) Caçonete

F170																
▪	1.1	1.2	1.3	3.1	3.2	3.3	7.1	7.2	7.3							
●	1.4	2.1	2.2	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.4	8.1	8.2	8.3	



F170

1/8 - 2"

G(BSP)	TPI	d_1 nom mm	d_2 Ø mm	h_1 mm	F170
1/8	28	9.73	30	11	F1701/8
1/4	19	13.16	38	10	F1701/4
3/8	19	16.66	45	14	F1703/8
1/2	14	20.96	45	14	F1701/2
5/8	14	22.91	55	16	F1705/8
3/4	14	26.44	55	16	F1703/4
7/8	14	30.20	65	18	F1707/8
1"	11	33.25	65	18	F1701
1.1/8	11	37.89	75	20	F1701.1/8
1.1/4	11	41.91	75	20	F1701.1/4
1.1/2	11	47.80	90	22	F1701.1/2
2"	11	59.61	105	22	F1702

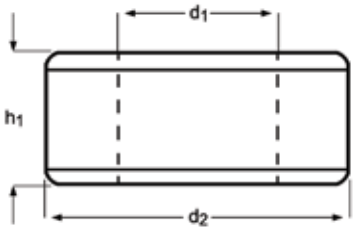
F180 NPT HSS ISO 2568 Normal 1.75XP

F180

- NPT Gun Nosed Die
- NPT Schneideisen, Schälanschnitt
- NPT Snijplaten met schilaansnijding
- NPT Filières
- NPT Terrajas de roscar
- NPT Caçonete

F180 ▪ 1.1 1.2 1.3 3.1 3.2 3.3 7.1 7.2 7.3

● 1.4 2.1 2.2 3.4 4.3 5.1 5.2 5.3 6.1 6.2 6.3 7.4 8.1 8.2 8.3



F180

1/8 - 1“

NPT	TPI	d_1 nom mm	d_2 Ø mm	h_1 mm	F180
1/8	27	9.49	30	11	F1801/8
1/4	18	12.49	38	14	F1801/4
3/8	18	15.93	45	14	F1803/8
1/2	14	19.77	45	18	F1801/2
3/4	14	25.12	55	22	F1803/4
1“	11.5	31.46	65	25	F1801

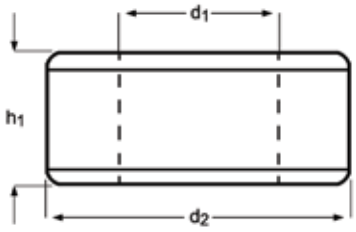
DORMER

F190 PG HSS ISO 2568 Normal 1.75XP

F190

- PG Gun Nosed Die
- PG Schneideisen, Schälanschnitt
- PG Snijplaten met schilaansnijding
- PG Filières
- PG Terrajas de roscar
- PG Caçonete

F190																
	▪	1.1	1.2	1.3	3.1	3.2	3.3	7.1	7.2	7.3						
	•	1.4	2.1	2.2	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.4	8.1	8.2	8.3



F190

M7 - M36

PG	TPI	d_1 nom mm	d_2 Ø mm	h_1 mm	F190
7	20	12.5	38	10	F190PG7
9	18	15.2	38	10	F190PG9
11	18	18.6	45	14	F190PG11
13.5	18	20.4	45	14	F190PG13.5
16	18	22.5	55	16	F190PG16
21	16	28.3	65	18	F190PG21
29	16	37.0	65	18	F190PG29
36	16	47.0	90	22	F190PG36

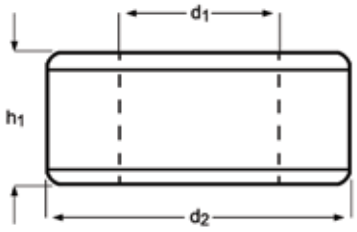
F300 M HSS BS 1127: 1950 1.75XP L120 c 109

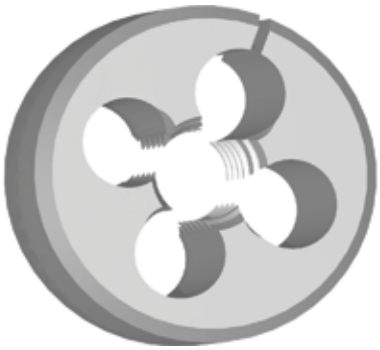
F300

- M Adjustable Dies
- M Schneideisen, einstellbar
- M Verstelbare snijplaten
- M Filières extensibles
- M Terraja tipo abierto
- M Caçonete Ajustável

F300 ▪ 1.1 1.2 1.3 3.1 3.2 3.3 7.1 7.2 7.3

• 1.4 2.1 2.2 3.4 4.3 5.1 5.2 5.3 6.1 6.2 6.3 7.4 8.1 8.2 8.3





F300

M2 - M36

M	P mm	d_2 Ø Inch	h1 Inch	F300
2	0.40	13/16	1/4	F300M2X13/16
2.5	0.45	13/16	1/4	F300M2.5X13/16
3	0.50	13/16	1/4	F300M3X13/16
3.5	0.60	13/16	1/4	F300M3.5X13/16
4	0.70	13/16	1/4	F300M4X13/16
5	0.80	13/16	1/4	F300M5X13/16
5	0.80	1“	3/8	F300M5X1
6	1.00	13/16	1/4	F300M6X13/16
6	1.00	1“	3/8	F300M6X1
6	1.00	1.5/16	7/16	F300M6X1.5/16
7	1.00	13/16	1/4	F300M7X13/16
7	1.00	1“	3/8	F300M7X1
8	1.25	1“	3/8	F300M8X1
8	1.25	1.5/16	7/16	F300M8X1.5/16
9	1.25	1“	3/8	F300M9X1
9	1.25	1.5/16	7/16	F300M9X1.5/16
10	1.50	1“	3/8	F300M10X1
10	1.50	1.5/16	7/16	F300M10X1.5/16
10	1.50	1.1/2	1/2	F300M10X1.1/2
11	1.50	1.5/16	7/16	F300M11X1.5/16
12	1.75	1.5/16	7/16	F300M12X1.5/16
12	1.75	1.1/2	1/2	F300M12X1.1/2
14	2.00	1.5/16	7/16	F300M14X1.5/16
14	2.00	1.1/2	1/2	F300M14X1.1/2
16	2.00	1.1/2	1/2	F300M16X1.1/2
16	2.00	2“	5/8	F300M16X2
18	2.50	1.1/2	1/2	F300M18X1.1/2
18	2.50	2“	5/8	F300M18X2
20	2.50	1.1/2	1/2	F300M20X1.1/2
20	2.50	2“	5/8	F300M20X2
22	2.50	2“	5/8	F300M22X2
24	3.00	2“	5/8	F300M24X2
27	3.00	3“	7/8	F300M27X3
30	3.50	3“	7/8	F300M30X3
36	4.00	3“	7/8	F300M36X3

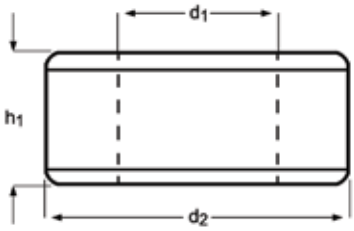
DORMER

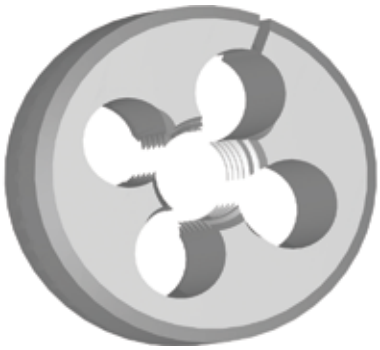
F310 MF HSS BS 1127: 1950 1.75XP

F310

- MF Adjustable Dies
- MF Schneideisen, einstellbar
- MF Verstelbare snijplaten
- MF Filières extensibles
- MF Terraja tipo abierto
- MF Caçonete Ajustável

F310										
▪	1.1	1.2	1.3	3.1	3.2	3.3	7.1	7.2	7.3	
●	1.4	2.1	2.2	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.4	8.1	8.2	8.3





F310

M3 - M30

MF	P mm	d_2 Ø Inch	h1 Inch	F310
3	0.35	13/16	1/4	F310M3X.35X13/16
4	0.50	13/16	1/4	F310M4X.5X13/16
4	0.75	13/16	1/4	F310M4X.75X13/16
5	0.50	13/16	1/4	F310M5X.5X13/16
5	0.90	13/16	1/4	F310M5X.9X13/16
6	0.75	13/16	1/4	F310M6X.75X13/16
8	0.75	1“	3/8	F310M8X.75X1
8	1.00	1“	3/8	F310M8X1.0X1
9	1.00	1“	3/8	F310M9X1.0X1
10	0.75	1“	3/8	F310M10X.75X1
10	1.00	1“	3/8	F310M10X1.0X1
10	1.25	1“	3/8	F310M10X1.25X1
10	1.25	1.5/16	7/16	F310M10X1.25X1.5/16
12	1.00	1.5/16	7/16	F310M12X1.0X1.5/16
12	1.25	1.5/16	7/16	F310M12X1.25X1.5/16
12	1.50	1.5/16	7/16	F310M12X1.5X1.5/16
14	1.25	1.5/16	7/16	F310M14X1.25X1.5/16
14	1.50	1.5/16	7/16	F310M14X1.5X1.5/16
16	1.00	1.1/2	1/2	F310M16X1.0X1.1/2
16	1.50	1.1/2	1/2	F310M16X1.5X1.1/2
18	1.50	1.1/2	1/2	F310M18X1.5X1.1/2
20	1.00	1.1/2	1/2	F310M20X1.0X1.1/2
20	1.50	2“	5/8	F310M20X1.5X2
20	2.00	1.1/2	1/2	F310M20X2.0X1.1/2
22	1.50	2“	5/8	F310M22X1.5X2
24	1.50	2“	5/8	F310M24X1.5X2
24	2.00	2“	5/8	F310M24X2.0X2
25	1.50	2“	5/8	F310M25X1.5X2
27	2.00	2.1/4	11/16	F310M27X2.0X2.1/4
30	2.00	2.1/4	11/16	F310M30X2.0X2.1/4

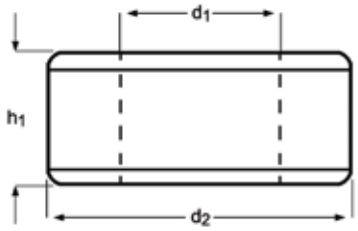
F320 UNC HSS BS 1127: 1950 1.75XP L120 c 109

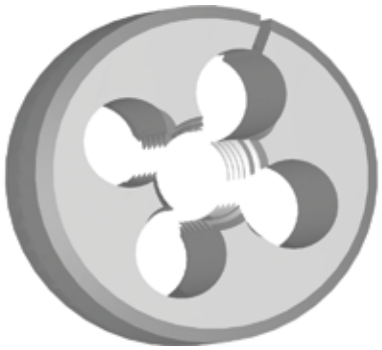
F320

- UNC Adjustable Dies
- UNC Schneideisen, einstellbar
- UNC Verstelbare snijplaten
- UNC Filières extensibles
- UNC Terraja tipo abierto
- UNC Caçonete Ajustável

F320 ▪ 1.1 1.2 1.3 3.1 3.2 3.3 7.1 7.2 7.3

▪ 1.4 2.1 2.2 3.4 4.3 5.1 5.2 5.3 6.1 6.2 6.3 7.4 8.1 8.2 8.3





F320

No.4 - 1.1/4

UNC	TPI	d_1 nom mm	d_2 Ø Inch	h1 Inch	F320
4	40	2.85	13/16	1/4	F3204-40X13/16
5	40	3.18	13/16	1/4	F3205-40X13/16
6	32	3.51	13/16	1/4	F3206-32X13/16
8	32	4.17	13/16	1/4	F3208-32X13/16
8	32	4.17	1“	3/8	F3208-32X1
10	24	4.83	13/16	1/4	F32010-24X13/16
10	24	4.83	1“	3/8	F32010-24X1
12	24	5.49	13/16	1/4	F32012-24X13/16
1/4	20	6.35	13/16	1/4	F3201/4X13/16
1/4	20	6.35	1“	3/8	F3201/4X1
1/4	20	6.35	1.5/16	7/16	F3201/4X1.5/16
1/4	20	6.35	1.1/2	1/2	F3201/4X1.1/2
5/16	18	7.94	1“	3/8	F3205/16X1
5/16	18	7.94	1.1/2	1/2	F3205/16X1.1/2
3/8	16	9.53	1“	3/8	F3203/8X1
3/8	16	9.53	1.5/16	7/16	F3203/8X1.5/16
3/8	16	9.53	1.1/2	1/2	F3203/8X1.1/2
7/16	14	11.11	1.5/16	7/16	F3207/16X1.5/16
7/16	14	11.11	1.1/2	1/2	F3207/16X1.1/2
1/2	13	12.70	1.5/16	7/16	F3201/2X1.5/16
1/2	13	12.70	1.1/2	1/2	F3201/2X1.1/2
1/2	13	12.70	2“	5/8	F3201/2X2
9/16	12	14.29	1.1/2	1/2	F3209/16X1.1/2
5/8	11	15.88	1.1/2	1/2	F3205/8X1.1/2
5/8	11	15.88	2“	5/8	F3205/8X2
3/4	10	19.05	1.1/2	1/2	F3203/4X1.1/2
3/4	10	19.05	2“	5/8	F3203/4X2
7/8	9	22.23	2“	5/8	F3207/8X2
1“	8	25.40	2“	5/8	F3201X2
1.1/8	7	28.58	3“	7/8	F3201.1/8X3
1.1/4	7	31.75	3“	7/8	F3201.1/4X3

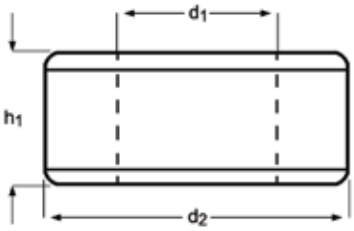
DORMER

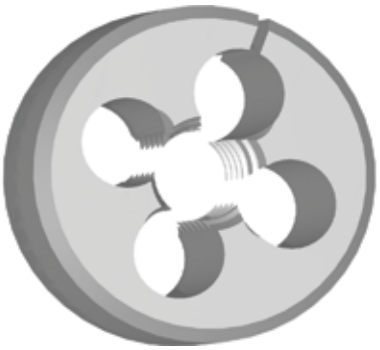
F330 UNF HSS BS 1127: 1950 1.75XP L120 c 109

F330

- UNF Adjustable Dies
- UNF Schneideisen, einstellbar
- UNF Verstelbare snijplaten
- UNF Filières extensibles
- UNF Terraja tipo abierto
- UNF Caçonete Ajustável

F330									
■	1.1	1.2	1.3	3.1	3.2	3.3	7.1	7.2	7.3
●	1.4	2.1	2.2	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.4	8.1	8.2	8.3





F330

No.4 - 1.1/2

UNF	TPI	d_1 nom mm	d_2 Ø Inch	h1 Inch	F330
4	48	2.85	13/16	1/4	F3304-48X13/16
5	44	3.18	13/16	1/4	F3305-44X13/16
6	40	3.51	13/16	1/4	F3306-40X13/16
8	36	4.17	13/16	1/4	F3308-36X13/16
10	32	4.83	13/16	1/4	F33010-32X13/16
10	32	4.83	1“	3/8	F33010-32X1
12	28	5.49	13/16	1/4	F33012-28X13/16
1/4	28	6.35	13/16	1/4	F3301/4X13/16
1/4	28	6.35	1“	3/8	F3301/4X1
1/4	28	6.35	1.1/2	1/2	F3301/4X1.1/2
5/16	24	7.94	1“	3/8	F3305/16X1
5/16	24	7.94	1.5/16	7/16	F3305/16X1.5/16
5/16	24	7.94	1.1/2	1/2	F3305/16X1.1/2
3/8	24	9.53	1“	3/8	F3303/8X1
3/8	24	9.53	1.5/16	7/16	F3303/8X1.5/16
3/8	24	9.53	1.1/2	1/2	F3303/8X1.1/2
7/16	20	11.11	1“	3/8	F3307/16X1
7/16	20	11.11	1.5/16	7/16	F3307/16X1.5/16
7/16	20	11.11	1.1/2	1/2	F3307/16X1.1/2
1/2	20	12.70	1.5/16	7/16	F3301/2X1.5/16
1/2	20	12.70	1.1/2	1/2	F3301/2X1.1/2
9/16	18	14.29	1.5/16	7/16	F3309/16X1.5/16
9/16	18	14.29	1.1/2	1/2	F3309/16X1.1/2
5/8	18	15.88	1.1/2	1/2	F3305/8X1.1/2
5/8	18	15.88	2“	5/8	F3305/8X2
3/4	16	19.05	1.1/2	1/2	F3303/4X1.1/2
3/4	16	19.05	2“	5/8	F3303/4X2
7/8	14	22.23	2“	5/8	F3307/8X2
1“	12	25.40	2“	5/8	F3301X2
1.1/8	12	28.58	3“	7/8	F3301.1/8X3
1.1/4	12	31.75	3“	7/8	F3301.1/4X3
1.1/2	12	38.10	3“	7/8	F3301.1/2X3

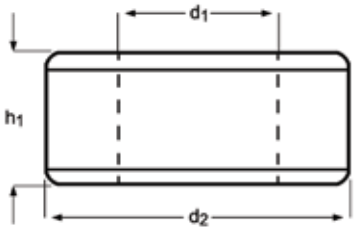
F370 G HSS BS 1127: 1950 1.75XP

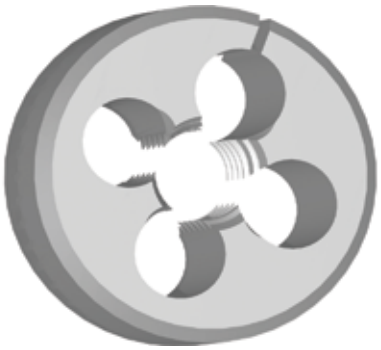
F370

- G(BSP) Adjustable Dies
- G(BSP) Schneideisen, einstellbar
- G(BSP) Verstelbare snijplaten
- G(BSP) Filières extensibles
- G(BSP) Terraja tipo abierto
- G(BSP) Caçonete Ajustável

F370

▪	1.1	1.2	1.3	3.1	3.2	3.3	7.1	7.2	7.3						
▪	1.4	2.1	2.2	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.4	8.1	8.2	8.3





F370

1/8 - 1.1/2

G(BSP)	TPI	d_1 nom mm	d_2 Ø Inch	h1 Inch	F370
1/8	28	9.73	1“	3/8	F3701/8X1
1/4	19	13.16	1.5/16	7/16	F3701/4X1.5/16
3/8	19	16.66	1.1/2	1/2	F3703/8X1.1/2
1/2	14	20.96	2“	5/8	F3701/2X2
5/8	14	22.91	2“	5/8	F3705/8X2
3/4	14	26.44	2“	5/8	F3703/4X2
7/8	14	30.20	2.1/4	11/16	F3707/8X2.1/4
1“	11	33.25	2.1/4	11/16	F3701X2.1/4
1.1/4	11	41.91	3“	7/8	F3701.1/4X3
1.1/2	11	47.80	4“	1“	F3701.1/2X4

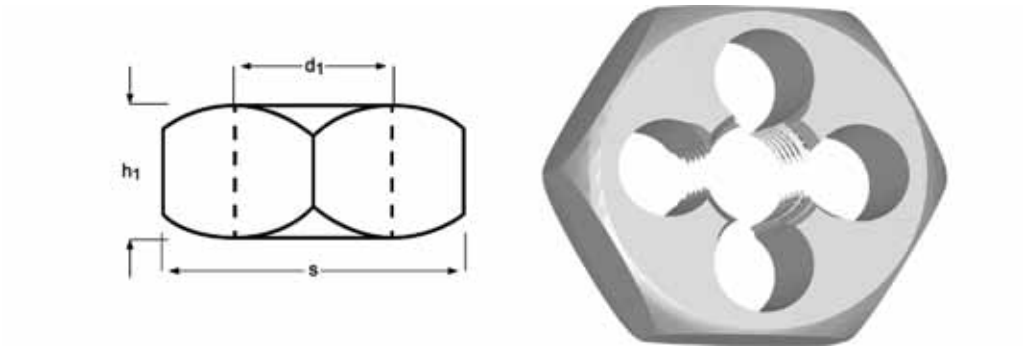
DORMER

F202 M HSS DIN 382 6g 1.75XP

F202

- M Dienuts
- M Sechskant-Schneideisen
- M Snijmoeren
- M Filières hexagonales BSPF
- M Terrajas, exterior hexagonal
- M Caçonete 'G' Série (BSPF)

F202																
	■	1.1	1.2	1.3	3.1	3.2	3.3	7.1	7.2	7.3						
	●	1.4	2.1	2.2	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.4	8.1	8.2	8.3



F202

M3 - M36

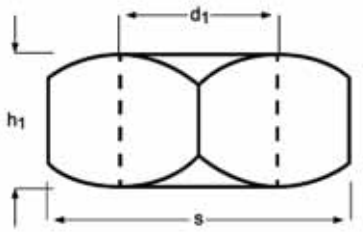
M	P mm	S	h_1 mm	F202
3	0.50	19	5	F202M3
4	0.70	19	5	F202M4
5	0.80	19	7	F202M5
6	1.00	19	7	F202M6
7	1.00	22	9	F202M7
8	1.25	22	9	F202M8
10	1.50	27	11	F202M10
12	1.75	36	14	F202M12
14	2.00	36	14	F202M14
16	2.00	41	18	F202M16
18	2.50	41	18	F202M18
20	2.50	41	18	F202M20
22	2.50	50	22	F202M22
24	3.00	50	22	F202M24
27	3.00	60	25	F202M27
30	3.50	60	25	F202M30
36	4.00	60	25	F202M36

F302 M HSS BS 1127: 1950 6g 1.75XP

F302

- M Dienuts
- M Sechskant-Schneideisen
- M Snijmoeren
- M Filières hexagonales BSPF
- M Terrajas, exterior hexagonal
- M Caçonete 'G' Série (BSPF)

F302															
▪	1.1	1.2	1.3	3.1	3.2	3.3	7.1	7.2	7.3						
▪	1.4	2.1	2.2	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.4	8.1	8.2	8.3



F302

M3 - M36

M	P mm	S Inch	h1 Inch	F302
3	0.50	0.7100	1/4	F302M3
4	0.70	0.7100	1/4	F302M4
5	0.80	0.7100	1/4	F302M5
6	1.00	0.7100	1/4	F302M6
7	1.00	0.8200	5/16	F302M7
8	1.25	0.8200	5/16	F302M8
9	1.25	0.9200	3/8	F302M9
10	1.50	0.9200	3/8	F302M10
11	1.50	1.0100	7/16	F302M11
12	1.75	1.1000	1/2	F302M12
14	2.00	1.3000	5/8	F302M14
16	2.00	1.3000	5/8	F302M16
18	2.50	1.4800	11/16	F302M18
20	2.50	1.4800	11/16	F302M20
22	2.50	1.6700	13/16	F302M22
24	3.00	2.0500	15/16	F302M24
27	3.00	2.2200	1.1/16	F302M27
30	3.50	2.2200	1.1/16	F302M30
33	3.50	2.5800	1.1/8	F302M33
36	4.00	2.7600	1.1/4	F302M36

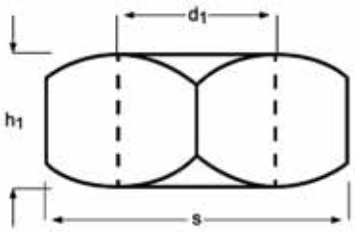
DORMER

F312 MF HSS BS 1127: 1950 6g 1.75XP

F312

- MF Dienuts
- MF Sechskant-Schneideisen
- MF Snijmoeren
- MF Filières hexagonales BSPF
- MF Terrajas, exterior hexagonal
- MF Caçonete 'G' Série (BSPF)

F312																
▪	1.1	1.2	1.3	3.1	3.2	3.3	7.1	7.2	7.3							
▪	1.4	2.1	2.2	3.4	4.3	5.1	5.2	5.3	6.1	6.2	6.3	7.4	8.1	8.2	8.3	



F312

M8 - M24

MF	P mm	S Inch	h1 Inch	F312
8	0.75	0.8200	5/16	F312M8X.75
8	1.00	0.8200	5/16	F312M8X1.0
10	1.00	0.9200	3/8	F312M10X1.0
10	1.25	0.9200	3/8	F312M10X1.25
12	1.00	1.0100	7/16	F312M12X1.0
12	1.25	1.0100	7/16	F312M12X1.25
12	1.50	1.0100	7/16	F312M12X1.5
14	1.50	1.3000	5/8	F312M14X1.5
16	1.50	1.3000	5/8	F312M16X1.5
18	1.50	1.4800	11/16	F312M18X1.5
20	1.50	1.4800	11/16	F312M20X1.5
22	1.50	1.6700	13/16	F312M22X1.5
24	1.50	2.0500	15/16	F312M24X1.5
24	2.00	2.0500	15/16	F312M24X2.0

F272 G HSS DIN 382 Class A 1.75XP

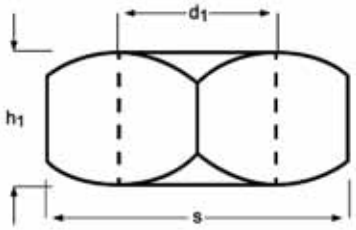
F272

- G(BSP) Dienuts
- G(BSP) Sechskant-Schneideisen
- G(BSP) Snijmoeren
- G(BSP) Filières hexagonales BSPF
- G(BSP) Terrajas, exterior hexagonal
- G(BSP) Caçonete 'G' Série (BSPF)

F272

▪ 1.1 1.2 1.3 3.1 3.2 3.3 7.1 7.2 7.3

• 1.4 2.1 2.2 3.4 4.3 5.1 5.2 5.3 6.1 6.2 6.3 7.4 8.1 8.2 8.3



F272

1/8 - 1.1/2

G(BSP)	TPI	d_1 nom mm	S	h_1 mm	F272
1/8	28	9.73	27	11	F2721/8
1/4	19	13.16	36	10	F2721/4
3/8	19	16.66	41	14	F2723/8
1/2	14	20.96	41	14	F2721/2
3/4	14	26.44	60	18	F2723/4
1“	11	33.25	60	18	F2721
1.1/4	11	41.91	70	20	F2721.1/4
1.1/2	11	47.80	85	22	F2721.1/2

C110 e 24
C122 e 37
C123 e 26
C126 e 24
C135 e 28
C139 e 26
C159 e 34
C166 e 45
C167 e 36
C169 e 34
C246 e 41
C247 e 41
C273 e 43
C295 e 43
C299 e 39
C305 e 32
C306 e 29
C324 e 48
C333 e 46
C336 e 35
C346 e 38
C352 e 32
C353 e 29
C358 e 35
C359 e 46
C365 e 47
C367 e 31
C368 e 31
C400 e 55
C403 e 56
C407 e 52
C413 e 55
C426 e 50
C428 e 50
C429 e 56
C491 e 51
C492 e 51
C500 e 57
C503 e 57
C505 e 58
C511 e 59
C700 e 72
C710 e 71
C800 e 60
C801 e 63
C810 e 61
C820 e 65
C822 e 64
C825 e 62
C830 e 69
C831 e 70
C835 e 68
C837 e 67
C903 e 40
C905 e 49
C907 e 39
C908 e 52
C920 e 40
C921 e 54
C922 e 49
C944 e 53
C948 e 53

D200 e 73
D400 e 82
D402 e 83
D420 e 82
D422 e 83
D745 e 75
D747 e 77
D750 e 81
D751 e 81
D752 e 80
D753 e 80
D763 e 73

e1 - e84

S501 e 21
S511 e 22
S802HA e 12
S802HB e 12
S803HA e 15
S803HB e 15
S804HA e 18
S804HB e 18
S812HA e 13
S812HB e 13
S813HA e 16
S813HB e 16
S814HA e 19
S814HB e 19
S902 e 14
S903 e 17
S904 e 20
S922 e 14
S933 e 17
S944 e 20
S991 e 23

	S802HA	S802HB	S812HA	S812HB	S902	S922	S803HA	S803HB	S813HA	S813HB	S903	S933	S804HA	S804HB	S814HA	S814HB	S904
	1.00 - 20.00	1.80 - 20.00	2.00 - 20.00	2.00 - 20.00	2.00 - 20.00	2.00 - 20.00	1.00 - 20.00	1.80 - 20.00	2.00 - 20.00	2.00 - 20.00	2.00 - 20.00	2.00 - 20.00	2.00 - 25.00	2.00 - 25.00	2.00 - 25.00	2.00 - 25.00	2.00 - 20.00
	NEW	NEW	NEW	NEW			NEW	NEW	NEW	NEW			NEW	NEW	NEW	NEW	
	e 12	e 12	e 13	e 13	e 14	e 14	e 15	e 15	e 16	e 16	e 17	e 17	e 18	e 18	e 19	e 19	e 20
1.1	■260B	■260B	■210B	■210B	■65B	■95B	■260B	■260B	■210B	■210B	■65B	■95B	■360B	■360B	■270B	■270B	■95B
1.2	■260B	■260B	■210B	■210B	■65B	■95B	■260B	■260B	■210B	■210B	■65B	■95B	■300B	■300B	■225B	■225B	■95B
1.3	■155B	■155B	■125B	■125B	■55B	■80B	■155B	■155B	■125B	■125B	■55B	■80B	■230B	■230B	■175B	■175B	■80B
1.4	■155B	■155B	■125B	■125B	■50B	■75B	■155B	■155B	■125B	■125B	■50B	■75B	■230B	■230B	■175B	■175B	■70B
1.5	■115B	■115B	■90B	■90B	●30B	■45B	■115B	■115B	■90B	■90B	●30B	■45B	■165B	■165B	■125B	■125B	●55B
1.6	■90B	■90B	■75B	■75B		●30B	■90B	■90B	●75B	●75B		●30B	■130B	■130B	●100B	●100B	●30B
1.7																	
1.8																	
2.1	■105A	■105A	■75A	■75A			■105A	■105A	■85A	■85A			■165A	■165A	■125A	■125A	
2.2	■70A	■70A	■55A	■55A			■70A	■70A	●55A	●55A			■110A	■110A	●85A	●85A	
2.3	●70A	●70A	■55A	■55A			●70A	●70A	●55A	●55A			●110A	●110A	●85A	●85A	
2.4	●50A	●50A					●50A	●50A					●75A	●75A			
3.1	■180B	■180B	■145B	■145B	■55B	■80B	■180B	■180B	■145B	■145B	■55B	■80B	■275B	■275B	■205B	■205B	■80B
3.2	■110B	■110B	■85B	■85B	●30B	■45B	■110B	■110B	■85B	■85B	●30B	■45B	■165B	■165B	■125B	■125B	●55B
3.3	■145B	■145B	■115B	■115B	■55B	■80B	■145B	■145B	■115B	■115B	■55B	■80B	■165B	■165B	■125B	■125B	■70B
3.4	■95B	■95B	■75B	■75B	●30B	■45B	■95B	■95B	■75B	■75B	●30B	■45B	■135B	■135B	■105B	■105B	●55B
4.1	●170B	●170B	■140B	■140B	■65B	■95B	●170B	●170B	●140B	●140B	■65B	■95B	●275B	●275B	●205B	●205B	■95B
4.2	●115B	●115B	■90B	■90B	●30B	●45B	●115B	●115B	●90B	●90B	●30B	●45B	●140B	●140B	●105B	●105B	●40B
4.3					●15B	●20B					●15B	●20B					●30B
5.1	●165B	●165B	■130B	■130B	■65B	■95B	●165B	●165B	●130B	●130B	■65B	■95B	●275B	●275B	●205B	●205B	■135B
5.2	●35A	●35A	■25A	■25A			●35A	●35A	●25A	●25A			●55A	●55A	●40A	●40A	●30A
5.3																	●25A
6.1	●320C	●320C	■255C	■255C	■110C	■155C	●320C	●320C	●255C	●255C	■110C	■155C	●320C	●320C	●255C	●255C	■110C
6.2	■320C	■320C	■255C	■255C	■110C	■155C	■320C	■320C	■255C	■255C	■110C	■155C	■320C	■320C	■255C	■255C	■110C
6.3	■320C	■320C	■255C	■255C	■110C	■155C	■320C	■320C	■255C	■255C	■110C	■155C	■320C	■320C	■255C	■255C	■110C
6.4	■40B	■40B	■30C	■30C	●15B	●20B	■40B	■40B	■30C	■30C	●15B	●20B	■40B	■40B	■32C	■32C	●15B
7.1	●800C	●800C	■640C	■640C	●275C	●390C	●800C	●800C	●640C	●640C	●275C	●390C	●800C	●800C	●640C	●640C	●275C
7.2	■800C	■800C	■640C	■640C	●275C	●390C	■800C	■800C	■640C	■640C	●275C	●390C	●800C	●800C	●640C	●640C	●275C
7.3	■480C	■480C	■380C	■380C	●165C	●235C	■480C	■480C	■380C	■380C	●165C	●235C	●480C	●480C	●380C	●380C	●165C
7.4	■240B	■240B	■190B	■190B			■240B	■240B	■190B	■190B			●240B	●240B	●190B	●190B	
8.1	●320C	●320C	■255C	■255C	●110C	●155C	●320C	●320C	●255C	●255C	●110C	●155C	●320C	●320C	●255C	●255C	●110C
8.2	●320C	●320C	■255C	■255C	●110C	●155C	●320C	●320C	●255C	●255C	●110C	●155C	●320C	●320C	●255C	●255C	●110C
8.3					●30B	●45B					●30B	●45B					●55B
9.1																	
10.1																	

DORMER

	S944	S501	S511	S991	C110	C126	C123	C139	C135	C306	C353	C368	C367	C305	C352	C159
	HM	HM	HM		HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E
	P9	P9	P9		P9	P9	P9	P9	P9	P9	P9	P9	P9	P9	P9	P9
	N	N	N		N	N	N	N	N	N	N	N	N	N	N	W
	Z 4	Z 2	Z 4		Z 2	Z 2	Z 2	Z 2	Z 2	Z 3	Z 3	Z 3	Z 3	Z 3	Z 3	Z 2
	λ30°	λ30°	λ30°		λ30°	λ30°	λ30°	λ30°	λ30°	λ30°	λ30°	λ40°	λ40°	λ30°	λ30°	λ40°
	DIN 6535HB	DIN 6535HA	DIN 6535HA		DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B
	TiAlN	X-CEED	X-CEED			TiCN		TiCN			Alcrona		Alcrona		Alcrona	
	h12	h9	h9		e8	e8	e8	e8	e8	e8 h10	e8 h10	e8	e8	e8	e8	e8
	DORMER	DORMER	DORMER		DIN 327D	DIN 327D	DIN 844K	DIN 844K	DORMER	DIN 327D	DIN 327D	DIN 327D	DIN 327D	DIN 844K	DIN 844K	DIN 844K
	2.00 - 20.00	1.00 - 16.00	3.00 - 16.00	Set	1.00 - 50.00	1.00 - 30.00	1/16 - 40.00	2.00 - 30.00	2.00 - 30.00	3.00 - 30.00	3.00 - 30.00	2.00 - 20.00	2.00 - 20.00	2.00 - 32.00	3.00 - 20.00	2.00 - 20.00
	e 20	e 21	e 22	e 23	e 24	e 24	e 26	e 26	e 28	e 29	e 29	e 31	e 31	e 32	e 32	e 34
1.1	■140B	■181B	■230B		■60A	■135A	■55A	■120A	■50A	●53A	●145A	■60A	■146A	●56A	●135A	■50A
1.2	■140B	■181B	■192B		■50A	■105A	■45A	■95A	■40A	■49A	■120A	■48A	■117A	■44A	■105A	●40A
1.3	■120B	■118B	■153B		●40B	■95B	■40B	■85B	●35B	■41B	■100B	●42B	●102B	■39B	■95B	●35B
1.4	■105B	■118B	■153B		●35B	■80B	■35B	■70B	●30B	●35B	■85B	●36B	●87B	●33B	■80B	
1.5	■80B	■90B	■115B			●55C		●50C			■60C				■55C	
1.6	●45B	■72B	■92B			●25C		●20C			●25C				●25C	
1.7		●45A	●61A													
1.8																
2.1		■81A	■115A		●30F	●45F	●25F	●45F	●25F	●26F	●50F	■35F	■67F	●26F	●50F	●23F
2.2		■54A	■76A								●45F	●29F	■55F		●40F	●19F
2.3		■54A	■76A			●25F		●25F			●30F	■19F	■35F		●25F	
2.4												■13F	■25F			
3.1	■120B	■136B	■192B		●35A	■60A	●30A	■55A	●30A	●32A	■65A			●30A	■60A	
3.2	■80B	■81B	■115B		●30A	■50A	●25A	■45A	●25A	●27A	■55A			●25A	■50A	
3.3	■105B	■109B	■115B		●50B	■90B	●45B	■80B	●40B	●48B	■95B			●45B	■90B	
3.4	■80B	■72B	■96B		●30B	■55B	●30B	■50B	●25B	●30B	■60B			●27B	■55B	
4.1	■140B	■136B	■192B		■35D	■45D	■30D	■45D	●30D	■33D	■50D	●33D	●50D	■29D	■45D	●28D
4.2	●60B	■90B	■96B		●25D	■40D	●25D	■35D	●25D	●27D	■40D			●24D	■35D	
4.3	●45B	■45B	■61B			●15D		●15D			●20D				●15D	
5.1	■200B	■136B	■192B		■60D	■130D	■50D	■115D	■50D	■58D	■140D	●58D	●140D	■51D	■125D	●48D
5.2	●45A	■27A	■38A		●15C	■25C	●15C	■25C	●15C	●16C	■30C			■13C	■25C	
5.3	●35A	■22A	■30A			●10D		●10D			●15D				●10D	
6.1	■155C	■255C	●255C		■85C	■190C	■80C	■170C	■70C	■110C	■210C	■110C	■209C	■100C	■190C	■100C
6.2	■155C	■255C	●255C		■85C	■190C	■80C	■170C	■70C	■110C	■210C	●110C	●209C	■100C	■190C	■100C
6.3	■155C	■255C	●255C		■85C	■190C	■80C	■170C	■70C	■110C	■210C	●110C	●209C	■100C	■190C	■100C
6.4	●20B	■30B	●32B			●25C		●25C			●30C				●25C	
7.1	●390C	■640C	●640C		●220E	●480E	●200E	●435E	●180E			■218E	■528E			■250E
7.2	●390C	■640C	●640C		●220E	●480E	●200E	●435E	●180E	●219E	●530E	●218E	●528E	●198E	●480E	■250E
7.3	●235C	■380C	■380C		●85E	●190E	●80E	●170E	●70E	●86E	●210E		●209E	●79E	●190E	■100E
7.4		■190B	■190B			●95A		●85A			●105A				●95A	
8.1	●155C	■255C	●255C		●90C	●190C	●80C	●175C	●70C	●72C	●210C	●72C	●438C	●65C	●190C	■100C
8.2	●155C	■255C	■255C													■100C
8.3	●80B															
9.1																
10.1																

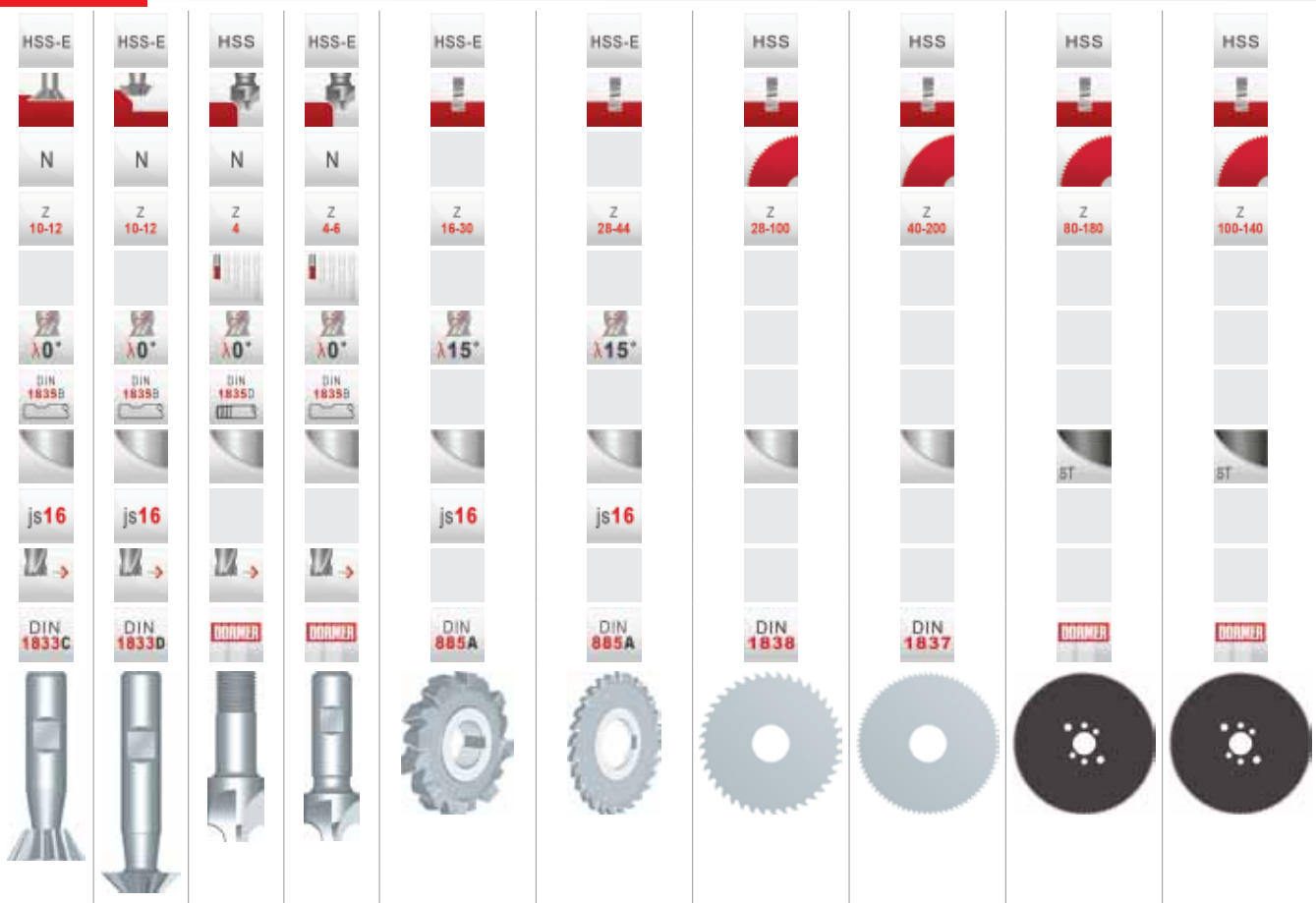
	C169	C336	C358	C167	C122	C346	C299	C907	C903	C920	C247	C246	C273	C295	C166	C333
	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E	HSS-E	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E-PM
	P9															
	W	W	W	N	N	N	N	N	N	N	N	N	N	N	W	W
	Z 2	Z 3	Z 3	Z 2	Z 2	Z 3	Z 3-5	Z 3-6	Z 3-5	Z 3-5	Z 4-8	Z 4-6	Z 4-6	Z 4-6	Z 2	Z 3
	40°	40°	40°	30°	30°	30°	45°	45°	45°	45°	30°	30°	30°	30°	40°	40°
	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835A	DIN 1835A	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B
	TiCN		Alcrona					Alcrona		Alcrona		TiCN		TiCN		
	e8	k10	k10	js14	e8	e8	k10	k10	k10	k10	k10	k10	k10	k10	e8	k10
	DIN 844K	DIN 844K	DIN 844K	DORMER	DORMER	DIN 844L	DIN 844K	DIN 844K	DIN 844L	DIN 844L	DIN 844K	DIN 844K	DIN 844L	DIN 844L	DIN 844L	DIN 844L
	2.00 - 20.00	10.00 - 30.00	10.00 - 30.00	6.00 - 16.00	5.00 - 30.00	3.00 - 20.00	3.00 - 25.00	3.00 - 32.00	6.00 - 25.00	6.00 - 25.00	2.00 - 50.00	2.00 - 32.00	2.00 - 40.00	2.00 - 40.00	6.00 - 16.00	10.00 - 30.00
	e 34	e 35	e 35	e 36	e 37	e 38	e 39	e 39	e 40	e 40	e 41	e 41	e 43	e 43	e 45	e 46
1.1	■100A	●55A	●133A	■50A	■45A	●45A					■55S	■120S	■50S	■110S	■45A	●49A
1.2	■80A	●44A	■106A	■40A	■36A	■35A					■45S	■95S	■50S	■85S	●36A	●39A
1.3	●70B	●38B	●93B	●35B	●31B	●30B	■37T	■95T	■35T	■85T	■40T	■85T	■35T	■75T	●31B	●34B
1.4				●30B	●27B	●25B	■33T	■80T	■29T	■70T	●35T	■70T	●30T	■65T		
1.5							■22U	■55U	■20U	■50U		●50U		●45U		
1.6							●10U	■25U	●9U	■20U		●20U		●20U		
1.7																
1.8																
2.1	●34F	●25F	●48F	●25F	●20F	●20F	■26Y	■50Y	■23Y	■45Y	●25Y	●45Y	●10Y	●40Y	●20F	●22F
2.2	●29F	●21F	●40F				●21Y	■40Y	●18Y	■35Y					●17F	●19F
2.3	●18F		●26F				■13Y	■25Y	■13Y	■25Y		●25Y		●20Y		
2.4																
3.1				●30A	●25A	●25A	■30S	■60S	■27S	■55S	●30S	■55S	●25S	■50S		
3.2				●25A	●20A	●20A	■25S	■50S	■22S	■45S	●25S	■45S	●20S	■40S		
3.3				●40B	●36B	●35B	■45T	■90T	■39T	■80T	●45T	■79T	●40T	■70T		
3.4				●25B	●22B	●20B	■27T	■55T	■24T	■50T	●25T	■49T	●25T	■45T		
4.1	●36D	●30D	●46D	■30D	●25D	■25D	●29V	●45V	●26V	●40V	■30V	■43V	■25V	■40V	●25D	●27D
4.2	●29D		●37D	●25D	●20D	●20D	■57V	■85V	■23V	■35V	●25V	■35V	●20V	■30V		
4.3							■10V	■15V	■10V	■15V		●15V		●15V		
5.1	●96D	●52D	●127D	■50D	■43D	■45D	■51V	■125V	■47V	■115V	■50V	■116V	■45V	■105V	●43D	●47D
5.2	●19D		●27D	●15C	●11C	●10C	■13U	■25U	■13U	■25U	●15U	■24U	●10U	■20U		
5.3							■5V	■10V	■5V	■10V		●10V		●10V		
6.1	■200C	■100C	■240C	■75C	■112C	■70C					■80U	■170U	■70U	■155U	■90C	■123C
6.2	■200C	■100C	■240C	■75C	■112C	■70C	■100U	■190U	■89U	■170U	■80U	■170U	■70U	■155U	■90C	
6.3	■200C	■100C	■240C	■75C	■112C	■70C					■80U	■170U	■70U	■155U	■90C	
6.4												●25U		●20U		
7.1	■500E	■250E	■600E	●200E	●270E	●180E					●200X	●435X	●180X	●390X	■225E	●297E
7.2	■500E	■250E	■600E	●200E	●270E	●180E					●200X	●435X	●180X	●390X	■225E	■297E
7.3	■200E	■100E	■240E	●75E	●81E						●80X	●170X	●70X	●155X	■90E	●89E
7.4	■100A		■120A				■39S	■95S	■35S	■85S		●85S		●75S		
8.1	■200C	■100E	■240A	●80C	●112C	●70C					●80U	●175U	●70U	●155U	■90C	
8.2	■200C	■100E	■240A												■90C	
8.3																
9.1																
10.1																

DORMER

	C359	C365	C324	C905	C922	C426	C428	C491	C492	C407	C908	C944	C948	C921	C400	C413
	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E-PM	HSS-E	HSS-E
	W	W	HRA	HRA	HRA	HRA	HRA	HRA	HRA	NRA	NRA	NRA	NRA	FS	NF	NF
	Z 3	Z 3-4	Z 3	Z 3-4	Z 3-4	Z 4-6	Z 4-6	Z 3-6	Z 3-6	Z 4-6	Z 4-6	Z 4-6	Z 4-6	Z 3-6	Z 4-6	Z 4-6
	λ40°	λ40°	λ35°	λ35°	λ35°	λ35°	λ35°	λ35°	λ35°	λ35°	λ35°	λ35°	λ35°	λ45°	λ30°	λ30°
	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B
	Alcrona		Alcrona		Alcrona		Alcrona		Alcrona		Alcrona		Alcrona	Alcrona		TiCN
	k10	k10	k12	k12	k12	k12	k12	k12	k12	k12	k12	k12	k12	k10	k12	k12
	DIN 844L	DIN 844K	DIN 327D	DIN 844K	DIN 844K	DIN 844K	DIN 844K	DIN 844L	DIN 844L	DIN 844K	DIN 844K	DIN 844L	DIN 844L	DIN 844K	DIN 844K	DIN 844K
	10.00 - 30.00	10.00 - 30.00	8.00 - 30.00	7.00 - 20.00	6.00 - 40.00	6.00 - 20.00	6.00 - 40.00	6.00 - 30.00	6.00 - 30.00	6.00 - 40.00	6.00 - 40.00	6.00 - 40.00	6.00 - 32.00	6.00 - 32.00	6.00 - 50.00	6.00 - 32.00
	e 46	e 47	e 48	e 49	e 49	e 50	e 50	e 51	e 51	e 52	e 52	e 53	e 53	e 54	e 55	e 55
1.1	●119A	●55M								●55G					●50G	●100G
1.2	■95A	●44M								■44G					■40G	■80G
1.3	●83B	●38N	●100H	●39H	●95H	●38H	●93H	■34H	■83H	■38H	■93H	■34H	■83H	■96N	■35H	■70H
1.4			■85H	■33H	■80H	■33H	■79H	■29H	■71H	■33H	■79H	■29H	■71H	■80N	●30H	■60H
1.5			■60I	■22I	■55I	■22I	■54I	■20I	■49I	■22I	■54I	■20I	■49I	■55O		●40I
1.6			■25I	●10I	■25I	●10I	■24I	●9I	■21I	●10I	●24I	●9I	■21I	■25O		●20I
1.7																
1.8																
2.1	●43F	●25R	■50L	■26L	■50L	■25L	■48L	■22L	■43L	■25L	■48L	■22L	■43L	■50R	●25L	●35L
2.2	●36F		■45L	●21L	■40L	●21L	■40L	●19L	■36L	●21L	■40L	●19L	■36L	■40R		
2.3	●23F		■30L	■13L	■25L	■13L	■26L	■12L	■23L	■13L	■26L	■12L	■23L	■25R		●20L
2.4																
3.1			■65G	■30G	■60G	■30G	■61G	■27G	■55G	■30G	■61G	■27G	■55G	■60M	●30G	■45G
3.2			■55G	■25G	■50G	■25G	■50G	■22G	■45G	■25G	■50G	■22G	■45G	■50M	●25G	■35G
3.3			■95H	■45H	■90H	■44H	■88H	■39H	■79H	■44H	■88H	■39H	■79H	■90N	●40H	■65H
3.4			■60H	■27H	■55H	■27H	■55H	■24H	■49H	■27H	■55H	■24H	■49H	■55N	●25H	■40H
4.1	●41D	●30P	●50J	●29J	●45J	●30J	●46J	●27J	●41J	●30J	●46J	●27J	●41J	●45P	●30J	●35J
4.2	●34D		■40J	■24J	■35J	■25J	■37J	■22J	■34J	■25J	■37J	■22J	■34J	■35P	●25J	■30J
4.3			■20J	■10J	■15J	■11J	■16J	■10J	■15J	■11J	■16J	■10J	■15J	■15P		●10J
5.1	●114D	●52P	●140J	●51J	●125J	●52J	●127J	●47J	●114J	●52J	●127J	●47J	●114J	●130P	●50J	●95J
5.2	●24D		■30I	■13I	■25I	■14I	■27I	■12I	■24I	■14I	■27I	■12I	■24I	■30O	●15I	■20I
5.3			■15J	■5J	■10J	■6J	■11J	**■5J**	■10J	■6J	■11J	■5J	■10J	■10P		●10J
6.1	■235C	■100O													●70I	●140I
6.2	●235C	■100O	■210I	■100I	■190I	■100I	■190I	■89I	■170I	■100I	■190I	■89I	■170I	■190O	■70I	■140I
6.3		■100O													■70I	■140I
6.4			●30I	●13I	●25I	●13I	●25I	●12I	●23I	●13I	●25I	●12I	●23I	●25O		●20I
7.1	●718E	■250Q														
7.2	■718E	■250Q													●180K	●360K
7.3	■215E	■100Q													●70K	●140K
7.4	■120A		■105G	■39G	■95G	■39G	■95G	■35G	■85G	●39G	●95G	■35G	■85G	■95M		●70G
8.1		■100O													●70I	●145I
8.2		■100O														
8.3																
9.1																
10.1																

	C403	C429	C500	C503	C505	C511	C800	C810	C825	C801	C822	C820	C837	C835
	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS-E	HSS	HSS-E	HSS-E	HSS-E	HSS	HSS	HSS
	NF	NF	N	N	N	N	N	N	N	NF	N	N	N	N
	Z 4-6	Z 4-6	Z 2	Z 2	Z 2	Z 2	Z 6-8	Z 6-8	Z 8-12	Z 6-8	Z 6-12	Z 6-12	Z 6-8	Z 6-8
	λ30°	λ30°	λ30°	λ30°	λ30°	λ30°	λ15°	λ12°	λ15°	λ12°	λ10°	λ12°	λ0°	λ0°
	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835B	DIN 1835D	DIN 1835D	DIN 1835B	DIN 1835B	DIN 1835D	DIN 1835D	DIN 1835D	DIN 1835D
		TiCN		TiCN										
	k12	k12	e8	e8	e8	e8	d11	d11	js16	d11	h11			
	DIN 844L	DIN 844L	DIN 327D	DIN 327D	DIN 844K	DORMER	DIN 851	DORMER	DORMER	DIN 851	DIN 850	DORMER	DORMER	DORMER
	10.00 - 50.00	10.00 - 32.00	2.00 - 25.00	2.00 - 25.00	3.00 - 30.00	3.00 - 25.00	11.00 - 50.00	12.50 - 1.61/64	40.00 - 63.00	16.00 - 32.00	4.50 - 45.50	10.50 - 45.50	13.00 - 1.1/2	1/2 - 1.1/2
	e 56	e 56	e 57	e 57	e 58	e 59	e 60	e 61	e 62	e 63	e 64	e 65	e 67	e 68
1.1	●45G	●90G	■55S	■110S	■50S	■50S	■35P	■25P	■35P	■40P	■40P	■25P	■20P	■20P
1.2	■35G	■70G	■45S	■90S	■40S	■40S	■35P	■25P	■30P	■40P	■40P	■25P	■20P	■20P
1.3	■30H	■65H	●40T	■75T	●35T	●35T	■30O	■20O	■30O	■30O	■30O	■20O	■15O	■15O
1.4	●25H	■55H	●35T	■65T	●30T	●30T	■25O	■15O	■20O	■25O	■25O	■20O	■15O	■15O
1.5		●35I		●45U			■20N	●10N	■15N	■20N	■20N	●10N	●10N	●10N
1.6		●15I		●20U			■15N	●10N	■10N	■15N	■15N	●10N	●5N	●5N
1.7														
1.8														
2.1	●20L	●30L	●25Y	●35Y	●25Y	●25Y	■20M	■15M	■15M	■25M	■25M	■15M	■10M	■10M
2.2							■15M	●10M	■10M	■15M	■15M	■10M	●10M	●10M
2.3		●15L		●20Y			■10M	●10M	■10M	■15M	■15M	●10M	●5M	●5M
2.4														
3.1	●25G	■40G	●30S	■50S	●30S	●30S	■20P	■20P	■25P	■25P	■25P	■20P	■15P	■15P
3.2	●20G	■35G	●25S	■40S	●25S	●25S	■20P	■20P	■20P	■20P	■20P	■20P	■15P	■15P
3.3	●35H	■55H	●45T	■70T	●40T	●40T	■30O	■20O	■30O	■35O	■30O	■20O	■15O	■15O
3.4	●20H	■35H	●30T	■45T	●25T	●25T	■20O	■10O	■20O	■20O	■20O	■15O	■10O	■10O
4.1	●25J	●30J	■30V	■40V	■30V	■30V	■30P	■20P	■35P	■30P	■30P	■20P	■15P	■15P
4.2	●20J	■25J	●25V	■30V	●25V	●25V	■20P	●15P	■20P	■20P	■20P	●15P	●10P	●10P
4.3		●10J		●14V			■10O	●5O	■10O	■10O	■10O	●10O	●5O	●5O
5.1	●45J	●85J	■50V	■105V	■50V	■50V	■35P	■25P	■35P	■40P	■35P	■25P	■20P	■20P
5.2	●10I	■15I	●15U	■20V	●15U	●15U	■10O	●5O	■5O	■10O	■10O	●5O	●5O	●5O
5.3		●10J		●10V			■5N	●5N	■5N	■5N	■5N	●5N	●5N	●5N
6.1	●65I	●125I	■85U	■170U	■80U	■80U	■100Q	■50Q	■30Q	■110Q	■100Q	■50Q	■40Q	■40Q
6.2	■65I	■125I	■85U	■170U	■80U	■80U	■100P	■55P	■35P	■110P	■100P	■55P	■45P	■45P
6.3	■65I	■125I	■85U	■170U	■80U	■80U	■35P	■20P	■35P	■40P	■100P	■55P	■15P	■15P
6.4		●15I		●25V			■15O	■5O	■10O	■15O	■15O	●5O	●5O	●5O
7.1			●220X	●435X	●200X	●200X	■250R	■60R	■70R	■275R	■260R	■65R	■50R	■50R
7.2	●160K	●325K	●220X	●435X	●200X	●200X	■250R	■50R	■70R	■275R	■260R	■50R	■40R	■40R
7.3	●65K	●125K	●85X	●170X	●80X	●80X	■65R	■30R	■30R	■70R	■66R	■35R	■25R	■25R
7.4		●65G		●85S			■45Q	●20Q	■20Q	■45Q	■44Q	●20Q	●17Q	●17Q
8.1	●65I	●130I	●90U	●175U	●80U	●80U	■100R	●50R	■35R	■110R	■100R	●50R	●40R	●40R
8.2														
8.3														
9.1														
10.1							■45Q	●20Q	■20Q	■45Q	■45Q	●20Q		

DORMER



	C830	C831	C710	C700	D200	D763	D745	D747	D752	D753
	12.00 - 32.00	12.00 - 32.00	1/16 - 1/2	1.00 - 20.00	50.00 - 200.00	63.00 - 125.00	50.00 - 315.00	32.00 - 315.00	200.00 - 350.00	250.00 - 350.00
	e 69	e 70	e 71	e 72	e 73	e 73	e 75	e 77	e 80	e 80
1.1	■30P	■30P	■20P	■35P	■45P	■45P	■40R	■40R	■40R	■40R
1.2	■30P	■30P	■20P	■35P	■40P	■40P	■30R	■30R	■30R	■30R
1.3	■25O	■25O	■15O	■25O	■35P	■35P	■30R	■30R	■30R	■30R
1.4	■20O	■20O	■15O	■25O	■30P	■30P	■20S	■20S	■20S	■20S
1.5	■15N	■15N	●10N	■15N	■20P	■20P				
1.6	■10N	■10N	●10N	■15N	■10P	■10P				
1.7										
1.8										
2.1	■20M	■20M	■15M	■20M	■30P	■30P	●10S	●10S	●10S	●10S
2.2	■15M	■15M	■10M	■15M	■20P	■20P	●10S	●10S	●10S	●10S
2.3	■10M	■10M	●5M	■10M	■10Q	■10Q				
2.4										
3.1	■20P	■20P	■20P	■20P	■30Q	■30Q	■40R	■40R	■40R	■40R
3.2	■15P	■15P	■15P	■15P	■25Q	■25Q	■40R	■40R	■40R	■40R
3.3	■25O	■25O	■15O	■25O	■40Q	■40Q	■30R	■30R	■30R	■30R
3.4	■15O	■15O	■10O	■15O	■25Q	■25Q				
4.1	■25P	■25P	■15P	■25P	■30N	■30N				
4.2	■15P	■15P	■10P	■20P	■20O	■20O				
4.3	■10O	■10O	●5O	■10O	■15O	■15O				
5.1	■30P	■30P	■20P	■35P	■40P	■40P				
5.2	■10O	■10O	■5O	■10O	■15O	■15O				
5.3	■5N	■5N	●5N	■5N	■10M	■10M				
6.1	■90Q	■90Q	■40Q	■90Q	■150P	■150P	■200R	■200R	■200R	■200R
6.2	■90P	■90P	■45P	■90P	■150P	■150P	■200T	■200T	■200T	■200T
6.3	■75P	■75P	■45P	■90P	■150P	■150P	■200T	■200T	■200T	■200T
6.4	■10O	■10O	●5O	■15O	■15M	■15M				
7.1	■190R	■190R	■55R	■245R	■400Q	■400Q	■600T	■600T	■600T	■600T
7.2	■190R	■190R	■40R	■230R	■400Q	■400Q	■500T	■500T	■500T	■500T
7.3	■55R	■55R	■25R	■60R	■100Q	■100Q	■500T	■500T	■500T	■500T
7.4	■35Q	■35Q	●15Q	■40Q	■70Q	■70Q				
8.1	■75R	■75R			■150M	■150M	■60T	■60T	■60T	■60T
8.2										
8.3										
9.1										
10.1	■35Q	■35Q	●15Q	■40Q						

	D750	D751	D400	D420	D402	D422
	HSS	HSS	HSS-E	HSS-E	HSS-E	HSS-E
			N	N	NR	NR
	Z 128-220	Z 160-350	Z 8-12	Z 8-12	Z 6-12	Z 6-10
			λ30°	λ30°	λ30°	λ30°
	5T	5T		TiCN		TiCN
			js16	js16	js16	js16
	DORMER	DORMER	DIN 1880	DIN 1880	DIN 1880	DIN 1880
	200.00 - 350.00	200.00 - 350.00	40.00 - 100.00	40.00 - 100.00	40.00 - 125.00	40.00 - 100.00
	e 81	**e 81**	**e 82**	**e 82**	**e 83**	**e 83**
1.1	■40R	■40R	■40J	■75J	■40J	■75J
1.2	■30R	■30R	■40J	■75J	■40J	■75J
1.3	■30R	■30R	■30I	■65I	■30I	■65I
1.4	■20S	■20S	■25I	■50I	■25I	■50I
1.5			●20H	■35H	●20H	■35H
1.6			●15H	■30H	●15H	■30H
1.7						
1.8						
2.1	●10S	●10S	■25H	■35H	■25H	■35H
2.2	●10S	●10S	●15G	■30G	●15G	■30G
2.3			■10G	■20G	■10G	■20G
2.4						
3.1	■40R	■40R	■20J	■35J	■20J	■35J
3.2	■40R	■40R	■20J	■30J	■20J	■30J
3.3	■30R	■30R	■30I	■50I	■30I	■50I
3.4			■20I	■30I	■20I	■30I
4.1			■30J	■35J	■30J	■35J
4.2			●20I	■25I	●20I	■25I
4.3			●10I	■15I	●10I	■15I
5.1			■35J	■75J	■35J	■75J
5.2			●10I	■20I	●10I	■20I
5.3			●5H	■10H	●5H	■10H
6.1	■200R	■200R	■105M	■150M	■105M	■150M
6.2	■200T	■200T	■105K	■150K	■105K	■150K
6.3	■200T	■200T	■35K	■50K	■35K	■50K
6.4			●15H	■20H	●15H	■20H
7.1	■600T	■600T	●260N	●260N	●260N	●260N
7.2	■500T	■500T	■260N	■260N	■260N	■260N
7.3	■500T	■500T	■65N	■135N	■65N	■135N
7.4			●45L	■75L	●45L	■75L
8.1	■60T	■60T	●105N	■120N	●105N	■120N
8.2			●30N	●60N	●30N	●60N
8.3			●5L	●15L	●5L	●15L
9.1						
10.1			●45K	■125K	●45K	■125K

DORMER

HM

Z 1	Z 2	Z 3	Z 4	Z >4	Ø	Ae (x Ø)	Ap (x Ø)	fz	Ø [mm] fz [mm/Z] ± 25%

Ø	<0,5	0.6	0.8	1	2	3	4	5	6	8	10	12	14	16	18	20
A	0.001	0.001	0.002	0.002	0.005	0.009	0.013	0.017	0.020	0.023	0.035	0.040	0.050	0.055	0.060	0.070
B	0.001	0.002	0.003	0.003	0.007	0.013	0.020	0.025	0.030	0.035	0.050	0.060	0.070	0.080	0.090	0.100
C	0.002	0.003	0.004	0.004	0.009	0.017	0.025	0.033	0.040	0.045	0.065	0.080	0.090	0.105	0.120	0.130

■ ■ ● | Ap / Ae | 1.0 | 0.2 - 0.5

Ø	<0,5	0.6	0.8	1	2	3	4	5	6	8	10	12	14	16	18	20
A					0.010	0.020	0.030	0.040	0.045	0.050	0.060	0.075	0.080	0.090	0.100	0.120
B					0.015	0.030	0.040	0.055	0.065	0.075	0.090	0.110	0.120	0.130	0.150	0.170
C					0.015	0.030	0.040	0.055	0.085	0.100	0.120	0.140	0.150	0.170	0.200	0.220

■ ■ ■ | Ap / Ae | 0.05 - 0.15 | 1.0 - 2.0

Ø	<0,5	0.6	0.8	1	2	3	4	5	6	8	10	12	14	16	18	20
A				0.001	0.003	0.005	0.008	0.010	0.013	0.020	0.027	0.035	0.040	0.050	0.055	0.060
B				0.002	0.004	0.008	0.012	0.015	0.020	0.030	0.040	0.050	0.060	0.070	0.080	0.090
C				0.003	0.005	0.010	0.015	0.020	0.025	0.040	0.050	0.065	0.080	0.090	0.105	0.120

● ■ | Ap / Ae | 0.3 - 0.6 | 0.5 - 1.0

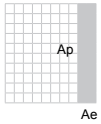
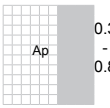
Ø	<0,5	0.6	0.8	1	2	3	4	5	6	8	10	12	14	16	18	20
A					0.010	0.017	0.023	0.028	0.032	0.040	0.050	0.055	0.070	0.080		
B					0.015	0.022	0.030	0.035	0.040	0.050	0.060	0.070	0.085	0.100		
C					0.015	0.022	0.030	0.035	0.040	0.050	0.060	0.070	0.085	0.100		

■ ■ | Ap / Ae | 0.01 - 0.05 | 0.01 - 0.05

■ Excellent
Sehr gut
Uitstekend
Excellent
Excelente
Excelente

● Good
Gut
Acceptabel
Acceptable
Bueno
Bom

HSS | HSS-E | HSS-E-PM

Z 2	Z 3	Z 4	Z >4	Ø	Ae (x Ø)	Ap (x Ø)
■	●				1.0	0.2 - 0.5
■	■	■			0.05 - 0.15	1.0 - 2.0
■	■	●			0.15 - 0.30	1.0 - 1.5
	■				0.3 - 0.8	0.5 - 1.5

Ø [mm] fz [mm/Z] ± 25%

Ø	1	2	3	4	5	6	8	10	12	14	16	18	20	22	25	28	30	32	36	40	50
A	0,004	0,008	0,013	0,017	0,024	0,029	0,043	0,060	0,072	0,084	0,096	0,097	0,096	0,099	0,105	0,109	0,108	0,106	0,108	0,108	0,105
B	0,004	0,007	0,012	0,015	0,022	0,026	0,039	0,054	0,065	0,076	0,086	0,087	0,086	0,089	0,095	0,098	0,097	0,095	0,097	0,097	0,095
C	0,003	0,006	0,011	0,014	0,019	0,023	0,035	0,049	0,058	0,068	0,078	0,079	0,078	0,080	0,085	0,088	0,087	0,086	0,087	0,087	0,085
D	0,004	0,007	0,011	0,014	0,020	0,024	0,037	0,051	0,061	0,071	0,081	0,082	0,081	0,084	0,089	0,099	0,091	0,097	0,091	0,101	0,101
E	0,007	0,012	0,018	0,024	0,035	0,042	0,063	0,087	0,105	0,122	0,140	0,141	0,140	0,144	0,153	0,171	0,157	0,168	0,157	0,175	0,175
F	0,007	0,009	0,013	0,018	0,021	0,025	0,033	0,041	0,050	0,055	0,064	0,072	0,079	0,079	0,085	0,085	0,085	0,085	0,085	0,085	0,085
G						0,026	0,034	0,036	0,043	0,050	0,057	0,064	0,071	0,071	0,054	0,053	0,054	0,053	0,056	0,057	0,060
H						0,023	0,031	0,032	0,039	0,045	0,051	0,058	0,064	0,064	0,049	0,048	0,049	0,048	0,050	0,051	0,054
I						0,021	0,028	0,029	0,035	0,041	0,046	0,052	0,058	0,058	0,044	0,043	0,044	0,043	0,045	0,046	0,049
J						0,024	0,031	0,033	0,039	0,046	0,052	0,059	0,065	0,065	0,049	0,049	0,049	0,049	0,051	0,052	0,055
K						0,035	0,047	0,065	0,079	0,092	0,105	0,088	0,098	0,097	0,110	0,110	0,110	0,110	0,115	0,118	0,123
L						0,010	0,013	0,017	0,020	0,025	0,028	0,030	0,032	0,033	0,034	0,036	0,038	0,039	0,040	0,042	0,042
M		0,008	0,012	0,018	0,023	0,031	0,041	0,057	0,069	0,080	0,091	0,103	0,114	0,090	0,103	0,085	0,091	0,097	0,110	0,107	0,086
N		0,007	0,011	0,016	0,021	0,028	0,037	0,051	0,062	0,072	0,082	0,093	0,103	0,081	0,093	0,077	0,082	0,087	0,099	0,096	0,077
O		0,006	0,010	0,015	0,019	0,025	0,033	0,046	0,056	0,065	0,074	0,083	0,092	0,073	0,083	0,069	0,074	0,079	0,089	0,087	0,070
P		0,007	0,010	0,016	0,020	0,027	0,035	0,049	0,059	0,069	0,079	0,088	0,098	0,078	0,088	0,073	0,079	0,084	0,094	0,092	0,074
Q		0,009	0,014	0,021	0,026	0,036	0,048	0,066	0,079	0,092	0,106	0,089	0,099	0,098	0,111	0,111	0,119	0,127	0,143	0,139	0,148
R		0,012	0,016	0,020	0,025	0,029	0,038	0,047	0,056	0,065	0,073	0,083	0,092	0,092	0,092	0,092	0,092	0,104	0,104	0,108	0,108
S		0,010	0,015	0,023	0,029	0,039	0,051	0,071	0,086	0,100	0,114	0,129	0,143	0,113	0,129	0,107	0,114	0,122	0,137	0,133	0,107
T		0,009	0,014	0,021	0,026	0,035	0,046	0,064	0,077	0,090	0,103	0,116	0,129	0,102	0,116	0,096	0,103	0,110	0,123	0,120	0,096
U		0,008	0,012	0,019	0,023	0,032	0,041	0,058	0,070	0,081	0,092	0,104	0,116	0,092	0,104	0,087	0,092	0,099	0,111	0,108	0,087
V		0,009	0,013	0,020	0,025	0,033	0,044	0,061	0,074	0,086	0,098	0,110	0,123	0,097	0,110	0,092	0,098	0,105	0,118	0,115	0,092
X		0,012	0,017	0,026	0,033	0,045	0,059	0,082	0,099	0,115	0,132	0,111	0,124	0,122	0,139	0,139	0,148	0,158	0,178	0,173	0,186
Y		0,015	0,020	0,025	0,031	0,036	0,047	0,059	0,070	0,081	0,092	0,104	0,115	0,115	0,115	0,115	0,115	0,130	0,130	0,136	0,136

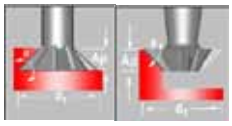
■ Excellent
Sehr gut
Uitstekend
Excellent
Excelente
Excelente

● Good
Gut
Acceptabel
Acceptable
Bueno
Bom

HSS | HSS-E | HSS-E-PM

Ø — **Ø [mm] fz [mm/Z] ± 25%**

	Ø	10	12	16	20	25	32	38	50	63	80	100	125	160	200	300	350
C800 C801 C810 C820 C822 C825	M		0.017	0.022	0.036	0.038	0.041	0.044	0.045	0.047							
	N		0.022	0.027	0.045	0.046	0.052	0.058	0.06	0.062							
	O		0.025	0.03	0.052	0.055	0.056	0.058	0.06	0.062							
	P		0.030	0.043	0.063	0.064	0.062	0.068	0.07	0.072							
	Q		0.045	0.048	0.063	0.064	0.066	0.068	0.07	0.072							
	R		0.055	0.07	0.115	0.119	0.123	0.126	0.128	0.13							

	Ø	10	12	16	20	25	32	38	50	63	80	100	125	160	200	300	350
C830 C835 C837 C831 	M		0.036	0.045	0.057	0.064	0.074	0.084									
	N		0.048	0.058	0.073	0.084	0.095	0.105									
	O		0.052	0.063	0.081	0.092	0.103	0.114									
	P		0.059	0.071	0.089	0.1	0.112	0.125									
	Q		0.072	0.088	0.106	0.12	0.133	0.147									
	R		0.079	0.095	0.114	0.13	0.143	0.157									

	Ø	10	12	16	20	25	32	38	50	63	80	100	125	160	200	300	350
C700 C710	M	0.03	0.03	0.03	0.04	0.05	0.05										
	N	0.04	0.04	0.04	0.05	0.06	0.07										
	O	0.04	0.04	0.05	0.06	0.07	0.08										
	P	0.04	0.04	0.05	0.07	0.08	0.08										
	Q	0.05	0.05	0.07	0.08	0.09	0.10										
	R	0.06	0.06	0.07	0.09	0.10	0.11										

	Ø	10	12	16	20	25	32	38	50	63	80	100	125	160	200	300	350
D745 D747 D750 D751 D752 D753																	
	R						0.040		0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040	0.040
	S						0.020		0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020
	T						0.060		0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060	0.060

	Ø	10	12	16	20	25	32	38	50	63	80	100	125	160	200	300	350
D200 D763 Ap= 0.1 X Ø	M								0.040	0.050	0.060	0.070	0.080	0.090	0.100		
	N								0.060	0.070	0.080	0.090	0.100	0.105	0.115		
	O								0.070	0.080	0.090	0.100	0.105	0.110	0.120		
	P								0.080	0.090	0.095	0.110	0.115	0.115	0.125		
	Q								0.090	0.100	0.105	0.110	0.115	0.125	0.135		

	Ø	40	50	60	80	100	125
D402 D422 Ae= 0.75 x Ø Ap= 0.25 x Ø	G	0.042	0.049	0.040	0.047	0.040	0.037
	H	0.050	0.059	0.047	0.055	0.048	0.044
	I	0.062	0.071	0.058	0.066	0.058	0.054
	J	0.082	0.095	0.078	0.090	0.078	0.073
	K	0.118	0.140	0.110	0.130	0.110	0.103
	L	0.145	0.171	0.136	0.160	0.136	0.127
	M	0.185	0.160	0.170	0.200	0.170	0.160
	N	0.270	0.320	0.250	0.290	0.250	0.230

	Ø	40	50	60	80	100
D400 D420 Ae= 0.75 x Ø Ap= 0.1 x Ø	G	0.042	0.049	0.040	0.047	0.040
	H	0.050	0.059	0.047	0.055	0.048
	I	0.062	0.071	0.058	0.066	0.058
	J	0.082	0.095	0.078	0.090	0.078
	K	0.118	0.140	0.110	0.130	0.110
	L	0.145	0.171	0.136	0.160	0.136
	M	0.185	0.160	0.170	0.200	0.170
	N	0.270	0.320	0.250	0.290	0.250

S802HA HM P9 N Z 2 λ30° DIN 6535HA Alcrona DIN 6527K

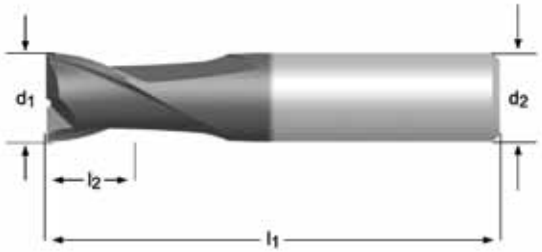
S802HB HM P9 N Z 2 λ30° DIN 6535HB Alcrona DIN 6527K

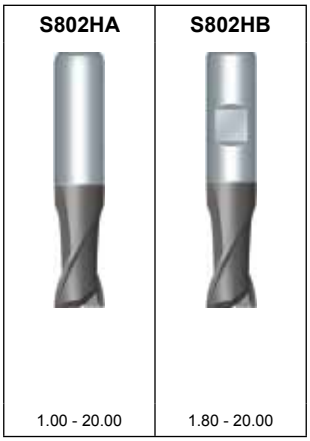
S802HA
S802HB

- Slot Drill
- Langlochfräser
- Spiebaanfrezen
- Fraises à rainurer
- Fresas Frontales
- Fresa de Ranhurar

S802HA; S802HB

▪	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	3.1	3.2	3.3	3.4	6.2	6.3	6.4	7.2	7.3	7.4
▪	2.3	2.4	4.1	4.2	5.1	5.2	6.1	7.1	8.1	8.2								





d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	S802HA	S802HB
1.00	3	3	38	2	S802HA1.0	
1.50	3	3	38	2	S802HA1.5	
1.80	6	3	50	2	S802HA1.8	S802HB1.8
2.00	6	3	50	2	S802HA2.0	S802HB2.0
2.50	6	3	50	2	S802HA2.5	S802HB2.5
2.80	6	4	50	2	S802HA2.8	S802HB2.8
3.00	6	4	50	2	S802HA3.0	S802HB3.0
3.50	6	4	50	2	S802HA3.5	S802HB3.5
3.80	6	5	54	2	S802HA3.8	S802HB3.8
4.00	6	5	54	2	S802HA4.0	S802HB4.0
4.50	6	5	54	2	S802HA4.5	S802HB4.5
4.80	6	6	54	2	S802HA4.8	S802HB4.8
5.00	6	6	54	2	S802HA5.0	S802HB5.0
5.75	6	7	54	2	S802HA5.75	S802HB5.75
6.00	6	7	54	2	S802HA6.0	S802HB6.0
6.75	8	8	58	2	S802HA6.75	S802HB6.75
7.00	8	8	58	2	S802HA7.0	S802HB7.0
7.75	8	9	58	2	S802HA7.75	S802HB7.75
8.00	8	9	58	2	S802HA8.0	S802HB8.0
9.00	10	10	66	2	S802HA9.0	S802HB9.0
9.70	10	11	66	2	S802HA9.7	S802HB9.7
10.00	10	11	66	2	S802HA10.0	S802HB10.0
11.70	12	12	73	2	S802HA11.7	S802HB11.7
12.00	12	12	73	2	S802HA12.0	S802HB12.0
13.70	14	14	75	2	S802HA13.7	S802HB13.7
14.00	14	14	75	2	S802HA14.0	S802HB14.0
15.70	16	16	82	2	S802HA15.7	S802HB15.7
16.00	16	16	82	2	S802HA16.0	S802HB16.0
17.70	18	18	84	2	S802HA17.7	S802HB17.7
18.00	18	18	84	2	S802HA18.0	S802HB18.0
19.70	20	20	92	2	S802HA19.7	S802HB19.7
20.00	20	20	92	2	S802HA20.0	S802HB20.0

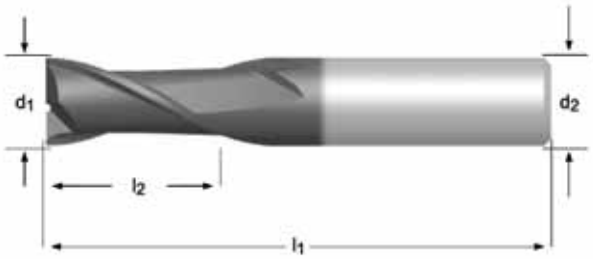
S812HA

S812HB

S812HA
S812HB

- Slot Drill
- Langlochfräser
- Spiebaanfrezen
- Fraises à rainurer
- Fresas Frontales
- Fresa de Ranhurar

S812HA; S812HB ▪ 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 5.1 5.2 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 8.2



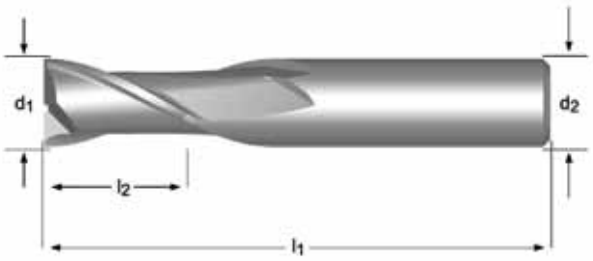
S812HA	S812HB
2.00 - 20.00	2.00 - 20.00

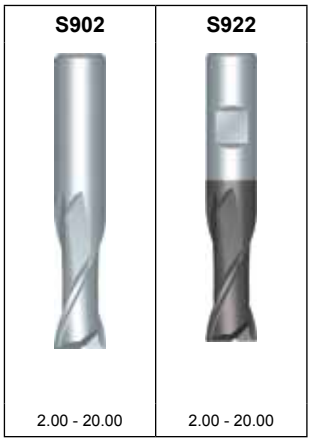
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	S812HA	S812HB
2.00	6	6	57	2	S812HA2.0	S812HB2.0
2.50	6	7	57	2	S812HA2.5	S812HB2.5
3.00	6	7	57	2	S812HA3.0	S812HB3.0
3.50	6	7	57	2	S812HA3.5	S812HB3.5
4.00	6	8	57	2	S812HA4.0	S812HB4.0
4.50	6	8	57	2	S812HA4.5	S812HB4.5
5.00	6	10	57	2	S812HA5.0	S812HB5.0
6.00	6	10	57	2	S812HA6.0	S812HB6.0
7.00	8	13	63	2	S812HA7.0	S812HB7.0
8.00	8	16	63	2	S812HA8.0	S812HB8.0
9.00	10	16	72	2	S812HA9.0	S812HB9.0
10.00	10	19	72	2	S812HA10.0	S812HB10.0
12.00	12	22	83	2	S812HA12.0	S812HB12.0
14.00	14	22	83	2	S812HA14.0	S812HB14.0
16.00	16	26	92	2	S812HA16.0	S812HB16.0
18.00	18	26	92	2	S812HA18.0	S812HB18.0
20.00	20	32	104	2	S812HA20.0	S812HB20.0

S902
S922

- End Mill
- Schaftfräser
- Spiebaanfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

S902	▪	1.1	1.2	1.3	1.4	3.1	3.3	4.1	5.1	6.1	6.2	6.3			
	▪	1.5	3.2	3.4	4.2	4.3	6.4	7.1	7.2	7.3	8.1	8.2	8.3		
S922	▪	1.1	1.2	1.3	1.4	1.5	3.1	3.2	3.3	3.4	4.1	5.1	6.1	6.2	6.3
	▪	1.6	4.2	4.3	6.4	7.1	7.2	7.3	8.1	8.2	8.3				





d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	S902	S922
2.00	3	6	38	2	S9022.0	S9222.0 [1]
2.50	3	9	38	2	S9022.5	S9222.5 [1]
3.00	3	12	38	2	S9023.0	S9223.0 [1]
4.00	4	14	50	2	S9024.0	S9224.0 [1]
5.00	5	16	50	2	S9025.0	S9225.0 [1]
6.00	6	19	57	2	S9026.0	S9226.0
7.00	8	19	63	2	S9027.0	S9227.0
8.00	8	19	63	2	S9028.0	S9228.0
9.00	10	21	72	2	S9029.0	S9229.0
10.00	10	22	72	2	S90210.0	S92210.0
12.00	12	25	73	2	S90212.0	S92212.0
14.00	14	30	83	2	S90214.0	S92214.0
16.00	16	32	92	2	S90216.0	S92216.0
18.00	18	32	92	2	S90218.0	S92218.0
20.00	20	38	104	2	S90220.0	S92220.0

[1] Cylindrical shank / Zylinderschaft / Cilindrische schacht / Queue cylindrique / Mango cilíndrico / Encabadouro Cilindrico

DORMER

S803HA HM P9 N Z 3 λ30° DIN 6535HA Alcrona DIN 6527K

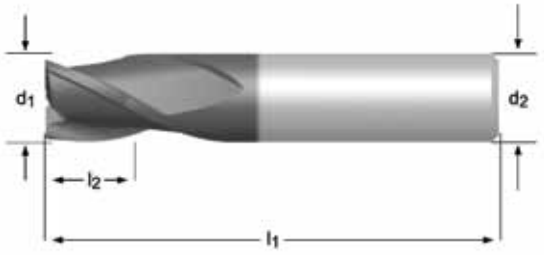
S803HB HM P9 N Z 3 λ30° DIN 6535HB Alcrona DIN 6527K

S803HA
S803HB

- Slot Drill
- Langlochfräser
- Spiebaanfrezen
- Fraises à rainurer
- Fresas Frontales
- Fresa de Ranhurar

S803HA; S803HB

1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	3.1	3.2	3.3	3.4	6.2	6.3	6.4	7.2	7.3	7.4
2.3	2.4	4.1	4.2	5.1	5.2	6.1	7.1	8.1	8.2								



S803HA	S803HB
1.00 - 20.00	1.80 - 20.00

d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	S803HA	S803HB
1.00	3	3	38	3	S803HA1.0	
1.50	3	3	38	3	S803HA1.5	
1.80	6	3	50	3	S803HA1.8	S803HB1.8
2.00	6	3	50	3	S803HA2.0	S803HB2.0
2.50	6	3	50	3	S803HA2.5	S803HB2.5
2.80	6	4	50	3	S803HA2.8	S803HB2.8
3.00	6	4	50	3	S803HA3.0	S803HB3.0
3.50	6	4	50	3	S803HA3.5	S803HB3.5
3.80	6	5	54	3	S803HA3.8	S803HB3.8
4.00	6	5	54	3	S803HA4.0	S803HB4.0
4.50	6	5	54	3	S803HA4.5	S803HB4.5
4.80	6	6	54	3	S803HA4.8	S803HB4.8
5.00	6	6	54	3	S803HA5.0	S803HB5.0
5.75	6	7	54	3	S803HA5.75	S803HB5.75
6.00	6	7	54	3	S803HA6.0	S803HB6.0
6.75	8	8	58	3	S803HA6.75	S803HB6.75
7.00	8	8	58	3	S803HA7.0	S803HB7.0
7.75	8	9	58	3	S803HA7.75	S803HB7.75
8.00	8	9	58	3	S803HA8.0	S803HB8.0
9.00	10	10	66	3	S803HA9.0	S803HB9.0
9.70	10	11	66	3	S803HA9.7	S803HB9.7
10.00	10	11	66	3	S803HA10.0	S803HB10.0
11.70	12	12	73	3	S803HA11.7	S803HB11.7
12.00	12	12	73	3	S803HA12.0	S803HB12.0
13.70	14	14	75	3	S803HA13.7	S803HB13.7
14.00	14	14	75	3	S803HA14.0	S803HB14.0
15.70	16	16	82	3	S803HA15.7	S803HB15.7
16.00	16	16	82	3	S803HA16.0	S803HB16.0
17.70	18	18	84	3	S803HA17.7	S803HB17.7
18.00	18	18	84	3	S803HA18.0	S803HB18.0
19.70	20	20	92	3	S803HA19.7	S803HB19.7
20.00	20	20	92	3	S803HA20.0	S803HB20.0

S813HA HM P9 N Z 3 λ30° DIN 6535HA Alcrona DIN 6527L

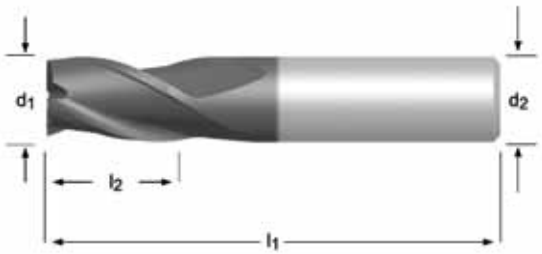
S813HB HM P9 N Z 3 λ30° DIN 6535HB Alcrona DIN 6527L

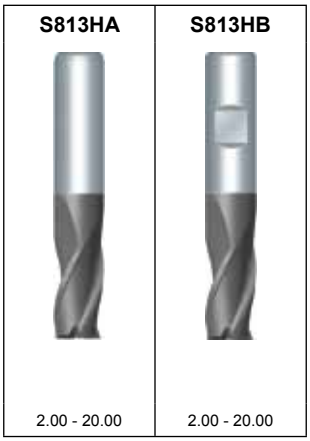
S813HA
S813HB

- Slot Drill
- Langlochfräser
- Spiebaanfrezen
- Fraises à rainurer
- Fresas Frontales
- Fresa de Ranhurar

S813HA; S813HB

▪	1.1	1.2	1.3	1.4	1.5	2.1	3.1	3.2	3.3	3.4	6.2	6.3	6.4	7.2	7.3	7.4
▪	1.6	2.2	2.3	4.1	4.2	5.1	5.2	6.1	7.1	8.1	8.2					



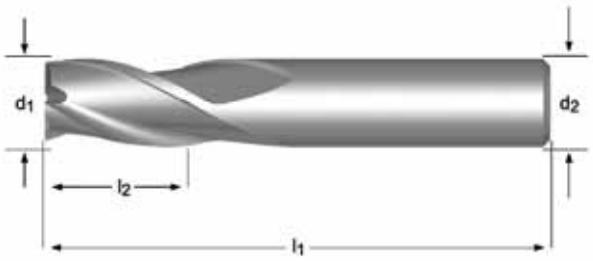


d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	S813HA	S813HB
2.00	6	6	57	3	S813HA2.0	S813HB2.0
2.50	6	7	57	3	S813HA2.5	S813HB2.5
3.00	6	7	57	3	S813HA3.0	S813HB3.0
3.50	6	7	57	3	S813HA3.5	S813HB3.5
4.00	6	8	57	3	S813HA4.0	S813HB4.0
4.50	6	8	57	3	S813HA4.5	S813HB4.5
5.00	6	10	57	3	S813HA5.0	S813HB5.0
6.00	6	10	57	3	S813HA6.0	S813HB6.0
7.00	8	13	63	3	S813HA7.0	S813HB7.0
8.00	8	16	63	3	S813HA8.0	S813HB8.0
9.00	10	16	72	3	S813HA9.0	S813HB9.0
10.00	10	19	72	3	S813HA10.0	S813HB10.0
12.00	12	22	83	3	S813HA12.0	S813HB12.0
14.00	14	22	83	3	S813HA14.0	S813HB14.0
16.00	16	26	92	3	S813HA16.0	S813HB16.0
18.00	18	26	92	3	S813HA18.0	S813HB18.0
20.00	20	32	104	3	S813HA20.0	S813HB20.0

S903
S933

- End Mill
- Schaftfräser
- Spiebaanfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

S903	▪	1.1	1.2	1.3	1.4	3.1	3.3	4.1	5.1	6.1	6.2	6.3			
	▪	1.5	3.2	3.4	4.2	4.3	6.4	7.1	7.2	7.3	8.1	8.2	8.3		
S933	▪	1.1	1.2	1.3	1.4	1.5	3.1	3.2	3.3	3.4	4.1	5.1	6.1	6.2	6.3
	▪	1.6	4.2	4.3	6.4	7.1	7.2	7.3	8.1	8.2	8.3				



S903	S933
2.00 - 20.00	2.00 - 20.00

d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	S903	S933
2.00	3	6	38	3	S9032.0	S9332.0 [1]
2.50	3	9	38	3	S9032.5	S9332.5 [1]
3.00	3	12	38	3	S9033.0	S9333.0 [1]
4.00	4	14	50	3	S9034.0	S9334.0 [1]
5.00	5	16	50	3	S9035.0	S9335.0 [1]
6.00	6	19	57	3	S9036.0	S9336.0
7.00	8	19	63	3	S9037.0	S9337.0
8.00	8	19	63	3	S9038.0	S9338.0
9.00	10	21	72	3	S9039.0	S9339.0
10.00	10	22	72	3	S90310.0	S93310.0
12.00	12	25	73	3	S90312.0	S93312.0
14.00	14	30	83	3	S90314.0	S93314.0
16.00	16	32	92	3	S90316.0	S93316.0
18.00	18	32	92	3	S90318.0	S93318.0
20.00	20	38	104	3	S90320.0	S93320.0

[1] Cylindrical shank / Zylinderschaft / Cilindrische schacht / Queue cylindrique / Mango cilíndrico / Encabadouro Cilindrico

S804HA HM N Z 4 λ35° DIN 6535HA Alcrona h10 DIN 6527K

S804HB HM N Z 4 λ35° DIN 6535HB Alcrona h10 DIN 6527K

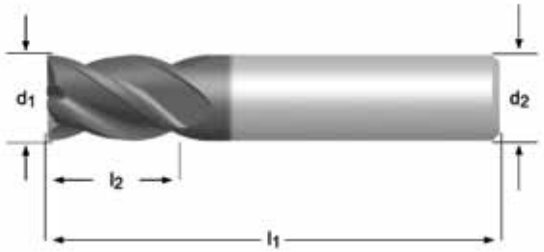
S804HA
S804HB

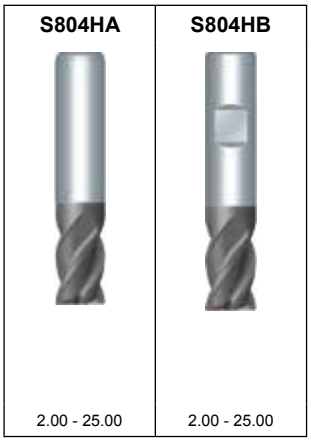
- End Mill
- Schaftfräser
- Vingerfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

S804HA; S804HB

▪ 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 3.1 3.2 3.3 3.4 6.2 6.3 6.4

▪ 2.3 2.4 4.1 4.2 5.1 5.2 6.1 7.1 7.2 7.3 7.4 8.1 8.2





d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	S804HA	S804HB
2.00	6	4	50	4	S804HA2.0	S804HB2.0
3.00	6	5	50	4	S804HA3.0	S804HB3.0
4.00	6	8	54	4	S804HA4.0	S804HB4.0
5.00	6	9	54	4	S804HA5.0	S804HB5.0
6.00	6	10	54	4	S804HA6.0	S804HB6.0
8.00	8	12	58	4	S804HA8.0	S804HB8.0
10.00	10	14	66	4	S804HA10.0	S804HB10.0
12.00	12	16	73	4	S804HA12.0	S804HB12.0
16.00	16	22	82	4	S804HA16.0	S804HB16.0
20.00	20	26	92	4	S804HA20.0	S804HB20.0
25.00	25	32	121	4	S804HA25.0	S804HB25.0

S814HA

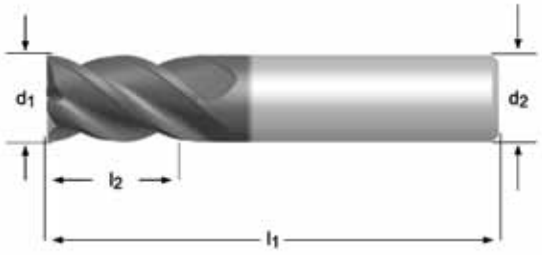
S814HB

S814HA
S814HB

- End Mill
- Schaftfräser
- Vingerfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

S814HA; S814HB

▪	1.1	1.2	1.3	1.4	1.5	2.1	3.1	3.2	3.3	3.4	6.2	6.3	6.4
▪	1.6	2.2	2.3	4.1	4.2	5.1	5.2	6.1	7.1	7.2	7.3	7.4	8.1	8.2



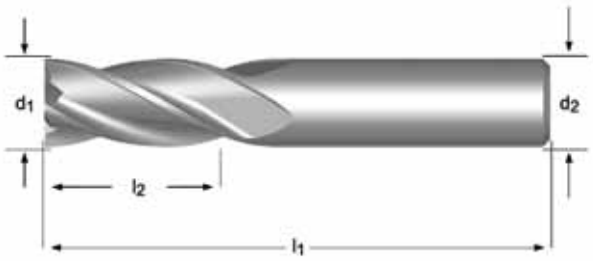
S814HA	S814HB
2.00 - 25.00	2.00 - 25.00

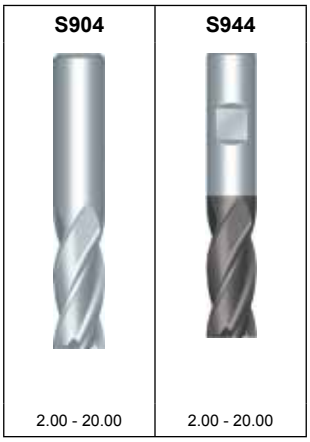
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	S814HA	S814HB
2.00	6	7	57	4	S814HA2.0	S814HB2.0
3.00	6	8	57	4	S814HA3.0	S814HB3.0
4.00	6	11	57	4	S814HA4.0	S814HB4.0
5.00	6	13	57	4	S814HA5.0	S814HB5.0
6.00	6	13	57	4	S814HA6.0	S814HB6.0
8.00	8	19	63	4	S814HA8.0	S814HB8.0
10.00	10	22	72	4	S814HA10.0	S814HB10.0
12.00	12	26	83	4	S814HA12.0	S814HB12.0
16.00	16	32	92	4	S814HA16.0	S814HB16.0
20.00	20	38	104	4	S814HA20.0	S814HB20.0
25.00	25	45	121	4	S814HA25.0	S814HB25.0

S904
S944

- End Mill
- Schaftfräser
- Vingerfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

S904	▪	1.1	1.2	1.3	1.4	3.1	3.3	4.1	5.1	6.1	6.2	6.3			
	•	1.5	1.6	3.2	3.4	4.2	4.3	5.2	5.3	6.4	7.1	7.2	7.3	8.1	8.2	8.3
S944	▪	1.1	1.2	1.3	1.4	1.5	3.1	3.2	3.3	3.4	4.1	5.1	6.1	6.2	6.3	
	•	1.6	4.2	4.3	5.2	5.3	6.4	7.1	7.2	7.3	8.1	8.2	8.3			





d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	S904	S944
2.00	3	6	38	4	S9042.0	S9442.0 [1]
2.50	3	9	38	4	S9042.5	S9442.5 [1]
3.00	3	12	38	4	S9043.0	S9443.0 [1]
4.00	4	14	50	4	S9044.0	S9444.0 [1]
5.00	5	16	50	4	S9045.0	S9445.0 [1]
6.00	6	19	57	4	S9046.0	S9446.0
7.00	8	19	63	4	S9047.0	S9447.0
8.00	8	19	63	4	S9048.0	S9448.0
9.00	10	21	72	4	S9049.0	S9449.0
10.00	10	22	72	4	S90410.0	S94410.0
12.00	12	25	73	4	S90412.0	S94412.0
14.00	14	30	83	4	S90414.0	S94414.0
16.00	16	32	92	4	S90416.0	S94416.0
18.00	18	32	92	4	S90418.0	S94418.0
20.00	20	38	104	4	S90420.0	S94420.0

[1] Cylindrical shank / Zylinderschaft / Cilindrische schacht / Queue cylindrique / Mango cilíndrico / Encabadouro Cilindrico

S501 HM N Z 2 λ30° DIN 6535HA X-CEED h9 DORMER

S501

- Ball-Nosed End Mill
- Radius Kopierfräser
- Radius-/kopieërfrezen
- Fraises de finition bout hémisphérique
- Fresas con punta esferica
- Fresa Topo Esférico

S501																					
▪	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1
	6.2	6.3	6.4	7.1	7.2	7.3	7.4	8.1	8.2	8.3	9.1									
▪	1.7																			

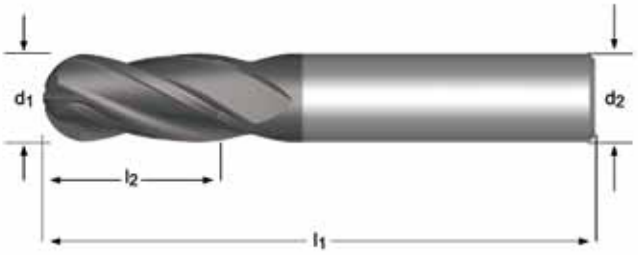
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	r ± 0,01	S501
1.00	3	3	38	2	0.50	S5011.0
1.50	3	3	38	2	0.75	S5011.5
2.00	3	6	38	2	1.00	S5012.0
2.50	3	7	38	2	1.25	S5012.5
3.00	3	7	38	2	1.50	S5013.0
4.00	6	8	57	2	2.00	S5014.0
5.00	6	10	57	2	2.50	S5015.0
6.00	6	10	57	2	3.00	S5016.0
7.00	8	13	63	2	3.50	S5017.0
8.00	8	16	63	2	4.00	S5018.0
9.00	10	16	72	2	4.50	S5019.0
10.00	10	19	72	2	5.00	S50110.0
12.00	12	22	83	2	6.00	S50112.0
16.00	16	26	92	2	8.00	S50116.0

S511 HM N Z 4 λ30° DIN 6535HA X-CEED h9 DORMER

S511

- Ball-Nosed End Mill
- Radius Kopierfräser
- Radius-/kopieërfrezen
- Fraises de finition bout hémisphérique
- Fresas con punta esferica
- Fresa Topo Esférico

S511																					
	▪	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	7.3
		7.4	8.2	8.3	9.1																
	▪	1.7	6.1	6.2	6.3	6.4	7.1	7.2	8.1												



S511

3.00 - 16.00

d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	r mm	S511
3.00	6	8	80	4	1.50	S5113.0
4.00	6	11	80	4	2.00	S5114.0
5.00	6	13	80	4	2.50	S5115.0
6.00	6	13	80	4	3.00	S5116.0
7.00	8	16	100	4	3.50	S5117.0
8.00	8	19	100	4	4.00	S5118.0
9.00	10	19	100	4	4.50	S5119.0
10.00	10	22	100	4	5.00	S51110.0
12.00	12	26	100	4	6.00	S51112.0
16.00	16	32	100	4	8.00	S51116.0

S991

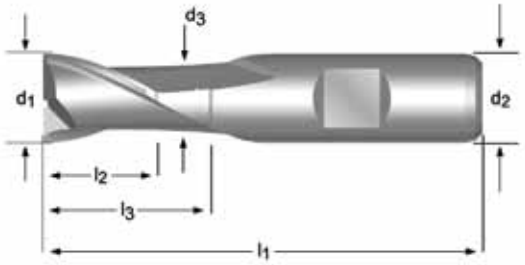
- Solid Carbide Cutter Set — A=Types in Set, B=No. in Set, C=Diameters in Set
- Schaftfräser, Satz — A=Typen in Satz, B=Bohreranzahl, C=Durchmesser im Satz
- VHM Frezenset — A=Type, B=Aantal, C=Diameters
- Coffret de fraises de finition — A=Types de coffrets, B=Nombre de forets dans le coffret, C=Diamètres dans le coffret
- Juego de Fresas de acabado — A=Tipos en el juego, B=No. Brocas en el Juego, C=Diámetros en el Juego
- Jogo de Fresa de Acabamento — A=Tipos no Jogo, B=No. brocas/jogo, C=Diâmetros por Jogo

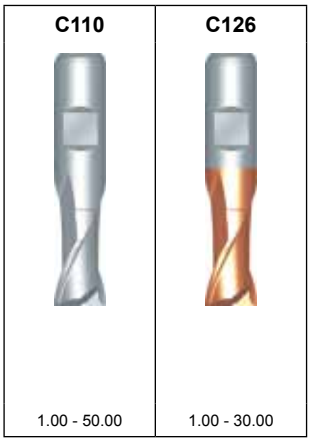
Nr.	A	B	C	S991
922	S922 type in	6 pcs	Ø 3-4-5-6-8-10 mm	S991SET922
933	S933 type in	6 pcs	Ø 3-4-5-6-8-10 mm	S991SET933
944	S944 type in	6 pcs	Ø 3-4-5-6-8-10 mm	S991SET944

C110
C126

- Slot Drill
- Langlochfräser
- Spiebaanfrezen
- Fraises à rainurer
- Fresas Frontales
- Fresa de Ranhurar

C110	▪	1.1	1.2	4.1	5.1	6.1	6.2	6.3								
	▪	1.3	1.4	2.1	3.1	3.2	3.3	3.4	4.2	5.2	7.1	7.2	7.3	8.1		
C126	▪	1.1	1.2	1.3	1.4	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.1	6.2	6.3
	▪	1.5	1.6	2.1	2.3	4.3	5.3	6.4	7.1	7.2	7.3	7.4	8.1			





d_1 Ø Inch /	d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C110	C126
	1.00	6	2.5	47	2	-	-	C1101.0	C1261.0
	1.50	6	3	47	2	-	-	C1101.5	C1261.5
1/16	1.59	6	3	47	2	-	-	C1101/16	
	1.80	6	4	48	2	-	-	C1101.8	
	2.00	6	4	48	2	-	-	C1102.0	C1262.0
3/32	2.38	6	5	49	2	-	-	C1103/32	
	2.50	6	5	49	2	-	-	C1102.5	C1262.5
	2.80	6	5	49	2	-	-	C1102.8	
	3.00	6	5	49	2	-	-	C1103.0	C1263.0
1/8	3.18	6	6	50	2	-	-	C1101/8	
	3.50	6	6	50	2	-	-	C1103.5	C1263.5
	3.80	6	7	51	2	-	-	C1103.8	
	4.00	6	7	51	2	-	-	C1104.0	C1264.0
	4.50	6	7	51	2	-	-	C1104.5	C1264.5
3/16	4.76	6	8	52	2	-	-	C1103/16	
	4.80	6	8	52	2	-	-	C1104.8	C1264.8 2)3)
	5.00	6	8	52	2	-	-	C1105.0	C1265.0
	5.50	6	8	52	2	-	-	C1105.5	C1265.5
	5.75	6	8	52	2	-	-	C1105.75	C1265.75 2)3)
	6.00	6	8	52	2	-	-	C1106.0	C1266.0
1/4	6.35	10	10	60	2	-	-	C1101/4	
	6.50	10	10	60	2	-	-	C1106.5	C1266.5
	6.75	10	10	60	2	-	-	C1106.75	
	7.00	10	10	60	2	-	-	C1107.0	C1267.0

[2] diameter tolerance h10 / Durchmesser-Toleranz h10 / Diameter tolerantie h10 / tolérance sur le diamètre h10 / Tolerancia diámetro h10 / tolerância no diâmetro h10

[3] slot not in P9 tolerance / slot not in P9 tolerance / slot not in P9 tolerance / slot not in P9 tolerance / slot not in P9 tolerance / slot not in P9 tolerance / slot not in P9 tolerance

d_1 Ø Inch /	d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C110	C126
	7.50	10	10	60	2	-	-	C1107.5	C1267.5
	7.75	10	11	61	2	-	-	C1107.75	C1267.75 [2)3)]
5/16	7.94	10	11	61	2	-	-	C1105/16	
	8.00	10	11	61	2	-	-	C1108.0	C1268.0
	8.50	10	11	61	2	-	-	C1108.5	C1268.5
	9.00	10	11	61	2	-	-	C1109.0	C1269.0
	9.50	10	11	61	2	-	-	C1109.5	C1269.5
3/8	9.52	10	13	63	2	22.5	9.5	C1103/8	
	9.70	10	13	63	2	22.5	9.5	C1109.7	C1269.7 [2)3)]
	10.00	10	13	63	2	22.5	9.5	C11010.0	C12610.0
13/32	10.32	12	13	70	2	-	-	C11013/32	
	10.50	12	13	70	2	-	-	C11010.5	C12610.5
	11.00	12	13	70	2	-	-	C11011.0	C12611.0
7/16	11.11	12	13	70	2	-	-	C1107/16	
	11.50	12	13	70	2	-	-	C11011.5	C12611.5
	11.70	12	16	73	2	27.5	11.5	C11011.7	C12611.7 [2)3)]
	12.00	12	16	73	2	27.5	11.5	C11012.0	C12612.0
	12.50	12	16	73	2	27.5	11.5	C11012.5	C12612.5
1/2	12.70	12	16	73	2	27.5	11.5	C1101/2	
	13.00	12	16	73	2	27.5	11.5	C11013.0	C12613.0
17/32	13.49	12	16	73	2	27.5	11.5	C11017/32	
	13.70	12	16	73	2	27.5	11.5	C11013.7	C12613.7 [2)3)]
	14.00	12	16	73	2	27.5	11.5	C11014.0	C12614.0
9/16	14.29	12	16	73	2	27.5	11.5	C1109/16	
	15.00	12	16	73	2	27.5	11.5	C11015.0	C12615.0
	15.70	16	19	79	2	30.5	15.5	C11015.7	C12615.7 [2)3)]
5/8	15.88	16	19	79	2	30.5	15.5	C1105/8	
	16.00	16	19	79	2	30.5	15.5	C11016.0	C12616.0
	17.00	16	19	79	2	30.5	15.5	C11017.0	
11/16	17.46	16	19	79	2	30.5	15.5	C11011/16	
	17.70	16	19	79	2	30.5	15.5	C11017.7	
	18.00	16	19	79	2	30.5	15.5	C11018.0	C12618.0
	19.00	16	19	79	2	30.5	15.5	C11019.0	
3/4	19.05	20	22	88	2	37.5	18.5	C1103/4	
	19.70	20	22	88	2	37.5	19.5	C11019.7	
	20.00	20	22	88	2	37.5	19.5	C11020.0	C12620.0
	21.70	20	22	88	2	37.5	19.5	C11021.7	
	22.00	20	22	88	2	37.5	19.5	C11022.0	C12622.0
7/8	22.22	20	22	88	2	37.5	19.5	C1107/8	
	24.00	25	26	102	2	45.5	23.5	C11024.0	C12624.0
	24.70	25	26	102	2	45.5	24.5	C11024.7	
	25.00	25	26	102	2	45.5	24.5	C11025.0	C12625.0
1“	25.40	25	26	102	2	45.5	24.5	C1101	
	26.00	25	26	102	2	45.5	24.5	C11026.0	
	28.00	25	26	102	2	45.5	24.5	C11028.0	
1.1/8	28.58	25	26	102	2	45.5	24.5	C1101.1/8	
	30.00	25	26	102	2	45.5	24.5	C11030.0	C12630.0
1.1/4	31.75	32	32	112	2	51.5	31.5	C1101.1/4	
	32.00	32	32	112	2	51.5	31.5	C11032.0	
	35.00	32	32	112	2	51.5	31.5	C11035.0 [2)]	
	36.00	32	32	112	2	51.5	31.5	C11036.0 [2)]	
1.1/2	38.10	40	38	130	2	55.5	37	C1101.1/2 [2)]	
	40.00	40	38	130	2	59.5	39	C11040.0 [2)]	
1.3/4	44.45	40	38	130	2	59.5	38	C1101.3/4 [2)]	
	45.00	40	38	130	2	59.5	38	C11045.0 [2)]	
	50.00	50	45	147	2	66.5	48	C11050.0 [2)]	

[2)] diameter tolerance h10 / Durchmesser-Toleranz h10 / Diameter tolerantie h10 / tolérance sur le diamètre h10 / Tolerancia diámetro h10 / tolerância no diâmetro h10

[3)] slot not in P9 tolerance / slot not in P9 tolerance / slot not in P9 tolerance / slot not in P9 tolerance / slot not in P9 tolerance / slot not in P9 tolerance

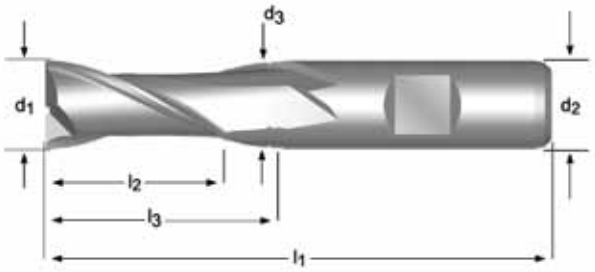
C123 HSS-E-PM | P9 | N | Z 2 | λ30° | DIN 1835B | e8 | DIN 844K

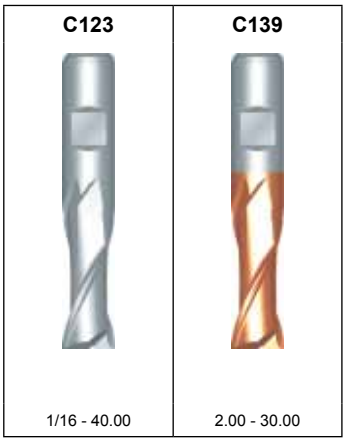
C139 HSS-E-PM | P9 | N | Z 2 | λ30° | DIN 1835B | TiCN | e8 | DIN 844K

C123
C139

- Slot Drill
- Langlochfräser
- Spiebaanfrezen
- Fraises à rainurer
- Fresas Frontales
- Fresa de Ranhurar

C123	▪	1.1	1.2	1.3	1.4	4.1	5.1	6.1	6.2	6.3						
	▪	2.1	3.1	3.2	3.3	3.4	4.2	5.2	7.1	7.2	7.3	8.1				
C139	▪	1.1	1.2	1.3	1.4	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.1	6.2	6.3
	▪	1.5	1.6	2.1	2.3	4.3	5.3	6.4	7.1	7.2	7.3	7.4	8.1			





d_1 Ø Inch /	d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C123	C139
1/16	1.59	6	7	51	2	-	-	C1231/16 [4]	
	2.00	6	7	51	2	-	-	C1232.0	C1392.0
	2.50	6	8	52	2	-	-	C1232.5	C1392.5
	3.00	6	8	52	2	-	-	C1233.0	C1393.0
1/8	3.18	6	10	54	2	-	-	C1231/8 [4]	
	3.50	6	10	54	2	-	-	C1233.5	C1393.5
5/32	3.97	6	11	55	2	-	-	C1235/32 [4]	
	4.00	6	11	55	2	-	-	C1234.0	C1394.0
	4.50	6	11	55	2	-	-	C1234.5	C1394.5
3/16	4.76	6	13	57	2	-	-	C1233/16 [4]	
	5.00	6	13	57	2	-	-	C1235.0	C1395.0
	5.50	6	13	57	2	-	-	C1235.5	C1395.5
	6.00	6	13	57	2	-	-	C1236.0	C1396.0
1/4	6.35	10	16	66	2	-	-	C1231/4 [4]	
	6.50	10	16	66	2	-	-	C1236.5	C1396.5
	7.00	10	16	66	2	-	-	C1237.0	C1397.0
	7.50	10	16	66	2	-	-	C1237.5	C1397.5
5/16	7.94	10	19	69	2	-	-	C1235/16 [4]	
	8.00	10	19	69	2	-	-	C1238.0	C1398.0
	8.50	10	19	69	2	-	-	C1238.5	C1398.5
	9.00	10	19	69	2	-	-	C1239.0	C1399.0
	9.50	10	19	69	2	-	-	C1239.5	C1399.5
3/8	9.52	10	22	72	2	31.5	9.5	C1233/8 [4]	
	10.00	10	22	72	2	31.5	9.5	C12310.0	C13910.0

[4] diameter tolerance -0.0005 inches / -0.0013 inches / Durchmesser-Toleranz -0.0005 inches / -0.0013 inches / Diameter tolerantie -0,0005" / -0,0013" / tolérance sur le diamètre -.0005 inches / -.0013 inches / Tolerancia diámetro -.0005 pulgadas/ - .0013 pulgadas / tolerância no diâmetro-.0005 poleg. / -.0013 poleg.

d_1 Ø Inch /	d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C123	C139
	11.00	12	22	79	2	-	-	C12311.0	C13911.0
	12.00	12	26	83	2	37.5	11.5	C12312.0	C13912.0
1/2	12.70	12	26	83	2	37.5	11.5	C1231/2 [4]	
	13.00	12	26	83	2	37.5	11.5	C12313.0	C13913.0
	14.00	12	26	83	2	37.5	11.5	C12314.0	C13914.0
9/16	14.29	12	26	83	2	37.5	11.5	C1239/16 [4]	
	15.00	12	26	83	2	37.5	11.5	C12315.0	C13915.0
5/8	15.88	16	32	92	2	43.5	15.5	C1235/8 [4]	
	16.00	16	32	92	2	43.5	15.5	C12316.0	C13916.0
	18.00	16	32	92	2	43.5	15.5	C12318.0	C13918.0
3/4	19.05	20	38	104	2	53.5	18.5	C1233/4 [5]	
	20.00	20	38	104	2	53.5	19.5	C12320.0	C13920.0
	22.00	20	38	104	2	53.5	19.5	C12322.0	C13922.0
	25.00	25	45	121	2	64.5	24.5	C12325.0	C13925.0
1“	25.40	25	45	121	2	64.5	24.5	C1231 [5]	
	30.00	25	45	121	2	64.5	24.5	C12330.0	C13930.0
	32.00	32	53	133	2	72.5	31.5	C12332.0	
	36.00	32	53	133	2	72.5	31.5	C12336.0 [6]	
1.1/2	38.10	40	63	155	2	84.5	37	C1231.1/2 [6][5]	
	40.00	40	63	155	2	84.5	39	C12340.0 [6]	

[4] diameter tolerance -0.0005 inches / -0.0013 inches / Durchmesser-Toleranz -0.0005 inches / -0.0013 inches / Diameter tolerantie -0,0005” / -0,0013” / tolérance sur le diamètre -.0005 inches / -.0013 inches / Tolerancia diámetro -.0005 pulgadas/ - .0013 pulgadas / tolerância no diâmetro-.0005 poleg. / -.0013 poleg.

[5] diameter tolerance -0.0005 inches / -0.0015 inches / Durchmesser-Toleranz -0.0005 inches / -0.0015inches / Diameter tolerantie -0,0005” / -0,0015” / tolérance sur le diamètre -.0005 inches / -.0015 inches / Tolerancia diámetro -.0005 pulgadas /- .0015 pulgadas / tolerância no diâmetro-.0005 poleg. / -.0015 poleg.

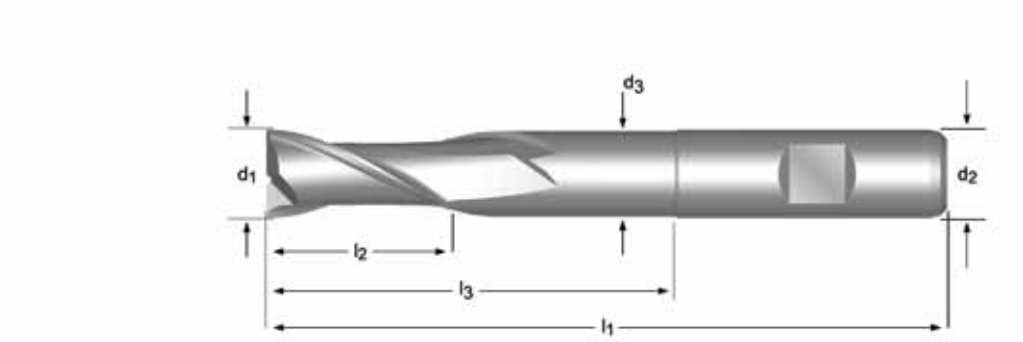
[6] Available in HSS-E only / nur in HSS-E / Alleen in HSS-E leverbaar / Disponible en HSS-E seulement / Disponible solo en HSS-E / Só disponível em HSS-E

C135 HSS-E P9 N Z 2 λ30° DIN 1835B e8 DORMER

C135

- Slot Drill
- Langlochfräser
- Spiebaanfrezen
- Fraises à rainurer
- Fresas Frontales
- Fresa de Ranhurar

C135														
▪	1.1	1.2	5.1	6.1	6.2	6.3								
▪	1.3	1.4	2.1	3.1	3.2	3.3	3.4	4.1	4.2	5.2	7.1	7.2	7.3	8.1



C135

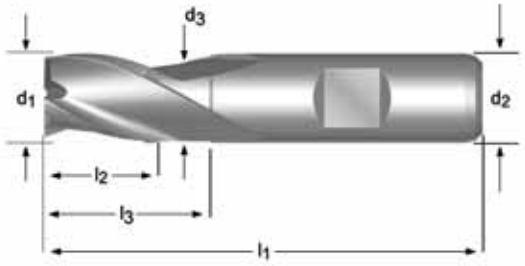
2.00 - 30.00

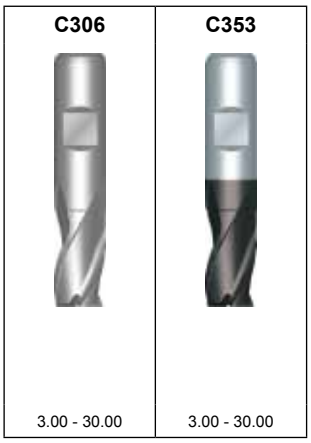
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C135
2.00	6	7	54	2	18	1.8	C1352.0
3.00	6	8	56	2	20	2.8	C1353.0
4.00	6	11	63	2	27	3.7	C1354.0
5.00	6	13	68	2	32	4.7	C1355.0
6.00	6	13	68	2	32	5.7	C1356.0
7.00	10	16	80	2	40	6.5	C1357.0
8.00	10	19	88	2	48	7.5	C1358.0
9.00	10	19	88	2	48	8.5	C1359.0
10.00	10	22	95	2	54.5	9.5	C13510.0
11.00	12	22	102	2	57	10.5	C13511.0
12.00	12	26	110	2	64.5	11.5	C13512.0
13.00	12	26	110	2	64.5	11.5	C13513.0
14.00	12	26	110	2	64.5	11.5	C13514.0
15.00	12	26	110	2	64.5	11.5	C13515.0
16.00	16	32	123	2	74.5	15.5	C13516.0
17.00	16	32	123	2	74.5	15.5	C13517.0
18.00	16	32	123	2	74.5	15.5	C13518.0
19.00	16	32	123	2	74.5	15.5	C13519.0
20.00	20	38	141	2	90.5	19.5	C13520.0
25.00	25	45	166	2	109.5	24.5	C13525.0
30.00	25	45	166	2	109.5	24.5	C13530.0

C306
C353

- Slot Drill
- Langlochfräser
- Spiebaanfrezen
- Fraises à rainurer
- Fresas Frontales
- Fresa de Ranhurar

C306	▪	1.2	1.3	4.1	5.1	6.1	6.2	6.3								
	•	1.1	1.4	2.1	3.1	3.2	3.3	3.4	4.2	5.2	7.2	7.3	8.1			
C353	▪	1.2	1.3	1.4	1.5	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.1	6.2	6.3
	•	1.1	1.6	2.1	2.2	2.3	4.3	5.3	6.4	7.2	7.3	7.4	8.1			





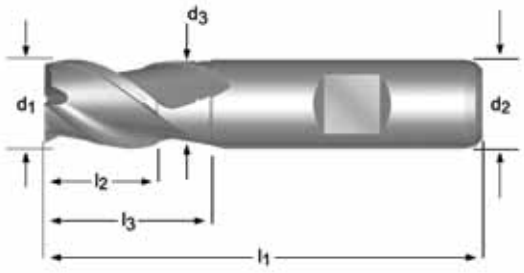
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C306	C353
3.00	6	5	49	3	-	-	C3063.0	C3533.0
3.50	6	6	50	3	-	-	C3063.5	C3533.5
4.00	6	7	51	3	-	-	C3064.0	C3534.0
4.50	6	7	51	3	-	-	C3064.5	C3534.5
4.80	6	8	52	3	-	-	C3064.8	C3534.8
5.00	6	8	52	3	-	-	C3065.0	C3535.0
5.50	6	8	52	3	-	-	C3065.5	C3535.5
5.75	6	8	52	3	-	-	C3065.75	C3535.75
6.00	6	8	52	3	-	-	C3066.0	C3536.0
6.50	10	10	60	3	-	-	C3066.5	C3536.5
7.00	10	10	60	3	-	-	C3067.0	C3537.0
7.50	10	10	60	3	-	-	C3067.5	C3537.5
7.75	10	11	61	3	-	-	C3067.75	C3537.75
8.00	10	11	61	3	-	-	C3068.0	C3538.0
8.50	10	11	61	3	-	-	C3068.5	C3538.5
9.00	10	11	61	3	-	-	C3069.0	C3539.0
9.50	10	11	61	3	-	-	C3069.5	C3539.5
9.70	10	13	63	3	22.5	9.5	C3069.7	C3539.7
10.00	10	13	63	3	22.5	9.5	C30610.0	C35310.0
11.00	12	13	70	3	-	-	C30611.0	C35311.0
11.70	12	16	73	3	27.5	11.5	C30611.7	C35311.7
12.00	12	16	73	3	27.5	11.5	C30612.0	C35312.0
13.00	12	16	73	3	27.5	11.5	C30613.0	C35313.0
13.70	12	16	73	3	27.5	11.5	C30613.7	C35313.7
14.00	12	16	73	3	27.5	11.5	C30614.0	C35314.0
15.00	12	16	73	3	27.5	11.5	C30615.0	C35315.0
15.70	16	19	79	3	30.5	15.5	C30615.7	C35315.7
16.00	16	19	79	3	30.5	15.5	C30616.0	C35316.0

d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C306	C353
18.00	16	19	79	3	30.5	15.5	C30618.0	C35318.0
19.00	16	19	79	3	-	-	C30619.0	
19.70	20	22	88	3	37.5	19.5	C30619.7	C35319.7
20.00	20	22	88	3	37.5	19.5	C30620.0	C35320.0
22.00	20	22	88	3	37.5	19.5	C30622.0	C35322.0
25.00	25	26	102	3	45.5	24.5	C30625.0	C35325.0
28.00	25	26	102	3	45.5	24.5	C30628.0	C35328.0
30.00	25	26	102	3	45.5	24.5	C30630.0	C35330.0

C368
C367

- Slot Drill
- Langlochfräser
- Spiebaanfrezen
- Fraises à rainurer
- Fresas Frontales
- Fresa de Ranhurar

C368	▪	1.1	1.2	2.1	2.3	2.4	6.1	7.1	
	▪	1.3	1.4	2.2	4.1	5.1	6.2	6.3	7.2	8.1
C367	▪	1.1	1.2	2.1	2.2	2.3	2.4	6.1	7.1	
	▪	1.3	1.4	4.1	5.1	6.2	6.3	7.2	7.3	8.1



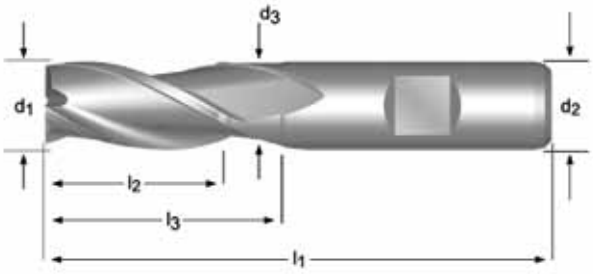
C368	C367
2.00 - 20.00	2.00 - 20.00

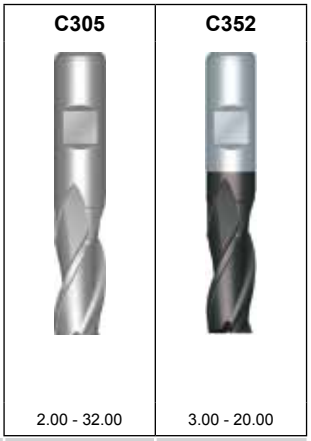
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C368	C367
2.00	6	4	48	3	-	-	C3682.0	C3672.0
3.00	6	5	49	3	-	-	C3683.0	C3673.0
4.00	6	7	51	3	-	-	C3684.0	C3674.0
5.00	6	8	52	3	-	-	C3685.0	C3675.0
6.00	6	8	52	3	-	-	C3686.0	C3676.0
7.00	10	10	60	3	-	-	C3687.0	C3677.0
8.00	10	11	61	3	-	-	C3688.0	C3678.0
9.00	10	11	61	3	-	-	C3689.0	C3679.0
10.00	10	13	63	3	22.5	9.5	C36810.0	C36710.0
11.00	12	13	70	3	-	-	C36811.0	C36711.0
12.00	12	16	73	3	27.5	11.5	C36812.0	C36712.0
13.00	12	16	73	3	27.5	11.5	C36813.0	C36713.0
14.00	12	16	73	3	27.5	11.5	C36814.0	C36714.0
15.00	12	16	73	3	27.5	11.5	C36815.0	C36715.0
16.00	16	19	79	3	30.5	15.5	C36816.0	C36716.0
18.00	16	19	79	3	30.5	15.5	C36818.0	C36718.0
20.00	20	22	88	3	37.5	19.5	C36820.0	C36720.0

C305
C352

- Slot Drill
- Langlochfräser
- Spiebaanfrezen
- Fraises à rainurer
- Fresas Frontales
- Fresa de Ranhurar

C305	■	1.2	1.3	4.1	5.1	5.2	6.1	6.2	6.3						
	●	1.1	1.4	2.1	3.1	3.2	3.3	3.4	4.2	7.2	7.3	8.1			
C352	■	1.2	1.3	1.4	1.5	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.1	6.2	6.3
	●	1.1	1.6	2.1	2.2	2.3	4.3	5.3	6.4	7.2	7.3	7.4	8.1			





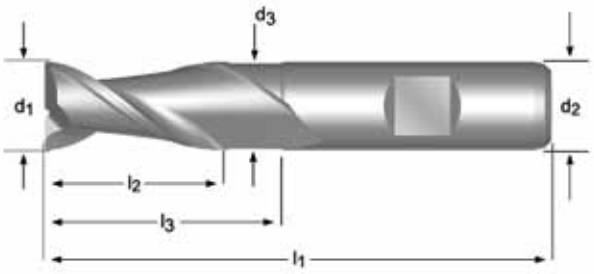
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C305	C352
2.00	6	7	51	3	-	-	C3052.0	
2.50	6	8	52	3	-	-	C3052.5	
3.00	6	8	52	3	-	-	C3053.0	C3523.0
3.50	6	10	54	3	-	-	C3053.5	
4.00	6	11	55	3	-	-	C3054.0	C3524.0
4.50	6	11	55	3	-	-	C3054.5	
5.00	6	13	57	3	-	-	C3055.0	C3525.0
5.50	6	13	57	3	-	-	C3055.5	
6.00	6	13	57	3	-	-	C3056.0	C3526.0
6.50	10	16	66	3	-	-	C3056.5	
7.00	10	16	66	3	-	-	C3057.0	
7.50	10	16	66	3	-	-	C3057.5	
8.00	10	19	69	3	-	-	C3058.0	C3528.0
8.50	10	19	69	3	-	-	C3058.5	
9.00	10	19	69	3	-	-	C3059.0	
10.00	10	22	72	3	31.5	9.5	C30510.0	C35210.0
11.00	12	22	79	3	-	-	C30511.0	
12.00	12	26	83	3	37.5	11.5	C30512.0	C35212.0
13.00	12	26	83	3	37.5	11.5	C30513.0	
14.00	12	26	83	3	37.5	11.5	C30514.0	C35214.0
15.00	12	26	83	3	37.5	11.5	C30515.0	
16.00	16	32	92	3	43.5	15.5	C30516.0	C35216.0
17.00	16	32	92	3	43.5	15.5	C30517.0	
18.00	16	32	92	3	43.5	15.5	C30518.0	C35218.0
19.00	16	32	92	3	43.5	15.5	C30519.0	
20.00	20	38	104	3	53.5	19.5	C30520.0	C35220.0

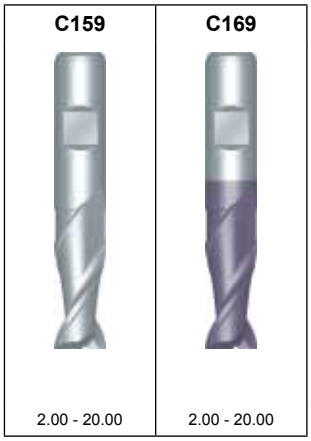
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C305	C352
22.00	20	38	104	3	53.5	19.5	C30522.0	
25.00	25	45	121	3	-	-	C30525.0	
28.00	25	45	121	3	-	-	C30528.0	
30.00	25	45	121	3	-	-	C30530.0	
32.00	32	53	133	3	-	-	C30532.0	

C159
C169

- Slot Drill
- Langlochfräser
- Spiebaanfrezen
- Fraises à rainurer
- Fresas Frontales
- Fresa de Ranhurar

C159	▪	1.1	6.1	6.2	6.3	7.1	7.2	7.3	8.1	8.2		
	▪	1.2	1.3	2.1	2.2	4.1	5.1					
C169	▪	1.1	1.2	6.1	6.2	6.3	7.1	7.2	7.3	7.4	8.1	8.2
	▪	1.3	2.1	2.2	2.3	4.1	4.2	5.1	5.2			





d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C159	C169
2.00	6	7	51	2	-	-	C1592.0	C1692.0
3.00	6	8	52	2	-	-	C1593.0	C1693.0
4.00	6	11	55	2	-	-	C1594.0	C1694.0
5.00	6	13	57	2	-	-	C1595.0	C1695.0
6.00	6	13	57	2	-	-	C1596.0	C1696.0
7.00	10	16	66	2	-	-	C1597.0	C1697.0
8.00	10	19	69	2	-	-	C1598.0	C1698.0
9.00	10	19	69	2	-	-	C1599.0	C1699.0
10.00	10	22	72	2	-	-	C15910.0	C16910.0
11.00	12	22	79	2	-	-	C15911.0	
12.00	12	26	83	2	-	-	C15912.0	C16912.0
13.00	12	26	83	2	37.5	11.5	C15913.0	
14.00	12	26	83	2	37.5	11.5	C15914.0	C16914.0
15.00	12	26	83	2	37.5	11.5	C15915.0	
16.00	16	32	92	2	43.5	15.5	C15916.0	C16916.0
18.00	16	32	92	2	43.5	15.5	C15918.0	C16918.0
20.00	20	38	104	2	53.5	19.5	C15920.0	C16920.0

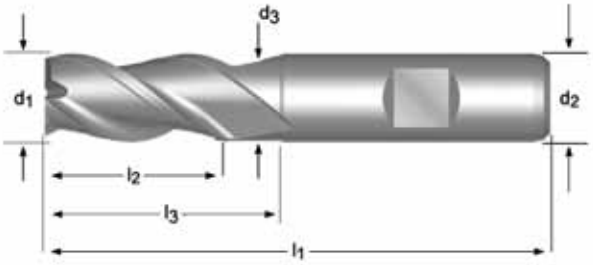
DORMER

C336	HSS-E-PM		W	Z 3		λ40°	DIN 1835B		k10		DIN 844K
C358	HSS-E-PM		W	Z 3		λ40°	DIN 1835B	Alcrona	k10		DIN 844K

C336
C358

- End Mill
- Schaftfräser
- Spiebaanfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

C336	▪	6.1	6.2	6.3	7.1	7.2	7.3	8.1	8.2	
	▪	1.1	1.2	1.3	2.1	2.2	4.1	5.1		
C358	▪	1.2	6.1	6.2	6.3	7.1	7.2	7.3	7.4	8.1	8.2
	▪	1.1	1.3	2.1	2.2	2.3	4.1	4.2	5.1	5.2	



C336	C358
10.00 - 30.00	10.00 - 30.00

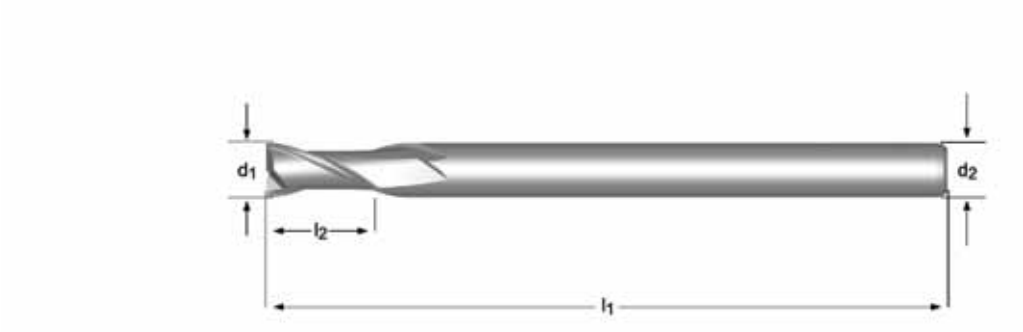
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C336	C358
10.00	10	22	72	3	31.5	9.5	C33610.0	C35810.0
12.00	12	26	83	3	37.5	11.5	C33612.0	C35812.0
14.00	12	26	83	3	37.5	11.5	C33614.0	C35814.0
15.00	12	26	83	3	37.5	11.5	C33615.0	
16.00	16	32	92	3	43.5	15.5	C33616.0	C35816.0
18.00	16	32	92	3	43.5	15.5	C33618.0	C35818.0
20.00	20	38	104	3	53.5	19.5	C33620.0	C35820.0
22.00	20	38	104	3	53.5	19.5	C33622.0	C35822.0
25.00	25	45	121	3	64.5	24.5	C33625.0	C35825.0
30.00	25	45	121	3	64.5	24.5	C33630.0	C35830.0

C167 HSS-E N Z 2 λ30° DIN 1835A js14 DORMER

C167

- End Mill
- Schaftfräser
- Spiebaanfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

C167														
▪	1.1	1.2	5.1	6.1	6.2	6.3								
▪	1.3	1.4	2.1	3.1	3.2	3.3	3.4	4.1	4.2	5.2	7.1	7.2	7.3	8.1



C167

6.00 - 16.00

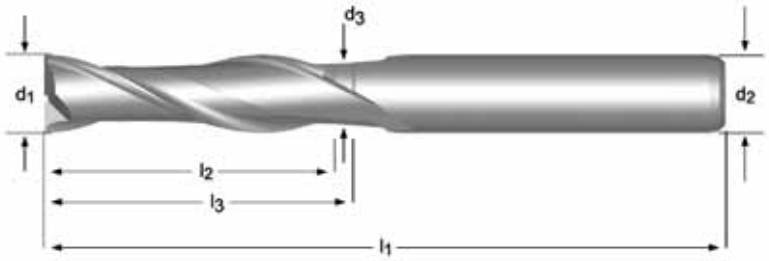
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	C167
6.00	6	13	180	2	C1676.0
8.00	8	19	180	2	C1678.0
10.00	10	22	200	2	C16710.0
12.00	12	26	200	2	C16712.0
16.00	16	32	200	2	C16716.0

C122 HSS-E N Z 2 λ30° DIN 1835A e8 DORMER

C122

- End Mill
- Schaftfräser
- Spiebaanfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

C122															
	▪	1.1	1.2	5.1	6.1	6.2	6.3								
	▪	1.3	1.4	2.1	3.1	3.2	3.3	3.4	4.1	4.2	5.2	7.1	7.2	7.3	8.1



C122

5.00 - 30.00

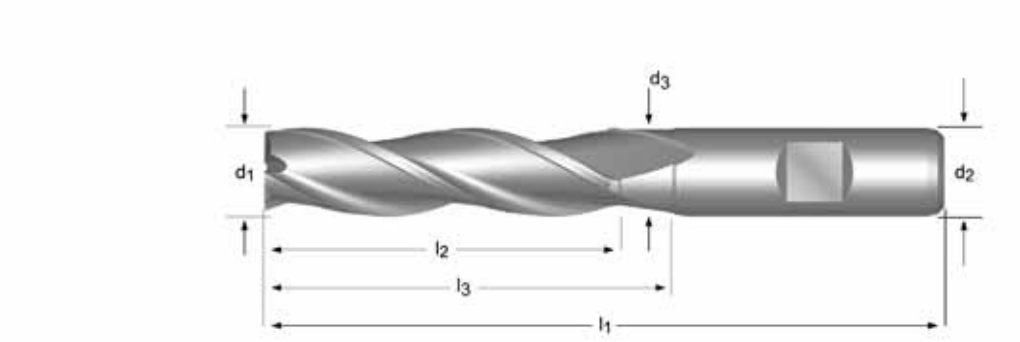
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C122
5.00	5	22	65	2	-	-	C1225.0
6.00	6	27	75	2	-	-	C1226.0
7.00	8	33	85	2	-	-	C1227.0
8.00	8	33	85	2	-	-	C1228.0
10.00	10	40	95	2	-	-	C12210.0
12.00	12	45	110	2	-	-	C12212.0
14.00	12	52	125	2	-	-	C12214.0
16.00	16	58	140	2	69.5	15.5	C12216.0
18.00	16	65	150	2	76.5	15.5	C12218.0
20.00	20	70	160	2	85.5	19.5	C12220.0
22.00	20	75	170	2	90.5	19.5	C12222.0
25.00	25	82	185	2	101.5	24.5	C12225.0
30.00	25	90	205	2	109.5	24.5	C12230.0

C346 HSS-E N Z 3 λ30° DIN 1835B e8 DIN 844L

C346

- Slot Drill
- Langlochfräser
- Spiebaanfrezen
- Fraises à rainurer
- Fresas Frontales
- Fresa de Ranhurar

C346													
▪	1.2	4.1	5.1	6.1	6.2	6.3							
▪	1.1	1.3	1.4	2.1	3.1	3.2	3.3	3.4	4.2	5.2	7.1	7.2	8.1



C346

3.00 - 20.00

d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C346
3.00	6	12	56	3	-	-	C3463.0
4.00	6	19	63	3	-	-	C3464.0
5.00	6	24	68	3	-	-	C3465.0
6.00	6	24	68	3	-	-	C3466.0
7.00	10	30	80	3	-	-	C3467.0
8.00	10	38	88	3	-	-	C3468.0
9.00	10	38	88	3	-	-	C3469.0
10.00	10	45	95	3	-	-	C34610.0
11.00	12	45	102	3	-	-	C34611.0
12.00	12	53	110	3	-	-	C34612.0
13.00	12	53	110	3	64.5	11.5	C34613.0
14.00	12	53	110	3	64.5	11.5	C34614.0
15.00	12	53	110	3	64.5	11.5	C34615.0
16.00	16	63	123	3	74.5	15.5	C34616.0
18.00	16	63	123	3	74.5	15.5	C34618.0
20.00	20	75	141	3	90.5	19.5	C34620.0

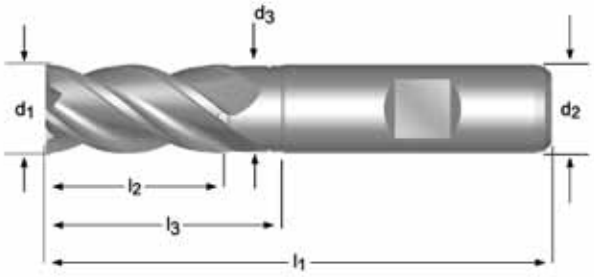
DORMER

C299	HSS-E-PM		N	Z 3-5		λ45°	DIN 1835B		k10		DIN 844K
C907	HSS-E-PM		N	Z 3-6		λ45°	DIN 1835B	Alcrona	k10		DIN 844K

C299
C907

- End Mill
- Schaftfräser
- Vingerfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

C299	▪	1.3 1.4 1.5 2.1 2.3 3.1 3.2 3.3 3.4 4.2 4.3 5.1 5.2 5.3 6.2 7.4
	▪	1.6 2.2 4.1
C907	▪	1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.2 4.3 5.1 5.2 5.3 6.2 7.4
	▪	4.1



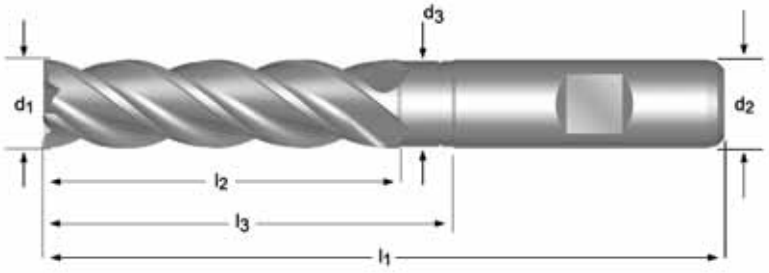
C299	C907
3.00 - 25.00	3.00 - 32.00

d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C299	C907
3.00	6	8	52	3	-	-	C2993.0	C9073.0
4.00	6	11	55	3	-	-	C2994.0	C9074.0
5.00	6	13	57	3	-	-	C2995.0	C9075.0
6.00	6	13	57	3	-	-	C2996.0	C9076.0
8.00	10	19	69	4	-	-	C2998.0	C9078.0
10.00	10	22	72	4	31.5	9.5	C29910.0	C90710.0
12.00	12	26	83	4	37.5	11.5	C29912.0	C90712.0
14.00	12	26	83	4	37.5	11.5	C29914.0	C90714.0
16.00	16	32	92	4	43.5	15.5	C29916.0	C90716.0
18.00	16	32	92	4	43.5	15.5	C29918.0	C90718.0
20.00	20	38	104	4	53.5	19.5	C29920.0	C90720.0
22.00	20	38	104	5	53.5	19.5		C90722.0
25.00	25	45	121	5	64.5	24.5	C29925.0	C90725.0
28.00	25	45	121	6	64.5	24.5		C90728.0
30.00	25	45	121	6	64.5	24.5		C90730.0
32.00	32	53	133	6	72.5	31.5		C90732.0

C903
C920

- End Mill
- Schaftfräser
- Vingerfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

C903	▪	1.3 1.4 1.5 2.1 2.3 3.1 3.2 3.3 3.4 4.2 4.3 5.1 5.2 5.3 6.2 7.4
	▪	1.6 2.2 4.1
C920	▪	1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.2 4.3 5.1 5.2 5.3 6.2 7.4
	▪	4.1



d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C903	C920
6.00	6	24	68	3	-	-	C9036.0	C9206.0
8.00	10	38	88	4	-	-	C9038.0	C9208.0
10.00	10	45	95	4	54.5	9.5	C90310.0	C92010.0
12.00	12	53	110	4	64.5	11.5	C90312.0	C92012.0
14.00	12	53	110	4	64.5	11.5	C90314.0	C92014.0
16.00	16	63	123	4	74.5	15.5	C90316.0	C92016.0
18.00	16	63	123	4	74.5	15.5	C90318.0	C92018.0
20.00	20	75	141	4	90.5	19.5	C90320.0	C92020.0
22.00	20	75	141	5	90.5	19.5	C90322.0	C92022.0
25.00	25	90	166	5	109.5	24.5	C90325.0	C92025.0

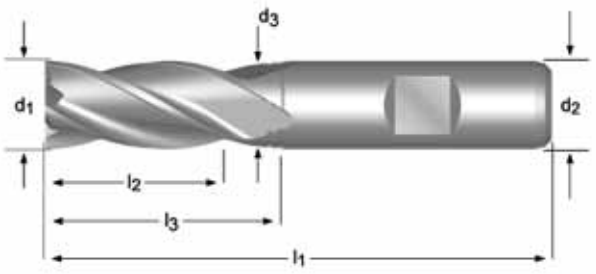
DORMER

C247	HSS-E-PM		N	Z 4-8		λ30°	DIN 1835B		k10		DIN 844K
C246	HSS-E-PM		N	Z 4-6		λ30°	DIN 1835B	TiCN	k10		DIN 844K

C247
C246

- End Mill
- Schaftfräser
- Vingerfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

C247	■	1.1	1.2	1.3	4.1	5.1	6.1	6.2	6.3							
	■	1.4	2.1	3.1	3.2	3.3	3.4	4.2	5.2	7.1	7.2	7.3	8.1			
C246	■	1.1	1.2	1.3	1.4	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.1	6.2	6.3
	■	1.5	1.6	2.1	2.3	4.3	5.3	6.4	7.1	7.2	7.3	7.4	8.1			



C247	C246
2.00 - 50.00	2.00 - 32.00

d_1 Ø Inch /	d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C247	C246
	2.00	6	7	51	4	-	-	C2472.0	C2462.0
	2.50	6	8	52	4	-	-	C2472.5	
	3.00	6	8	52	4	-	-	C2473.0	C2463.0
1/8	3.18	6	10	54	4	-	-	C2471/8 [1)]	
	3.50	6	10	54	4	-	-	C2473.5	
	4.00	6	11	55	4	-	-	C2474.0	C2464.0
	4.50	6	11	55	4	-	-	C2474.5	
3/16	4.76	6	13	57	4	-	-	C2473/16 [1)]	
	5.00	6	13	57	4	-	-	C2475.0	C2465.0
	5.50	6	13	57	4	-	-	C2475.5	
	6.00	6	13	57	4	-	-	C2476.0	C2466.0
1/4	6.35	10	16	66	4	-	-	C2471/4 [1)]	
	6.50	10	16	66	4	-	-	C2476.5	
	7.00	10	16	66	4	-	-	C2477.0	C2467.0
	7.50	10	16	66	4	-	-	C2477.5	
5/16	7.94	10	19	69	4	-	-	C2475/16 [1)]	
	8.00	10	19	69	4	-	-	C2478.0	C2468.0
	8.50	10	19	69	4	-	-	C2478.5	
	9.00	10	19	69	4	-	-	C2479.0	C2469.0
	9.50	10	19	69	4	-	-	C2479.5	
3/8	9.52	10	22	72	4	31.5	9.5	C2473/8 [1)]	
	10.00	10	22	72	4	31.5	9.5	C24710.0	C24610.0
	11.00	12	22	79	4	-	-	C24711.0	C24611.0
	12.00	12	26	83	4	37.5	11.5	C24712.0	C24612.0
1/2	12.70	12	26	83	4	37.5	11.5	C2471/2 [1)]	
	13.00	12	26	83	4	37.5	11.5	C24713.0	C24613.0

[1)] diameter tolerance +0.0025 inches / -0.0005 inches / Durchmesser-Toleranz +.0025 inches / -.0005 inches / Diameter tolerantie +0,0025" / -0,0005" / tolérance sur le diamètre +.0025 inches / -.0005 inches / Tolerancia diámetro + .0025 pulgadas/ -.0005 pulgadas / tolerância no diâmetro+.0025 poleg. / -.0005 poleg.

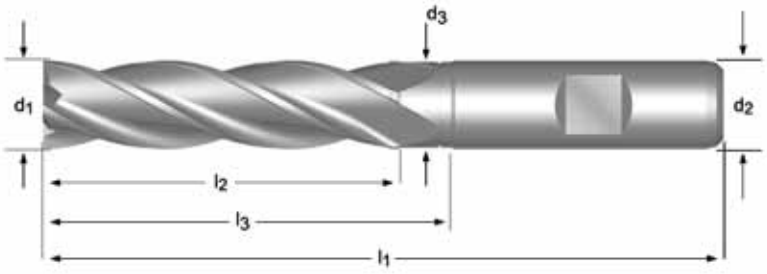
d_1 Ø	d_1 Ø	d_2 Ø	l_2	l_1		l_3	d_3 Ø	C247	C246
Inch /	mm	mm	mm	mm	z	mm	mm		
	14.00	12	26	83	4	37.5	11.5	C24714.0	C24614.0
9/16	14.29	12	26	83	4	37.5	11.5	C2479/16 [1)]	
	15.00	12	26	83	4	37.5	11.5	C24715.0	C24615.0
5/8	15.88	16	32	92	4	43.5	15.5	C2475/8 [1)]	
	16.00	16	32	92	4	43.5	15.5	C24716.0	C24616.0
	17.00	16	32	92	4	43.5	15.5	C24717.0	
	18.00	16	32	92	4	43.5	15.5	C24718.0	C24618.0
	19.00	16	32	92	4	43.5	15.5	C24719.0	
3/4	19.05	20	38	104	4	53.5	18.5	C2473/4 [1)]	
	20.00	20	38	104	4	53.5	19.5	C24720.0	C24620.0
	21.00	20	38	104	4	53.5	19.5	C24721.0	
	22.00	20	38	104	5	53.5	19.5	C24722.0	C24622.0
7/8	22.22	20	38	104	5	53.5	19.5	C2477/8 [1)]	
	23.00	20	38	104	5	53.5	19.5	C24723.0	
	24.00	25	45	121	5	64.5	23.5	C24724.0	
	25.00	25	45	121	5	64.5	24.5	C24725.0	C24625.0
1“	25.40	25	45	121	5	64.5	24.5	C2471 [1)]	
	26.00	25	45	121	6	64.5	24.5	C24726.0	
	28.00	25	45	121	6	64.5	24.5	C24728.0	C24628.0
	30.00	25	45	121	6	64.5	24.5	C24730.0	C24630.0
	32.00	32	53	133	6	72.5	31.5	C24732.0	C24632.0
	36.00	32	53	133	6	72.5	31.5	C24736.0	
	40.00	40	63	155	6	84.5	39	C24740.0	
	50.00	50	75	177	8	96.5	48	C24750.0	

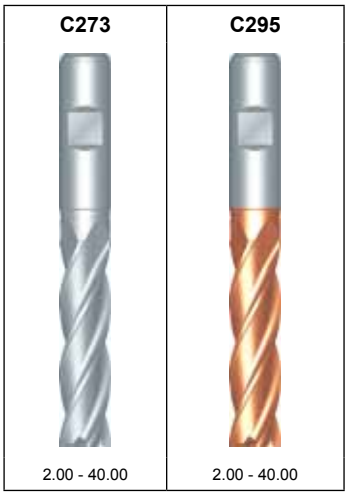
[1)] diameter tolerance +0.0025 inches / -0.0005 inches / Durchmesser-Toleranz +.0025 inches / -.0005 inches / Diameter tolerantie +0,0025” / -0,0005” / tolérance sur le diamètre +.0025 inches / -.0005 inches / Tolerancia diámetro + .0025 pulgadas/ -.0005 pulgadas / tolerância no diâmetro+.0025 poleg. / -.0005 poleg.

C273
C295

- End Mill
- Schaftfräser
- Vingerfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

C273	▪	1.1	1.2	1.3	4.1	5.1	6.1	6.2	6.3							
	▪	1.4	2.1	3.1	3.2	3.3	3.4	4.2	5.2	7.1	7.2	7.3	8.1			
C295	▪	1.1	1.2	1.3	1.4	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.1	6.2	6.3
	▪	1.5	1.6	2.1	2.3	4.3	5.3	6.4	7.1	7.2	7.3	7.4	8.1			





d_1 Ø Inch /	d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C273	C295
	2.00	6	10	54	4	-	-	C2732.0	C2952.0
	2.50	6	12	56	4	-	-	C2732.5	
	3.00	6	12	56	4	-	-	C2733.0	C2953.0
1/8	3.18	6	15	59	4	-	-	C2731/8 [1)]	
	3.50	6	15	59	4	-	-	C2733.5	
	4.00	6	19	63	4	-	-	C2734.0	C2954.0
	4.50	6	19	63	4	-	-	C2734.5	
3/16	4.76	6	24	68	4	-	-	C2733/16 [1)]	
	5.00	6	24	68	4	-	-	C2735.0	C2955.0
	5.50	6	24	68	4	-	-	C2735.5	
	6.00	6	24	68	4	-	-	C2736.0	C2956.0
1/4	6.35	10	30	80	4	-	-	C2731/4 [1)]	
	7.00	10	30	80	4	-	-	C2737.0	C2957.0
	8.00	10	38	88	4	-	-	C2738.0	C2958.0
	9.00	10	38	88	4	-	-	C2739.0	C2959.0
3/8	9.52	10	45	95	4	54.5	9.5	C2733/8 [1)]	
	10.00	10	45	95	4	54.5	9.5	C27310.0	C29510.0
	11.00	12	45	102	4	-	-	C27311.0	C29511.0
	12.00	12	53	110	4	64.5	11.5	C27312.0	C29512.0
1/2	12.70	12	53	110	4	64.5	11.5	C2731/2 [1)]	
	13.00	12	53	110	4	64.5	11.5	C27313.0	C29513.0
	14.00	12	53	110	4	64.5	11.5	C27314.0	C29514.0
	15.00	12	53	110	4	64.5	11.5	C27315.0	C29515.0
5/8	15.88	16	63	123	4	74.5	15.5	C2735/8 [1)]	

[1)] diameter tolerance +0.0025 inches / -0.0005 inches / Durchmesser-Toleranz +.0025 inches / -.0005 inches / Diameter tolerantie +0,0025" / -0,0005" / tolérance sur le diamètre +.0025 inches / -.0005 inches / Tolerancia diámetro + .0025 pulgadas/ -.0005 pulgadas / tolerância no diâmetro+.0025 poleg. / -.0005 poleg.

d_1 Ø	d_1 Ø	d_2 Ø	l_2	l_1		l_3	d_3 Ø	C273	C295
Inch /	mm	mm	mm	mm	z	mm	mm		
	16.00	16	63	123	4	74.5	15.5	C27316.0	C29516.0
	18.00	16	63	123	4	74.5	15.5	C27318.0	C29518.0
3/4	19.05	20	75	141	4	90.5	18.5	C2733/4 [1)]	
	20.00	20	75	141	4	90.5	19.5	C27320.0	C29520.0
	22.00	20	75	141	5	90.5	19.5	C27322.0	C29522.0
7/8	22.22	20	75	141	5	90.5	19.5	C2737/8 [1)]	
	25.00	25	90	166	5	109.5	24.5	C27325.0	C29525.0
1“	25.40	25	90	166	5	109.5	24.5	C2731 [1)]	
	28.00	25	90	166	6	109.5	24.5	C27328.0	C29528.0
	30.00	25	90	166	6	109.5	24.5	C27330.0	C29530.0
	32.00	32	106	186	6	125.5	31.5	C27332.0	C29532.0
	36.00	32	106	186	6	125.5	31.5	C27336.0	
1.1/2	38.10	40	125	217	6	146.5	37	C2731.1/2	
	40.00	40	125	217	6	146.5	39	C27340.0	C29540.0

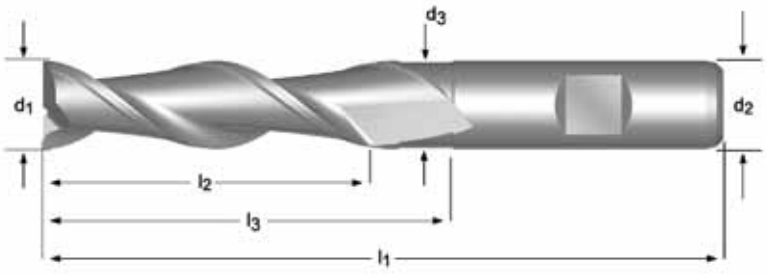
[1)] diameter tolerance +0.0025 inches / -0.0005 inches / Durchmesser-Toleranz +.0025 inches / -.0005 inches / Diameter tolerantie +0,0025” / -0,0005” / tolérance sur le diamètre +.0025 inches / -.0005 inches / Tolerancia diámetro + .0025 pulgadas/ -.0005 pulgadas / tolerância no diâmetro+.0025 poleg. / -.0005 poleg.

C166 HSS-E W Z 2 λ40° DIN 1835B e8 DIN 844L

C166

- End Mill
- Schaftfräser
- Spiebaanfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

C166	1.1	6.1	6.2	6.3	7.1	7.2	7.3	8.1	8.2
	1.2	1.3	2.1	2.2	4.1	5.1			



C166

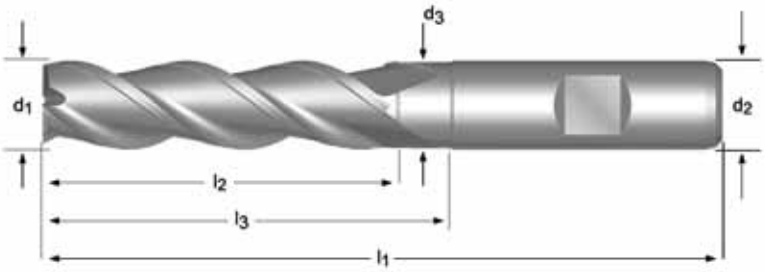
6.00 - 16.00

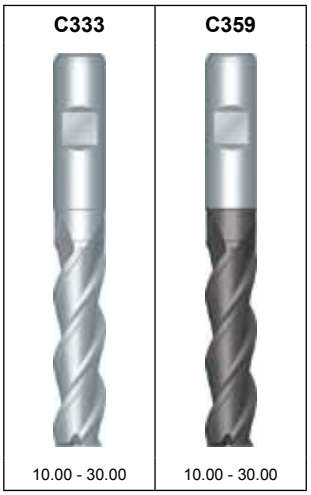
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C166
6.00	6	24	68	2	-	-	C1666.0
7.00	10	30	80	2	-	-	C1667.0
8.00	10	38	88	2	-	-	C1668.0
9.00	10	38	88	2	-	-	C1669.0
10.00	10	45	95	2	-	-	C16610.0
12.00	12	53	110	2	-	-	C16612.0
14.00	12	53	110	2	64.5	11.5	C16614.0
16.00	16	63	123	2	74.5	15.5	C16616.0

C333
C359

- End Mill
- Schaftfräser
- Spiebaanfrezen
- Fraises de finition
- Fresas de acabado
- Fresa de Acabamento

C333	■	6.1 7.2
	●	1.1 1.2 1.3 2.1 2.2 4.1 5.1 7.1 7.3
C359	■	1.2 6.1 7.2 7.3 7.4
	●	1.1 1.3 2.1 2.2 2.3 4.1 4.2 5.1 5.2 6.2 7.1





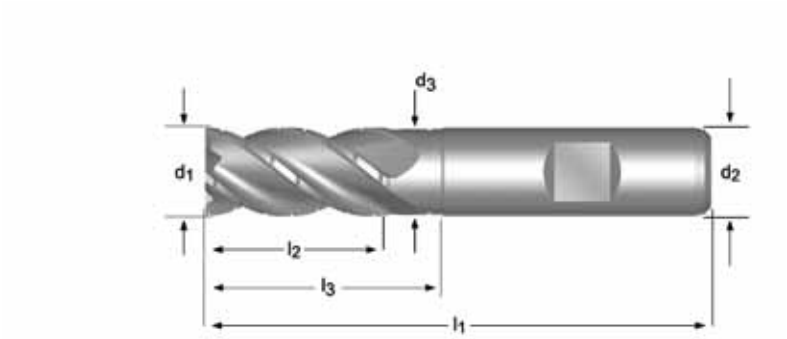
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C333	C359
10.00	10	45	95	3	54.5	9.5	C33310.0	C35910.0
12.00	12	53	110	3	64.5	11.5	C33312.0	C35912.0
14.00	12	53	110	3	64.5	11.5	C33314.0	C35914.0
16.00	16	63	123	3	74.5	15.5	C33316.0	C35916.0
18.00	16	63	123	3	74.5	15.5	C33318.0	C35918.0
20.00	20	75	141	3	90.5	19.5	C33320.0	C35920.0
25.00	25	90	166	3	109.5	24.5	C33325.0	C35925.0
30.00	25	90	166	3	109.5	24.5	C33330.0	C35930.0

C365 HSS-E-PM W Z 3-4 λ40° DIN 1835B k10 DIN 844K

C365

- Roughing End Mill
- Schruppfräser
- Ruwfrezen
- Fraises d'ébauche
- Fresas Gran Desbaste
- Fresa de Desbaste

C365								
■	6.1	6.2	6.3	7.1	7.2	7.3	8.1	8.2
■	1.1	1.2	1.3	2.1	4.1	5.1		



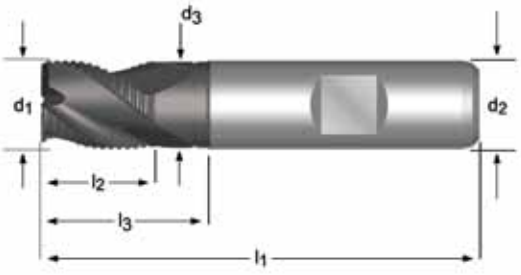
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C365
10.00	10	22	72	3	31.5	9.5	C36510.0
12.00	12	26	83	3	37.5	11.5	C36512.0
14.00	12	26	83	3	37.5	11.5	C36514.0
16.00	16	32	92	3	43.5	15.5	C36516.0
18.00	16	32	92	4	43.5	15.5	C36518.0
20.00	20	38	104	4	53.5	19.5	C36520.0
25.00	25	45	121	4	64.5	24.5	C36525.0
30.00	25	45	121	4	64.5	24.5	C36530.0

C324 HSS-E-PM HRA Z 3 λ35° DIN 1835B Alcrona k12 DIN 327D

C324

- Roughing End Mill
- Schruppfräser
- Ruwfrezen
- Fraises d'ébauche
- Fresas Gran Desbaste
- Fresa de Desbaste

C324																	
	▪	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.2	4.3	5.2	5.3	6.2	7.4
	•	1.3	4.1	5.1	6.4												



C324

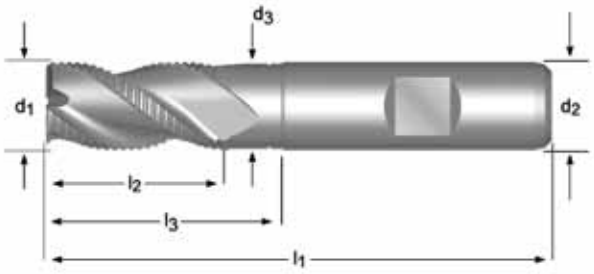
8.00 - 30.00

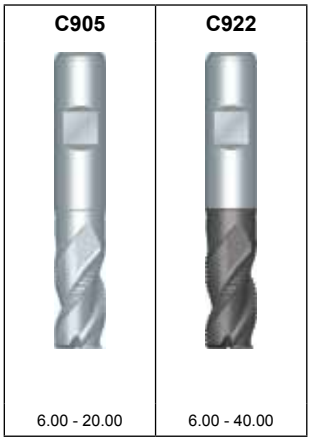
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C324
8.00	10	11	61	3	-	-	C3248.0
10.00	10	13	63	3	22.5	9.5	C32410.0
12.00	12	16	73	3	27.5	11.5	C32412.0
14.00	12	16	73	3	27.5	11.5	C32414.0
16.00	16	19	79	3	30.5	15.5	C32416.0
18.00	16	19	79	3	30.5	15.5	C32418.0
20.00	20	22	88	3	37.5	19.5	C32420.0
22.00	20	22	88	3	37.5	19.5	C32422.0
25.00	25	26	102	3	45.5	24.5	C32425.0
28.00	25	26	102	3	45.5	24.5	C32428.0
30.00	25	26	102	3	45.5	24.5	C32430.0

C905
C922

- Roughing End Mill
- Schruppfräser
- Ruwfrezen
- Fraises d'ébauche
- Fresas Gran Desbaste
- Fresa de Desbaste

C905	▪	1.4 1.5 2.1 2.3 3.1 3.2 3.3 3.4 4.2 4.3 5.2 5.3 6.2 7.4
	•	1.3 1.6 2.2 4.1 5.1 6.4
C922	▪	1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.2 4.3 5.2 5.3 6.2 7.4
	•	1.3 4.1 5.1 6.4



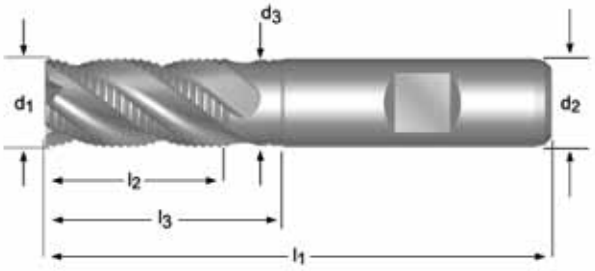


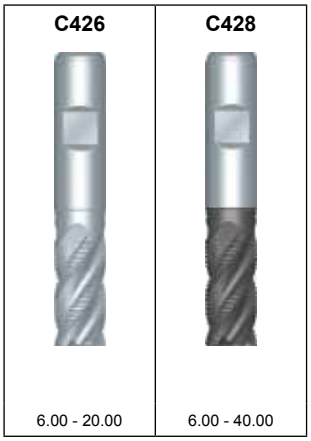
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C905	C922
6.00	6	13	57	3	-	-	C9056.0	C9226.0
7.00	10	16	66	3	-	-	C9057.0	C9227.0
8.00	10	19	69	3	-	-	C9058.0	C9228.0
9.00	10	19	69	3	-	-	C9059.0	C9229.0
10.00	10	22	72	3	31.5	9.5	C90510.0	C92210.0
11.00	12	22	79	3	-	-	C90511.0	C92211.0
12.00	12	26	83	3	37.5	11.5	C90512.0	C92212.0
13.00	12	26	83	3	37.5	11.5	C90513.0	C92213.0
14.00	12	26	83	3	37.5	11.5	C90514.0	C92214.0
15.00	12	26	83	3	37.5	11.5	C90515.0	C92215.0
16.00	16	32	92	3	43.5	15.5	C90516.0	C92216.0
18.00	16	32	92	3	43.5	15.5	C90518.0	C92218.0
20.00	20	38	104	3	53.5	19.5	C90520.0	C92220.0
22.00	20	38	104	3	53.5	19.5		C92222.0
24.00	25	45	121	4	64.5	23.5		C92224.0
25.00	25	45	121	4	64.5	24.5		C92225.0
26.00	25	45	121	4	64.5	24.5		C92226.0
28.00	25	45	121	4	64.5	24.5		C92228.0
30.00	25	45	121	4	64.5	24.5		C92230.0
32.00	32	53	133	4	72.5	31.5		C92232.0
36.00	32	53	133	4	72.5	31		C92236.0
40.00	40	63	155	4	84.5	39		C92240.0

C426
C428

- Roughing End Mill
- Schruppfräser
- Ruwfrezen
- Fraises d'ébauche
- Fresas Gran Desbaste
- Fresa de Desbaste

C426	■	1.4 1.5 2.1 2.3 3.1 3.2 3.3 3.4 4.2 4.3 5.2 5.3 6.2 7.4
	●	1.3 1.6 2.2 4.1 5.1 6.4
C428	■	1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.2 4.3 5.2 5.3 6.2 7.4
	●	1.3 4.1 5.1 6.4





d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C426	C428
6.00	6	13	57	4	-	-	C4266.0	C4286.0
7.00	10	16	66	4	-	-	C4267.0	C4287.0
8.00	10	19	69	4	-	-	C4268.0	C4288.0
9.00	10	19	69	4	-	-	C4269.0	C4289.0
10.00	10	22	72	4	31.5	9.5	C42610.0	C42810.0
11.00	12	22	79	4	-	-	C42611.0	C42811.0
12.00	12	26	83	4	37.5	11.5	C42612.0	C42812.0
13.00	12	26	83	4	37.5	11.5	C42613.0	C42813.0
14.00	12	26	83	4	37.5	11.5	C42614.0	C42814.0
15.00	12	26	83	4	37.5	11.5	C42615.0	C42815.0
16.00	16	32	92	4	43.5	15.5	C42616.0	C42816.0
18.00	16	32	92	4	43.5	15.5	C42618.0	C42818.0
20.00	20	38	104	4	53.5	19.5	C42620.0	C42820.0
22.00	20	38	104	4	53.5	19.5		C42822.0
25.00	25	45	121	6	64.5	24.5		C42825.0
28.00	25	45	121	6	64.5	24.5		C42828.0
30.00	25	45	121	6	64.5	24.5		C42830.0
32.00	32	53	133	6	72.5	31.5		C42832.0
36.00	32	53	133	6	72.5	31		C42836.0
40.00	40	63	155	6	84.5	39		C42840.0

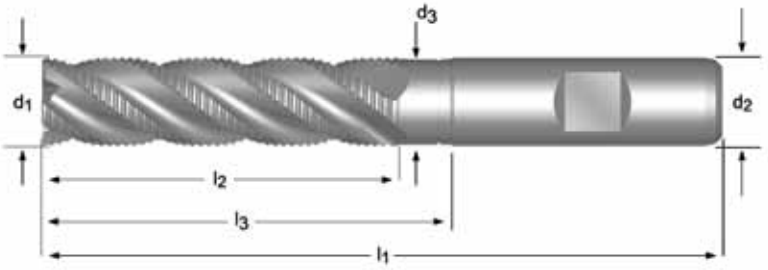
DORMER

C491	HSS-E-PM		HRA	Z 3-6		λ35°	DIN 1835B		k12		DIN 844L
C492	HSS-E-PM		HRA	Z 3-6		λ35°	DIN 1835B	Alcrona	k12		DIN 844L

C491
C492

- Roughing End Mill
- Schruppfräser
- Ruwfrezen
- Fraises d'ébauche
- Fresas Gran Desbaste
- Fresa de Desbaste

C491	▪	1.3	1.4	1.5	2.1	2.3	3.1	3.2	3.3	3.4	4.2	4.3	5.2	5.3	6.2	7.4	
	•	1.6	2.2	4.1	5.1	6.4											
C492	▪	1.3	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.2	4.3	5.2	5.3	6.2	7.4
	•	4.1	5.1	6.4														



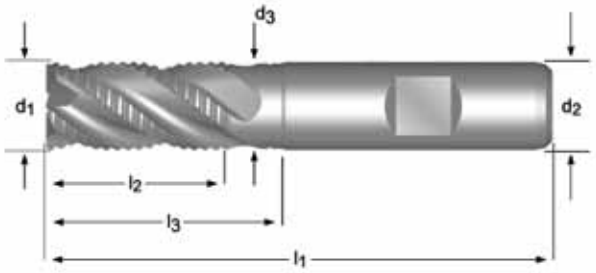
C491	C492
6.00 - 30.00	6.00 - 30.00

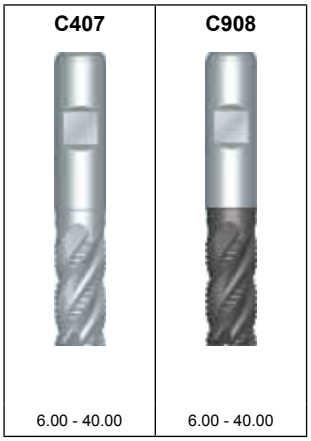
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C491	C492
6.00	6	24	68	3	-	-	C4916.0	C4926.0
8.00	10	38	88	3	-	-	C4918.0	C4928.0
10.00	10	45	95	4	54.5	9.5	C49110.0	C49210.0
12.00	12	53	110	4	64.5	11.5	C49112.0	C49212.0
14.00	12	53	110	4	64.5	11.5	C49114.0	C49214.0
16.00	16	63	123	4	74.5	15.5	C49116.0	C49216.0
18.00	16	63	123	4	74.5	15.5	C49118.0	C49218.0
20.00	20	75	141	4	90.5	19.5	C49120.0	C49220.0
22.00	20	75	141	4	90.5	19.5	C49122.0	C49222.0
25.00	25	90	166	6	109.5	24.5	C49125.0	C49225.0
30.00	25	90	166	6	109.5	24.5	C49130.0	C49230.0

C407
C908

- Roughing End Mill
- Schruppfräser
- Ruwfrezen
- Fraises d'ébauche
- Fresas Gran Desbaste
- Fresa de Desbaste

C407	▪	1.2	1.3	1.4	1.5	2.1	2.3	3.1	3.2	3.3	3.4	4.2	4.3	5.2	5.3	6.2
	•	1.1	1.6	2.2	4.1	5.1	6.4	7.4								
C908	▪	1.3	1.4	1.5	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.2	4.3	5.2	5.3	6.2
	•	1.6	4.1	5.1	6.4	7.4										



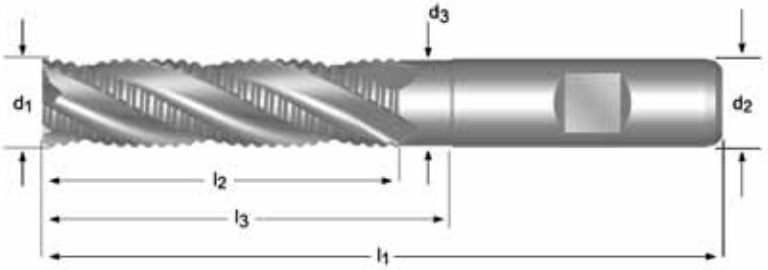


d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C407	C908
6.00	6	13	57	4	-	-	C4076.0	C9086.0
7.00	10	16	66	4	-	-	C4077.0	C9087.0
8.00	10	19	69	4	-	-	C4078.0	C9088.0
9.00	10	19	69	4	-	-	C4079.0	C9089.0
10.00	10	22	72	4	31.5	9.5	C40710.0	C90810.0
11.00	12	22	79	4	-	-	C40711.0	C90811.0
12.00	12	26	83	4	37.5	11.5	C40712.0	C90812.0
13.00	12	26	83	4	37.5	11.5	C40713.0	C90813.0
14.00	12	26	83	4	37.5	11.5	C40714.0	C90814.0
15.00	12	26	83	4	37.5	11.5	C40715.0	C90815.0
16.00	16	32	92	4	43.5	15.5	C40716.0	C90816.0
18.00	16	32	92	4	43.5	15.5	C40718.0	C90818.0
20.00	20	38	104	4	53.5	19.5	C40720.0	C90820.0
22.00	20	38	104	4	53.5	19.5	C40722.0	C90822.0
25.00	25	45	121	6	64.5	24.5	C40725.0	C90825.0
28.00	25	45	121	6	64.5	24.5	C40728.0	C90828.0
30.00	25	45	121	6	64.5	24.5	C40730.0	C90830.0
32.00	32	53	133	6	72.5	31.5	C40732.0	C90832.0
36.00	32	53	133	6	72.5	31		C90836.0
40.00	40	63	155	6	84.5	39	C40740.0	C90840.0

C944
C948

- Roughing End Mill
- Schruppfräser
- Ruwfrezen
- Fraises d'ébauche
- Fresas Gran Desbaste
- Fresa de Desbaste

C944	▪	1.3	1.4	1.5	2.1	2.3	3.1	3.2	3.3	3.4	4.2	4.3	5.2	5.3	6.2	7.4	
	•	1.6	2.2	4.1	5.1	6.4											
C948	▪	1.3	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.2	4.3	5.2	5.3	6.2	7.4
	•	4.1	5.1	6.4														



C944	C948
6.00 - 40.00	6.00 - 32.00

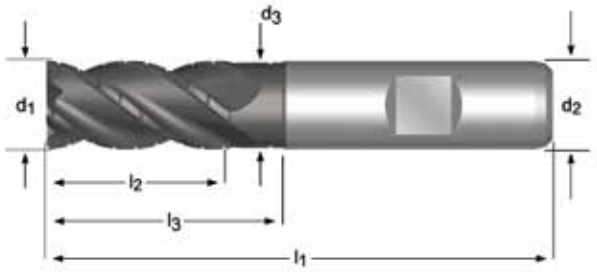
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C944	C948
6.00	6	24	68	4	-	-	C9446.0	C9486.0
8.00	10	38	88	4	-	-	C9448.0	C9488.0
10.00	10	45	95	4	54.5	9.5	C94410.0	C94810.0
12.00	12	53	110	4	64.5	11.5	C94412.0	C94812.0
14.00	12	53	110	4	64.5	11.5	C94414.0	C94814.0
16.00	16	63	123	4	74.5	15.5	C94416.0	C94816.0
18.00	16	63	123	4	74.5	15.5		C94818.0
20.00	20	75	141	4	90.5	19.5	C94420.0	C94820.0
25.00	25	90	166	6	109.5	24.5	C94425.0	C94825.0
30.00	25	90	166	6	109.5	24.5		C94830.0
32.00	32	106	186	6	125.5	31.5	C94432.0	C94832.0
40.00	40	125	217	6	-	-	C94440.0	

C921 HSS-E-PM FS Z 3-6 λ45° DIN 1835B Alcrona k10 DIN 844K

C921

- Roughing End Mill
- Schruppfräser
- Ruwfrezen
- Fraises d'ébauche
- Fresas Gran Desbaste
- Fresa de Desbaste

C921 ▪ 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.2 4.3 5.2 5.3 6.2 7.4
● 4.1 5.1 6.4



d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C921
6.00	6	13	57	3	-	-	C9216.0
8.00	10	19	69	4	-	-	C9218.0
10.00	10	22	72	4	31.5	9.5	C92110.0
12.00	12	26	83	4	37.5	11.5	C92112.0
14.00	12	26	83	4	37.5	11.5	C92114.0
16.00	16	32	92	4	43.5	15.5	C92116.0
18.00	16	32	92	4	43.5	15.5	C92118.0
20.00	20	38	104	4	53.5	19.5	C92120.0
22.00	20	38	104	5	53.5	19.5	C92122.0
25.00	25	45	121	5	64.5	24.5	C92125.0
28.00	25	45	121	6	64.5	24.5	C92128.0
30.00	25	45	121	6	64.5	24.5	C92130.0
32.00	32	53	133	6	72.5	31.5	C92132.0

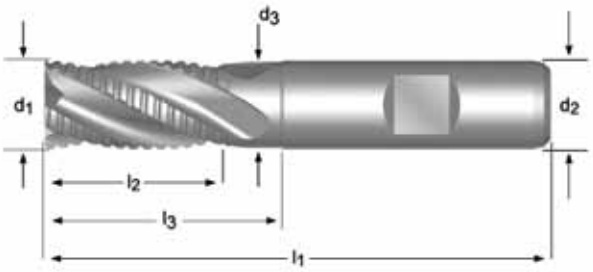
DORMER

C400	HSS-E		NF	Z 4-6		λ30°	DIN 1835B		k12		DIN 844K
C413	HSS-E		NF	Z 4-6		λ30°	DIN 1835B	TiCN	k12		DIN 844K

C400
C413

- Roughing End Mill
- Schruppfräser
- Ruwfrezen
- Fraises d'ébauche
- Fresas Gran Desbaste
- Fresa de Desbaste

C400	▪	1.2	1.3	6.2	6.3											
	•	1.1	1.4	2.1	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.1	7.2	7.3	8.1
C413	▪	1.2	1.3	1.4	3.1	3.2	3.3	3.4	4.2	5.2	6.2	6.3				
	•	1.1	1.5	1.6	2.1	2.3	4.1	4.3	5.1	5.3	6.1	6.4	7.2	7.3	7.4	8.1



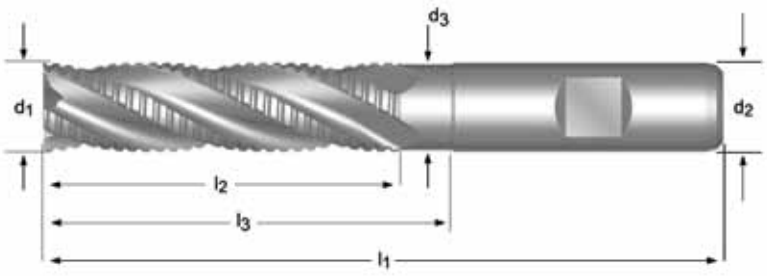
C400	C413
6.00 - 50.00	6.00 - 32.00

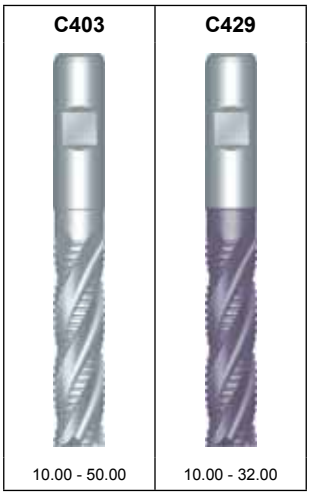
d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C400	C413
6.00	6	13	57	4	-	-	C4006.0	C4136.0
7.00	10	16	66	4	-	-	C4007.0	
8.00	10	19	69	4	-	-	C4008.0	C4138.0
9.00	10	19	69	4	-	-	C4009.0	
10.00	10	22	72	4	-	-	C40010.0	C41310.0
11.00	12	22	79	4	-	-	C40011.0	
12.00	12	26	83	4	-	-	C40012.0	C41312.0
13.00	12	26	83	4	37.5	11.5	C40013.0	
14.00	12	26	83	4	37.5	11.5	C40014.0	C41314.0
15.00	12	26	83	4	37.5	11.5	C40015.0	
16.00	16	32	92	4	43.5	15.5	C40016.0	C41316.0
18.00	16	32	92	4	43.5	15.5	C40018.0	C41318.0
20.00	20	38	104	4	53.5	19.5	C40020.0	C41320.0
22.00	20	38	104	4	53.5	19.5	C40022.0	C41322.0
24.00	25	45	121	4	64.5	23.5	C40024.0	
25.00	25	45	121	5	64.5	24.5	C40025.0	C41325.0
26.00	25	45	121	5	64.5	24.5	C40026.0	
28.00	25	45	121	5	64.5	24.5	C40028.0	C41328.0
30.00	25	45	121	5	64.5	24.5	C40030.0	C41330.0
32.00	32	53	133	6	72.5	31	C40032.0	C41332.0
36.00	32	53	133	6	72.5	31.5	C40036.0	
40.00	40	63	155	6	84.5	39	C40040.0	
50.00	50	75	177	6	96.5	48	C40050.0	

C403
C429

- Roughing End Mill
- Schruppfräser
- Ruwfrezen
- Fraises d'ébauche
- Fresas Gran Desbaste
- Fresa de Desbaste

C403	▪	1.2	1.3	6.2	6.3											
	▪	1.1	1.4	2.1	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.1	7.2	7.3	8.1
C429	▪	1.2	1.3	1.4	3.1	3.2	3.3	3.4	4.2	5.2	6.2	6.3				
	▪	1.1	1.5	1.6	2.1	2.3	4.1	4.3	5.1	5.3	6.1	6.4	7.2	7.3	7.4	8.1





d_1 Ø mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C403	C429
10.00	10	45	95	4	-	-	C40310.0	C42910.0
12.00	12	53	110	4	-	-	C40312.0	C42912.0
14.00	12	53	110	4	64.5	11.5	C40314.0	C42914.0
16.00	16	63	123	4	74.5	15.5	C40316.0	C42916.0
18.00	16	63	123	4	74.5	15.5	C40318.0	C42918.0
20.00	20	75	141	4	90.5	19.5	C40320.0	C42920.0
22.00	20	75	141	4	90.5	19.5	C40322.0	
25.00	25	90	166	5	109.5	24.5	C40325.0	C42925.0
28.00	25	90	166	5	109.5	24.5	C40328.0	C42928.0
30.00	25	90	166	5	109.5	24.5	C40330.0	C42930.0
32.00	32	106	186	6	125.5	31	C40332.0	C42932.0
36.00	32	106	186	6	125.5	31.5	C40336.0	
40.00	40	125	217	6	146.5	39	C40340.0	
45.00	40	125	217	6	146.5	39.5	C40345.0	
50.00	50	150	252	6	171.5	48	C40350.0	

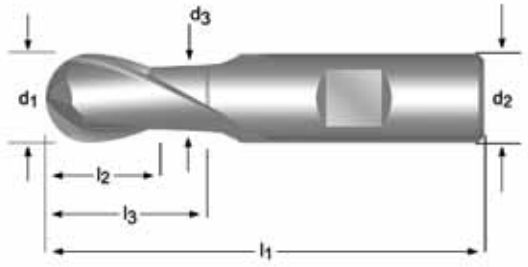
DORMER

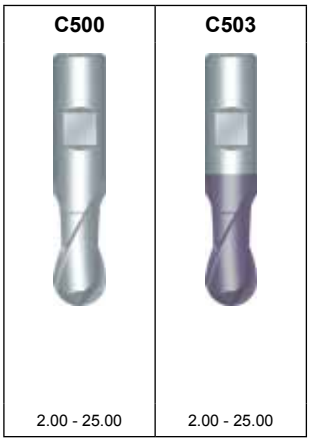
C500	HSS-E		N	Z 2		λ30°	DIN 1835B		e8		DIN 327D
C503	HSS-E		N	Z 2		λ30°	DIN 1835B	TiCN	e8		DIN 327D

C500
C503

- Ball-Nosed End Mill
- Radius Kopierfräser
- Radius-/kopieërfrezen
- Fraises de finition bout hémisphérique
- Fresas con punta esferica
- Fresa Topo Esférico

C500	■	1.1	1.2	4.1	5.1	6.1	6.2	6.3								
	■	1.3	1.4	2.1	3.1	3.2	3.3	3.4	4.2	5.2	7.1	7.2	7.3	8.1		
C503	■	1.1	1.2	1.3	1.4	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.1	6.2	6.3
	■	1.5	1.6	2.1	2.3	4.3	5.3	6.4	7.1	7.2	7.3	7.4	8.1			





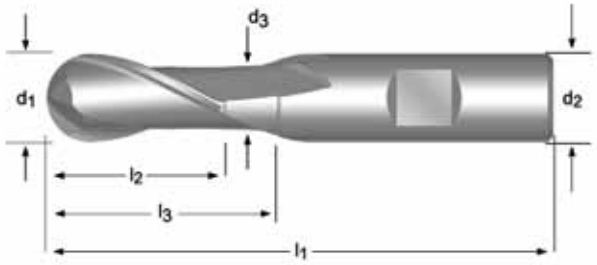
d_1 Ø mm	r mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C500	C503
2.00	1.0	6	4	48	2	-	-	C5002.0	C5032.0
3.00	1.5	6	5	49	2	-	-	C5003.0	C5033.0
4.00	2.0	6	7	51	2	-	-	C5004.0	C5034.0
5.00	2.5	6	8	52	2	-	-	C5005.0	C5035.0
6.00	3.0	6	8	52	2	-	-	C5006.0	C5036.0
7.00	3.5	10	10	60	2	-	-	C5007.0	C5037.0
8.00	4.0	10	11	61	2	-	-	C5008.0	C5038.0
9.00	4.5	10	11	61	2	-	-	C5009.0	C5039.0
10.00	5.0	10	13	63	2	-	-	C50010.0	C50310.0
11.00	5.5	12	13	70	2	-	-	C50011.0	C50311.0
12.00	6.0	12	16	73	2	-	-	C50012.0	C50312.0
13.00	6.5	12	16	73	2	27.5	11.5	C50013.0	C50313.0
14.00	7.0	12	16	73	2	27.5	11.5	C50014.0	C50314.0
15.00	7.5	12	16	73	2	27.5	11.5	C50015.0	C50315.0
16.00	8.0	16	19	79	2	30.5	15.5	C50016.0	C50316.0
18.00	9.0	16	19	79	2	30.5	15.5	C50018.0	C50318.0
20.00	10.0	20	22	88	2	37.5	19.5	C50020.0	C50320.0
25.00	12.5	25	26	102	2	45.5	24.5	C50025.0	C50325.0

C505 HSS-E N Z 2 λ30° DIN 1835B e8 DIN 844K

C505

- Ball-Nosed End Mill
- Radius Kopierfräser
- Radius-/kopieërfrezen
- Fraises de finition bout hémisphérique
- Fresas con punta esferica
- Fresa Topo Esférico

C505 ▪ 1.1 1.2 4.1 5.1 6.1 6.2 6.3
● 1.3 1.4 2.1 3.1 3.2 3.3 3.4 4.2 5.2 7.1 7.2 7.3 8.1



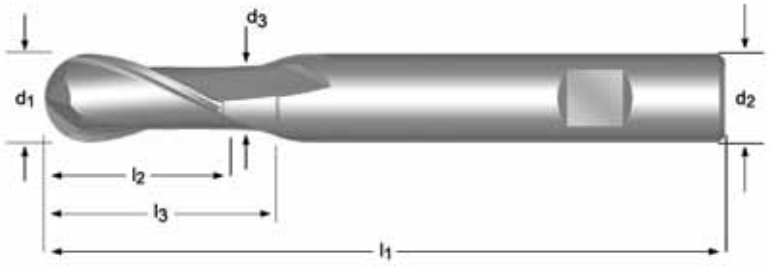
d_1 Ø mm	r mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C505
3.00	1.5	6	8	52	2	-	-	C5053.0
4.00	2.0	6	11	55	2	-	-	C5054.0
5.00	2.5	6	13	57	2	-	-	C5055.0
6.00	3.0	6	13	57	2	-	-	C5056.0
7.00	3.5	10	16	66	2	-	-	C5057.0
8.00	4.0	10	19	69	2	-	-	C5058.0
9.00	4.5	10	19	69	2	-	-	C5059.0
10.00	5.0	10	22	72	2	-	-	C50510.0
12.00	6.0	12	26	83	2	-	-	C50512.0
14.00	7.0	12	26	83	2	37.5	11.5	C50514.0
16.00	8.0	16	32	92	2	43.5	15.5	C50516.0
18.00	9.0	16	32	92	2	43.5	15.5	C50518.0
20.00	10.0	20	38	104	2	53.5	19.5	C50520.0
22.00	11.0	20	38	104	2	53.5	19.5	C50522.0
25.00	12.5	25	45	121	2	64.5	24.5	C50525.0
28.00	14.0	25	45	121	2	64.5	24.5	C50528.0
30.00	15.0	25	45	121	2	64.5	24.5	C50530.0

C511 HSS-E N Z 2 λ30° DIN 1835B e8 DORMER

C511

- Ball-Nosed End Mill
- Radius Kopierfräser
- Radius-/kopieërfrezen
- Fraises de finition bout hémisphérique
- Fresas con punta esferica
- Fresa Topo Esférico

C511														
■	1.1	1.2	4.1	5.1	6.1	6.2	6.3							
●	1.3	1.4	2.1	3.1	3.2	3.3	3.4	4.2	5.2	7.1	7.2	7.3	8.1	



C511

3.00 - 25.00

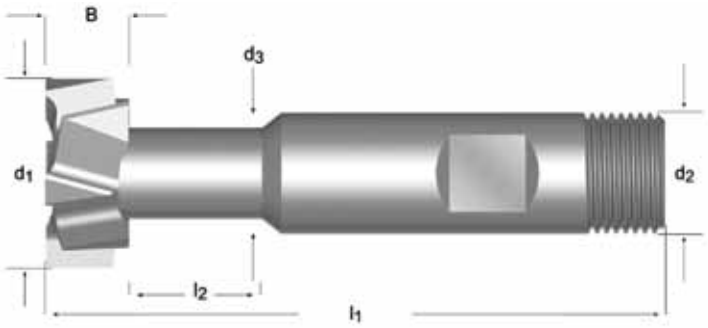
d_1 Ø mm	r mm	d_2 Ø mm	l_2 mm	l_1 mm	z	l_3 mm	d_3 Ø mm	C511
3.00	1.5	6	8	56	2	-	-	C5113.0
4.00	2.0	6	11	63	2	-	-	C5114.0
5.00	2.5	6	13	68	2	-	-	C5115.0
6.00	3.0	6	13	68	2	-	-	C5116.0
8.00	4.0	10	19	88	2	-	-	C5118.0
10.00	5.0	10	22	95	2	-	-	C51110.0
12.00	6.0	12	26	110	2	-	-	C51112.0
14.00	7.0	12	26	110	2	64.5	11.5	C51114.0
16.00	8.0	16	32	123	2	74.5	15.5	C51116.0
18.00	9.0	16	32	123	2	74.5	15.5	C51118.0
20.00	10.0	20	38	141	2	90.5	19.5	C51120.0
25.00	12.5	25	45	166	2	109.5	24.5	C51125.0

C800 HSS-E N Z 6-8 λ15° DIN1835 D B d11 DIN 851

C800

- T-slot Cutter
- T-Nutenfräser
- T-gleuffrezen
- Fraises pour rainures en T
- Fresas de ranurar en “T”
- Fresa p/ Abrir Rasgos T

C800 ▪ 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 10.1



C800

11.00 - 50.00

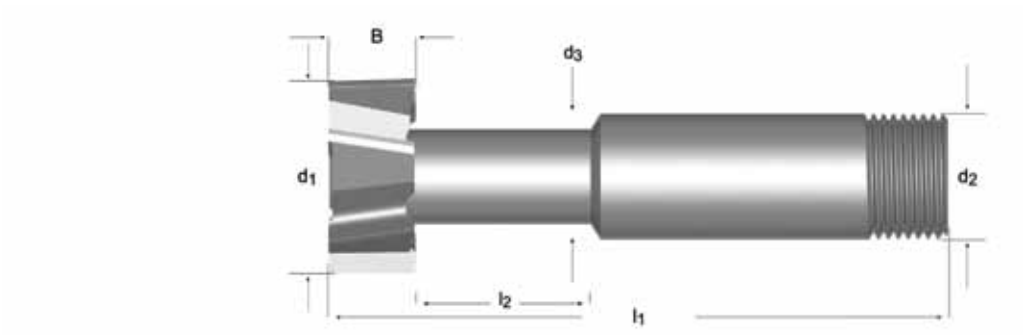
B mm	d_1 Ø mm	T DIN650	d_3 Ø mm	l_2 mm	l_1 mm	d_2 Ø mm	z	C800
4.0	11.00	5	4	6.5	53.5	10	6	C80011.0X5.0
6.0	12.50	6	5	9	57.0	10	6	C80012.5X6.0
8.0	16.00	8	7	12	62.0	10	6	C80016.0X8.0
8.0	18.00	10	8	15	70.0	12	6	C80018.0X10.0
9.0	21.00	12	10	18	74.0	12	8	C80021.0X12.0
11.0	25.00	14	12	20	82.0	16	8	C80025.0X14.0
14.0	32.00	18	15	26	90.0	16	8	C80032.0X18.0
18.0	40.00	22	19	27	108.0	25	8	C80040.0X22.0
22.0	50.00	28	25	34	124.0	32	8	C80050.0X28.0

C810 HSS N Z 6-8 λ12° DIN 1835D d11 DORMER

C810

- T-slot Cutter
- T-Nutenfräser
- T-gleuffrezen
- Fraises pour rainures en T
- Fresas de ranurar en “T”
- Fresa p/ Abrir Rasgos T

C810																		
▪	1.1	1.2	1.3	1.4	2.1	3.1	3.2	3.3	3.4	4.1	5.1	6.1	6.2	6.3	6.4	7.1	7.2	7.3
▪	1.5	1.6	2.2	2.3	4.2	4.3	5.2	5.3	7.4	8.1	10.1							



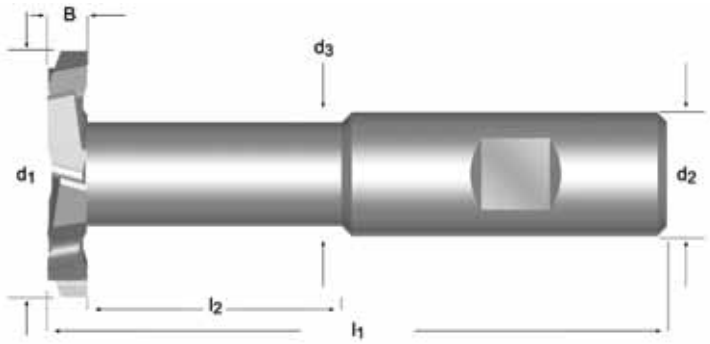
B Inch	B mm	d_1 Ø Inch	d_1 Ø mm	T DIN650	d_3 Ø mm	l_2 mm	l_1 mm	d_2 Ø Inch	d_2 Ø mm	z	C810
	6.00		12.50	6.0	5.00	11	57.0		10.0	6	C8106.0
1/4	6.35	37/64	14.68	1/4	6.35	14	60.5	1/2	12.7	6	C8101/4
	8.00		16.00	8.0	7.00	13	61.0		10.0	6	C8108.0
5/16	7.94	45/64	17.86	5/16	7.15	17	65.0	1/2	12.7	6	C8105/16
	8.00		18.00	10.0	8.00	17	65.0		12.0	6	C81010.0
	9.00		21.00	12.0	10.00	20	69.0		12.0	6	C81012.0
23/64	9.13	53/64	21.03	3/8	8.75	19	68.5	1/2	12.7	6	C8103/8
27/64	10.72	61/64	24.21	7/16	9.50	22	73.0	1/2	12.7	6	C8107/16
	11.00		25.00	14.0	12.00	23	79.0		16.0	6	C81014.0
15/32	11.91	1.5/64	27.38	1/2	11.90	24	76.0	1/2	12.7	6	C8101/2
	12.00		28.00	16.0	13.00	23	76.0		16.0	6	C81016.0
	14.00		32.00	18.0	15.00	27	98.0		25.0	8	C81018.0
37/64	14.68	1.21/64	33.73	5/8	14.30	30	101.5	1“	25.4	8	C8105/8
	16.00		36.00	20.0	17.00	30	100.0		25.0	8	C81020.0
11/16	17.46	1.33/64	38.50	3/4	17.45	35	109.5	1“	25.4	8	C8103/4
	18.00		40.00	22.0	19.00	33	108.0		25.0	8	C81022.0
51/64	20.24	1.45/64	43.26	7/8	20.65	40	117.5	1“	25.4	8	C8107/8
29/32	23.02	1.61/64	49.61	1“	23.80	47	127.0	1“	25.4	8	C8101

C825 HSS-E N Z 8-12 λ15° DIN 1835B js16 DORMER

C825

- T-slot Cutter
- T-Nutenfräser
- T-gleuffrezen
- Fraises pour rainures en T
- Fresas de ranurar en “T”
- Fresa p/ Abrir Rasgos T

C825 ▪ 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 10.1



B mm	d_1 Ø mm	d_3 Ø mm	l_2 mm	l_1 mm	d_2 Ø mm	z	C825
3	40	19.2	46	100	20	8	C8253.0X40.0
4	40	19.2	45	100	20	8	C8254.0X40.0
5	40	19.2	44	100	20	8	C8255.0X40.0
6	40	19.2	43	100	20	8	C8256.0X40.0
8	40	19.2	41	100	20	8	C8258.0X40.0
10	40	19.2	39	100	20	8	C82510.0X40.0
6	63	24.2	67	130	25	12	C8256.0X63.0
8	63	24.2	65	130	25	12	C8258.0X63.0
10	63	24.2	63	130	25	12	C82510.0X63.0
12	63	24.2	61	130	25	12	C82512.0X63.0
14	63	24.2	59	130	25	12	C82514.0X63.0
16	63	24.2	57	130	25	12	C82516.0X63.0
18	63	24.2	55	130	25	12	C82518.0X63.0

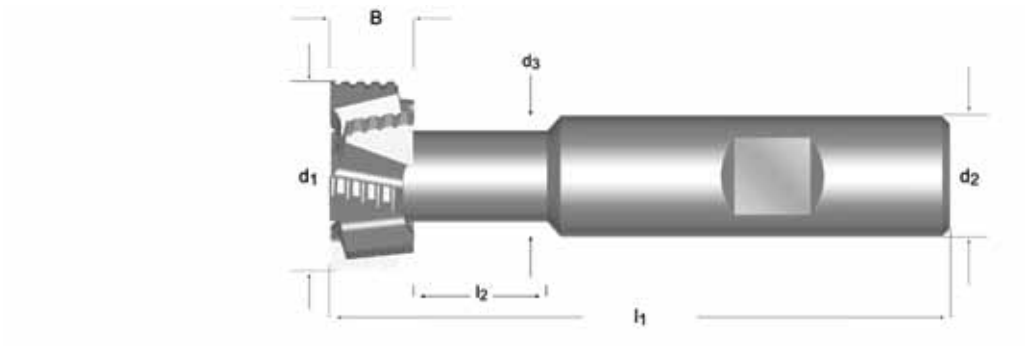
DORMER

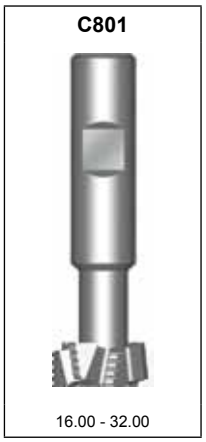
C801 HSS-E NF Z 6-8 λ12° DIN 1835B d11 DIN 851

C801

- T-slot Cutter
- T-Nutenfräser
- T-gleuffrezen
- Fraises pour rainures en T
- Fresas de ranurar en “T”
- Fresa p/ Abrir Rasgos T

C801 ▪ 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 10.1





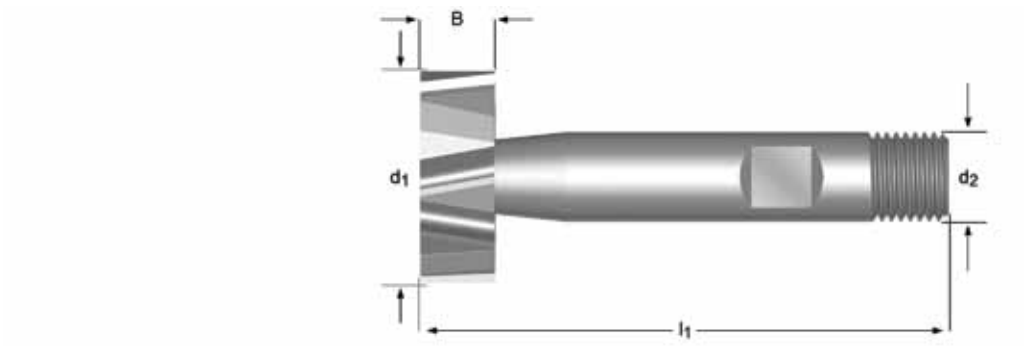
B mm	d_1 Ø mm	T DIN650	d_3 Ø mm	l_2 mm	l_1 mm	d_2 Ø mm	z	C801
8.0	16.0	8	7	10	62	10	6	C80116.0X8.0
8.0	18.0	10	8	13	70	12	6	C80118.0X10.0
9.0	21.0	12	10	16	74	12	6	C80121.0X12.0
11.0	25.0	14	12	17	82	16	8	C80125.0X14.0
14.0	32.0	18	15	22	90	16	8	C80132.0X18.0

C822 HSS-E N Z 6-12 λ10° DIN1835 D B h11 DIN 850

C822

- Woodruff Cutter
- Schlitzfräser für Scheibenfeder
- Schijfspiefrezen
- Fraises Woodruff
- Fresas para ranurados tipo Woodruff
- Fresa p/ Chavetas Meia Lua

C822 ▪ 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 10.1



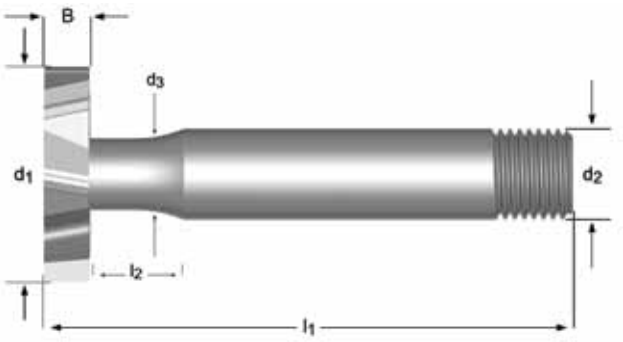
B mm	d_1 Ø mm	l_1 mm	d_2 Ø mm	z	C822
1.0	4.50	50.0	6	6	C8224.5X1.0
1.5	7.50	50.0	6	6	C8227.5X1.5
2.0	7.50	50.0	6	6	C8227.5X2.0
2.0	10.50	50.0	6	8	C82210.5X2.0
2.5	10.50	50.0	6	8	C82210.5X2.5
3.0	10.50	50.0	6	8	C82210.5X3.0
3.0	13.50	56.0	10	8	C82213.5X3.0
4.0	13.50	56.0	10	8	C82213.5X4.0
3.0	16.50	56.0	10	8	C82216.5X3.0
4.0	16.50	56.0	10	8	C82216.5X4.0
5.0	16.50	56.0	10	8	C82216.5X5.0
3.0	19.50	63.0	10	6	C82219.5X3.0
4.0	19.50	63.0	10	10	C82219.5X4.0
5.0	19.50	63.0	10	10	C82219.5X5.0
5.0	22.50	63.0	10	10	C82222.5X5.0
6.0	22.50	63.0	10	10	C82222.5X6.0
8.0	22.50	63.0	10	10	C82222.5X8.0
6.0	25.50	63.0	10	12	C82225.5X6.0
6.0	28.50	63.0	10	12	C82228.5X6.0
8.0	28.50	63.0	10	12	C82228.5X8.0
10.0	28.50	71.0	12	12	C82228.5X10.0
8.0	32.50	71.0	12	12	C82232.5X8.0
10.0	32.50	71.0	12	12	C82232.5X10.0
10.0	45.50	71.0	12	12	C82245.5X10.0

C820 HSS N Z 6-12 λ12° DIN 1835D DORMER

C820

- Woodruff Cutter
- Schlitzfräser für Scheibenfeder
- Schijfspiefrezen
- Fraises Woodruff
- Fresas para ranurados tipo Woodruff
- Fresa p/ Chavetas Meia Lua

C820	1.1	1.2	1.3	1.4	2.1	2.2	3.1	3.2	3.3	3.4	4.1	5.1	6.1	6.2	6.3	7.1	7.2	7.3
▪	1.5	1.6	2.3	4.2	4.3	5.2	5.3	6.4	7.4	8.1	10.1							



C820

10.50 - 45.50

Nr.	B Inch	B mm	d_1 Ø Inch	d_1 Ø mm	d_3 Ø mm	l_1 mm	d_2 Ø mm	z	C820
		2.00		10.50	3.90	57.0	12.0	6	C82010.5X2.0
		2.50		10.50	3.90	57.0	12.0	6	C82010.5X2.5
		3.00		10.50	4.20	57.0	12.0	6	C82010.5X3.0
204	1/16	1.59	1/2	12.70	3.30	57.0	12.7	6	C820204
304	3/32	2.38	1/2	12.70	4.05	57.0	12.7	6	C820304
404	1/8	3.18	1/2	12.70	4.85	57.0	12.7	6	C820404
		2.00		13.50	4.00	57.0	12.0	6	C82013.5X2.0
		2.50		13.50	4.00	57.0	12.0	6	C82013.5X2.5
		3.00		13.50	5.00	57.0	12.0	6	C82013.5X3.0
		4.00		13.50	5.00	57.0	12.0	6	C82013.5X4.0
305	3/32	2.38	5/8	15.88	4.85	57.0	12.7	6	C820305
405	1/8	3.18	5/8	15.88	5.65	57.0	12.7	6	C820405
505	5/32	3.97	5/8	15.88	6.35	57.0	12.7	6	C820505
		2.50		16.50	4.00	57.0	12.0	6	C82016.5X2.5
		3.00		16.50	5.00	57.0	12.0	6	C82016.5X3.0
		4.00		16.50	5.00	57.0	12.0	6	C82016.5X4.0
		5.00		16.50	5.60	57.0	12.0	6	C82016.5X5.0
406	1/8	3.18	3/4	19.05	5.50	57.0	12.7	6	C820406
506	5/32	3.97	3/4	19.05	6.35	57.0	12.7	6	C820506
606	3/16	4.76	3/4	19.05	7.15	57.0	12.7	6	C820606
		3.00		19.50	5.60	57.0	12.0	6	C82019.5X3.0
		4.00		19.50	5.60	57.0	12.0	6	C82019.5X4.0
		5.00		19.50	6.00	57.0	12.0	6	C82019.5X5.0
507	5/32	3.97	7/8	22.23	6.35	63.5	12.7	8	C820507
607	3/16	4.76	7/8	22.23	7.15	63.5	12.7	8	C820607
707	7/32	5.56	7/8	22.23	7.95	63.5	12.7	8	C820707
807	1/4	6.35	7/8	22.23	8.75	63.5	12.0	8	C820807
		4.00		22.50	5.60	63.5	12.0	8	C82022.5X4.0
		5.00		22.50	6.00	63.5	12.0	8	C82022.5X5.0
		6.00		22.50	6.50	63.5	12.0	8	C82022.5X6.0
608	3/16	4.76	1“	25.40	7.15	70.0	12.7	8	C820608
708	7/32	5.56	1“	25.40	7.95	70.0	12.7	8	C820708
808	1/4	6.35	1“	25.40	8.75	70.0	12.7	8	C820808
1008	5/16	7.94	1“	25.40	10.30	70.0	12.7	8	C8201008
		5.00		25.50	7.50	70.0	12.0	8	C82025.5X5.0
		6.00		25.50	7.50	70.0	12.0	8	C82025.5X6.0

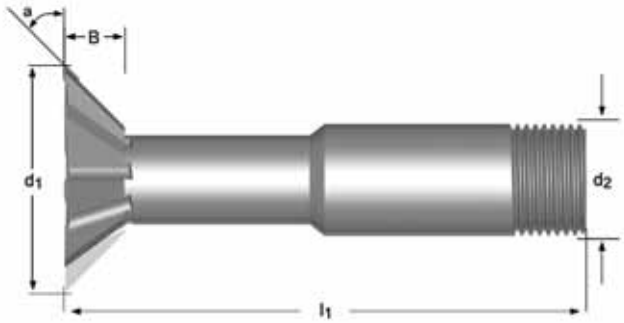
Nr.	B Inch	B mm	d_1 Ø Inch	d_1 Ø mm	d_3 Ø mm	l_1 mm	d_2 Ø mm	z	C820
		7.00		25.50	8.00	70.0	12.0	8	C82025.5X7.0
		8.00		25.50	8.00	70.0	12.0	8	C82025.5X8.0
		5.00		28.50	8.00	70.0	12.0	8	C82028.5X5.0
		6.00		28.50	8.50	70.0	12.0	8	C82028.5X6.0
		7.00		28.50	8.50	70.0	12.0	8	C82028.5X7.0
		8.00		28.50	9.00	70.0	12.0	8	C82028.5X8.0
609	3/16	4.76	1.1/8	28.58	7.95	70.0	12.7	8	C820609
709	7/32	5.56	1.1/8	28.58	8.75	70.0	12.7	8	C820709
809	1/4	6.35	1.1/8	28.58	9.50	70.0	12.7	8	C820809
1009	5/16	7.94	1.1/8	28.58	11.10	70.0	12.7	8	C8201009
610	3/16	4.76	1.1/4	31.75	7.95	70.0	12.7	10	C820610
710	7/32	5.56	1.1/4	31.75	8.75	70.0	12.7	10	C820710
810	1/4	6.35	1.1/4	31.75	9.50	70.0	12.7	10	C820810
1010	5/16	7.94	1.1/4	31.75	11.10	70.0	12.7	10	C8201010
1210	3/8	9.53	1.1/4	31.75	11.95	70.0	12.7	10	C8201210
		5.00		32.50	8.00	70.0	12.0	10	C82032.5X5.0
		6.00		32.50	8.50	70.0	12.0	10	C82032.5X6.0
		7.00		32.50	8.50	70.0	12.0	10	C82032.5X7.0
		8.00		32.50	9.00	70.0	12.0	10	C82032.5X8.0
811	1/4	6.35	1.3/8	34.93	11.10	76.0	12.7	10	C820811
1011	5/16	7.94	1.3/8	34.93	11.95	76.0	12.7	10	C8201011
1211	3/8	9.53	1.3/8	34.93	11.95	76.0	12.7	10	C8201211
		6.00		35.50	9.50	76.0	12.0	10	C82035.5X6.0
		7.00		35.50	9.50	76.0	12.0	10	C82035.5X7.0
		8.00		35.50	11.50	76.0	12.0	10	C82035.5X8.0
		9.00		35.50	11.50	76.0	12.0	10	C82035.5X9.0
812	1/4	6.35	1.1/2	38.10	11.10	76.0	12.7	10	C820812
1012	5/16	7.94	1.1/2	38.10	11.95	76.0	12.7	10	C8201012
1212	3/8	9.53	1.1/2	38.10	11.95	76.0	12.7	10	C8201212
		7.00		38.50	10.50	76.0	12.0	10	C82038.5X7.0
		8.00		38.50	11.50	76.0	12.0	10	C82038.5X8.0
		9.00		38.50	11.50	76.0	12.0	10	C82038.5X9.0
		10.00		38.50	11.50	76.0	12.0	10	C82038.5X10.0
		10.00		45.50	11.50	76.0	12.0	12	C82045.5X10.0

C837 HSS N Z 6-8 λ0° DIN 1835D DORMER

C837

- Dovetail Cutter
- Winkel-Schaftfräser
- Zwaluwstaartfrezen
- Fraises coniques
- Fresas de cola de milano
- Fresa Rabo de Andorinha

C837																		
▪	1.1	1.2	1.3	1.4	2.1	3.1	3.2	3.3	3.4	4.1	5.1	6.1	6.2	6.3	7.1	7.2	7.3
▪	1.5	1.6	2.2	2.3	4.2	4.3	5.2	5.3	6.4	7.4	8.1						



▷	B mm	d_1 Ø Inch	d_1 Ø mm	l_1 mm	d_2 Ø Inch	d_2 Ø mm	z	C837
45°	3.0		13.00	63.5		12.00	6	C83713.0
45°	4.0	5/8	15.88	66.5	1/2	12.70	6	C8375/8
45°	4.0		16.00	66.5		12.00	6	C83716.0
45°	5.5		19.00	66.5		12.00	6	C83719.0
45°	5.5	3/4	19.05	66.5	1/2	12.70	6	C8373/4
45°	6.5		22.00	68.5		12.00	6	C83722.0
45°	6.5	7/8	22.23	68.5	1/2	12.70	6	C8377/8
45°	7.5		25.00	70.0		12.00	6	C83725.0
45°	8.0	1“	25.40	70.0	1/2	12.70	6	C8371
45°	8.5		28.00	71.5		16.00	6	C83728.0
45°	8.5	1.1/4	31.75	74.5	5/8	15.88	8	C8371.1/4
45°	8.5		32.00	74.5		16.00	8	C83732.0
45°	9.5	1.3/8	34.93	78.0	1“	25.40	8	C8371.3/8
45°	9.5		35.00	78.0		25.00	8	C83735.0
45°	10.5		38.00	78.5		25.00	8	C83738.0
45°	10.5	1.1/2	38.10	78.5	1“	25.40	8	C8371.1/2

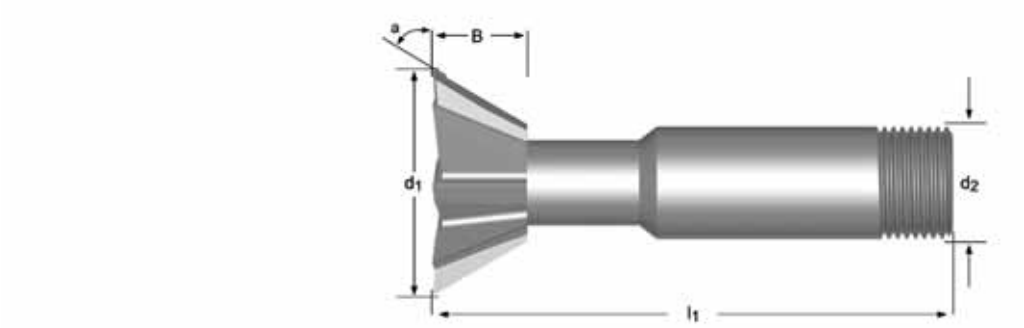
C835 HSS N Z 6-8 λ0° DIN 1835D

C835

- Dovetail Cutter
- Winkel-Schaftfräser
- Zwaluwstaartfrezen
- Fraises coniques
- Fresas de cola de milano
- Fresa Rabo de Andorinha

C835 ▪ 1.1 1.2 1.3 1.4 2.1 3.1 3.2 3.3 3.4 4.1 5.1 6.1 6.2 6.3 7.1 7.2 7.3

▪ 1.5 1.6 2.2 2.3 4.2 4.3 5.2 5.3 6.4 7.4 8.1



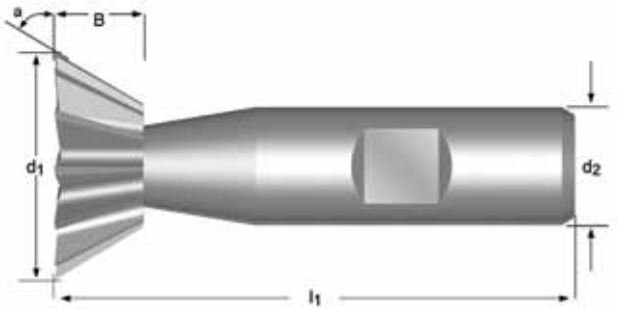
▷	B mm	d_1 Ø Inch	d_1 Ø mm	l_1 mm	d_2 Ø Inch	d_2 Ø mm	z	C835
60°	4.0	1/2	12.70	63.50	1/2	12.70	6	C8351/2
60°	4.0		13.00	63.50		12.00	6	C83513.0
60°	5.5	5/8	15.88	66.50	1/2	12.70	6	C8355/8
60°	5.5		16.00	66.50		12.00	6	C83516.0
60°	7.0		19.00	67.50		12.00	6	C83519.0
60°	7.0	3/4	19.05	67.50	1/2	12.70	6	C8353/4
60°	9.5		22.00	67.50		12.00	6	C83522.0
60°	9.5	7/8	22.23	67.50	1/2	12.70	6	C8357/8
60°	12.0		25.00	70.00		12.00	6	C83525.0
60°	12.0	1“	25.40	70.00	1/2	12.70	6	C8351
60°	12.5		28.00	73.00		16.00	6	C83528.0
60°	12.5	1.1/8	28.58	73.00	5/8	15.88	6	C8351.1/8
60°	13.5	1.1/4	31.75	74.50	5/8	15.88	8	C8351.1/4
60°	13.5		32.00	74.50		16.00	8	C83532.0
60°	14.5	1.3/8	34.93	82.50	1“	25.40	8	C8351.3/8
60°	14.5		35.00	82.50		25.00	8	C83535.0
60°	16.0		38.00	84.00		25.00	8	C83538.0
60°	16.0	1.1/2	38.10	84.00	1“	25.40	8	C8351.1/2

C830 HSS-E N Z 10-12 λ0° DIN 1835B js16 DIN 1833C

C830

- Dovetail Cutter
- Winkel-Schaftfräser
- Zwaluwstaartfrezen
- Fraises coniques
- Fresas de cola de milano
- Fresa Rabo de Andorinha

C830 ▪ 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 10.1



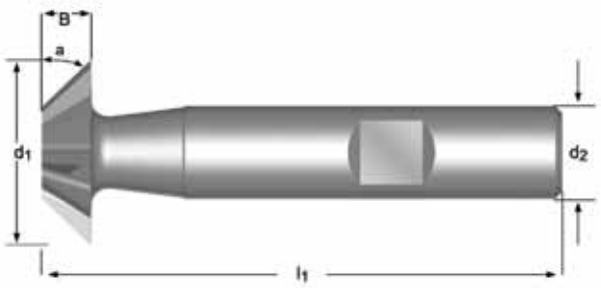
▷	B mm	d_1 Ø mm	l_1 mm	d_2 Ø mm	z	C830
45°	3.5	12.0	54	10	10	C83012.0X45
60°	5.0	12.0	54	10	10	C83012.0X60
45°	4.0	16.0	60	12	10	C83016.0X45
60°	6.3	16.0	60	12	10	C83016.0X60
45°	5.0	20.0	63	12	10	C83020.0X45
60°	8.0	20.0	63	12	10	C83020.0X60
45°	6.3	25.0	67	12	10	C83025.0X45
60°	10.0	25.0	67	12	10	C83025.0X60
45°	8.0	32.0	71	16	12	C83032.0X45
60°	12.5	32.0	71	16	12	C83032.0X60

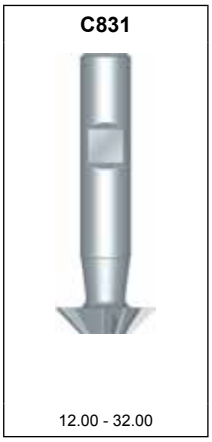
C831 HSS-E N Z 10-12 λ0° DIN 1835B js16 DIN 1833D

C831

- Inverse Dovetail Cutters
- Winkelstirnfräser
- Duivenstaarfrezen
- Fraises coniques cône direct
- Fresa para cola de milano Inversa
- Fresa Cauda de Andorinha Invertida

C831 ▪ 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 10.1





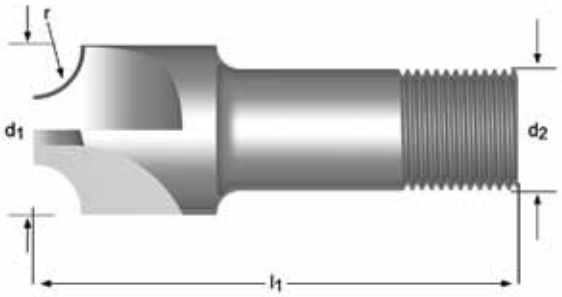
▷	B mm	d_1 Ø mm	l_1 mm	d_2 Ø mm	z	C831
45°	3.5	12.0	54	10	10	C83112.0X45
45°	4.0	16.0	60	12	10	C83116.0X45
45°	5.0	20.0	63	12	10	C83120.0X45
45°	6.3	25.0	67	12	10	C83125.0X45
45°	8.0	32.0	71	16	12	C83132.0X45
60°	5.0	12.0	54	10	10	C83112.0X60
60°	6.3	16.0	60	12	10	C83116.0X60
60°	8.0	20.0	63	12	10	C83120.0X60
60°	10.0	25.0	67	12	10	C83125.0X60
60°	12.5	32.0	71	16	12	C83132.0X60

C710 HSS N Z 4 λ0° DIN 1835D DORMER

C710

- Corner Rounding Cutter
- Viertelrund-Profilfräser
- Kwartholfrezen
- Fraises concaves
- Fresas frontales de perfil cóncavo
- Fresa p/ Arredondar Arestas

C710																				
▪	1.1	1.2	1.3	1.4	2.1	2.2	3.1	3.2	3.3	3.4	4.1	4.2	5.1	5.2	6.1	6.2	6.3	7.1	7.2	7.3
▪	1.5	1.6	2.3	4.3	5.3	6.4	7.4	10.1												



C710

1/16 - 1/2

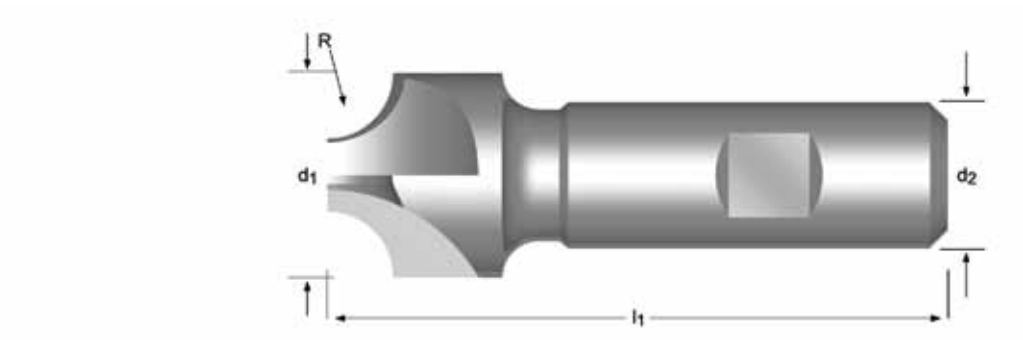
r Inch	d_2 Ø Inch	d_2 Ø mm	d_1 Ø Inch	l_1 mm	z	C710
1/16	3/8	9.530	3/8	60.5	4	C7101/16
3/32	3/8	9.530	7/16	60.5	4	C7103/32
1/8	1/2	12.70	1/2	60.5	4	C7101/8
5/32	1/2	12.70	9/16	60.5	4	C7105/32
3/16	5/8	15.88	5/8	60.5	4	C7103/16
7/32	5/8	15.88	3/4	63.5	4	C7107/32
1/4	5/8	15.88	7/8	63.5	4	C7101/4
5/16	1“	25.40	1“	73.0	4	C7105/16
3/8	1“	25.40	1.1/16	76.0	4	C7103/8
7/16	1“	25.40	1.3/16	79.5	4	C7107/16
1/2	1“	25.40	1.3/8	82.5	4	C7101/2

C700 HSS-E N Z 4-6 λ0° DIN 1835B

C700

- Corner Rounding Cutter
- Viertelrund-Profilfräser
- Kwartholfrezen
- Fraises concaves
- Fresas frontales de perfil cóncavo
- Fresa p/ Arredondar Arestas

C700 ▪ 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 10.1



C700

1.00 - 20.00

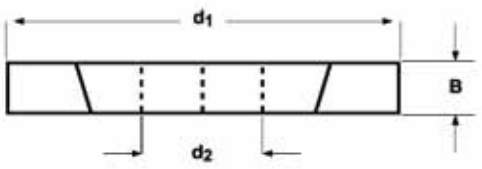
r mm	d_2 Ø mm	d_1 Ø mm	l_1 mm	z	C700
1.00	10	10	60	4	C7001.0
1.50	10	10	60	4	C7001.5
2.00	10	10	60	4	C7002.0
2.50	10	10	60	4	C7002.5
3.00	12	12	60	4	C7003.0
3.50	12	12	60	4	C7003.5
4.00	12	15	60	4	C7004.0
5.00	16	18	70	4	C7005.0
6.00	16	21	70	4	C7006.0
7.00	16	24	70	4	C7007.0
8.00	16	24	70	4	C7008.0
9.00	20	28	85	4	C7009.0
10.00	20	28	85	4	C70010.0
12.00	20	35	100	4	C70012.0
12.50	20	35	100	4	C70012.5
14.00	25	42	100	4	C70014.0
15.00	25	48	105	5	C70015.0
16.00	25	48	105	5	C70016.0
18.00	32	52	115	5	C70018.0
20.00	32	60	115	6	C70020.0

D200	HSS-E			Z 16-30		λ15°			js16		DIN 885A
D763	HSS-E			Z 28-44		λ15°			js16		DIN 885A

D200
D763

- Side and Face Milling Cutter
- Scheibenfräser, kreuzverzahnt
- Schijffrezen
- Fraise 3 tailles
- Fresa para ranurar
- Fresa de Facejamento Lateral

D200; D763 ▪ 1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1



D200	D763
50.00 - 200.00	63.00 - 125.00

d_1 Ø mm	B	d_2 Ø mm	z	D200	D763
50.00	4.0	16	16	D20050.0X4.0	
50.00	5.0	16	16	D20050.0X5.0	
50.00	6.0	16	16	D20050.0X6.0	
50.00	8.0	16	16	D20050.0X8.0	
50.00	10.0	16	16	D20050.0X10.0	
63.00	1.6	22	32		D76363.0X1.6
63.00	2	22	32		D76363.0X2.0
63.00	2.5	22	32		D76363.0X2.5
63.00	3	22	28		D76363.0X3.0
63.00	3.5	22	28		D76363.0X3.5
63.00	4	22	18	D20063.0X4.0	
63.00	5	22	18	D20063.0X5.0	
63.00	6	22	18	D20063.0X6.0	
63.00	8	22	18	D20063.0X8.0	
63.00	10	22	18	D20063.0X10.0	
63.00	12	22	18	D20063.0X12.0	
63.00	14	22	18	D20063.0X14.0	
63.00	16	22	16	D20063.0X16.0	
80.00	2	27	36		D76380.0X2.0
80.00	2.5	27	36		D76380.0X2.5
80.00	3	27	32		D76380.0X3.0
80.00	3.5	27	32		D76380.0X3.5
80.00	4	27	20	D20080.0X4.0	
80.00	5	27	20	D20080.0X5.0	
80.00	6	27	20	D20080.0X6.0	
80.00	8	27	20	D20080.0X8.0	
80.00	10	27	18	D20080.0X10.0	
80.00	12	27	18	D20080.0X12.0	
80.00	14	27	18	D20080.0X14.0	
80.00	16	27	18	D20080.0X16.0	
80.00	20	27	18	D20080.0X20.0	

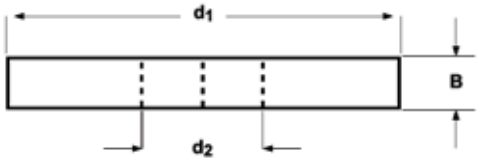
d_1 Ø mm	B	d_2 Ø mm	z	D200	D763
100.00	2	32	44		D763100.0X2.0
100.00	2.5	32	44		D763100.0X2.5
100.00	3	32	40		D763100.0X3.0
100.00	3.5	32	40		D763100.0X3.5
100.00	4	32	24	D200100.0X4.0	
100.00	5	32	24	D200100.0X5.0	
100.00	6	32	24	D200100.0X6.0	
100.00	8	32	22	D200100.0X8.0	
100.00	10	32	22	D200100.0X10.0	
100.00	12	32	20	D200100.0X12.0	
100.00	14	32	20	D200100.0X14.0	
100.00	16	32	20	D200100.0X16.0	
100.00	18	32	20	D200100.0X18.0	
100.00	20	32	20	D200100.0X20.0	
100.00	25	32	20	D200100.0X25.0	
125.00	2.0	32	44		D763125.0X2.0
125.00	2.5	32	44		D763125.0X2.5
125.00	3.0	32	44		D763125.0X3.0
125.00	3.5	32	40		D763125.0X3.5
125.00	4.0	32	40		D763125.0X4.0
125.00	6	32	26	D200125.0X6.0	
125.00	8	32	26	D200125.0X8.0	
125.00	10	32	24	D200125.0X10.0	
125.00	12	32	22	D200125.0X12.0	
125.00	14	32	22	D200125.0X14.0	
125.00	16	32	22	D200125.0X16.0	
125.00	20	32	22	D200125.0X20.0	
125.00	25	32	22	D200125.0X25.0	
160.00	8	40	28	D200160.0X8.0	
160.00	10	40	26	D200160.0X10.0	
160.00	12	40	26	D200160.0X12.0	
160.00	14	40	24	D200160.0X14.0	
160.00	16	40	24	D200160.0X16.0	
160.00	18	40	24	D200160.0X18.0	
160.00	20	40	24	D200160.0X20.0	
200.00	12	40	30	D200200.0X12.0	
200.00	16	40	30	D200200.0X16.0	
200.00	20	40	30	D200200.0X20.0	

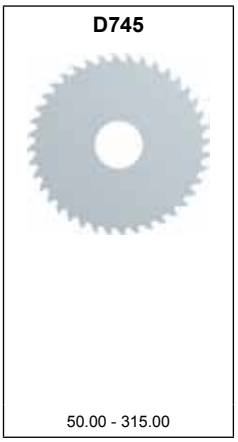
D745 HSS Z 28-100 DIN 1838

D745

- Metal slitting saw Coarse
- Metallkreissägeblätter
- Cirkelzagen met grove vertanding
- Fraises scies
- Sierras de ranurar o tronzar Grueso
- Serras Circulares p/ Abertura de Rasgos

D745	1.1	1.2	1.3	1.4	3.1	3.2	3.3	6.1	6.2	6.3	7.1	7.2	7.3	8.1
●	2.1	2.2												





d1 Ø mm	B	d2 Ø mm	z	D745
50	0.5	13	48	D74550.0X.5
50	0.6	13	48	D74550.0X.6
50	0.8	13	40	D74550.0X.8
50	1.0	13	40	D74550.0X1.0
50	1.2	13	40	D74550.0X1.2
50	1.5	13	32	D74550.0X1.5
50	1.6	13	32	D74550.0X1.6
50	2.0	13	32	D74550.0X2.0
50	2.5	13	32	D74550.0X2.5
50	3.0	13	24	D74550.0X3.0
63	0.5	16	64	D74563.0X.5
63	0.6	16	48	D74563.0X.6
63	0.8	16	48	D74563.0X.8
63	1.0	16	48	D74563.0X1.0
63	1.2	16	40	D74563.0X1.2
63	1.5	16	40	D74563.0X1.5
63	1.6	16	40	D74563.0X1.6
63	2.0	16	40	D74563.0X2.0
63	2.5	16	32	D74563.0X2.5
63	3.0	16	32	D74563.0X3.0
80	0.5	22	64	D74580.0X.5
80	0.6	22	64	D74580.0X.6
80	0.8	22	64	D74580.0X.8
80	1.0	22	48	D74580.0X1.0
80	1.2	22	48	D74580.0X1.2
80	1.5	22	48	D74580.0X1.5
80	1.6	22	48	D74580.0X1.6
80	2.0	22	40	D74580.0X2.0
80	2.5	22	40	D74580.0X2.5
80	3.0	22	40	D74580.0X3.0
80	4.0	22	32	D74580.0X4.0
80	5.0	22	32	D74580.0X5.0
80	6.0	22	32	D74580.0X6.0
100	0.5	22	80	D745100.0X.5
100	0.6	22	80	D745100.0X.6
100	0.8	22	64	D745100.0X.8

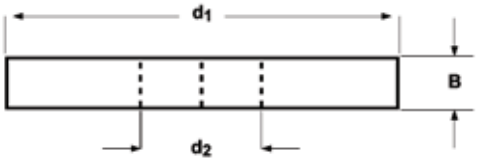
d_1 Ø mm	B	d_2 Ø mm	z	D745
100	1.0	22	64	D745100.0X1.0
100	1.2	22	64	D745100.0X1.2
100	1.5	22	48	D745100.0X1.5
100	1.6	22	48	D745100.0X1.6
100	2.0	22	48	D745100.0X2.0
100	2.5	22	48	D745100.0X2.5
100	3.0	22	40	D745100.0X3.0
100	4.0	22	40	D745100.0X4.0
100	5.0	22	40	D745100.0X5.0
100	6.0	22	32	D745100.0X6.0
125	1.0	22	80	D745125.0X1.0
125	1.2	22	64	D745125.0X1.2
125	1.5	22	64	D745125.0X1.5
125	1.6	22	64	D745125.0X1.6
125	2.0	22	64	D745125.0X2.0
125	2.5	22	48	D745125.0X2.5
125	3.0	22	48	D745125.0X3.0
125	4.0	22	48	D745125.0X4.0
125	5.0	22	40	D745125.0X5.0
125	6.0	22	40	D745125.0X6.0
160	1.0	32	80	D745160.0X1.0
160	1.2	32	80	D745160.0X1.2
160	1.5	32	80	D745160.0X1.5
160	1.6	32	80	D745160.0X1.6
160	2.0	32	64	D745160.0X2.0
160	2.5	32	64	D745160.0X2.5
160	3.0	32	64	D745160.0X3.0
160	4.0	32	48	D745160.0X4.0
160	5.0	32	48	D745160.0X5.0
160	6.0	32	48	D745160.0X6.0
200	1.0	32	100	D745200.0X1.0
200	1.2	32	100	D745200.0X1.2
200	1.5	32	80	D745200.0X1.5
200	1.6	32	80	D745200.0X1.6
200	2.0	32	80	D745200.0X2.0
200	2.5	32	80	D745200.0X2.5
200	3.0	32	64	D745200.0X3.0
200	4.0	32	64	D745200.0X4.0
200	5.0	32	64	D745200.0X5.0
200	6.0	32	48	D745200.0X6.0
250	2.0	32	100	D745250.0X2.0
250	2.5	32	80	D745250.0X2.5
250	3.0	32	80	D745250.0X3.0
250	4.0	32	80	D745250.0X4.0
250	5.0	32	64	D745250.0X5.0
250	6.0	32	64	D745250.0X6.0
315	2.5	40	100	D745315.0X2.5
315	3.0	40	100	D745315.0X3.0

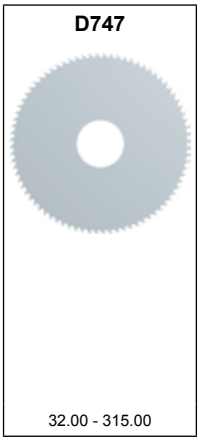
D747 HSS Z 40-200 DIN 1837

D747

- Metal slitting saw Fine
- Metallkreissägeblätter fein
- Cirkelzagen met grove vertanding
- Fraises scies
- Sierras de ranurar o tronzar fino
- Serras Circulares p/ Abertura de Rasgos

D747 ▪ 1.1 1.2 1.3 1.4 3.1 3.2 3.3 6.1 6.2 6.3 7.1 7.2 7.3 8.1
● 2.1 2.2

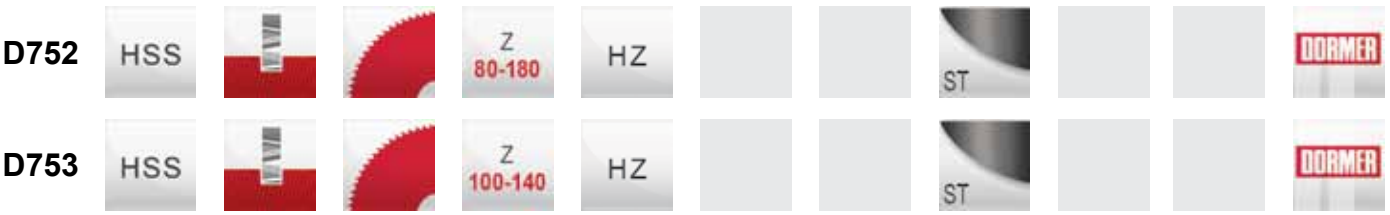




d_1 Ø mm	B	d_2 Ø mm	z	D747
32	0.3	8	80	D74732.0X.3
32	0.4	8	80	D74732.0X.4
32	0.5	8	80	D74732.0X.5
32	0.6	8	64	D74732.0X.6
32	0.8	8	64	D74732.0X.8
32	1.0	8	64	D74732.0X1.0
32	1.2	8	48	D74732.0X1.2
32	1.5	8	48	D74732.0X1.5
32	1.6	8	48	D74732.0X1.6
32	2.0	8	48	D74732.0X2.0
32	2.5	8	40	D74732.0X2.5
32	3.0	8	40	D74732.0X3.0
40	0.3	10	100	D74740.0X.3
40	0.4	10	100	D74740.0X.4
40	0.5	10	80	D74740.0X.5
40	0.6	10	80	D74740.0X.6
40	0.8	10	80	D74740.0X.8
40	1.0	10	64	D74740.0X1.0
40	1.2	10	64	D74740.0X1.2
40	1.5	10	64	D74740.0X1.5
40	1.6	10	64	D74740.0X1.6
40	2.0	10	48	D74740.0X2.0
40	2.5	10	48	D74740.0X2.5
40	3.0	10	48	D74740.0X3.0
50	0.3	13	128	D74750.0X.3
50	0.4	13	100	D74750.0X.4
50	0.5	13	100	D74750.0X.5
50	0.6	13	100	D74750.0X.6
50	0.8	13	80	D74750.0X.8
50	1.0	13	80	D74750.0X1.0
50	1.2	13	80	D74750.0X1.2
50	1.5	13	64	D74750.0X1.5
50	1.6	13	64	D74750.0X1.6
50	2.0	13	64	D74750.0X2.0

d_1 Ø mm	B	d_2 Ø mm	z	D747
50	2.5	13	64	D74750.0X2.5
50	3.0	13	48	D74750.0X3.0
50	4.0	13	48	D74750.0X4.0
50	5.0	13	48	D74750.0X5.0
50	6.0	13	40	D74750.0X6.0
63	0.3	16	128	D74763.0X.3
63	0.4	16	128	D74763.0X.4
63	0.5	16	128	D74763.0X.5
63	0.6	16	100	D74763.0X.6
63	0.8	16	100	D74763.0X.8
63	1.0	16	100	D74763.0X1.0
63	1.2	16	80	D74763.0X1.2
63	1.5	16	80	D74763.0X1.5
63	1.6	16	80	D74763.0X1.6
63	2.0	16	80	D74763.0X2.0
63	2.5	16	64	D74763.0X2.5
63	3.0	16	64	D74763.0X3.0
63	4.0	16	64	D74763.0X4.0
63	5.0	16	48	D74763.0X5.0
63	6.0	16	48	D74763.0X6.0
80	0.4	22	160	D74780.0X.4
80	0.5	22	128	D74780.0X.5
80	0.6	22	128	D74780.0X.6
80	0.8	22	128	D74780.0X.8
80	1.0	22	100	D74780.0X1.0
80	1.2	22	100	D74780.0X1.2
80	1.5	22	100	D74780.0X1.5
80	1.6	22	100	D74780.0X1.6
80	2.0	22	80	D74780.0X2.0
80	2.5	22	80	D74780.0X2.5
80	3.0	22	80	D74780.0X3.0
80	4.0	22	64	D74780.0X4.0
80	5.0	22	64	D74780.0X5.0
80	6.0	22	64	D74780.0X6.0
100	0.5	22	160	D747100.0X.5
100	0.6	22	160	D747100.0X.6
100	0.8	22	128	D747100.0X.8
100	1.0	22	128	D747100.0X1.0
100	1.2	22	128	D747100.0X1.2
100	1.5	22	100	D747100.0X1.5
100	1.6	22	100	D747100.0X1.6
100	2.0	22	100	D747100.0X2.0
100	2.5	22	100	D747100.0X2.5
100	3.0	22	80	D747100.0X3.0
100	4.0	22	80	D747100.0X4.0
100	5.0	22	80	D747100.0X5.0
100	6.0	22	64	D747100.0X6.0
125	1.0	22	160	D747125.0X1.0
125	1.2	22	128	D747125.0X1.2
125	1.5	22	128	D747125.0X1.5
125	1.6	22	128	D747125.0X1.6
125	2.0	22	128	D747125.0X2.0
125	2.5	22	100	D747125.0X2.5
125	3.0	22	100	D747125.0X3.0
125	4.0	22	100	D747125.0X4.0
125	5.0	22	80	D747125.0X5.0
125	6.0	22	80	D747125.0X6.0
160	1.0	32	160	D747160.0X1.0
160	1.2	32	160	D747160.0X1.2
160	1.5	32	160	D747160.0X1.5
160	1.6	32	160	D747160.0X1.6
160	2.0	32	128	D747160.0X2.0
160	2.5	32	128	D747160.0X2.5
160	3.0	32	128	D747160.0X3.0
160	4.0	32	100	D747160.0X4.0
160	5.0	32	100	D747160.0X5.0
160	6.0	32	100	D747160.0X6.0
200	1.0	32	200	D747200.0X1.0

d_1 Ø mm	B	d_2 Ø mm	z	D747
200	1.2	32	200	D747200.0X1.2
200	1.5	32	160	D747200.0X1.5
200	1.6	32	160	D747200.0X1.6
200	2.0	32	160	D747200.0X2.0
200	2.5	32	160	D747200.0X2.5
200	3.0	32	128	D747200.0X3.0
200	4.0	32	128	D747200.0X4.0
200	5.0	32	128	D747200.0X5.0
200	6.0	32	100	D747200.0X6.0
250	2.0	32	200	D747250.0X2.0
250	2.5	32	160	D747250.0X2.5
250	3.0	32	160	D747250.0X3.0
250	4.0	32	160	D747250.0X4.0
250	5.0	32	128	D747250.0X5.0
250	6.0	32	128	D747250.0X6.0
315	2.5	40	200	D747315.0X2.5
315	3.0	40	200	D747315.0X3.0
315	4.0	40	160	D747315.0X4.0
315	5.0	40	160	D747315.0X5.0
315	6.0	40	160	D747315.0X6.0

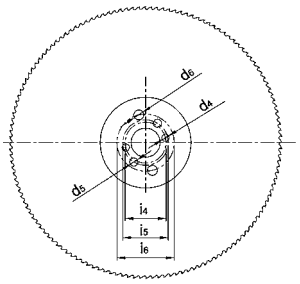


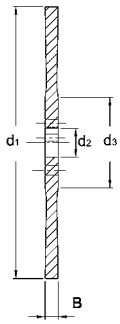
D752
D753

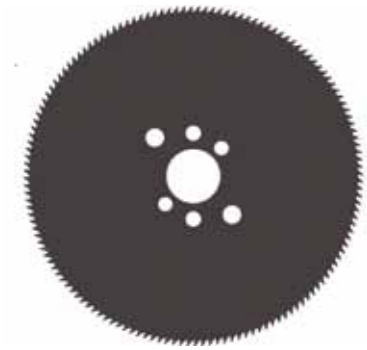
- Metal slitting saw Coarse
- Metallkreissägeblätter
- Cirkelzagen met grove vertanding
- Fraises scies
- Sierras de ranurar o tronzar Grueso
- Serras Circulares p/ Abertura de Rasgos

D752; D753

- 1.1 1.2 1.3 1.4 3.1 3.2 3.3 6.1 6.2 6.3 7.1 7.2 7.3 8.1
- 2.1 2.2

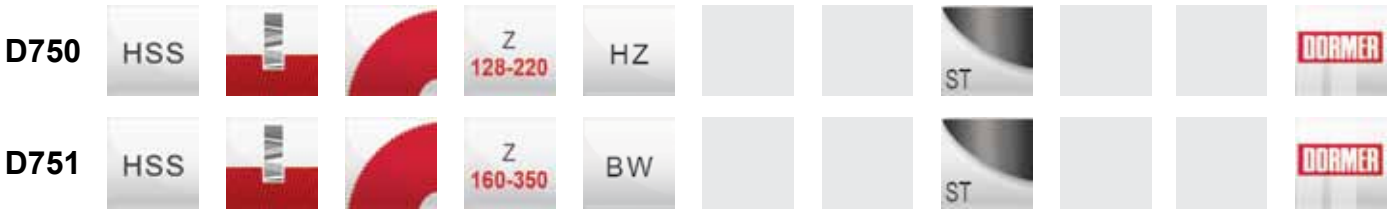






D752	D753
200.00 - 350.00	250.00 - 350.00

d_1 Ø		d_2 Ø			d_3 Ø	d_4 Ø	i_4	d_5 Ø	i_5	d_6 Ø	i_6	D752	D753
mm	B	mm	z	P mm	mm	mm	mm	mm	mm	mm	mm		
200	1.8	32	80	8	100	8	45	9	50	11	63	D752200.0X1.8X80	
200	1.8	32	100	6	100	8	45	9	50	11	63	D752200.0X1.8X100	
225	2.0	32	90	8	100	8	45	9	50	11	63	D752225.0X2.0X90	
225	2.0	32	120	6	100	8	45	9	50	11	63	D752225.0X2.0X120	
250	2.0	32	100	8	100	8	45	9	50	11	63		D753250.0X2.0
250	2.0	32	128	6	100	8	45	9	50	11	63	D752250.0X2.0X128	
275	2.5	32	110	8	100	8	45	9	50	11	63	D752275.0X2.5X110	
300	2.5	32	120	8	100	8	45	9	50	11	63		D753300.0X2.5
300	2.5	32	160	6	100	8	45	9	50	11	63	D752300.0X2.5X160	
315	2.5	32	120	8	100	8	45	9	50	11	63		D753315.0X2.5
315	2.5	32	160	6	100	8	45	9	50	11	63	D752315.0X2.5X160	
350	2.5	32	140	8	120	8	45	9	50	11	63		D753350.0X2.5
350	2.5	32	180	6	120	8	45	9	50	11	63	D752350.0X2.5X180	



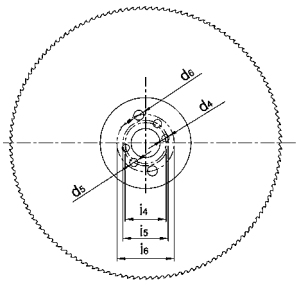
D750
D751

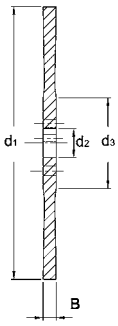
- Metal slitting saw Coarse
- Metallkreissägeblätter
- Cirkelzagen met grove vertanding
- Fraises scies
- Sierras de ranurar o tronzar Grueso
- Serras Circulares p/ Abertura de Rasgos

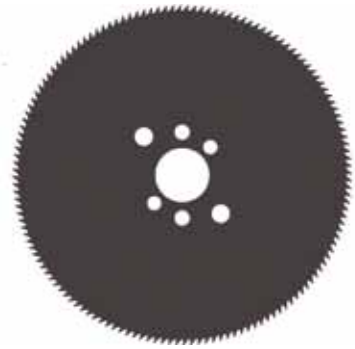
D750; D751

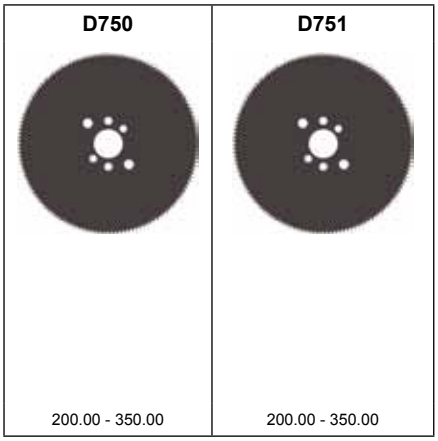
▪ 1.1 1.2 1.3 1.4 3.1 3.2 3.3 6.1 6.2 6.3 7.1 7.2 7.3 8.1

▪ 2.1 2.2









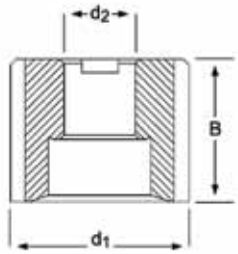
d_1 Ø		d_2 Ø		P	d_3 Ø	d_4 Ø	i_4	d_5 Ø	i_5	d_6 Ø	i_6	D750	D751
mm	B	mm	z	mm	mm	mm	mm	mm	mm	mm	mm		
200	1.8	32	130	5	100	8	45	9	50	11	63	D750200.0X1.8	
200	1.8	32	160	4	100	8	45	9	50	11	63		D751200.0X1.8X160
200	1.8	32	200	3	100	8	45	9	50	11	63		D751200.0X1.8X200
225	2.0	32	140	5	100	8	45	9	50	11	63	D750225.0X2.0	
225	2.0	32	180	4	100	8	45	9	50	11	63		D751225.0X2.0X180
225	2.0	32	220	3	100	8	45	9	50	11	63		D751225.0X2.0X220
250	2.0	32	160	5	100	8	45	9	50	11	63	D750250.0X2.0	
250	2.0	32	200	4	100	8	45	9	50	11	63		D751250.0X2.0X200
250	2.0	32	240	3	100	8	45	9	50	11	63		D751250.0X2.0X250
275	2.5	32	180	5	100	8	45	9	50	11	63	D750275.0X2.5	
275	2.5	32	220	4	100	8	45	9	50	11	63		D751275.0X2.5X220
275	2.5	32	280	3	100	8	45	9	50	11	63		D751275.0X2.5X280
300	2.5	32	180	5	100	8	45	9	50	11	63	D750300.0X2.5	
300	2.5	32	220	4	100	8	45	9	50	11	63		D751300.0X2.5X220
300	2.5	32	300	3	100	8	45	9	50	11	63		D751300.0X2.5X300
315	2.5	32	200	5	100	8	45	9	50	11	63	D750315.0X2.5	
315	2.5	32	240	4	100	8	45	9	50	11	63		D751315.0X2.5X240
315	2.5	32	320	3	100	8	45	9	50	11	63		D751315.0X2.5X320
350	2.5	32	220	5	120	8	45	9	59	11	63	D750350.0X2.5	
350	2.5	32	280	4	120	8	45	9	50	11	63		D751350.0X2.5X280
350	2.5	32	350	3	120	8	45	9	50	11	63		D751350.0X2.5X350

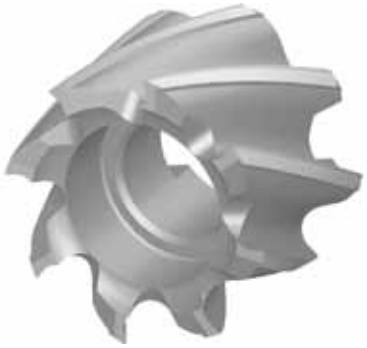
D400	HSS-E		N	Z 8-12		λ30°		js16	DIN 1880
D420	HSS-E		N	Z 8-12		λ30°	TiCN	js16	DIN 1880

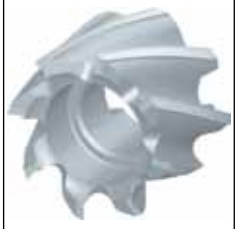
D400
D420

- Shell End Mill
- Walzenstirnfräser
- MMantelkopfrezen
- Fraises 2 tailles finition
- Fresas frontales cilíndricas
- Fresas de Acabamento Tipo Tacho

D400	▪	1.1	1.2	1.3	1.4	2.1	2.3	3.1	3.2	3.3	3.4	4.1	5.1	6.1	6.2	6.3	7.2	7.3				
	▪	1.5	1.6	2.2	4.2	4.3	5.2	5.3	6.4	7.1	7.4	8.1	8.2	8.3	10.1							
D420	▪	1.1	1.2	1.3	1.4	1.5	1.6	2.1	2.2	2.3	3.1	3.2	3.3	3.4	4.1	4.2	4.3	5.1	5.2	5.3	6.1	
		6.2	6.3	6.4	7.2	7.3	7.4	8.1	10.1													
	▪	7.1	8.2	8.3																		





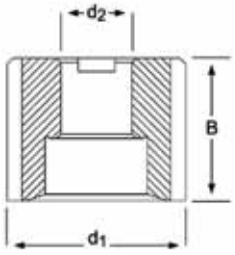
D400	D420
	
40.00 - 100.00	40.00 - 100.00

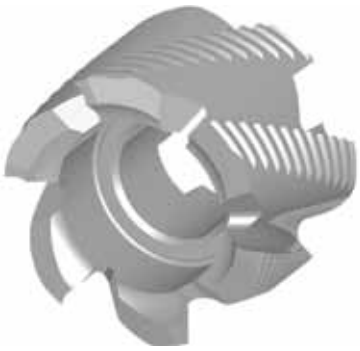
d_1 Ø mm	B	d_2 Ø mm	z	D400	D420
40.00	32	16	8	D40040.0	D42040.0
50.00	36	22	8	D40050.0	D42050.0
63.00	40	27	8	D40063.0	D42063.0
80.00	45	27	10	D40080.0	D42080.0
100.00	50	32	12	D400100.0	D420100.0

D402
D422

- Shell End Mill
- Walzenstirnfräser
- Mantelkop-ruwfrezen
- Fraises 2 tailles finition
- Fresas frontales cilíndricas
- Fresas de Acabamento Tipo Tacho

D402	■	1.1 1.2 1.3 1.4 2.1 2.3 3.1 3.2 3.3 3.4 4.1 5.1 6.1 6.2 6.3 7.2 7.3
	●	1.5 1.6 2.2 4.2 4.3 5.2 5.3 6.4 7.1 7.4 8.1 8.2 8.3 10.1
D422	■	1.1 1.2 1.3 1.4 1.5 1.6 2.1 2.2 2.3 3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3 6.1 6.2 6.3 6.4 7.2 7.3 7.4 8.1 10.1
	●	7.1 8.2 8.3

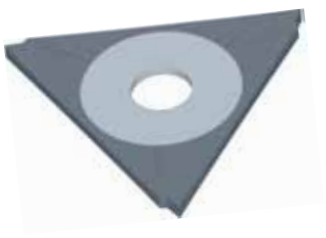




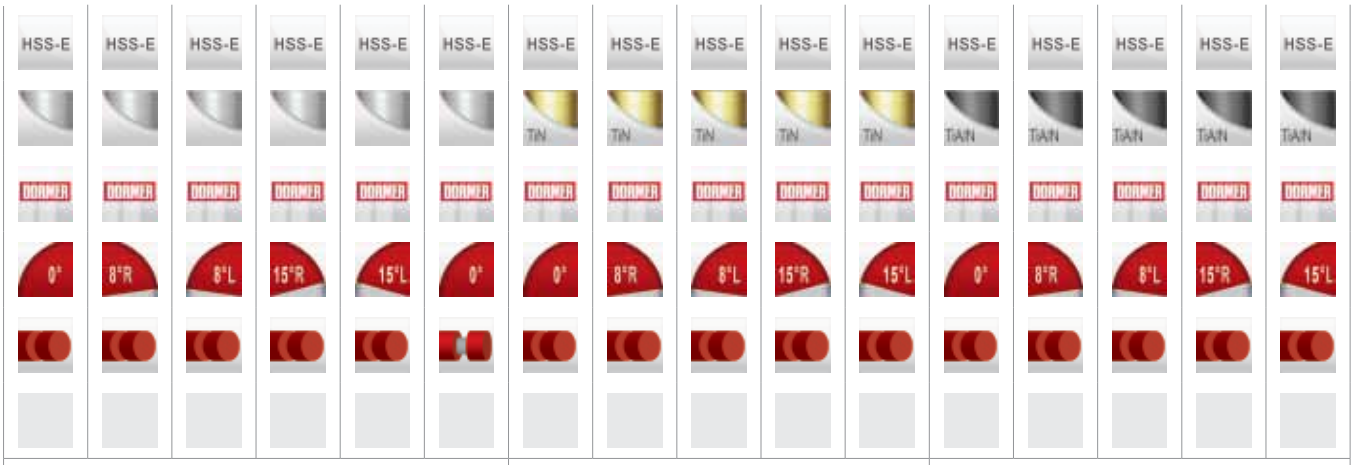
D402	D422
40.00 - 125.00	40.00 - 100.00

d_1 Ø mm	B	d_2 Ø mm	z	D402	D422
40.00	32	16	6	D40240.0	D42240.0
50.00	36	22	6	D40250.0	D42250.0
63.00	40	27	8	D40263.0	D42263.0
80.00	45	27	8	D40280.0	D42280.0
100.00	50	32	10	D402100.0	D422100.0
125.00	56	40	12	D402125.0	

K100	f 12	**K301**	f 6	**K331**	f 10
K101	f 12	**K302**	f 6	**K332**	f 10
K102	f 12	**K303**	f 6	**K333**	f 10
K103	f 13	**K304**	f 6	**K334**	f 10
K104	f 13	**K305**	f 6	**K520**	f 15
K200	f 14	**K310**	f 8	**K521**	f 16
K201	f 14	**K311**	f 8	**K522**	f 17
K202	f 14	**K312**	f 8	**M150**	f 18
K203	f 14	**K313**	f 8	**M151**	f 19
K204	f 14	**K314**	f 8	**M152**	f 20
K300	f 6	**K330**	f 10	**M200**	f 21



f1 - f22

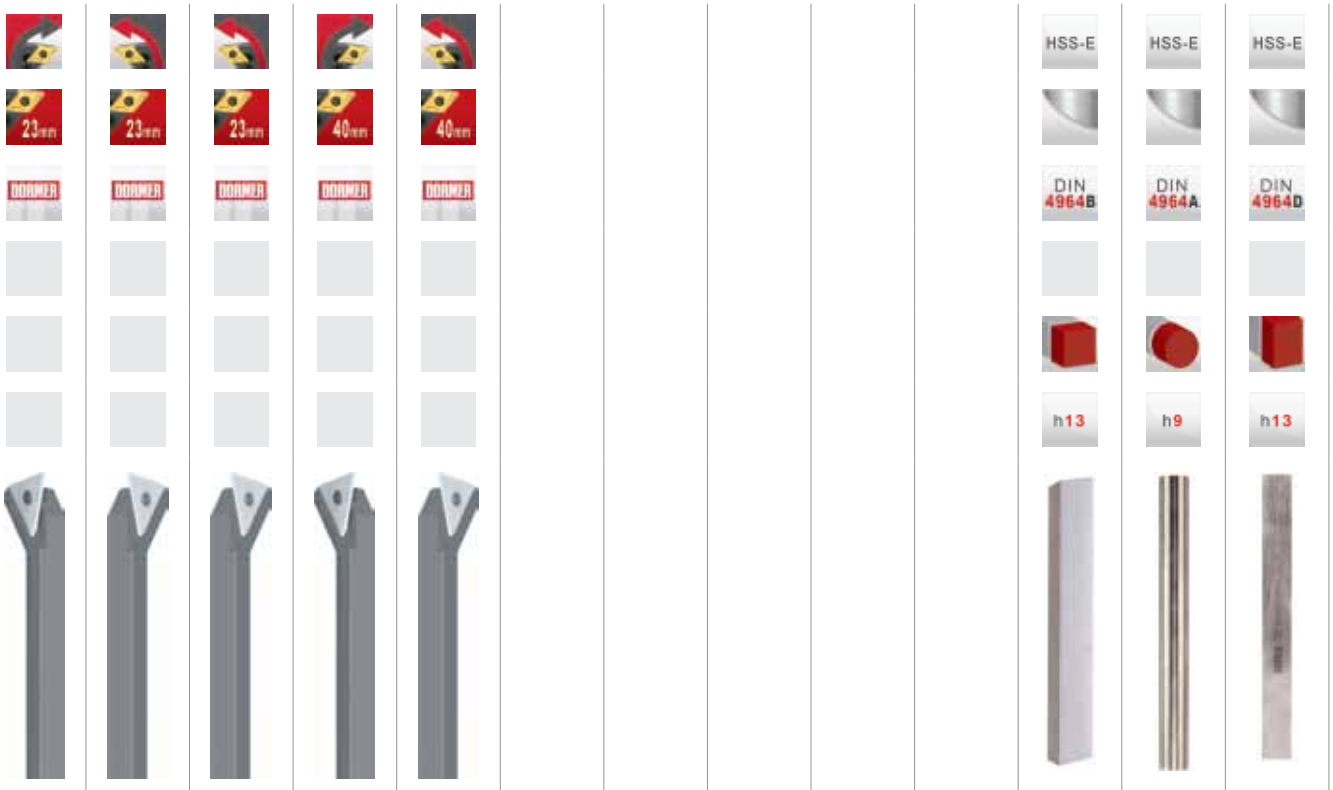


	K300	K301	K302	K303	K304	K305	K310	K311	K312	K313	K314	K330	K331	K332	K333	K334
	1.50 - 2.50	1.50 - 2.50	1.50 - 2.50	1.50 - 2.50	1.50 - 2.50	1.10 - 2.15	23.00 - 40.00	23.00 - 40.00	23.00 - 40.00	23.00 - 40.00	23.00 - 23.00	23.00 - 40.00	23.00 - 40.00	23.00 - 40.00	23.00 - 40.00	23.00 - 40.00
	F 6	F 6	F 6	F 6	F 6	F 6	F 8	F 8	F 8	F 8	F 8	F 10	F 10	F 10	F 10	F 10
1.1	■50A	■50A	■50A	■50A	■50A	■50A	■120A	■120A	■120A	■120A	■120A	■120A	■120A	■120A	■120A	■120A
1.2	■40B	■40B	■40B	■40B	■40B	■40B	■100B	■100B	■100B	■100B	■100B	■100B	■100B	■100B	■100B	■100B
1.3	●30C	●30C	●30C	●30C	●30C	●30C	■60C	■60C	■60C	■60C	■60C	■60C	■60C	■60C	■60C	■60C
1.4	●20D	●20D	●20D	●20D	●20D	●20D	●50D	●50D	●50D	●50D	●50D	●50D	●50D	●50D	●50D	●50D
1.5							●20E	●20E	●20E	●20E	●20E	●20E	●20E	●20E	●20E	●20E
1.6																
1.7																
1.8																
2.1	●15C	●15C	●15C	●15C	●15C	●15C	■20C	■20C	■20C	■20C	■20C	■20C	■20C	■20C	■20C	■20C
2.2							■20C	■20C	■20C	■20C	■20C	■20C	■20C	■20C	■20C	■20C
2.3							●10B	●10B	●10B	●10B	●10B	●10B	●10B	●10B	●10B	●10B
2.4																
3.1																
3.2																
3.3																
3.4																
4.1																
4.2																
4.3																
5.1																
5.2																
5.3																
6.1	●100B	●100B	●100B	●100B	●100B	●100B	■250B	■250B	■250B	■250B	■250B	■250B	■250B	■250B	■250B	■250B
6.2	■65C	■65C	■65C	■65C	■65C	■65C	■160C	■160C	■160C	■160C	■160C	■160C	■160C	■160C	■160C	■160C
6.3	■100B	■100B	■100B	■100B	■100B	■100B	■250B	■250B	■250B	■250B	■250B	■250B	■250B	■250B	■250B	■250B
6.4																
7.1	●150A	●150A	●150A	●150A	●150A	●150A	■370A	■370A	■370A	■370A	■370A	■370A	■370A	■370A	■370A	■370A
7.2	●150B	●150B	●150B	●150B	●150B	●150B	■370B	■370B	■370B	■370B	■370B	■370B	■370B	■370B	■370B	■370B
7.3							■110C	■110C	■110C	■110C	■110C	■110C	■110C	■110C	■110C	■110C
7.4							●45D	●45D	●45D	●45D	●45D	●45D	●45D	●45D	●45D	●45D
8.1																
8.2																
8.3																
9.1																
10.1																

	23 mm	40 mm
A	0,20	0,25
B	0,15	0,20
C	0,10	0,15
D	0,05	0,10
E	0,03	0,05

	23 mm	40 mm
A	0,20	0,25
B	0,15	0,20
C	0,10	0,15
D	0,05	0,10
E	0,03	0,05

	23 mm	40 mm
A	0,20	0,25
B	0,15	0,20
C	0,10	0,15
D	0,05	0,10
E	0,03	0,05



	K100	K101	K102	K103	K104	K200	K201	K202	K203	K204	K520	K521	K522
	10.00 - 20.00	12.00 - 20.00	10.00 - 14.00	16.00 - 32.00	16.00 - 32.00	1.50	1.50	1.50	2.50	2.50	4.00 - 1“	3.00 - 1/2	10.00 - 5/8
	F 12	F 12	F 12	F 13	F 13	F 14	F 14	F 14	F 14	F 14	F 15	F 16	F 17
1.1											■80A	■80A	■80A
1.2											■80A	■80A	■80A
1.3											■65A	■65A	■65A
1.4											■55A	■55A	■55A
1.5											●35A	●35A	●35A
1.6													
1.7													
1.8													
2.1											●37A	●37A	●37A
2.2											●30A	●30A	●30A
2.3													
2.4													
3.1											■60A	■60A	■60A
3.2											■50A	■50A	■50A
3.3											■40A	■40A	■40A
3.4											■25A	■25A	■25A
4.1													
4.2													
4.3													
5.1													
5.2													
5.3													
6.1											■100A	■100A	■100A
6.2											■65A	■65A	■65A
6.3											■100A	■100A	■100A
6.4											●50A	●50A	●50A
7.1											●120A	●120A	●120A
7.2											●150A	●150A	●150A
7.3													
7.4													
8.1													
8.2													
8.3													
9.1													
10.1													

	M150 10 - 65	**M151** 10 - 65	**M152** 0 - 6	**M200 1**	**M200 2**	**M200 3**
	F 18	**F 19**	**F 20**	**F 21**	**F 21**	**F 21**
1.1				■	■	■
1.2				■	■	■
1.3				■	■	■
1.4				■	■	■
1.5				■	■	■
1.6				■	■	■
1.7				■	■	■
1.8				■	■	■
2.1				■		■
2.2				■		■
2.3				■		■
2.4				■		■
3.1				●	■	■
3.2				●	■	■
3.3				●	■	■
3.4				●	■	■
4.1				●		■
4.2				●		■
4.3				●		■
5.1				●		■
5.2				●		■
5.3				●		■
6.1					■	
6.2					■	
6.3					■	
6.4					■	
7.1					■	
7.2					■	
7.3					■	
7.4					■	
8.1					■	
8.2					■	
8.3					■	
9.1					●	
10.1					●	

K300	HSS-E		DORMER	0°		
K301	HSS-E		DORMER	8°R		
K302	HSS-E		DORMER	8°L		
K303	HSS-E		DORMER	15°R		
K304	HSS-E		DORMER	15°L		
K305	HSS-E		DORMER	0°		

K300

- Parting Off Inserts
- Abstech-Wendeplatten
- Afsteek wisselplaten
- Plaquettes de tronçonnage
- Cuchillas de tronzar
- Pastilhas de Sangrar

K301

- Parting Off Inserts
- Abstech-Wendeplatten
- Afsteek wisselplaten
- Plaquettes de tronçonnage
- Cuchillas de tronzar
- Pastilhas de Sangrar

K302

- Parting Off Inserts
- Abstech-Wendeplatten
- Afsteek wisselplaten
- Plaquettes de tronçonnage
- Cuchillas de tronzar
- Pastilhas de Sangrar

K303

- Parting Off Inserts
- Abstech-Wendeplatten
- Afsteek wisselplaten
- Plaquettes de tronçonnage
- Cuchillas de tronzar
- Pastilhas de Sangrar

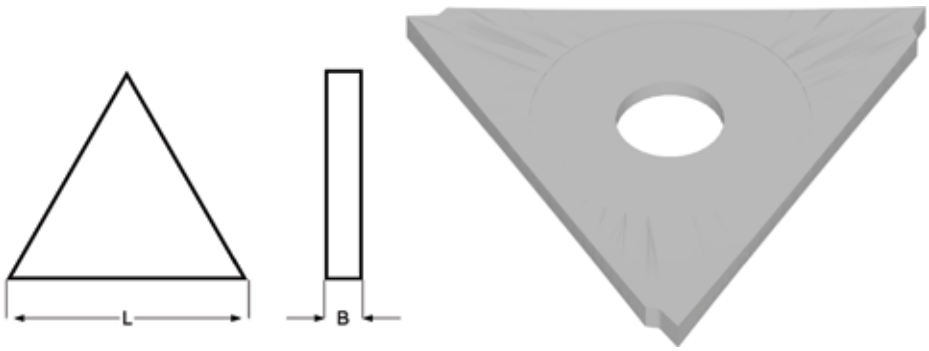
K304

- Parting Off Inserts
- Abstech-Wendeplatten
- Afsteek wisselplaten
- Plaquettes de tronçonnage
- Cuchillas de tronzar
- Pastilhas de Sangrar

K305

- Parting Off Inserts
- Abstech-Wendeplatten
- Afsteek wisselplaten
- Plaquettes de tronçonnage
- Cuchillas de tronzar
- Pastilhas de Sangrar

K300; K301; K302; K303; K304; K305	▪	1.1	1.2	6.2	6.3		
	▪	1.3	1.4	2.1	6.1	7.1	7.2



			K300	K301	K302	K303	K304	K305
			1.50 - 2.50	1.50 - 2.50	1.50 - 2.50	1.50 - 2.50	1.50 - 2.50	1.10 - 2.15
L	**B**	**d min-max mm**	**K300**	**K301**	**K302**	**K303**	**K304**	**K305**
23	1.10	9 - 17						K30523.0X1.1
23	1.30	18 - 26						K30523.0X1.3
23	1.50		K30023.0X1.5	K30123.0X1.5	K30223.0X1.5	K30323.0X1.5	K30423.0X1.5	
23	1.60	28 - 35						K30523.0X1.6
40	1.85	36 - 48						K30540.0X1.85
40	2.15	50 - 63						K30540.0X2.15
40	2.50		K30040.0X2.5	K30140.0X2.5	K30240.0X2.5	K30340.0X2.5	K30440.0X2.5	

K310	HSS-E	TiN	DORMER	0°		
K311	HSS-E	TiN	DORMER	8°R		
K312	HSS-E	TiN	DORMER	8°L		
K313	HSS-E	TiN	DORMER	15°R		
K314	HSS-E	TiN	DORMER	15°L		

K310

- Stickstål
- Kääntöterät
- Parting Off Inserts
- Inserti per troncatura
- Stikkstål
- Stikstål

K311

- Stickstål
- Kääntöterät
- Parting Off Inserts
- Inserti per troncatura
- Stikkstål
- Stikstål

K312

- Stickstål
- Kääntöterät
- Parting Off Inserts
- Inserti per troncatura
- Stikkstål
- Stikstål

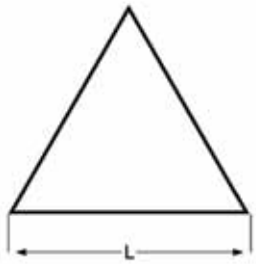
K313

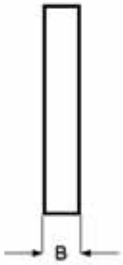
- Stickstål
- Kääntöterät
- Parting Off Inserts
- Inserti per troncatura
- Stikkstål
- Stikstål

K314

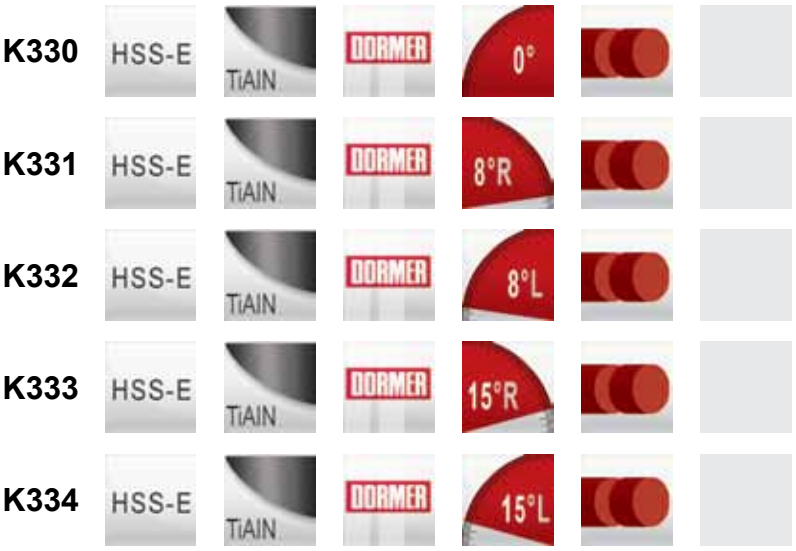
- Stickstål
- Kääntöterät
- Parting Off Inserts
- Inserti per troncatura
- Stikkstål
- Stikstål

K310; K311; K312; K313; K314	▪	1.1	1.2	1.3	2.1	2.2	6.1	6.2	6.3	7.1	7.2	7.3
	•	1.4	1.5	2.3	7.4							





		K310	K311	K312	K313	K314
		23.00 - 40.00	23.00 - 40.00	23.00 - 40.00	23.00 - 40.00	23.00 - 23.00
L	**B**	**K310**	**K311**	**K312**	**K313**	**K314**
23	1.50	K31023.0X1.5	K31123.0X1.5	K31223.0X1.5	K31323.0X1.5	K31423.0X1.5
40	2.50	K31040.0X2.5	K31140.0X2.5	K31240.0X2.5	K31340.0X2.5	K31440.0X2.5



K330

- Stickstål
- Kääntöterät
- Parting Off Inserts
- Inserti per troncatura
- Stikkstål
- Stikstål

K331

- Stickstål
- Kääntöterät
- Parting Off Inserts
- Inserti per troncatura
- Stikkstål
- Stikstål

K332

- Stickstål
- Kääntöterät
- Parting Off Inserts
- Inserti per troncatura
- Stikkstål
- Stikstål

K333

- Stickstål
- Kääntöterät
- Parting Off Inserts
- Inserti per troncatura
- Stikkstål
- Stikstål

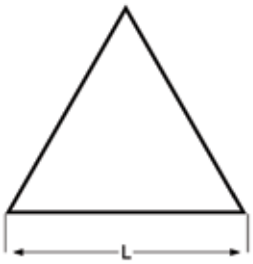
K334

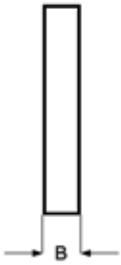
- Stickstål
- Kääntöterät
- Parting Off Inserts
- Inserti per troncatura
- Stikkstål
- Stikstål

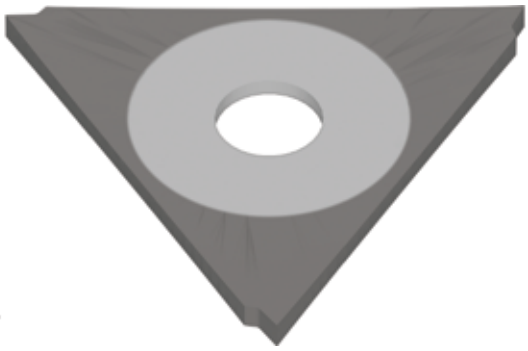
K330; K331; K332; K333; K334

▪ 1.1 1.2 1.3 2.1 2.2 6.1 6.2 6.3 7.1 7.2 7.3

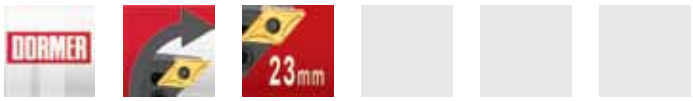
• 1.4 1.5 2.3 7.4

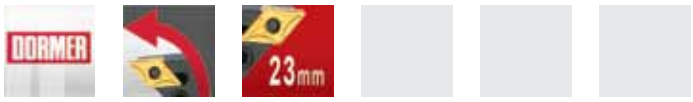


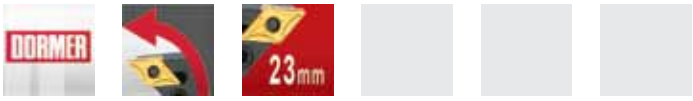




		K330	K331	K332	K333	K334
		23.00 - 40.00	23.00 - 40.00	23.00 - 40.00	23.00 - 40.00	23.00 - 40.00
L	**B**					
23	1.50	K33023.0X1.5	K33123.0X1.5	K33223.0X1.5	K33323.0X1.5	K33423.0X1.5
40	2.50	K33040.0X2.5	K33140.0X2.5	K33240.0X2.5	K33340.0X2.5	K33440.0X2.5

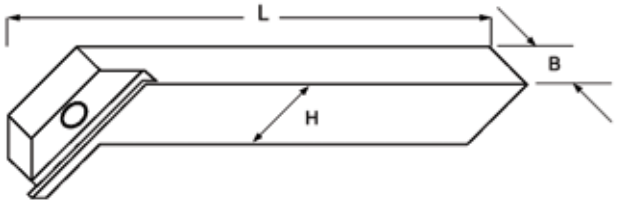
K100 

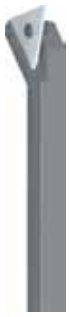
K101 

K102 

K100
K101
K102

- Parting Off Tool Holder
- Abstechhalter
- Wisselplaathouders
- Porte-outils pour plaquettes
- Portacuchillas de tronzar
- Suporte p/ Pastilhas de Sangrar



K100	K101	K102
		
10.00 - 20.00	12.00 - 20.00	10.00 - 14.00

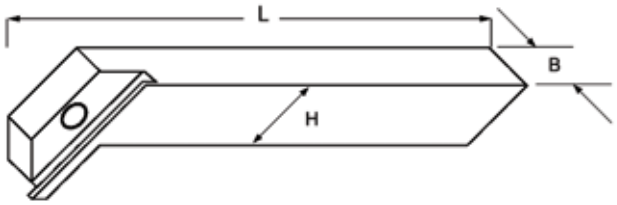
H	B	L	K100	K101	K102
10	10	125	K10010.0		K10210.0
12	12	125	K10012.0	K10112.0	
14	12	125			K10214.0
16	12	125	K10016.0	K10116.0	
20	12	125	K10020.0	K10120.0	

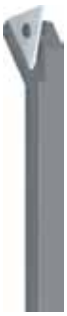
K103

K104

K103
K104

- Parting Off Tool Holder
- Abstechhalter
- Wisselplaathouders
- Porte-outils pour plaquettes
- Portacuchillas de tronzar
- Suporte p/ Pastilhas de Sangrar



K103	K104
	
16.00 - 32.00	16.00 - 32.00

H	B	L	K103	K104
16	16	125	K10010.0	
25	16	125	K10012.0	K10112.0
32	16	125		

K200 • Spare Parts for Parting Off Tool Holders
K201 • Ersatzteile für Abstechwerkzeuge
K202 • Onderdelen voor wisselplaathouders
K203 • Pièces de rechange pour outil à tronçonner
K204 • Portacuchillas de tronzar
• Suporte p/ Pastilhas de Sangrar

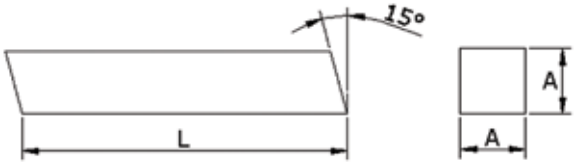
size	tool code			K200	K201	K202	K203	K204
1.5	Excentric			K200ECC1.5				
1.5		Spanner			K201SPAN1.5			
2.5			12.0			K2022.5X12.0		
2.5	Excentric						K203ECC2.5	
2.5		Spanner						K204SPAN2.5

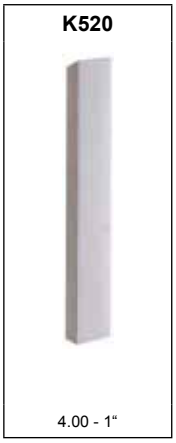
K520 HSS-E DIN 4964B h13

K520

- Toolbits Square h13
- Drehlinge Vierkant h13
- Toolbits Vierkant h13
- Barreaux rectifiés Carré h13
- Cuchillas Cuadrada h13
- Buril Quadrado h13

K520												
■	1.1	1.2	1.3	1.4	3.1	3.2	3.3	3.4	6.1	6.2	6.3
●	1.5	2.1	2.2	6.4	7.1	7.2					





A	L	K520
4	100	K5204.0X100.0
4	63	K5204.0X63.0
3/16	2.1/2	K5203/16X2.1/2
3/16	4“	K5203/16X4
5	160	K5205.0X160.0
5	63	K5205.0X63.0
6	100	K5206.0X100.0
6	160	K5206.0X160.0
6	200	K5206.0X200.0
6	63	K5206.0X63.0
1/4	2.1/2	K5201/4X2.1/2
1/4	4“	K5201/4X4
7	200	K5207.0X200.0
5/16	2.1/2	K5205/16X2.1/2
5/16	3“	K5205/16X3
5/16	4“	K5205/16X4
8	100	K5208.0X100.0
8	160	K5208.0X160.0
8	200	K5208.0X200.0
8	63	K5208.0X63.0
3/8	3“	K5203/8X3
3/8	4“	K5203/8X4
3/8	6“	K5203/8X6
10	100	K52010.0X100.0

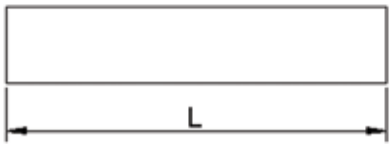
A	L	K520
10	125	K52010.0X125.0
10	160	K52010.0X160.0
10	200	K52010.0X200.0
10	63	K52010.0X63.0
7/16	3.1/2	K5207/16X3.1/2
12	100	K52012.0X100.0
12	160	K52012.0X160.0
12	200	K52012.0X200.0
1/2	4“	K5201/2X4
1/2	6“	K5201/2X6
14	100	K52014.0X100.0
14	160	K52014.0X160.0
14	200	K52014.0X200.0
5/8	4.1/2	K5205/8X4.1/2
5/8	6“	K5205/8X6
16	100	K52016.0X100.0
16	160	K52016.0X160.0
16	200	K52016.0X200.0
18	200	K52018.0X200.0
3/4	5“	K5203/4X5
20	160	K52020.0X160.0
20	200	K52020.0X200.0
25	200	K52025.0X200.0
1“	8“	K5201X8

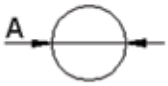
K521 HSS-E DIN 4964A h9

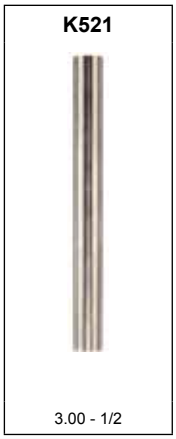
K521

- Toolbits Round h9
- Drehlinge Rund h9
- Toolbits Rond h9
- Barreaux rectifiés Rond h9
- Cuchillas Redonda h9
- Buril Redondo h9

K521												
▪	1.1	1.2	1.3	1.4	3.1	3.2	3.3	3.4	6.1	6.2	6.3
▪	1.5	2.1	2.2	6.4	7.1	7.2					







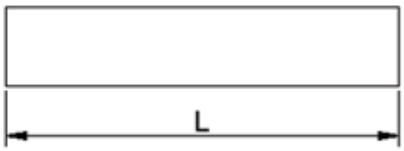
A	L	K521
3	100	K5213.0X100.0
4	100	K5214.0X100.0
4	80	K5214.0X80.0
3/16	4“	K5213/16X4
5	100	K5215.0X100.0
5	160	K5215.0X160.0
6	100	K5216.0X100.0
6	160	K5216.0X160.0
6	200	K5216.0X200.0
1/4	4“	K5211/4X4
5/16	4“	K5215/16X4
8	100	K5218.0X100.0
8	160	K5218.0X160.0
8	200	K5218.0X200.0
3/8	4“	K5213/8X4
10	100	K52110.0X100.0
10	160	K52110.0X160.0
10	200	K52110.0X200.0
12	100	K52112.0X100.0
12	160	K52112.0X160.0
12	200	K52112.0X200.0
1/2	4“	K5211/2X4
1/2	6“	K5211/2X6
14	100	K52114.0X100.0
14	200	K52114.0X200.0
15	100	K52115.0X100.0
16	100	K52116.0X100.0
16	160	K52116.0X160.0
16	200	K52116.0X200.0
18	160	K52118.0X160.0
18	200	K52118.0X200.0
20	200	K52120.0X200.0

K522 HSS-E DIN 4964D h13

K522

- Toolbits Rectangle h13
- Drehlinge Rechteck h13
- Toolbits Rechthoek h13
- Barreaux rectifiés Rectangle h13
- Cuchillas Rectangular h13
- Buril Rectângulo h13

K520	1.1	1.2	1.3	1.4	3.1	3.2	3.3	3.4	6.1	6.2	6.3
	1.5	2.1	2.2	6.4	7.1	7.2					

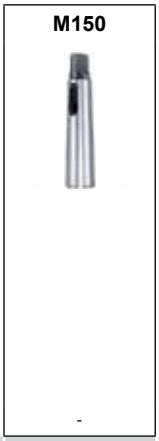


A	B	L	K522
10	3	200	K52210.0X3.0X200.0
12	3	90	K52212.0X3.0X90.0
12	3	200	K52212.0X3.0X200.0
20	3	200	K52220.0X3.0X200.0
10	4	100	K52210.0X4.0X100.0
10	4	120 (a)	K52210.0X4.0X120.0
10	4	200	K52210.0X4.0X200.0
12	4	200	K52212.0X4.0X200.0
16	4	160	K52216.0X4.0X160.0
16	4	200	K52216.0X4.0X200.0
20	4	200	K52220.0X4.0X200.0
12	5	90	K52212.0X5.0X90.0
12	5	200	K52212.0X5.0X200.0
18	5	200	K52218.0X5.0X200.0
20	5	200	K52220.0X5.0X200.0
8	6	70	K5228.0X6.0X70.0
10	6	200	K52210.0X6.0X200.0
12	6	200	K52212.0X6.0X200.0
14	6	140 (b+d)	K52214.0X6.0X140.0
16	6	200	K52216.0X6.0X200.0
18	6	140 (c)	K52218.0X6.0X140.0
20	6	200	K52220.0X6.0X200.0

A	B	L	K522
25	6	200	K52225.0X6.0X200.0
12	8	160	K52212.0X8.0X160.0
12	8	200	K52212.0X8.0X200.0
16	8	140 (d)	K52216.0X8.0X140.0
16	8	200	K52216.0X8.0X200.0
20	8	200	K52220.0X8.0X200.0
12	10	200	K52212.0X10.0X200.0
16	10	160	K52216.0X10.0X160.0
16	10	200	K52216.0X10.0X200.0
20	10	200	K52220.0X10.0X200.0
25	10	200	K52225.0X10.0X200.0
16	12	200	K52216.0X12.0X200.0
20	12	200	K52220.0X12.0X200.0
25	12	200	K52225.0X12.0X200.0
20	16	200	K52220.0X16.0X200.0
25	16	200	K52225.0X16.0X200.0
1/2	1/4	4	K5221/2X1/4X4
1/2	3/8	4	K5221/2X3/8X4
3/4	1/2	5	K5223/4X1/2X5
3/4	1/2	6	K5223/4X1/2X6
5/8	3/8	6	K5225/8X3/8X6

M150

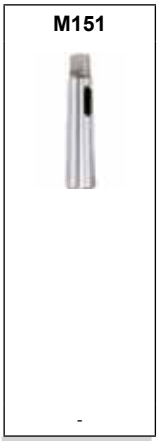
- Sleeves Oil Toughened — K=Ext. K1=Int.
- Reduzierhülsen, gehärtet und geschliffen — K= äußerer MK, K1= innerer MK
- Reduceerhulzen, oliegehard — K= uitw. K1= inw.
- Cône de réduction trempé — K=Ext.(externe) K1=Int. (Interne)
- Conos Morse endurecidos en aceite — k=Ext. K1=Int.
- Casquilho Cone Morse Temperado — K=Externo K1=Interno



Nr.	K = Nr.	K1 = Nr.	M150
10	1	0	M1501-0
21	2	1	M1502-1
31	3	1	M1503-1
41	4	1	M1504-1
32	3	2	M1503-2
42	4	2	M1504-2
52	5	2	M1505-2
43	4	3	M1504-3
53	5	3	M1505-3
54	5	4	M1505-4
65	6	5	M1506-5

M151

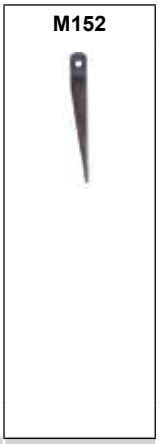
- Sleeves Hardened and Ground — K=Ext. K1=Int.
- Reduzierhülsen, gehärtet und geschliffen — K= äußerer MK, K1= innerer MK
- Reduceerhulzen, gehard en geslepen — K= uitw. K1= inw.
- Cône de réduction — K=Ext.(externe) K1=Int. (Interne)
- Conos Morse endurecidos y cementados — k=Ext. K1=Int.
- Casquilho Cone Morse Temperado e Rectificado — K=Externo K1=Interno



Nr.	K = Nr.	K1 = Nr.	M151
10	1	0	M1511-0
21	2	1	M1512-1
31	3	1	M1513-1
41	4	1	M1514-1
32	3	2	M1513-2
42	4	2	M1514-2
52	5	2	M1515-2
43	4	3	M1514-3
53	5	3	M1515-3
54	5	4	M1515-4
65	6	5	M1516-5

M152

- Drill Drift
- Austreibkeil
- Uitdrijfspieën
- Extracteur d'outils
- Expulsores de Brocas
- Extractor de Brocas



Nr.	M152
0	M1520
1 + 2	M15212
3 + 4	M15234
4 + 5	M15245
6	M1526

M200

- Cutting Oil
- Hochleistungs-Schneidöl
- Snijolie
- Huile de coupe
- Aceite de Corte
- Óleo de Corte

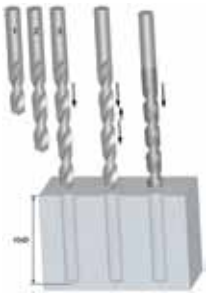
1 BLUE	▪	1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 2.1 2.2 2.3 2.4
	•	3.1 3.2 3.3 3.4 4.1 4.2 4.3 5.1 5.2 5.3
2 RED	▪	1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 3.1 3.2 3.3 3.4
		6.1 6.2 6.3 6.4 7.1 7.2 7.3 7.4 8.1 8.2 8.3
	•	9.1 10.1
3 GREEN	▪	1.1 1.2 1.3 1.4 1.5 1.6 1.7 1.8 2.1 2.2 2.3 2.4 3.1 3.2 3.3 3.4
		4.1 4.2 4.3 5.1 5.2 5.3

A		M200
1/4 Ltr. 12x	1 BLUE	M2000.25NR.1BLUE
1/4 Ltr. 12x	2 RED	M2000.25NR.2RED
1/4 Ltr. 12x	3 GREEN	M2000.25NR.3GREEN
1 Ltr.	1 BLUE	M2001.0NR.1BLUE
1 Ltr.	2 RED	M2001.0NR.2RED
1 Ltr.	3 GREEN	M2001.0NR.3GREEN
5 Ltr.	1 BLUE	M2005.0NR.1BLUE
5 Ltr.	2 RED	M2005.0NR.2RED
5 Ltr.	3 GREEN	M2005.0NR.3GREEN
20 Ltr.	1 BLUE	M20020.0NR.1BLUE

g1 - g12

1.1 2.3 3.4 5.2 7.1 8.2 g13 - g16

e8 f6 f7 h6 h10 js14 g17 - g19


g20 - g37

g38 - g55

g56 - g67

g68 - g80

g1 - g80

Common icons / Allgemeine Symbole / Algemene symbolen / Symboles standards / Símbolos comunes / Símbolos Comuns

Material
Material
Materiaal
Matière
Material
Material

Carbide
Hartmetall
Hardmetaal
Carbure
Metal Duro
Metal Duro

High Speed Steel
Hochleistungsschnellarbeitsstahl
Snelstaal
Acier rapide
Acero rápido
Aço Rápido

High Speed Cobalt
Hochlegierter Schnellarbeitsstahl
Cobalt gelegeerd snelstaal
Acier rapide au cobalt
Acero rápido al Cobalto
Aço Rápido ao Cobalto

HSS-E powder metallurgy steel
HSS-E-Pulverschnellstahl
Cobalt gelegeerd “poeder” snelstaal
Acier rapide au cobalt fritté
Acero rápido al Cobalto sinterizado
Aço Rápido ao Cobalto Sinterizado

High Speed Steel/ Carbide
Hochleistungsschnellarbeitsstahl/ Hartmetall
Snelstaal/ Hardmetaal
Acier rapide/ Carbure
Acero rápido/ Metal Duro
Aço Rápido/ Metal Duro

Coating
Oberfläche
Oppervlaktebeh
Revêtement
Tratamiento superficial
Revestimento

Steam tempered
Dampfangelassen
Stoomontlaten
Traitement vapeur
Templado al vapor
Tratamento a Vapor

Bright
Blank
Blank
Brillant
Brillante
Brilhante

Bright/Steam tempered
Blank/Dampfangelassen
Blank/Stoomontlaten
Brillant/traitement vapeur
Brillante/templado al vapor
Brilhante/Tratamento a Vapor

Bronze
Bronzefarben
Bronskleurig
Bronze
Bronce
Bronze

Steam tempered / Bronze
Dampfangelassen / Bronzefarben
Stoomontlaten / Bronskleurig
Traitement vapeur / Bronze
Templado al vapor / Bronce
Tratamento a Vapor / Bronze

Titanium Nitride
Titannitrid-Beschichtung
Titanium-nitride
Nitrure de titane
Nitruro de Titanio
Nitreto Titânio

Bright/Titanium Nitride
Blank/Titannitrid-Beschichtung
Blank/Titaniumnitride
Brillant/Nitrure de titane
Brillante/nitruro de Titanio
Brilhante/Nitreto Titânio

Titanium Carbo Nitride
Titancarbonitrid- Beschichtung
Titanium-carbonitride
Carbonitrure de titane
Carbo-nitruro de Titanio
Carbo Nitreto Titânio

Titanium Aluminium Nitride
Titanaluminiumnitrid-Beschichtung
Titanium-aluminium-nitride
Nitrure de titane aluminium
Nitruro de Aluminio al Titanio
Nitreto Titânio Alumínio

Titanium Aluminium Nitride - Top
Titanaluminiumnitrid-Beschichtung - Top
Titanium-aluminium-nitride - Top
Nitrure de titane aluminium - Top
Nitruro de Aluminio al Titanio - Top
Nitreto Titânio Alumínio - Top

Alcrona

Alcrona Top

X-CEED

Nitride
Nitriert
Nitride
Nitrure
Nitruro
Nitreto

Common icons / Allgemeine Symbole / Algemene symbolen / Symboles standards / Símbolos comunes / Símbolos Comuns

Direction Richtung Richting Direction Dirección Direcção		
	Right Rechts Rechts À droite A derecha À direita	Left Links Links À gauche A izquierda À esquerda
Rating Eignung Beoordeling Appréciations Clasificación Classificação		
	Excellent Sehr gut Uitstekend Excellent Excelente Excelente	Good Gut Acceptabel Acceptable Bueno Bom

Drilling icons / Symbole Bohrwerkzeuge / Boor symbolen / Symboles pour le perçage / Iconos de taladrado / Símbolos de Furação

Point geometry Anschliff Punt geometrie Géométrie Geometría Geometria			
	Special point Spezialanschliff Speciale punt Pointe Spéciale Punta Especial Ponta Especial	NAS 907 NAS 907- Normanschliff NAS 907 NAS 907 NAS 907 NAS 907	PS Point PS-Point PS-punt PS PS PS
Form Form Uitvoering Forme Forma Forma			
Point Angle Spitzenwinkel Punthoek Affûtage º de la punta º da Ponta			
Countersink º Senkwinkel Verzinkhoek º d'épaulement º de avellanado º do Escareado			
	Centre 60º Zentrierbohrer 60° Verzinkhoek 60º Chanfrein 60° Centro 60º De Centrar 60º	Centre radius form Zentrierbohrer mit Radius Verzinkboor met radius Chanfrein à rayon Forma con radio al centro De Centrar em forma de Raio	Subland 90º Mehrfasen-Stufenbohrer 90º Meerfasen trapboren 90º Angle d'épaulement à 90° Brocas bidiametrales 90º Escalonado 90º
	Subland 180º Mehrfasen-Stufenbohrer 180º Meerfasen trapboren 180º Angle d'épaulement à 180° Brocas bidiametrales 180º Escalonado 180º	Step drill 90º Stufenbohrer 90º Trapboren 90º Forets étagés 90º Brocas escalonadas 90º Broca Escalonada a 90º	Step drill 180º Stufenbohrer 180º Trapboren 180º Forets étagés 180º Brocas escalonadas 180º Broca Escalonada a 180º

Drilling icons / Symbole Bohrwerkzeuge / Boor symbolen / Symboles pour le perçage / Iconos de taladrado / Símbolos de Furação

Depth
Tiefe
Diepte
Profondeur
Profundidad
Profundidade

Shank
Schaft
Schacht
Queue
Mango
Encabadouro

Straight shank
Zylinderschaft
Cilindrisch
Queue cylindrique
Mango cilíndrico
Encabadouro Cilindrico

Morse taper shank
Morsekegelschaft
Morseconus
Queue cône morse
Mango cónico
Encabadouro Cónico

DIN 6535 HA

DIN 6535 HE

Shank with tang
Schaft mit Mitnehmerlappen
Schacht met meeneemlip
Queue avec tenon
Mango con espiga
Encabadouro com Patilhão

Step shank
NC-Schaft
Eenheidsschacht
Queue renforcée
Mango escalonado
Encabadouro Escalonado

Reduced shank
Reduzierter Schaft
Gereduceerde schacht

Standard
Standard
Standaard
Standard
Estándar
Standard

Coolant
Kühlung
Koeling
Lubrification
Refrigeración
Refrigeração

Internal Coolant
Innere Kühlung
Inwendig koelkanaal
Lubrification interne
Refrigeración Interna
Refrigeração Interna

Countersink icons / Symbole für Kegelsenker / Verzinkers symbool / Symboles pour les fraises coniques / Iconos Avellanado / Símbolos de Escareadores

Application
Anwendung
Toepassing
Utilisation
Aplicaciones
Aplicação

Countersink
Kegelsenken
Verzinkboren
Fraises à chanfreiner
Avellanadores
Escareador

G314

Counterbore
Flachsenken
Kopverzinkfrezen
Fraises pour logement de tête de vis
Refrentadores
Escareador p/ abertura de caixas

M138

Countersink °
Senkwinkel
Verzinkhoek
° d'épaulement
° de avellanado
Ângulo de
Escareador

G314

M138

Shank
Schaft
Schacht
Queue
Mango
Haste

Straight
Zylinderschaft
Cilindrisch
Queue cylindrique
Mango cilíndrico
Encabadouro Cilindrico

Morse taper shank
Morsekegelschaft
Morseconus
Queue cône morse
Mango cónico
Encabadouro Cónico

Standard
Standard
Standaard
Standard
Estándar
Standard

Threading icons / Symbole Gewindewerkzeuge / Scroefdraad symbolen / Symboles pour le taraudage / Iconos de Roscado / Símbolos de Roscagem

Thread form
Gewindeform
Draad type
Forme de filet
Forma de Rosca
Forma da Rosca

Metric Coarse
Metrisch
Metrisch
Métrique
Métrica
Métrica

Metric Fine
Metrisch fein
Metrisch fijn
Métrique fin
Métrica fina
Métrica Fina

Unified Coarse

Filetage américain

Unified Fine

Filetage américain pas fin

Unified

Filetage américain

British Standard Pipe Fastening - G series

Filetage Gaz

National Taper Pipe

Filetage Gaz conique

National Taper Pipe Dryseal

Filetage NPTF

National Straight Pipe Dryseal

Filetage NPSF

National Straight Pipe Mechanical

Filetage NPSM

British Association

Filetage BA

British Standard Fine

Withworth pas fin

British Standard Whitworth

Withworth

Wire Insert Taps
Einsatzgewinde metrisch

Pour filets rapportés

Armour Pipe/ Steel Conduit
Panzerrohrgewinde

pour tubes électriques

British Standard Pipe Taper - RC Series

Gaz conique withworth

Hole Type
Art der Bohrung
Type gat
Type de trou
Tipo de agujero
Tipo do furo

Through hole
Durchgangsbohrung
Doorlopend gat
Trou débouchant
Agujero pasante
Furo a Passar

Blind hole
Sackbohrung
Blind gat
Trou borgne
Agujero ciego
Furo cego

Through or blind hole
Durchgangs- oder Sackbohrung
Doorlopend of blind gat
Trou débouchant/borgne
Agujero pasante/ciego
Furo a Passar ou Furo Cego

Threading icons / Symbole Gewindewerkzeuge / Scroefdraad symbolen / Symboles pour le taraudage / Iconos de Roscado / Símbolos de Roscagem

Flute geometry / Geometrie / Spaangroef / Géométrie / Geometría / Geometria

Straight Flute
Geradegenutet
Rechte spaangroeven
Goujures droites
Estrías rectas
Canais Direitos

Spiral Point
Geradegenutet mit Schälanschnitt
Rechte groeven met schilaansnijding
Coupe gun
Estrías rectas, entrada en hélice
Entrada Helicoidal

Spiral Flute 15º
Spiralgenutet 15º
Gespiraliseerde spaangroeven 15º
Goujures hélicoidales 15º
Estrías helicoidales 15º
Canais Helicoidais a 15º

Spiral Flute 27º
Spiralgenutet 27º
Gespiraliseerde spaangroeven 27º
Goujures hélicoidales 27º
Estrías helicoidales 27º
Canais Helicoidais a 27º

Spiral Flute 30º
Spiralgenutet 30º
Gespiraliseerde spaangroeven 30º
Goujures hélicoidales 30º
Estrías helicoidales 30º
Canais Helicoidais a 30º

Spiral Flute 40º
Spiralgenutet 40º
Gespiraliseerde spaangroeven 40º
Goujures hélicoidales 40º
Estrías helicoidales 40º
Canais Helicoidais a 40º

Spiral Flute 45º
Spiralgenutet 45º
Gespiraliseerde spaangroeven 45º
Goujures hélicoidales 45º
Estrías helicoidales 45º
Canais Helicoidais a 45º

Depth / Tiefe / Diepte / Profondeur / Profundidad / Profundidade

Coolant / Kühlung / Koeling / Lubrification / Refrigeración / Refrigeração

Internal Coolant
Innere Kühlung
Inwendig koelkanaal
Lubrification interne
Refrigeración Interna
Refrigeração Interna

Chamfer / Anschnitt / Aansnijding / Chanfrein / Chaflán / Chanfro

Chamfer No. A
Anschnitt Form A
Aansnijding vorm A
Chanfrein No. A
Chaflán no. A
Chanfro No. A

Chamfer No. B
Anschnitt Form B
Aansnijding vorm B
Chanfrein No. B
Chaflán no. B
Chanfro No. B

Chamfer No. C
Anschnitt Form C
Aansnijding vorm C
Chanfrein No. C
Chaflán no. C
Chanfro No. C

Chamfer No. D
Anschnitt Form D
Aansnijding vorm D
Chanfrein No. D
Chaflán no. D
Chanfro No. D

Threading icons / Symbole Gewindewerkzeuge / Scroefdraad symbolen / Symboles pour le taraudage / Iconos de Roscado / Símbolos de Roscagem

Tolerance
Toleranz
Tolerantie
Tolérance
Tolerancia
Tolerância

Medium
Mittel
Middel
Moyen
Mediano
Médio

Normal
Normal
Normaal
Normal
Normal
Normal

Standard
Standard
Standaard
Standard
Estándar
Standard

Milling icons / Symbole Fräswerkzeuge / Frees symbolen / Symboles pour le fraisage / Iconos de Fresado / Símbolos de Fresagem

Type
Typ
Type
Type
Tipo
Tipo

Coarse pitch flat profile chipbreaker
Schruppschlicht-Verzahnung
Ruwvertanding met afgeplat rond profiel
Brise-copeaux plats
Rompevirutas de perfil grueso plano
1/2 Desbaste

Coarse pitch rounded profile chipbreaker
Schruppkordel-Verzahnung
Ruwvertanding met rond profiel
Brise-copeaux ronds fins
Rompevirutas de perfil grueso redondeado
Desbaste

Coarse pitch asymmetrical rounded profile chipbreaker
Asymetrische Schruppkordel-Verzahnung
Ruwvertanding met asymmetrisch rond profiel
Brise copeaux ronds asymétrique
Rompevirutas de perfil grueso asimétrico
Desbaste Assimétrico

Fine pitch asymmetrical rounded profile chipbreaker
Asymetrische feine Schruppkordel-Verzahnung
Fijnruwvertanding met asymmetrisch rond profiel
Brise-copeaux ronds fins asymétrique
Rompevirutas de perfil fino redondeado asimétrico
Desbaste Fino Assimétrico

Semi-finishing chipbreaker
Schlichtfräser mit Spanbrecher
Fijnruwvertanding
Semi-finition Ebauche
Rompevirutas semiacabado
Semi-Acabamento

Cutter type for soft and malleable materials
Für weiche und langspanende Materialien
Frezen voor zachte en smeedbare materialen
Fraise pour les matières douces et malléables
Cuchillas para materiales suaves y maleables
Para Materiais macios e maleáveis

For steels with low to high resistance
Schlichtfräser
Voor staal, lage tot hoge treksterkte
Pour aciers de moyenne à haute résistance
Para aceros con resistencia baja o alta
Acabamento

Milling icons / Symbole Fräswerkzeuge / Frees symbolen / Symboles pour le fraisage / Iconos de Fresado / Símbolos de Fresagem

Application
Anwendung
Toepassing
Utilisation
Aplicaciones
Aplicação

Slotting P9
Langlochfräsen in P9 Toleranz
Spiebaanfrezen P9
Rainurage P9
Ranurar
Abertura de Rasgos

Slotting
Langlochfräsen
Spiebaanfrezen
Rainurage
Ranurar
Abertura de Rasgos

Finishing
Schlichtfräsen
Nafrezen
Finition
Acabado
Acabamento

Roughing
Schruppfräser
Voorfrezen
Ébauche
Gran desbaste
Desbaste

Ball nose
Radiusfräsen
Radiusfrezen
Bout hémisphérique
Fresas radiales
Topo Boleado

T-shaped
T-Nutenfräser
T-gleuffrezen
Fraises pour rainures en T
Ranurados tipo “T”
Forma - T

Woodruff
Schlitzfräser für Scheibenfeder-Nuten
Schijfspie-frezen
Fraises Woodruff
Ranurados tipo Woodruff
Escatel

Dovetail
Winkelfräser
Zwaluwstaartfrezen
Fraises coniques cône renversé
Fresas angulares
Cónica Invertida

Inverse dovetail
Winkelfräser
Duivenstaartfrezen
Fraises coniques cône direct
Fresas con ángulo inverso
Cónica

Corner rounding
Viertelrund-Profilfräser konkav
Kwartholfrezen conkaaf
Fraises concaves 1/4 de cercle
Fresas frontales de perfil cóncavo
De Raio

Side and face/Saws
Schlitzfräser/Sägeblätter
Sleuffrezen/Zaagbladen
Fraise 3 tailles
Fresas de ranurar de 3 cortes/sierras
Dente Alternado / Circular

Shell end
Walzenstirnfräser
Mantelkopfrezen
Fraise 2 tailles
Fresas cónicas frontales
Furo Central

Metal slitting saw tooth form

Milling icons / Symbole Fräswerkzeuge / Frees symbolen / Symboles pour le fraisage / Iconos de Fresado / Símbolos de Fresagem

Direction
Richtung
Richting
Direction
Dirección
Direcção

Slotting, ramping, diving
mögliche Fräsrichtung
Spiebaan-, insteek-, borend- en contourfrezen
Rainurage, ramping, plongée
Ranurar, fresado lateral, penetración
Escatelar, Corte Lateral, Penetração

Slotting, ramping
mögliche Fräsrichtung
Inlopend- en contourfrezen
Rainurage, ramping
Ranurar, fresado lateral
Escatelar, Corte Lateral

Finishing
mögliche Fräsrichtung
Contourfrezen
Finition
Acabado
Acabamento

Milling
mögliche Fräsrichtung
Contourfrezen
Fraisage
Fresado
Fresagem

Cut length
Schneidenlänge
Snijkants lengte
Longueur de coupe
Longitud de corte
Comprimento
Navalha

Extra short
Extra kurz
Extra kort
Extra court
Extra corta
Extra curta

Medium
Mittel
Middel
Moyen
Mediana
Médio

Extra Long
Extra lang
Extra lang
Extra Long
Extra larga
Extra longa

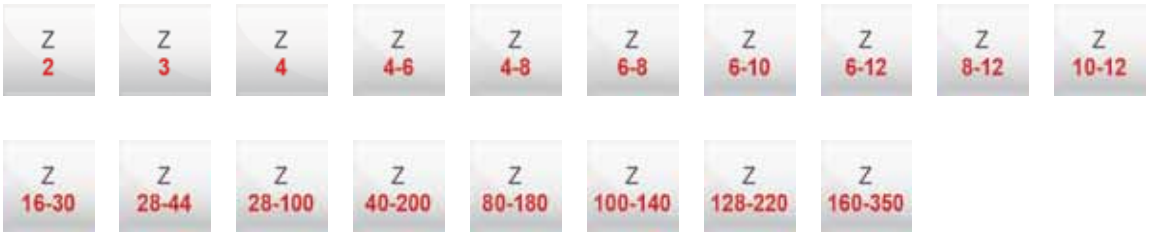
Diameter tolerance
Schneiden-toleranz
Spaangroef
Tolérance
Tolerancia del diámetro
Tolerância do diâmetro

e8 full and half diameters, h10 others
e8 für volle und halbe durchmesser ansonsten h10
e8 voor 1/1 en 1/2 diameters, h10 overige
e8 cotes rondes et intermédiaires, h10 autres
Tol e8 en diámetros enteros y medios, h10 en otros
e8 diâmetros inteiros e intermediários, h10 outros

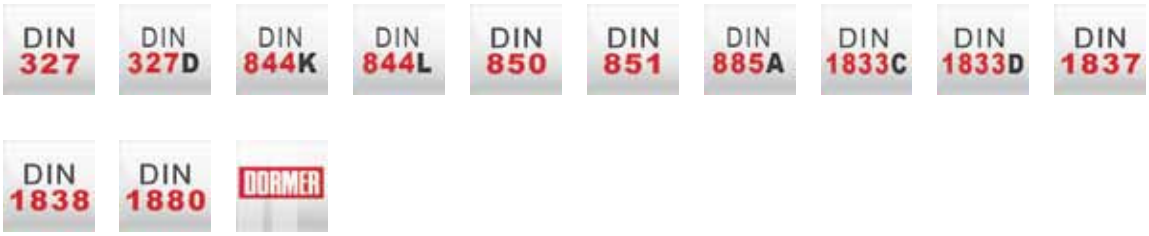
Milling icons / Symbole Fräswerkzeuge / Frees symbolen / Symboles pour le fraisage / Iconos de Fresado / Símbolos de Fresagem

Helix Angle
Spiralwinkel
Spiraalhoek
Angle d'hélice
Ángulo de hélice
Ângulo de hélice

teeth (z)
Zähne
tanden
dent
Dientes
Navalhas



Standard
Standard
Standaard
Standard
Estándar
Standard



Shank
Schaft
Schacht
Queue
Mango
Haste

Parting off tool icons / Symbole für Abstechwerkzeuge / Wisselplaten symbool / Symboles pour les outils de tronçonnage / Iconos de cuchillas de tronzar / Símbolos de Acessórios

Edge angle Abstechwinkel Afsteekhoek Angle de coupe ° de corte inclinado ° de Corte do Acessório	 0º	 8º Left - Right 8º links - rechts 8º Links - Rechts 8º à gauche - à droite 8º a izquierdas - a derechas 8º à esquerda - à direita	 15º Left - Right 15º links - rechts 15º Links - Rechts 15º à gauche - à droite 15º a izquierdas - a derechas 15º à esquerda - à direita
Insert Size Plattengrösse Grootte Taille Tamaño Dimensão da Plaquete			
Direction of cut Abstechrichtung Snijrichting Direction de coupe Dirección de corte Direcção do corte	 Right Rechts Rechts À droite A derecha À direita	 Left Links Links À gauche A izquierda À esquerda	
Application Anwendung Toepassing Utilisation Aplicaciones Aplicação	 Cut Abstechen Afsteken Tronçonnage Corte Corte	 Groove Einstechen Insteken Gorge Ranura Ranhura	
Form Drehlingsform Form Forme Formas Forma	 Round Rund Rond Rond Redonda Redondo	 Square Vierkant Vierkant Carré Cuadrada Quadrado	 Rectangular Rechteckig Rechthoekig Rectangulaire Rectangular Rectangular
Tolerance Toleranz Tolerantie Tolérance Tolerancia Tolerância			
Standard Standard Standaard Standard Estándar Standard			

English / Deutsch

English			Hardness	Tensile strength
Application Material Groups			HB	N/mm²
1. Steel	1.1	Magnetic soft steel	< 120	< 400
	1.2	Structural steel, case carburizing steel	< 200	< 700
	1.3	Plain Carbon steel	< 250	< 850
	1.4	Alloy steel	< 250	< 850
	1.5	Alloy steel, Hardened and tempered steel	> 250 < 350	> 850 < 1200
	1.6	Alloy steel, Hardened and tempered steel	> 350	> 1200 < 1620
	1.7	Alloy steel, Heat treated	49-55HRC	> 1620
	1.8	Alloy steel, Hardened & Wear resistant steel	55-63HRC	> 1980
2. Stainless Steel	2.1	Free machining, Stainless Steel	< 250	< 850
	2.2.	Austenitic,	< 320	< 1100
	2.3	Ferritic + Austenitic, Ferritic, Martensitic	< 300	< 1000
	2.4	Precipitation hardened	>320 <410	>1100 <1400
3. Cast Iron	3.1	Lamellar graphite	< 150	> 500
	3.2	Lamellar graphite	> 150 <300	> 500 < 1000
	3.3	Nodular graphite, Malleable Cast Iron	< 200	< 700
	3.4	Nodular graphite, Malleable Cast Iron	> 200 < 300	> 700 < 1000
4. Titanium	4.1	Titanium, unalloyed	< 200	< 700
	4.2	Titanium, alloyed	< 270	< 900
	4.3	Titanium, alloyed	> 270 < 350	> 900 ≤ 1250
5. Nickel	5.1	Nickel, unalloyed	< 150	< 500
	5.2	Nickel, alloyed	< 270	> 900
	5.3	Nickel, alloyed	> 270 < 350	> 900 < 1200
6. Copper	6.1	Copper	< 100	< 350
	6.2	β-Brass, Bronze	< 200	< 700
	6.3	α-Brass	< 200	< 700
	6.4	High Strength Bronze	< 470	< 1500
7. Aluminium Magnesium	7.1	Al, Mg, unalloyed	< 100	< 350
	7.2	Al alloyed, Si < 0.5%	< 150	< 500
	7.3	Al alloyed, Si > 0.5% < 10%	< 120	< 400
	7.4	Al alloyed, Si > 10% Whisker reinforced. Al-alloys MG-alloys	< 120	< 400
8. Synthetic materials	8.1	Thermoplastics	---	---
	8.2	Thermosetting plastics	---	---
	8.3	Reinforced plastic materials	---	---
9. Hard material	9,1	Cermets (metals-ceramics)	< 550	< 1700
10. Graphite	10.1	Graphite	---	< 100

Deutsch			Härte	Zugfestigkeit
Anwendungsmaterialgruppen			HB	N/mm²
1. Stahl	1.1	Magnetweicheisen	< 120	< 400
	1.2	Baustahl, Einsatzstahl	< 200	< 700
	1.3	Kohlenstoffstahl	< 250	< 850
	1.4	Legierter Stahl	< 250	< 850
	1.5	Legierter und vergüteter Stahl	> 250 < 350	> 850 < 1200
	1.6	Legierter und vergüteter Stahl	> 350	> 1200 < 1620
	1.7	Legierter gehärteter Stahl	49-55HRC	> 1620
	1.8	Legierter gehärteter Stahl	55-63HRC	> 1980
2. Rostfreier Stahl	2.1	Rostfreier Stahl, geschwefelt	< 250	< 850
	2.2.	Austenitisch	< 320	< 1100
	2.3	Ferritisch+Austenitisch, Martensitisch	< 300	< 1000
	2.4	Vergüteter rostfreier Stahl	>320 <410	>1100 <1400
3. Gusseisen	3.1	Grauguss	< 150	> 500
	3.2	Vergüteter Grauguss	> 150 <300	> 500 < 1000
	3.3	Kugelgraphitguss, Temperguss	< 200	< 700
	3.4	Kugelgraphitguss, Temperguss	> 200 < 300	> 700 < 1000
4. Titan	4.1	Reintitan	< 200	< 700
	4.2	Titan-Legierungen	< 270	< 900
	4.3	Titan-Legierungen	> 270 < 350	> 900 ≤ 1250
5. Nickel	5.1	Reinnickel	< 150	< 500
	5.2	Nickel-Legierungen	< 270	> 900
	5.3	Nickel-Legierungen	> 270 < 350	> 900 < 1200
6. Kupfer	6.1	Kupfer	< 100	< 350
	6.2	Kurzspanendes Messing, Bronze	< 200	< 700
	6.3	Langspanendes Messing	< 200	< 700
	6.4	Cu-Al-Fe-Legierung, (Ampco)	< 470	< 1500
7. Aluminium Magnesium	7.1	Al, Mg, unlegiert	< 100	< 350
	7.2	Al legiert, Si<0.5%	< 150	< 500
	7.3	Al legiert, Si>0.5%<10%	< 120	< 400
	7.4	Al legiert, Si>10% Whisker verstärkte Al-Legierung, Mg-Legierung	< 120	< 400
8. Kunststoffe	8.1	Thermoplaste	---	---
	8.2	Duroplaste	---	---
	8.3	Faserverstärkte Kunststoffe	---	---
9. Hartstoffe	9,1	Cermets (Metallkeramik)	< 550	< 1700
10. Graphit	10.1	Graphit	---	< 100

DORMER

Nederlands / Français

Nederlands			Hardheid	Treksterkte
Applicatie Materiaalgroepen (AMG)			HB	N/mm²
1. Staal	1.1	Automatenstaal, zachtstaal	< 120	< 400
	1.2	Constructiestaal, inzetstaal	< 200	< 700
	1.3	Koolstofstaal	< 250	< 850
	1.4	Gelegeerd staal	< 250	< 850
	1.5	Gelegeerd staal, gehard en ontlaten staal	> 250 < 350	> 850 < 1200
	1.6	Gelegeerd staal, gehard en ontlaten staal	> 350	> 1200 < 1620
	1.7	Gelegeerd staal, gehard	49-55HRC	> 1620
	1.8	Gelegeerd staal, gehard	55-63HRC	> 1980
2. Roestvast -staal	2.1	Roestvast automatenstaal	< 250	< 850
	2.2.	Austenietisch	< 320	< 1100
	2.3	Ferrietiesch+Austenietisch, Martensietisch	< 300	< 1000
	2.4	Precipitatiehardend roestvast staal	>320 <410	>1100 <1400
3. Gietijzer	3.1	Gietijzer Lamellair	< 150	> 500
	3.2	Gietijzer Lamellair	> 150 <300	> 500 < 1000
	3.3	Nodulair gietijzer / Smeedbaar gietijzer	< 200	< 700
	3.4	Nodulair gietijzer / Smeedbaar gietijzer	> 200 < 300	> 700 < 1000
4. Titaan	4.1	Titaan, ongelegeerd	< 200	< 700
	4.2	Titaan, gelegeerd	< 270	< 900
	4.3	Titaan, gelegeerd	> 270 < 350	> 900 ≤ 1250
5. Nikkel	5.1	Nikkel, ongelegeerd	< 150	< 500
	5.2	Nikkel, gelegeerd	< 270	> 900
	5.3	Nikkel, gelegeerd	> 270 < 350	> 900 < 1200
6. Koper	6.1	Koper	< 100	< 350
	6.2	β-Messing, brons	< 200	< 700
	6.3	α-Messing	< 200	< 700
	6.4	Extra-sterk brons	< 470	< 1500
7. Aluminium Magnesium	7.1	Al, Mg, ongelegeerd	< 100	< 350
	7.2	Al gelegeerd, Si < 0.5%	< 150	< 500
	7.3	Al gelegeerd, Si > 0.5% < 10%	< 120	< 400
	7.4	Al gelegeerd, Si>10% whisker versterkt Al-legeringen, Mg-legeringen	< 120	< 400
8. Kunststof	8.1	Thermoplasten	---	---
	8.2	Duraplasten	---	---
	8.3	Versterkte kunststofmaterialen	---	---
9. Cermets	9,1	Cermets (metal-ceramics)	< 550	< 1700
10. Grafiet	10.1	Standaard Grafiet	---	< 100

Français			Dureté	Résistance à la traction
Groupes d'application Matière			HB	N/mm²
1. Acier	1.1	Acier doux magnétique	< 120	< 400
	1.2	Acier de construction, Acier de cémentation	< 200	< 700
	1.3	Acier au carbone ordinaire	< 250	< 850
	1.4	Acier allié	< 250	< 850
	1.5	Acier allié/ Acier trempé et revenu	> 250 < 350	> 850 < 1200
	1.6	Acier allié/ Acier trempé et revenu	> 350	> 1200 < 1620
	1.7	Acier allié trempé	49-55HRC	> 1620
	1.8	Acier allié trempé	55-63HRC	> 1980
2. Acier inoxydable	2.1	Acier inoxydable de décolletage	< 250	< 850
	2.2.	Austénitique	< 320	< 1100
	2.3	Ferritique + Austénitique, Martensitique	< 300	< 1000
	2.4	Acier Inoxydable Trempé	>320 <410	>1100 <1400
3. Fonte	3.1	Graphite lamellaire	< 150	> 500
	3.2	Graphite lamellaire	> 150 <300	> 500 < 1000
	3.3	Graphite nodulaire/ Fonte malléable	< 200	< 700
	3.4	Graphite nodulaire/ Fonte malléable	> 200 < 300	> 700 < 1000
4. Titane	4.1	Titane, non-allié	< 200	< 700
	4.2	Titane, allié	< 270	< 900
	4.3	Titane, allié	> 270 < 350	> 900 ≤ 1250
5. Nickel	5.1	Nickel, non-allié	< 150	< 500
	5.2	Nickel, allié	< 270	> 900
	5.3	Nickel, allié	> 270 < 350	> 900 < 1200
6. Cuivre	6.1	Cuivre	< 100	< 350
	6.2	ß-Laiton, Bronze	< 200	< 700
	6.3	α-Laiton	< 200	< 700
	6.4	Bronze, haute résistance	< 470	< 1500
7. Aluminium Magnésium	7.1	Al, Mg, non-allié	< 100	< 350
	7.2	Al allié, Si < 0.5%	< 150	< 500
	7.3	Al allié, Si > 0.5% < 10%	< 120	< 400
	7.4	Al allié, Si>10% Alliages d'Al ou Mg, céramique renforcée	< 120	< 400
8. Matières synthétiques	8.1	Thermoplastiques	---	---
	8.2	Plastiques thermodurcissables	---	---
	8.3	Plastiques renforcés	---	---
9. Matières dures	9,1	Cermets (céramiques metalliques)	< 550	< 1700
10. Graphite	10.1	Graphite standard	---	< 100

Español			Dureza	Resistencia a la tracción
Aplicación por grupo de material			HB	N/mm²
1. Acero	1.1	Acero blando	< 120	< 400
	1.2	Acero de construcción/cementación	< 200	< 700
	1.3	Acero al carbono	< 250	< 850
	1.4	Acero aleado	< 250	< 850
	1.5	Acero aleado/temple y revenido	> 250 < 350	> 850 < 1200
	1.6	Acero aleado/temple y revenido	> 350	> 1200 < 1620
	1.7	Acero aleado cementado	49-55HRC	> 1620
	1.8	Acero aleado cementado	55-63HRC	> 1980
2. Acero inoxidable	2.1	Acero inoxidable fácil mecanizado	< 250	< 850
	2.2.	Austenítico	< 320	< 1100
	2.3	Ferritico, Ferr. + Aust., Marten	< 300	< 1000
	2.4	Acero Inoxidable Templado	>320 <410	>1100 <1400
3. Hierro Fundido	3.1	Con grafito laminar	< 150	> 500
	3.2	Con grafito laminar	> 150 <300	> 500 < 1000
	3.3	Con graf. laminar, fundic. maleable	< 200	< 700
	3.4	Con graf. laminar, fundic. maleable	> 200 < 300	> 700 < 1000
4. Titanio	4.1	Titanio no aleado	< 200	< 700
	4.2	Titanio aleado	< 270	< 900
	4.3	Titanio aleado	> 270 < 350	> 900 ≤ 1250
5. Nickel	5.1	Níquel no aleado	< 150	< 500
	5.2	Níquel aleado	< 270	> 900
	5.3	Níquel aleado	> 270 < 350	> 900 < 1200
6. Cobre	6.1	Cobre	< 100	< 350
	6.2	β-Latón, bronce	< 200	< 700
	6.3	α-Latón	< 200	< 700
	6.4	Metal AMPCO	< 470	< 1500
7. Aluminio Magnesio	7.1	Al, Mg, no aleado	< 100	< 350
	7.2	Al aleado con Si < 0.5%	< 150	< 500
	7.3	Al aleado con Si > 0.5% < 10%	< 120	< 400
	7.4	Al aleado, Si>10% Reforzado por filamentos Al-aleados, Mg-aleados	< 120	< 400
8. Materiales Sintéticos	8.1	Termoplásticos	---	---
	8.2	Plásticos endurecidos por calor	---	---
	8.3	Materiales plásticos reforzados	---	---
9. Materiales duros	9,1	Cerametales (metales-cerámicas)	< 550	< 1700
10. Grafito	10.1	Grafito standard	---	< 100

Português			Dureza	Resistência à força de tracção
Grupos de Materiais (AMG)			HB	N/mm²
1. Aço	1.1	Aço macio magnético	< 120	< 400
	1.2	Aço estrutural, Aço cementado	< 200	< 700
	1.3	Aço-carbono	< 250	< 850
	1.4	Aço de liga	< 250	< 850
	1.5	Aço de liga, Aço temperado	> 250 < 350	> 850 < 1200
	1.6	Aço de liga, Aço temperado	> 350	> 1200 < 1620
	1.7	Aço de liga temperado	49-55HRC	> 1620
	1.8	Aço de liga temperado	55-63HRC	> 1980
2.Aço inoxidável	2.1	Aço inoxidável de maquinagem fácil	< 250	< 850
	2.2.	Austenítico	< 320	< 1100
	2.3	Ferrítico + Austenítico + Martensítico	< 300	< 1000
	2.4		>320 <410	>1100 <1400
3.Ferro fundido	3.1	Grafite lamelar	< 150	> 500
	3.2	Grafite lamelar	> 150 <300	> 500 < 1000
	3.3	Grafite nodular/ Ferro fundido maleável	< 200	< 700
	3.4	Grafite nodular/ Ferro fundido maleável	> 200 < 300	> 700 < 1000
4.Titânio	4.1	Titânio, sem liga	< 200	< 700
	4.2	Titânio, com liga	< 270	< 900
	4.3	Titânio, com liga	> 270 < 350	> 900 ≤ 1250
5.Níquel	5.1	Níquel, sem liga	< 150	< 500
	5.2	Níquel, com liga	< 270	> 900
	5.3	Níquel, com liga	> 270 < 350	> 900 < 1200
6.Cobre	6.1	Cobre	< 100	< 350
	6.2	Latão beta, bronze	< 200	< 700
	6.3	Latão alfa	< 200	< 700
	6.4	Bronze de alta resistência	< 470	< 1500
7.Alumínio Magnésio	7.1	Al, Mg, sem liga	< 100	< 350
	7.2	Al com liga, Si<0.5%	< 150	< 500
	7.3	Al com liga, Si>0.5%<10%	< 120	< 400
	7.4	Al com liga, Si>10% reforçadas com monocristais filiformes, ligas de Al/Mg	< 120	< 400
8.Materiais sintéticos	8.1	Termoplásticos	---	---
	8.2	Plásticos termoduros	---	---
	8.3	Materiais plásticos reforçados	---	---
9.Materiais duros	9,1	Cerametal (metalocerâmica)	< 550	< 1700
10.Grafite	10.1	Grafite standard	---	< 100

EXAMPLES OF WORKPIECE MATERIALS FROM DIFFERENT STANDARDS / BEISPIELE VON WERKSTÜCK-MATERIALIEN VERSCHIEDENER STANDARDS / VOORBEELD VAN WERKSTUK MATERIAAL IN VERSCHILLENDE SPECIFICATIES / EXEMPLES DE MATIERES A USINER SELON DIFFERENTES NORMES / EJEMPLOS DE MATERIALES DE LAS PIEZAS DE TRABAJO EN DIFERENTES NORMAS / EXEMPLOS DE MATERIAIS DE PEÇAS A MAQUINAR

AMG	EN	W Nr.	DIN	BS	ISO
1.1		1.1015, 1.1013	Rfe60, Rfe100	230Mo7, 050A12	P
1.2	EN 10 025 – S235JRG2	1.1012, 1.1053, 1.7131	St37-2, 16MnCr5, St50-2	060A35, 080M40, 4360-50B	P
1.3	EN 10 025 – E295	1.1191, 1.0601	CK45, C60	080M46, 080A62	P
1.4	EN 10 083-1 – 42 CrMo 4 - EN 10 270-2	1.7225, 1.3505, 1.6582, 1.3247	42CrMo4, 100Cr6, 34CrNiMo6, S2-10-1-8	708M40/42, 817M40, 534A99, BM2, BT42	P
1.5	EN ISO 4957 – HS6-5-2 - EN-ISO 4957 – HS6-5-2-5	1.2510, 1.2713, 1.3247, 1.2080	100MnCrW12, 55NiCrMoV6, X210Cr12, S2-10-1-8	B01, BM2, BT42, 826 M40, 830M31	P
1.6	EN-ISO 4957 – HS2-9-1-8	1.2510, 1.2713, 1.3247, 1.2080	100MnCrW12, X210Cr12, S2-10-1-8	801, 826 M40, 830M31	P
1.7	EN-ISO 4957 – HS2-9-1-8	1.2510	100MnCrW4	BO1, BD3, BH13	H
1.8	EN-ISO 4957 – X40CrMoV5-1	1.3343, 1.2344	S6-5-2, GX40CrMoV5-1	BM2, BH13	H
2.1	EN 10 088-3 – X14CrMoS17	1.4305, 1.4104	X10CrNiS189, X12CrMoS17	303 S21 , 416 S37	M
2.2.	EN 10 088-2,0 -3 – 1.4301+AT	1.4301, 1.4541, 1.4571	X5CrNi189 X10CrNiMoTi1810	304 S15, 321 S17, 316 S, 320 S12	M
2.3	EN 10 088-3 – 1.4460	1.4460, 1.4512, 1.4582	XBCrNiMo275, X4CrNiMoN6257	317 S16, 316 S16	M
2.4	EN 1.4547	1.4547	X2CrNiMo20-18-6	HR41	M
3.1	EN 1561 – EN-JL1030	0.6010, 0.6040	GG10, GG40	Grade150, Grade 400	K
3.2	EN 1561 – EN-JL1050	0.6025, 0.6040	GG25, GG40	Grade200, Grade 400	K
3.3	EN 1561 – EN-JL2040	0.7040, 0.7070, 0.8145, 0.8045	GGG40, GGG70, GTS45-06, GTW45-07	420/12, P440/7, 700/2, 30g/72	K
3.4	EN 1561 – EN-JL2050	0.7040, 0.7070, 0.8145, 0.8045	GGG40, GGG70, GTS45-06, GTW45-07	420/12, P440/7, 700/2, 30g/72	K
4.1		3.7024LN	Ti99,8	TA1 to 9	S
4.2		3.7164LN, 3.7119LN	TiAl6V4, TiAl55n2	TA10 to 14, TA17	S
4.3		3.7164LN, 3.7174LN, 3.7184LN	TiAl6V4, TiAl6V5Sn2, TiAl4MoSn2	TA10 to 13, TA28	S
5.1		2.4060, 2.4066	Nickel 200, 270, Ni99,6	NA 11, NA12	S
5.2		2.4630LN, 2.4602, 2.4650LN	Nimonic 75, Monel 400, Hastelloy C, Inconel 600	HR203, 3027-76	S
5.3		2.4668LN, 2.4631LN, 2.6554LN	Inconel 718, Nimonic 80A, Waspaloy	HR8, HR401, 601	S
6.1	EN 1652 – CW004A	2.0060, 2.0070	E-Cu57, SE-Cu	C101	N
6.2	EN 1652 – CW612N	2.0380, 2.0360, 2.1030, 2.1080	CuZn39Pb2, CuZn40, CuSn8, CuSn6Zn	CZ120, CZ109,PB104	N
6.3	EN 1652 – CW508L	2.0321, 2.0260	CuZn37, CuZn28	CZ108,CZ106	N
6.4			Ampco 18, Ampco 25	AB1 type	N
7.1	EN 485-2 – EN AW-1070A	3.0255	Al99,5	LMO, 1 B (1050A)	N
7.2	EN 755-2 – EN AW-5005	3.1355, 3.3525	AlCuMg2, AlMg2Mn0,8	LM5, 10, 12, N4 (5251)	N
7.3	EN 1706 – EN AC-42000	3.2162.05, 3.2341.01	GD-AlSi8Cu, G-AlSi5Mg	LM2,4,16,18,21,22,, 24,25,26,27,L109	N
7.4	SS-EN 1706 – EN AC-47000	3.2581.01	G-AlSi18, G-AlSi12	LM6, 12,13, 20, 28, 29, 30	N
8.1				Polystyrene, Nylon, PVC Cellulose, Acetate & Nitrate	O
8.2				Ebonite, Tufnol, Bakelite	O
8.3				Kevlar, Printed Circuit boards	O
9,1				Ferrotic, Ferrotitanit	H
10.1					O

AMG	SS	USA	UNS	ISO
1.1	1160	Leaded Steels	G12120	P
1.2	1312, 1412, 1914	135, 30	G10100	P
1.3	1550, 2142, 2172	1024, 1060, 1061	G10600	P
1.4	1672-04, 2090, 2244-02, 2541-02	4140, A2, 4340, M42, M2	G41270, G41470, T30102, T11342	P
1.5	2244-04, 2541-03, 2550, 2722, 2723	01, L6, M42, D3, A2, M2, 4140, 8630	G86300, T30102' T11302, T30403, T11342	P
1.6	2244-05, 2541-05, , HARDOX 400	01, L6, M42, D3, 4140, 8130	T30403, G41400, J14047	P
1.7	HARDOX 500			H
1.8	2242 HARDOX 600			H
2.1	2301, 2312, 2314, 2346, 2380	303, 416, 430F	S30300, S41600, S43020	M
2.2.	2310, 2333, 2337, 2343, 2353, 2377	304, 321, 316	S30400, S32100, S31600	M
2.3	2324, 2387, 2570	409, 430, 436	S40900, S4300, S43600	M
2.4	2378	17-4PH	S31254	M
3.1	0120, 0212, 0814	ASTM A48 class 20	F11401, F12801	K
3.2	0125, 0130, 0140, 0217	ASTM A48 class 40, STM A48 class 60	F12801, F14101	K
3.3	0219, 0717, 0727, 0732, 0852	ASTM A220 grade 40010, ASTM A602 grade M4504	F22830, F20001	K
3.4	0221, 0223, 0737, 0854	ASTM A220 grade 90001, ASTM A602 grade M8501	F26230, 20005	K
4.1	Ti99,8	ASTM B265 grade 1	R50250	S
4.2	TiAl6V4, TiAl5Sn2	AMS4928	R54790	S
4.3	TiAl6V5Sn2	AMS4928, AMS4971	R56400, R54790	S
5.1	Ni200, Ni270	Nickel 200, Nickel 230	N02200, N02230	S
5.2		Nimonic 75,Monel400, Hastelloy, Inconel600	N06075, N10002, N04400, N06600	S
5.3		Inconel 718, 625, Nimonic 80	N07718, N07080, N06625	S
6.1	5010	101	C10100, C1020	N
6.2	5168		C28000, C37710	N
6.3	5150		C2600, C27200	N
6.4	5238, JM7-20			N
7.1	4005	EC, 1060, 1100	A91060, A91100	N
7.2	4106, 4212	380, 520.0, 520.2, 2024, 6061	A03800, A05200, A92024	N
7.3	4244	319.0, 333.0, 319.1, 356.0	A03190, A03330, C35600	N
7.4	4260, 4261, 4262	4032, 222.1, A332.0	A94032, A02220, A13320	N
8.1		Polystyrene, Nylon, PVC		O
8.2		Bakelite		O
8.3		Kevlar		O
9,1				H
10.1				O

m/Min		5	8	10	15	20	25	30	40	50	60	70	80	90	100	110	150
Feet/Min		16	26	32	50	66	82	98	130	165	197	230	262	296	330	362	495
Ø		Vc ↔ RPM															
mm	inch																
1,00		1592	2546	3183	4775	6366	7958	9549	12732	15916	19099	22282	25465	28648	31831	35014	47747
1,50		1061	1698	2122	3183	4244	5305	6366	8488	10610	12732	14854	16977	19099	21221	23343	31831
2,00		796	1273	1592	2387	3183	3979	4775	6366	7958	9549	11141	12732	14324	15916	17507	23873
2,50		637	1019	1273	1910	2546	3183	3820	5093	6366	7639	8913	10186	11459	12732	14006	19099
3,00		531	849	1061	1592	2122	2653	3183	4244	5305	6366	7427	8488	9549	10610	11671	15916
3,18	1/8	500	801	1001	1501	2002	2502	3003	4004	5005	6006	7007	8008	9009	10010	11011	15015
3,50		455	728	909	1364	1819	2274	2728	3638	4547	5457	6366	7276	8185	9095	10004	13642
4,00		398	637	796	1194	1592	1989	2387	3183	3979	4775	5570	6366	7162	7958	8754	11937
4,50		354	566	707	1061	1415	1768	2122	2829	3537	4244	4951	5659	6366	7074	7781	10610
4,76	3/16	334	535	669	1003	1337	1672	2006	2675	3344	4012	4681	5350	6018	6687	7356	10031
5,00		318	509	637	955	1273	1592	1910	2546	3183	3820	4456	5093	5730	6366	7003	9549
6,00		265	424	531	796	1061	1326	1592	2122	2653	3183	3714	4244	4775	5305	5836	7958
6,35	1/4	251	401	501	752	1003	1253	1504	2005	2506	3008	3509	4010	4511	5013	5514	7519
7,00		227	364	455	682	909	1137	1364	1819	2274	2728	3183	3638	4093	4547	5002	6821
7,94	5/16	200	321	401	601	802	1002	1203	1604	2004	2405	2806	3207	3608	4009	4410	6013
8,00		199	318	398	597	796	995	1194	1592	1989	2387	2785	3183	3581	3979	4377	5968
9,00		177	283	354	531	707	884	1061	1415	1768	2122	2476	2829	3183	3537	3890	5305
9,53	3/8	167	267	334	501	668	835	1002	1336	1670	2004	2338	2672	3006	3340	3674	5010
10,00		159	255	318	477	637	796	955	1273	1592	1910	2228	2546	2865	3183	3501	4775
11,11	7/16	143	229	287	430	573	716	860	1146	1433	1719	2006	2292	2579	2865	3152	4298
12,00		133	212	265	398	531	663	796	1061	1326	1592	1857	2122	2387	2653	2918	3979
12,70	1/2	125	201	251	376	501	627	752	1003	1253	1504	1754	2005	2256	2506	2757	3760
14,00		114	182	227	341	455	568	682	909	1137	1364	1592	1819	2046	2274	2501	3410
14,29	9/16	111	178	223	334	446	557	668	891	1114	1337	1559	1782	2005	2228	2450	3341
15,00		106	170	212	318	424	531	637	849	1061	1273	1485	1698	1910	2122	2334	3183
15,88	5/8	100	160	200	301	401	501	601	802	1002	1203	1403	1604	1804	2004	2205	3007
16,00		99	159	199	298	398	497	597	796	995	1194	1393	1592	1790	1989	2188	2984
17,46	11/16	91	146	182	273	365	456	547	729	912	1094	1276	1458	1641	1823	2005	2735
18,00		88	141	177	265	354	442	531	707	884	1061	1238	1415	1592	1768	1945	2653
19,05	3/4	84	134	167	251	334	418	501	668	835	1003	1170	1337	1504	1671	1838	2506
20,00		80	127	159	239	318	398	477	637	796	955	1114	1273	1432	1592	1751	2387
24,00		66	106	133	199	265	332	398	531	663	796	928	1061	1194	1326	1459	1989
25,00		64	102	127	191	255	318	382	509	637	764	891	1019	1146	1273	1401	1910
27,00		59	94	118	177	236	295	354	472	589	707	825	943	1061	1179	1297	1768
30,00		53	85	106	159	212	265	318	424	531	637	743	849	955	1061	1167	1592
32,00		50	80	99	149	199	249	298	398	497	597	696	796	895	995	1094	1492
36,00		44	71	88	133	177	221	265	354	442	531	619	707	796	884	973	1326
40,00		40	64	80	119	159	199	239	318	398	477	557	637	716	796	875	1194
50,00		32	51	64	95	127	159	191	255	318	382	446	509	573	637	700	955

HV Vickers	HRC Rockwell	HB Brinell	Tensile Strength Newtons/ mm^2	Tons/ sq. in.
940	68			
900	67			
864	66			
829	65			
800	64			
773	63			
745	62			
720	61			
698	60			
675	59			
655	58		2200	142
650		618	2180	141
640		608	2145	139
639	57	607	2140	138
630		599	2105	136
620		589	2070	134
615	56	584	2050	133
610		580	2030	131
600		570	1995	129
596	55	567	1980	128
590		561	1955	126
580		551	1920	124
578	54	549	1910	124
570		542	1880	122
560	53	532	1845	119
550		523	1810	117
544	52	517	1790	116
540		513	1775	115
530		504	1740	113
527	51	501	1730	112
520		494	1700	110
514	50	488	1680	109
510		485	1665	108
500		475	1630	105
497	49	472	1620	105
490		466	1595	103
484	48	460	1570	102
480		456	1555	101
473	47	449	1530	99
470		447	1520	98
460		437	1485	96
458	46	435	1480	96
450		428	1455	94
446	45	424	1440	93
440		418	1420	92

HV Vickers	HRC Rockwell	HB Brinell	Tensile Strength Newtons/ mm^2	Tons/ sq. in.
434	44	413	1400	91
423	43	402	1360	88
413	42	393	1330	86
403	41	383	1300	84
392	40	372	1260	82
382	39	363	1230	80
373	38	354	1200	78
364	37	346	1170	76
355	36	337	1140	74
350		333	1125	73
345	35	328	1110	72
340		323	1095	71
336	34	319	1080	70
330		314	1060	69
327	33	311	1050	68
320		304	1030	67
317	32	301	1020	66
310	31	295	995	64
302	30	287	970	63
300		285	965	62
295		280	950	61
293	29	278	940	61
290		276	930	60
287	28	273	920	60
285		271	915	59
280	27	266	900	58
275		261	880	57
272	26	258	870	56
270		257	865	56
268	25	255	860	56
265		252	850	55
260	24	247	835	54
255	23	242	820	53
250	22	238	800	52
245		233	785	51
243	21	231	780	50
240		228	770	50
235		223	755	49
230		219	740	48
225		214	720	47
220		209	705	46
215		204	690	45
210		199	675	44
205		195	660	43
200		190	640	41

	Ø mm							
	> 1 ≤ 3	> 3 ≤ 6	> 6 ≤ 10	> 10 ≤ 18	> 18 ≤ 30	> 30 ≤ 50	> 50 ≤ 80	> 80 ≤ 120
e8	-14 / -28	-20 / -38	-25 / -47	-32 / -59	-40 / -73	-50 / -89	-60 / -106	-72 / -126
f6	-6 / -12	-10 / -18	-13 / -22	-16 / -27	-20 / -33	-25 / -41	-30 / -49	- 36 / -58
f7	-6 / -16	-10 / -22	-13 / -28	-16 / -34	-20 / -41	-25 / -50	-30 / -60	-36 / -71
h6	0 / -6	0 / -8	0 / -9	0 / -11	0 / -13	0 / -16	0 / -19	0 / -22
h7	0 / -10	0 / -12	0 / -15	0 / -18	0 / -21	0 / -25	0 / -30	0 / -35
h8	0 / -14	0 / -18	0 / -22	0 / -27	0 / -33	0 / -39	0 / -46	0 / -54
h9	0 / -25	0 / -30	0 / -36	0 / -43	0 / -52	0 / -62	0 / -74	0 / -87
h10	0 / -40	0 / -48	0 / -58	0 / -70	0 / -84	0 / -100	0 / -120	0 / -140
h11	0 / -60	0 / -75	0 / -90	0 / -110	0 / -130	0 / -160	0 / -190	0 / -220
h12	0 / -100	0 / -120	0 / -150	0 / -180	0 / -210	0 / -250	0 / -300	0 / -350
k10	+40 / 0	+48 / 0	+58 / 0	+70 / 0	+84 / 0	+100 / 0	+120 / 0	+140 / 0
k12	+100 / 0	+120 / 0	+150 / 0	+180 / 0	+210 / 0	+250 / 0	+300 / 0	+350 / 0
m7	+2 / +12	+4 / +16	+6 / +21	+7 / +25	+8 / +29	+9 / +34	+11 / +41	+13 / +48
js14	+/- 125	+/- 150	+/- 180	+/- 215	+/- 260	+/- 310	+/- 370	+/- 435
js16	+/- 300	+/- 375	+/- 450	+/- 550	+/- 650	+/- 800	+/- 950	+/- 1100
H7	+10 / 0	+12 / 0	+15 / 0	+18 / 0	+21 / 0	+25 / 0	+30 / 0	+35 / 0
H8	+14 / 0	+18 / 0	+22 / 0	+27 / 0	+ 33 / 0	+39 / 0	+46 / 0	+54 / 0
H9	+25 / 0	+30 / 0	+36 / 0	+43 / 0	+52 / 0	+62 / 0	+74 / 0	+87 / 0
H12	+100 / 0	+120 / 0	+150 / 0	+180 / 0	+210 / 0	+250 / 0	+300 / 0	+ 350/ 0
P9	-6 / -31	-12 / -42	-15 / -51	-18 / -61	-22 / -74	-26 / -86	-32 / -106	-37 / -124

DRILLING

GENERAL HINTS ON DRILLING

1. Select the most appropriate drill for the application, bearing in mind the material to be machined, the capability of the machine tool and the coolant to be used.
2. Flexibility within the component and machine tool spindle can cause damage to the drill as well as the component and machine - ensure maximum stability at all times. This can be improved by selecting the shortest possible drill for the application.
3. Tool holding is an important aspect of the drilling operation and the drill cannot be allowed to slip or move in the tool holder.
4. The correct use of Morse Taper Shank drills relies on an efficient fit between the taper surfaces of the tool and the tool holder. The use of a soft-faced hammer should be used to drive the drill into the holder.
5. The use of suitable coolants and lubricants are recommended as required by the particular drilling operation. When using coolants and lubricants, ensure a copious supply, especially at the drill point.
6. Swarf evacuation whilst drilling is essential in ensuring the correct drilling procedure. Never allow the swarf to become stationary in the flute.
7. When regrinding a drill, always make sure that the correct point geometry is produced and that any wear has been removed.

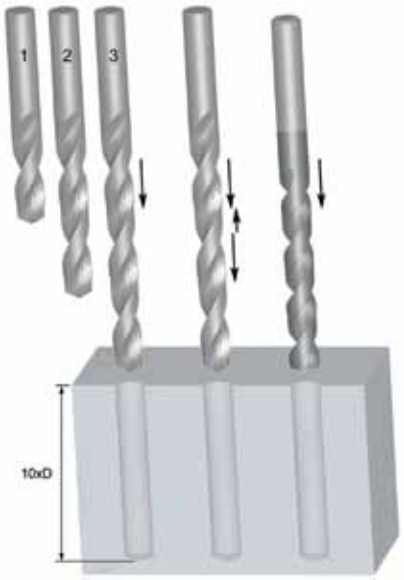
HOLE SIZE

As geometric, substrate and coating configurations become more advanced, the ability of a drill to produce a more accurate hole size increases. In general, a standard geometry tool will achieve a hole size to H12. However as the configuration of the drill becomes more complex the achievable hole size, under favourable conditions, can be as good as H8. To offer a better insight, listed below are the product types and their achievable hole tolerances:

- HSS General Purpose drills – H12
- HSS / HSS-E Parabolic Flute Deep Hole Drills – H10
- Solid Carbide High Performance coated – H8/H9

DEEP HOLE DRILLING STRATEGY

When drilling deep holes, several methods can be adopted to achieve the depth required. The example below shows four ways of drilling a hole with 10 x the diameter of the drill.



	Series Drilling	Series Drilling
No of drills	3 (2,5xD, 6xD,10xD)	2 (2,5xD,10xD)
Type of drill	Standard geometry, general purpose	Standard geometry, general purpose
+ / -	Expensive Time consuming	More cost effective Quick

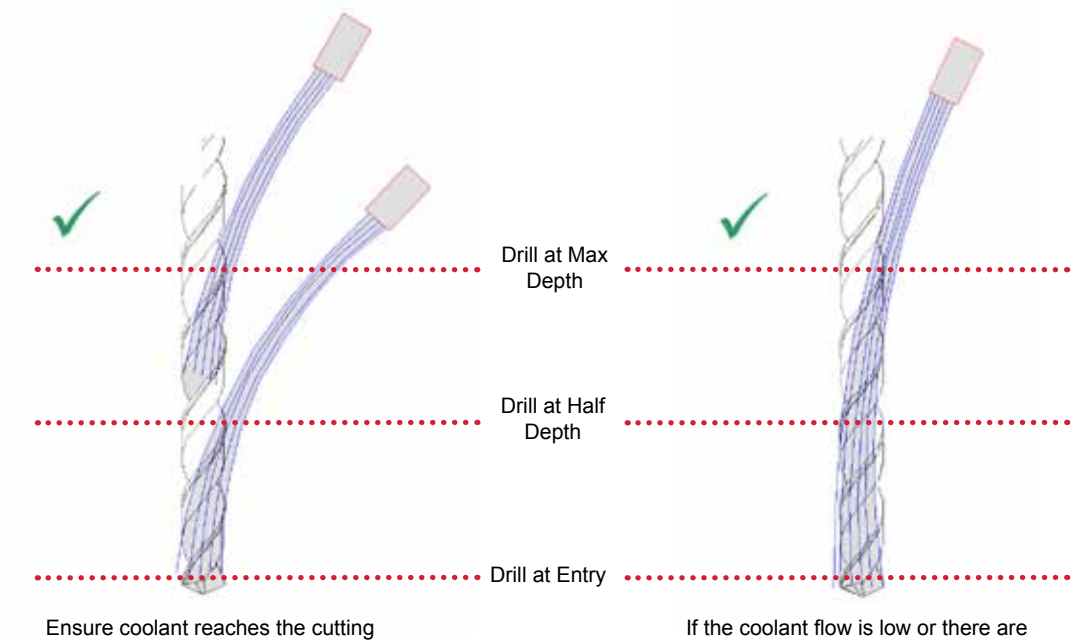
	Peck Drilling	Single Pass Drilling
No of drills	1 (10xD)	1 (10xD)
Type of drill	Standard geometry, general purpose	Purpose specific tools
+ / -	Time consuming	Cost effective Fast

INTERNAL COOLANT PRESSURE

The use of through tool coolant is to maintain a copious coolant flow direct to the point of the drill, therefore reducing the amount of heat generated and consequently increasing tool life. High performance drills require an increase in coolant pressure as the coolant flow not only keeps the cutting area cool, it helps with the efficient evacuation of swarf at high penetration rates. In short, the higher the coolant pressure, the more efficient the cooling and swarf evacuation processes are. For high performance and increased productivity, the coolant pressure should be at a minimum 20 bar.

EXTERNAL COOLANT POSITIONING

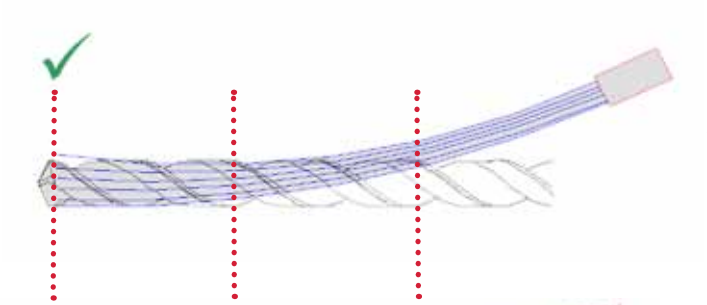
Vertical Machining



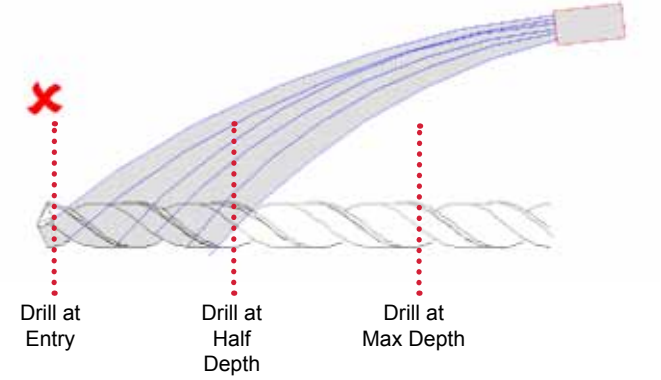
Ensure coolant reaches the cutting zone throughout the entire depth.

If the coolant flow is low or there are too few nozzles ensure the coolant flows down the flute into the hole

Horizontal Machining



If there are too few coolant pipes increase pressure and volume to ensure coolant reaches cutting zone for full depth of cut.



If nozzles are set incorrectly the coolant will become deflected and not reach the cutting zone, leading to possible premature tool failure.

TROUBLE SHOOTING WHEN DRILLING

PROBLEM	**CAUSE**	**REMEDY**
Broken or twisted tangs	Bad fit between shank and socket	Ensure the shank and socket are clean and free from damage
Splitting of the web	Feed too high	Reduce feed to optimum rate
	Insufficient initial clearance	Regrind to correct specification
	Excessive web thinning	Regrind to correct specification
	Heavy impact at point of drill	Avoid impact at the point of drill. Take care with taper shank drills when inserting/ejecting from spindle
Worn outer corners	Excessive speed	Reduce speed to optimum - may be able to increase feed
Broken outer corners	Unstable component set up	Reduce movement in the component
Chipped cutting lips	Excessive initial clearance	Regrind to correct specification
Breakage at flute run out	Choking of flutes	Adopt a peck/series drilling concept
	Drill slipping	Ensure the drill is held securely in the chuck and spindle
Spiral finish in hole	Insufficient feed	Increase feed
	Bad positional accuracy	Use a spot drill before drilling
Hole size too large	Incorrect point geometry	Check point geometry
	Ineffective swarf clearance	Adjust speed, feed and peck length to achieve more manageable swarf

BOHREN

ALLGEMEINE HINWEISE ZUM BOHREN

1. Auswahl des geeignetsten Bohrers für die Anwendung, wobei zu bearbeitendes Material, die Eigenschaften des Zerspanungswerkzeuges und die Kühlung berücksichtigt werden müssen.

2. Instabilitäten des Werkstückes und der Werkzeugspindel können den Bohrer, das Werkstück und die Maschine beschädigen - auf maximale Stabilität sollte immer geachtet werden. Sie kann durch Nutzung des für die Anwendung geeigneten kürzesten Bohrers verbessert werden.

3. Werkzeugspannung ist ein wichtiger Aspekt beim Bohrvorgang. Der Bohrer darf sich keinesfalls im Werkzeughalter auf irgendeine Art bewegen.

4. Die Nutzung geeigneter Kühl- und Schmiermittel je nach Bohrvorgang ist empfehlenswert. Beim Einsatz von Kühl- und Schmiermitteln auf eine ausgiebige Zufuhr achten, besonders an der Bohrerspitze.

5. Der Spanabtransport beim Bohren ist entscheidend, um einen korrekten Bohrvorgang zu gewährleisten. Ein Spanstau in den Nuten muss vermieden werden.

6. Beim Nachschleifen eines Bohrers immer darauf achten, dass die korrekte Spitzengeometrie erzeugt und Verschleiß entfernt wurde.

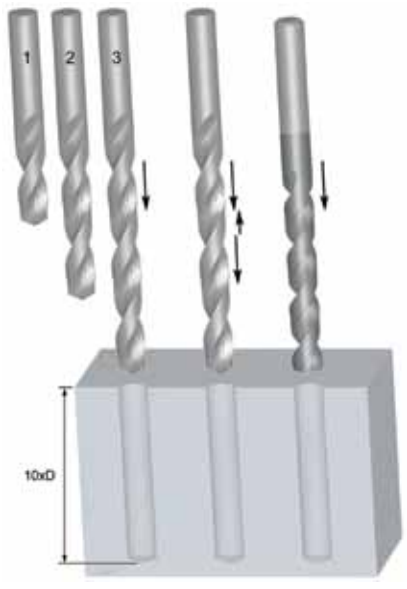
BOHRUNGSGRÖSSE

In dem Maße wie Geometrien, Trägermaterialien und Beschichtungen weiterentwickelt werden, erreicht man immer präzisere Bohrungsgrößen. Allgemein erreicht ein Werkzeug mit Standardgeometrie eine Bohrungsgröße bis H12. Für komplexere Bohrerkonfigurationen können unter günstigen Bedingungen H8-Bohrungstoleranzen realisiert werden. Für eine bessere Übersicht sind im folgenden die Produkttypen und ihre erreichbaren Bohrungstoleranzen aufgelistet:

- HSS Standardbohrer – H12
- HSS / HSS-E Tieflochbohrer mit parabolischen Nuten – H10
- Beschichtete Hochleistungs VHM-Bohrer – H8/H9

STRATEGIE FÜR DAS TIEFLOCHBOHREN

Bei hohen Bohrtiefen kann die nötige Tiefe mit verschiedenen Methoden erreicht werden. Das folgende Beispiel zeigt vier Wege, eine Bohrung von 10xD Tiefe zu erzeugen.



	Serienbohrung	Serienbohrung
Bohreranzahl	3 (2,5xD, 6xD,10xD)	2 (2,5xD,10xD)
Bohrertyp	Standardgeometrie, allgemeine Verwendung	Standardgeometrie, allgemeine Verwendung
+ / -	Teuer Zeitaufwendig	Kostengünstiger Schnell

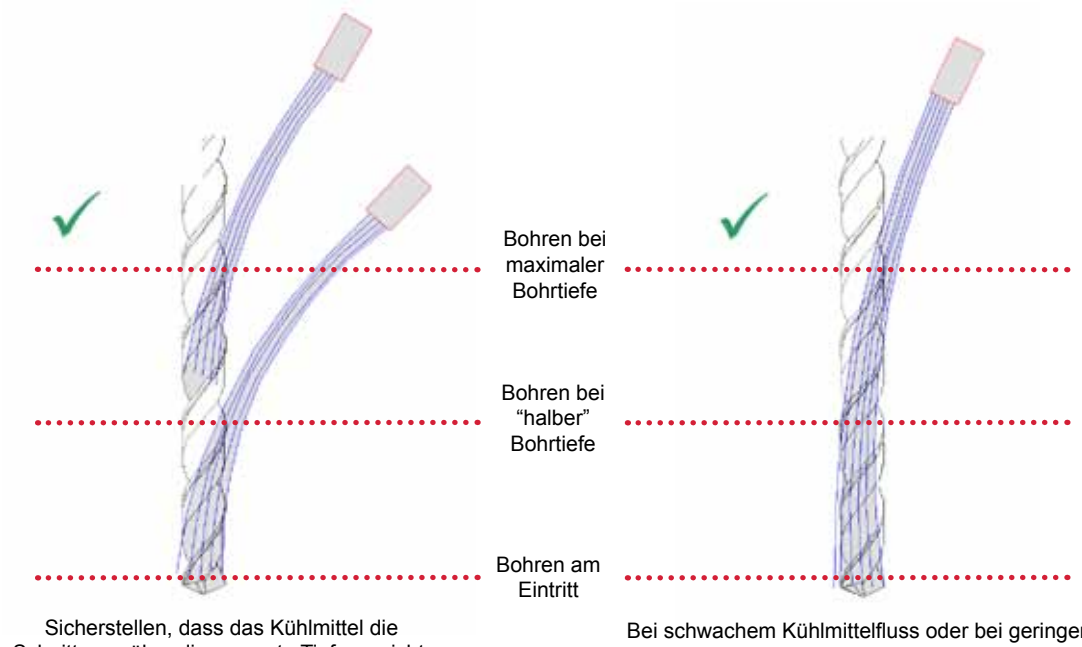
	Bohren mit Entspanen	Bohren ohne Entspanen
Bohreranzahl	1 (10xD)	1 (10xD)
Bohrertyp	Standardgeometrie, allgemeine Verwendung	Anwendung spezifische Werkzeuge
+ / -	Zeitaufwendig	Kostengünstig Schnell

KÜHLMITTELDRUCK BEI INTERNER KÜHLMITTELZUFUHR

Der Einsatz von Werkzeugen mit interner Kühlmittelzufuhr ermöglicht eine ausgiebige Kühlmittelversorgung direkt bis zur Bohrerspitze (Schnittzone). Dadurch wird die thermische Belastung verringert und die Standzeit erhöht. Hochleistungsbohrer benötigen einen höheren Kühlmitteldruck, da der Kühlmittelfluss nicht nur den Schnittbereich kühlt, sondern bei hohen Vorschubwerten und/oder Eindringtiefen auch die Spanabfuhr unterstützt. Kurz gesagt: Je höher der Kühlmitteldruck, desto effektiver sind Kühlung und Spanabfuhr. Für höchste Leistung und verbesserte Produktivität sollte der Kühlmitteldruck mindestens 20 bar betragen.

POSITIONIERUNG DER EXTERNEN KÜHLUNG

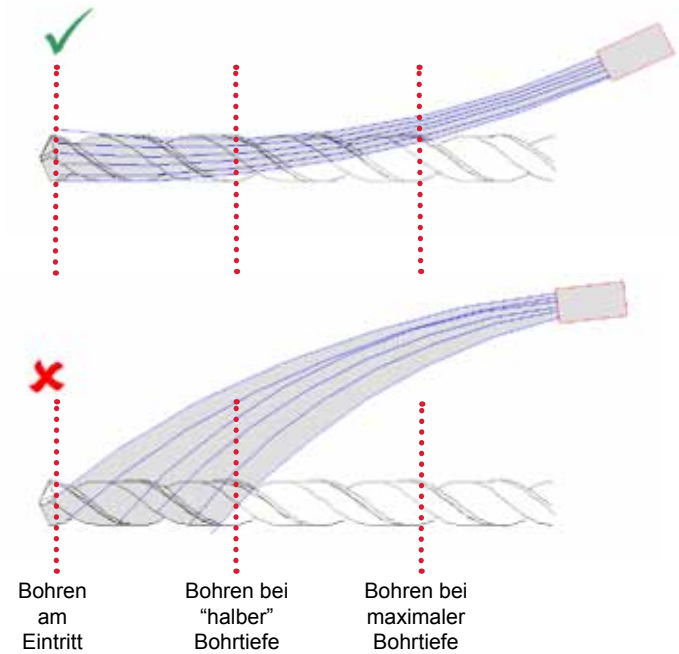
Vertikale Bearbeitung



Sicherstellen, dass das Kühlmittel die Schnittzone über die gesamte Tiefe erreicht.

Bei schwachem Kühlmittelfluss oder bei geringer Düsenanzahl sicherstellen, dass das Kühlmittel an der Nut entlang bis in das Bohrung läuft

Horizontale Bearbeitung



Ist die Anzahl der Kühlmittelrohre unzureichend, Druck und Volumen erhöhen, um sicherzustellen, dass das Kühlmittel die Schnittzone über die gesamte Schnitttiefe erreicht.

Bei inkorrekter Einstellung der Düsen kann das Kühlmittel die Schnittzone nicht effektiv erreichen, was zu frühzeitigem Werkzeugausfall führen kann.

FEHLERSUCHE BEIM BOHREN

PROBLEM	**URSACHE**	**ABHILFE**
Abgebrochene oder verformte Mitnehmer	Schlechter Sitz zwischen Schaft und Spannmittel	Schaft und Spannmittel sauber und unbeschädigt halten
Riss im Kern	Vorschub zu hoch	Vorschub bis zum optimalen Wert verringern
	Zu wenig Hinterschliff	Nach korrekter Spezifikation nachschleifen
	Kernausspitzung zu stark	Nach korrekter Spezifikation nachschleifen
	Schlag auf die Querschneide	Schlag auf die Querschneide vermeiden. Kegelschaftbohrer vorsichtig in die Spindel einsetzen bzw. austreiben
Eckenverschleiß	Überhöhte Drehzahl	Drehzahl auf das Optimum verringern - möglicherweise Erhöhung des Vorschubs
Ausbruch der Außenkanten	Instabile Arbeitsverhältnisse	Spindelspiel beseitigen
Ausbruch der Schneidkanten	Zu viel Hinterschliff	Nach korrekter Spezifikation nachschleifen
Bruch des Schaftauslaufs	“Abwürgen” der Nuten	Entspanen bzw. Serienbohrung anwenden
	Abrutschen des Bohrers	Sicherstellen, dass der Bohrer sicher in Spannfutter und Spindel sitzt
Spiralenförmiger Abschluss im Kernloch	Vorschub zu gering	Vorschub erhöhen
	Schlechte Positionsgenauigkeit	Bohrung vorher anzentrieren
Bohrungstoleranz zu groß	Falsche Spitzengeometrie	Spitzengeometrie prüfen
	Spanabfuhr nicht effektiv	Drehzahl, Vorschub und Bohrtiefe anpassen, um besseren Spanfluss zu erhalten

BOREN

ALGEMENE TIPS VOOR BOREN

1. Kies het beste type boor voor uw bewerking. Daarbij dienen het te boren materiaal, de mogelijkheden van de machine en de koeling in ogenschouw genomen te worden.
2. Instabiliteit van werkstuk en machinespindel kan schade aan het gereedschap tot gevolg hebben. Creëer altijd een stabiele opspanning. Dit kan ook worden bevorderd door de keuze van een zo kort mogelijke boor.
3. De houder waarin de boor moet worden opgespannen moet van een goede kwaliteit zijn. Als de boor in de houder slipt en de voeding automatisch is kan de boor breken.
4. Gebruik de aanbevolen koel- en smeermiddelen om de levensduur van de boor te verlengen. Zorg ervoor dat voldoende koel- en smeermiddel bij de boorpunt komt.
5. Een goede spaanafvoer is van essentieël belang. Voorkom ten allen tijde dat spaan kan ophopen in de spiraalgroef.
6. Zorg bij het herslijpen van de boor dat de originele geometrie weer hersteld wordt en dat de boor voldoende geslepen wordt zodat alle slijtage weg is.

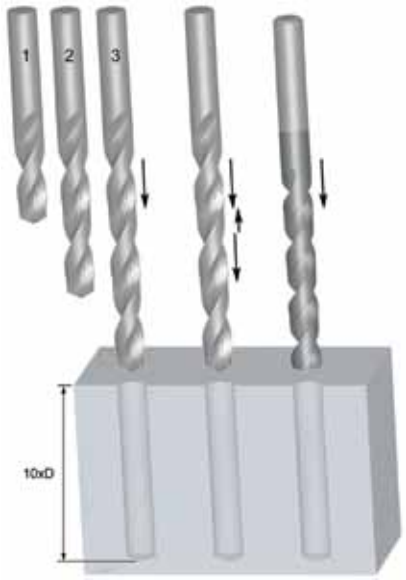
GATTOLERANTIE

Naarmate het gereedschapmateriaal, de geometrie en de oppervlakte coatings verbeteren, is het mogelijk steeds nauwkeuriger gaten te boren. Normaal kan een standaard boor een gat boren met een H12 tolerantie. Nu kan met de huidige applicatie gereedschappen, onder de juiste omstandigheden H8 gehaald worden. Gattoleranties welke in het algemeen haalbaar zijn:

- HSS standaard boren – H12
- HSS / HSS-E Parabolische spaangroef diepgatboren – H10
- Volhardmetaal high performance gecoat bijv. – H8/H9

BEWERKINGSSTRATEGIE VOOR DIEPGATBOREN

Voor het boren van diepe gaten kunnen verschillende methodes toegepast worden om de gewenste diepte te bereiken. Onderstaand voorbeeld geeft vier manieren om een gat van 10xD te boren.



	Meerdere boren	Meerdere boren
Aantal gebruikte boren	3 (2,5xD, 6xD,10xD)	2 (2,5xD,10xD)
Type boor	Standaard geometrie, algemeen gebruik	Standaard geometrie, algemeen gebruik
+ / -	Duur Tijdrovend	Goedkoper Snel

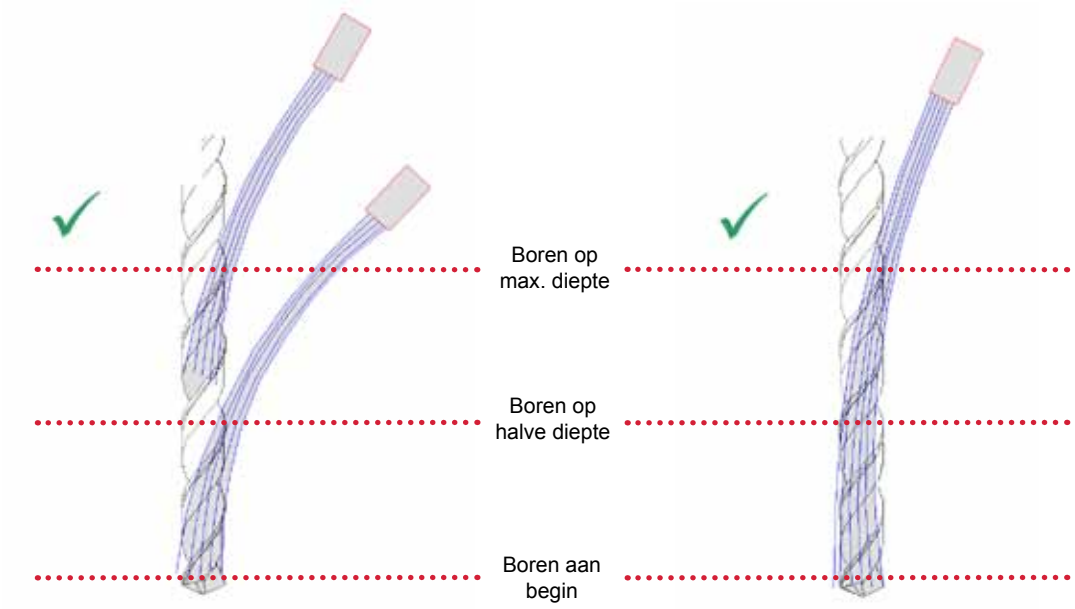
	Lossend boren	Zonder te lossen boren
Aantal gebruikte boren	1 (10xD)	1 (10xD)
Type boor	Standaard geometrie, algemeen gebruik	Toepassingsgerichte boren
+ / -	Tijdrovend	Goedkoopst Snelst

INWENDIGE KOELDRUK

Het doel van de inwendige koeling is het verzorgen van koeling aan de punt van de boor, zodat de warmteontwikkeling gereduceerd wordt en de levensduur van de boor toeneemt. High performance boren vragen een hogere koeldruk omdat het koelmiddel niet alleen dient voor de koeling, maar ook helpt de spanen af te voeren bij hoge penetratiesnelheden. Kortom, hoe hoger de druk van het koelmiddel, hoe beter de koeling en de afvoer van spanen. Tevens dient de inwendige koeling voor de afvoer van de spanen en daarvoor is het noodzakelijk dat de druk van de inwendige koeling minimaal 20 bar bedraagt.

EXTERNE POSITIE KOELING

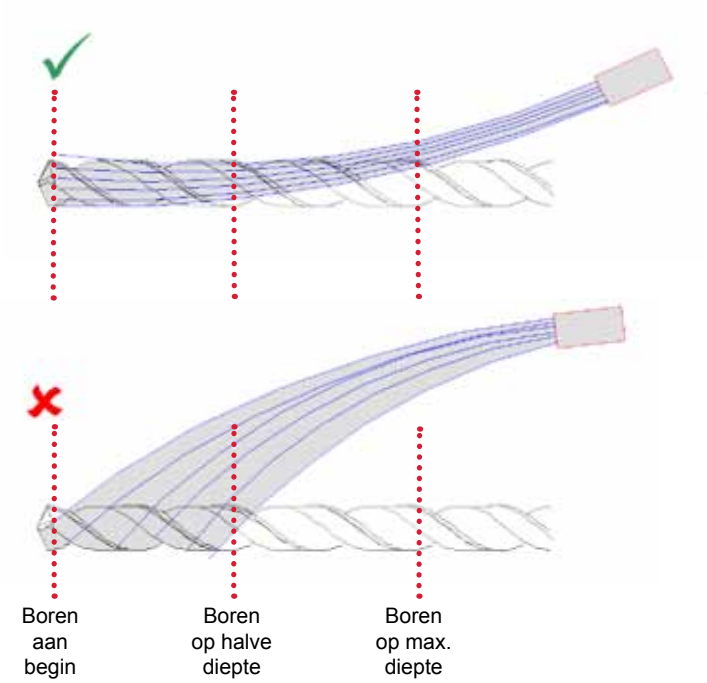
Verticale bewerking



Zorg dat over de gehele diepte voldoende koelmiddel de verspaningszone bereikt

Als er weinig koelmiddel is of te weinig nozzels, laat het koelmiddel dan via de snijgroef in het gat stromen

Horizontale bewerking



Als er te weinig koelmiddelkanalen zijn, vergroot dan druk en volume zodat het koelmiddel de verspaningszone over de gehele diepte bereikt

Als de nozzels niet correct zijn ingesteld, wordt het koelmiddel afgebogen en bereikt het de verspaningszone niet, waardoor het gereedschap snel slijt.

PROBLEMEN EN OPLOSSINGEN BIJ BOREN

PROBLEEM	**OORZAAK**	**OPLOSSING**
Gebroken of gedraaide lip	Slecht contact tussen de morse conus en de spindel	Beschadigde spindel of morseconus
Gespleten over de ziel van de boor	Te hoge voeding	Reduceer de voeding naar de juiste waarde
	Onvoldoende vrijloop	Herslijp volgens specificatie
	Ziel te veel uitgedund	Herslijp volgens specificatie
	Punt van de boor hard gestoten	Voorkom het stoten van de boorpunt. Let op met het plaatsen en verwijderen van morseconus boren
Versleten hoeken van de snijkant (de neus)	Te hoge snijsnelheid	Reduceer de snijsnelheid naar een optimum – misschien kan de voeding verhoogt worden
Uitbreken van de hoeken van de snijkant	Onstabiliteit van het werkstuk	Verbeter de stabiliteit van het werkstuk
Afbrokkelen van de snijkant	Te grote vrijloop	Herslijp volgens specificatie
Breuk bij de uitloop van de spaangroef	Het vollopen van de spaangroef met spanen	Tijdig lossen of een diepgat boor toepassen
	De boor slipt in de houder	Voorkom dat de boor kan slippen in de houder of spindel
Spiraal vormige vertekening in de wand van het gat	Onvoldoende voeding	Verhoog de voeding
	Slechte centreer werking van de boor	Gebruik een centreerboor om aan te centreren
Overmaat van het geboorde gat	Geen juiste puntgeometrie	Controleer of de boor juist herslepen is
	Onvoldoende spaanafvoer	Pas de snelheid, voeding of de diepte tussen het lossen aan om de spanen beter af te voeren

PERCAGE

RECOMMANDATIONS GENERALES POUR LE PERCAGE

1. Sélectionner le foret le plus approprié à l'application, en gardant en mémoire le matériau à usiner, la capacité de la machine outil et l'huile de coupe utilisée.

2. La flexibilité entre la pièce et l'axe de la machine peut abîmer le foret aussi bien que la pièce et la machine – il faut donc assurer un maximum de stabilité tout le temps. Ceci peut être amélioré en choisissant le foret le plus court possible pour l'application.

3. Le mandrin est un aspect important dans l'opération de perçage et le foret ne peut se permettre de casser ou de bouger du porte-outil.

4. Il est recommandé d'utiliser l'huile et les lubrifiants requis par l'opération de perçage. Lors de l'utilisation d'huiles ou de lubrifiants, il faut assurer un arrosage copieux, spécialement à la pointe du foret.

5. L'évacuation des copeaux durant le perçage est essentielle pour assurer une bonne opération de perçage. Ne jamais permettre aux copeaux des rester dans la goujure.

6. Lors du réaffûtage d'un foret, il faut toujours être sûr que la géométrie de pointe correcte est produite et que toute usure a été éliminée.

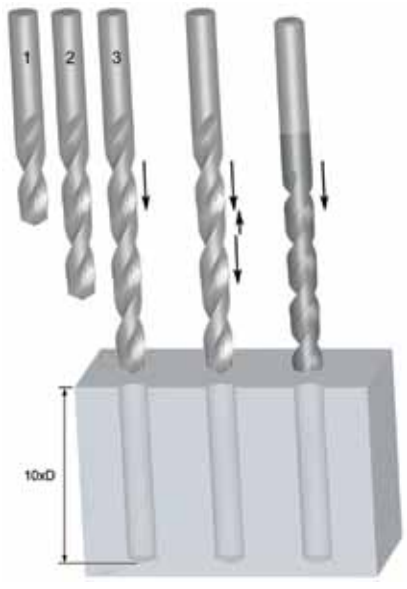
DIMENSION DE TROU

Plus les configurations de géométrie, de substrat et de revêtement sont avancées, plus la capacité d'un foret à produire un trou précis augmente. En général, un outil à géométrie standard produira un trou d'une tolérance H12. Cependant, étant donné que la configuration du foret devient plus complexe la dimension du trou fini, dans des conditions favorables, peut se rapprocher de la tolérance H8. Pour offrir une plus grande précision, les types de produits et la tolérance des trous qu'ils réalisent sont listés ci-dessous :

- Forets HSS d'utilisation générale – H12
- Forets à goujure parabolique HSS / HSS-E pour trous profonds – H10
- Forets avec revêtement en carbure monobloc hautes performances – H8/H9

STRATEGIE DE PERCAGE DE TROUS PROFONDS

Lors du perçage de trous profonds, il est possible d'utiliser différentes méthodes. L'exemple ci-dessous nous montre quatre possibilités de perçage de trous de 10 x le diamètre.



	Percage en Serie	Percage en Serie
No de forets	3 (2,5xD, 6xD,10xD)	2 (2,5xD,10xD)
Type de forets	Géométrie standard, utilisation générale	Géométrie standard, utilisation générale
+ / -	Coûteux Long	Plus rentable Rapide

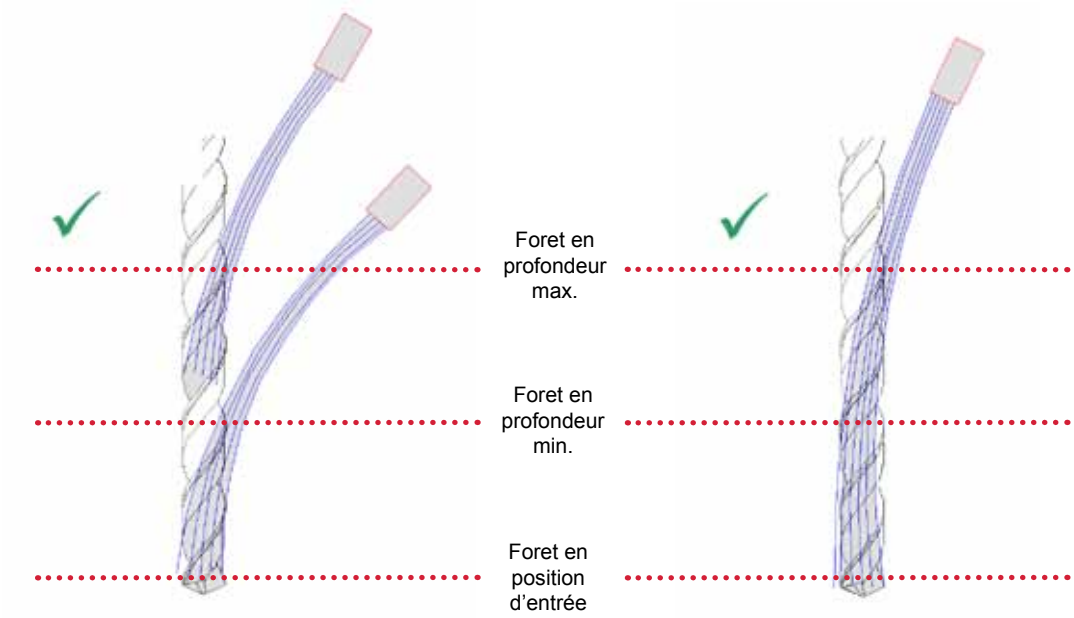
	Perçage en plusieurs passes	Perçage en une seule passe
No de forets	1 (10xD)	1 (10xD)
Type de forets	Géométrie standard, utilisation générale	Outils d'utilisation spécifique
+ / -	Long	Rentable Rapide

PRESSION DE REFROIDISSEMENT INTERNE

On utilise des outils à trou d'huile pour maintenir un flux d'huile copieux directement sur la pointe du foret, réduisant ainsi la chaleur générée et augmentant la durée de vie de l'outil. Les forets haute performance nécessitent une pression d'huile plus grande étant donné que le flux d'huile ne sert pas uniquement à refroidir la zone de coupe, mais il permet aussi d'avoir une bonne évacuation de copeaux à des taux de pénétration élevés. En quelques mots, plus la pression d'huile est forte, plus le refroidissement est efficace et mieux les copeaux s'évacuent. Pour une productivité plus performante et accrue, la pression d'huile devrait être au minimum de 20 bars.

POSITIONNEMENT EXTERNE DE L'HUILE DE REFROIDISSEMENT

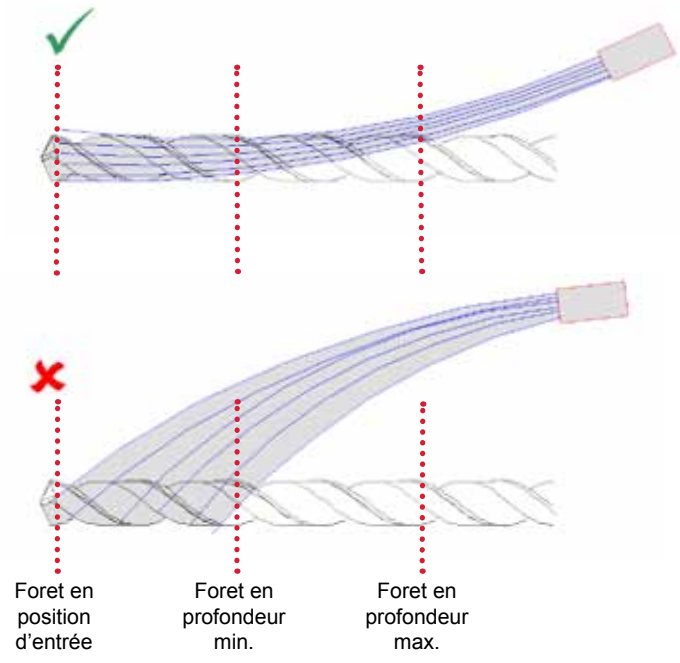
Usinage vertical



S'assurer que l'huile de refroidissement atteigne la zone de coupe sur toute sa profondeur.

Si le débit de l'huile est faible ou qu'il n'y a pas assez de buses, s'assurer que l'huile coule le long de la goujure dans le trou.

Usinage horizontal



S'il n'y a pas assez de tuyaux d'huile de refroidissement, augmenter la pression et le débit pour garantir que l'huile atteigne la zone de coupe sur toute sa profondeur.

Si les buses sont mal positionnées, l'huile sera déviée et n'atteindra pas la zone de coupe engendrant potentiellement une défaillance prématurée de l'outil.

INTERRUPTIONS LORS DU PERCAGE

PROBLÈME	CAUSE	REMÈDE
Tenon cassé ou tordu	Mauvais contact entre la queue et le porte-outil	S'assurer du bon état de la queue et du porte-outil
Casse de l'âme	Avance trop élevée	Réduire l'avance à un taux optimum
	Dépouille initiale insuffisante	Réaffûter selon les spécifications correctes
	Amincissement de l'âme excessif	Réaffûter selon les spécifications correctes
	Lourd impact au niveau de la pointe du foret	Eviter tout impact au niveau de la pointe du foret. Faire attention lors de la mise en place ou de l'éjection des forets queue cône morse de l'axe
Usure des angles extérieurs	Vitesse excessive	Réduire la vitesse – peut-être augmenter l'avance
Casse des angles extérieurs	Pièce à usiner instable	Réduire le jeu de la pièce
Eclat des lèvres de coupe	Dépouille initiale excessive	Réaffûter selon les spécifications correctes
Casse de la goujure	Choc sur les goujures	Adopter un concept de perçage en plusieurs passes/ en série
	Glisse du foret	S'assurer que le foret est bien maintenu dans le mandrin et dans l'axe
Finition en spiral dans le trou	Avance insuffisante	Augmenter la vitesse de coupe
	Manque de précision dans le positionnement	Utiliser un foret de pré-perçage avant le perçage
Trou trop grand	Géométrie de pointe incorrecte	Vérifier la géométrie de pointe
	Mauvaise évacuation des copeaux	Ajuster la vitesse, l'avance et la longueur des passes pour obtenir une meilleure fragmentation des copeaux

TALADRADO

INSTRUCCIONES GENERALES PARA EL TALADRADO

1. Seleccione la broca más apropiada para la aplicación, en función del material que se debe mecanizar, la capacidad de la máquina herramienta y el refrigerante que se va a utilizar.
2. La falta de rigidez del componente y del husillo de la máquina herramienta puede ocasionar daños en la broca, además de en el componente y en la máquina. Deberá garantizarse por tanto la máxima estabilidad en todo momento. Dicha estabilidad puede mejorarse seleccionando la broca más corta posible para la aplicación.
3. La sujeción de la herramienta es un aspecto importante en la operación de taladrar y no se puede permitir que la broca resbale o que se mueva en el portaherramientas.
4. El uso de refrigerantes y lubricantes adecuados se recomienda en función de la operación específica de taladrado. Cuando utilice refrigerantes y lubricantes, asegure un suministro abundante, especialmente en la punta de la broca.
5. La evacuación de la viruta durante el taladrado es esencial para garantizar un correcto procedimiento del taladrado. No permita que las estrías de la broca se atasquen de virutas.
6. Al reafilar la broca, cerciórese de que se ha eliminado todo el desgaste y de que se produce la geometría de punta correcta.

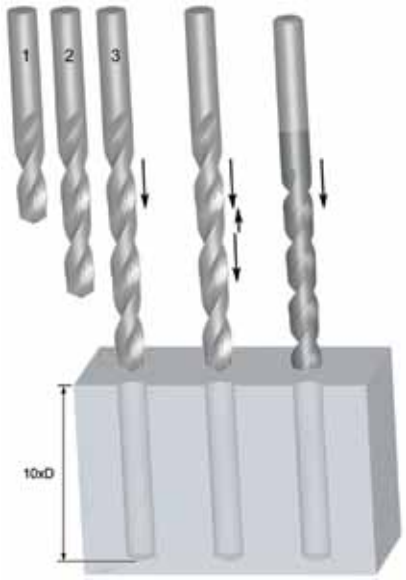
TAMAÑO DEL AGUJERO

A medida que aumenta la complejidad de las configuraciones de geometría, sustrato y recubrimiento, aumenta también la capacidad de la broca para producir tamaños de agujero más precisos. En general, una herramienta con geometría estándar logrará, como máximo, un tamaño de agujero H12. Sin embargo, a medida que la configuración de la broca se hace más compleja, el tamaño del agujero puede llegar, en condiciones favorables, hasta una tolerancia H8. A continuación se muestran las tolerancias de agujero que se puede lograr para cada tipo de brocas:

- Brocas HSS para aplicaciones generales – H12
- Brocas HSS/HSS-E con estrías parabólicas para agujeros profundos – H10
- Metal duro con recubrimiento de alto rendimiento – H8/H9

ESTRATEGIA DE TALADRADO DE AGUJEROS PROFUNDOS

Al taladrar agujeros profundos, pueden adoptarse varios métodos para lograr la profundidad requerida. En el ejemplo se muestran cuatro formas de taladrar un agujero con una profundidad de 10 veces el diámetro de la broca.



	Taladro en series	Series Drilling
Número de brocas	3 (2,5 xD, 6 xD,10 xD)	2 (2,5 xD,10 xD)
Tipo de broca	Geometría estándar, aplicaciones generales	Geometría estándar, aplicaciones generales
+ / -	Caro Largo	Más rentable Rápido

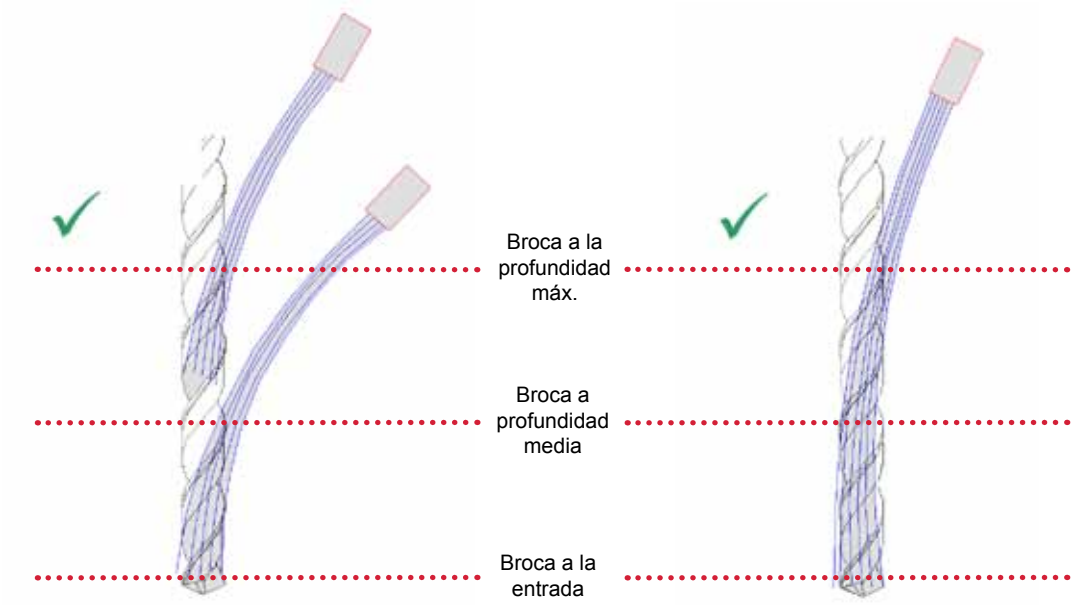
	Taladro con desahogo (misma broca)	Taladro en 1 paso
Número de brocas	1 (10 xD)	1 (10 xD)
Tipo de broca	Geometría estándar, aplicaciones generales	Herramientas específicas
+ / -	Largo	Rentable Rápido

PRESIÓN DEL REFRIGERANTE INTERNO

La utilización de refrigeración interior en las herramientas proporciona un flujo de refrigerante abundante dirigido hacia la punta de la broca, lo que reduce la generación de calor y, como consecuencia, prolonga la vida útil de la herramienta. Las brocas de alto rendimiento requieren un incremento de la presión de refrigeración, ya que el refrigerante que fluye no sólo conserva el área de corte refrigerada, sino que también ayuda a una eficiente evacuación de la viruta a altas velocidades de penetración. En resumen, cuanto mayor es la presión del refrigerante, más eficientes son los procesos de refrigeración y evacuación de la viruta. Para un alto rendimiento y un incremento de la productividad, la presión del refrigerante debe ser como mínimo de 20 bares.

POSICIONAMIENTO DEL REFRIGERANTE EXTERNO

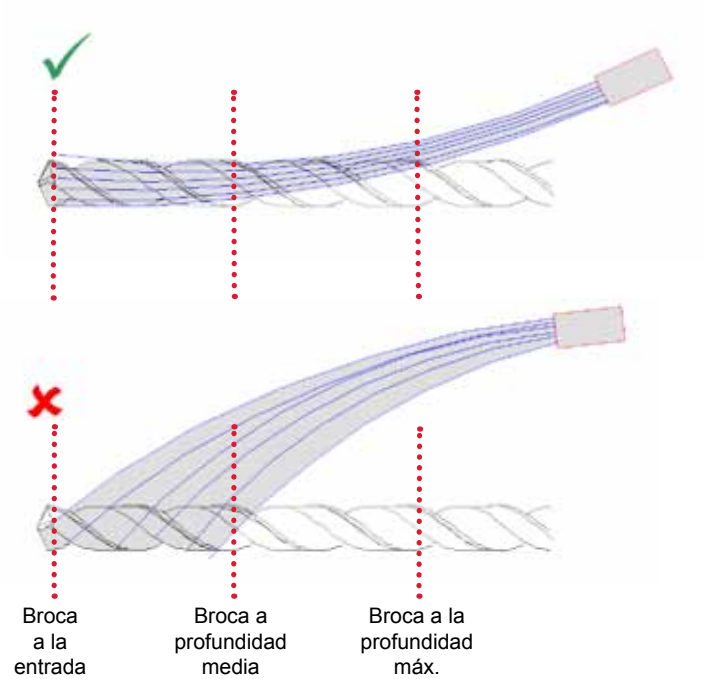
Mecanizado vertical



Asegurarse de que el refrigerante alcance la zona de corte en la profundidad completa

Si el flujo de refrigerante es reducido o no hay suficientes boquillas, asegurarse de que el refrigerante fluya hacia abajo, hacia la estría y el interior del agujero

Mecanizado horizontal



Si las tuberías de refrigerante son escasas, aumentar la presión y el volumen para garantizar que el refrigerante alcance la zona de corte en la profundidad del corte completa.

Si las boquillas están incorrectamente ajustadas, el refrigerante se desviará y no alcanzará la zona de corte, lo que puede ocasionar una avería prematura de la herramienta.

PROBLEMAS EN EL TALADRADO

PROBLEMA	**CAUSA**	**REMEDIO**
Rotura o torsión en la espiga	Malas condiciones entre el mango y el portaherramientas	Comprobar que el mango y el portaherramientas están limpios y no están dañados
Grietas en el alma de la herramienta	Avance demasiado alto	Reducir el avance a un valor óptimo
	Insuficiente holgura inicial	Reafilar según las especificaciones correctas
	Alma excesivamente delgada	Reafilar según las especificaciones correctas
	Duro impacto en la punta de la broca	Evitar impactos en la punta de la broca. Tener precaución con las brocas del mango cónico al introducirlas/expulsarlas del husillo
Desgaste en las esquinas exteriores	Excesiva velocidad	Reducir la velocidad al valor óptimo, debe poder incrementarse el avance
Rotura de las esquinas exteriores	Montaje de la herramienta inestable	Reducir el movimiento en el componente
Labios de corte astillados	Excesiva holgura inicial	Reafilar según las especificaciones correctas
Rotura en la salida de la estría	Estrías atascadas	Adoptar un concepto de taladrado con desahogo/en serie
	Resbalamiento de la broca	Asegurar que la broca está bien sujeta en el portapinzas y el husillo
Acabado en espiral del agujero	Avance insuficiente	Incrementar el avance
	Exactitud del posicionamiento mala	Usar una broca de centrar antes del taladrado
Tamaño del agujero demasiado grande	Geometría de la punta incorrecta	Corregir la geometría de la punta
	Holgura de la viruta deficiente	Ajustar la velocidad y el avance y la longitud de desahogo para lograr una viruta más manejable

FURAÇÃO

SUGESTÕES GERAIS SOBRE FURAÇÃO

1. Escolha a broca mais adequada à aplicação, tendo em conta o material a ser maquinado, a capacidade da ferramenta mecânica e o refrigerante a ser utilizado.
2. A flexibilidade dentro do componente e eixo da ferramenta mecânica pode danificar a broca, bem como o componente e a máquina - assegurar, sempre, estabilidade máxima. Pode fazê-lo, seleccionando para a aplicação a broca mais curta possível.
3. O suporte da ferramenta é um aspecto importante da furação, sendo que a broca não pode escorregar ou deslocar-se do porta-ferramentas.
4. Recomenda-se a utilização de refrigerantes e lubrificantes adequados, conforme necessário para o processo de furação. Ao utilizar refrigerantes e lubrificantes, assegurar um fornecimento abundante, especialmente na ponta da broca.
5. A remoção das aparas durante a furação é essencial para garantir um procedimento correcto. Nunca deixar que se acumulem aparas no sulco.
6. Ao reafiar a broca, assegurar sempre a geometria correcta da ponta e a remoção de qualquer sinal de desgaste.

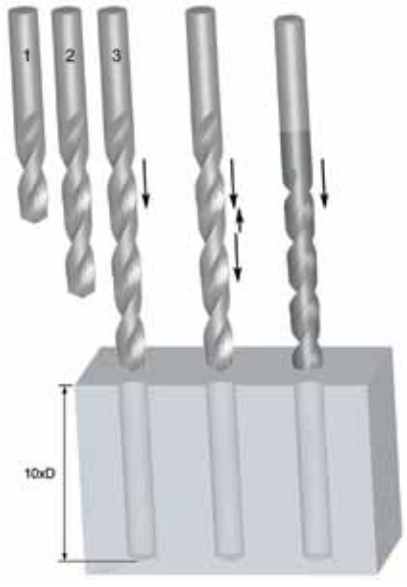
TAMANHO DO ORIFÍCIO

À medida que as configurações geométricas, substratas e de revestimento progridem, maior é a capacidade de a broca atingir um tamanho de orifício mais exacto. Em geral, uma ferramenta geométrica normalizada atingirá um tamanho de orifício até H12. Contudo, à medida que a configuração da broca se torna mais complexa, o tamanho atingido, sob condições favoráveis, será H8. Para uma melhor perspectiva, são apresentados abaixo os tipos de produto e respectivas tolerâncias de orifício alcançáveis:

- HSS Brocas para Fins Gerais – H12
- HSS/HSS-E Brocas para Orifícios Profundos com Sulco Parabólico – H10
- Alto Desempenho de Carboneto Sólido revestido – H8/H9

ESTRATÉGIA PARA ABERTURA DE ORIFÍCIOS PROFUNDOS

Para abrir orifícios profundos, podem ser adoptados vários métodos, de modo atingir a profundidade requerida. O exemplo a seguir apresenta quatro maneiras de abrir um orifício com 10 x o diâmetro da broca.



	Furação em Série	Furação em Série
N.º de brocas	3 (2,5xD, 6xD,10xD)	2 (2,5xD,10xD)
Tipo de broca	Geometria normalizada, fins gerais	Geometria normalizada, fins gerais
+ / -	Dispendiosa Lenta	Mais rentável Rápida

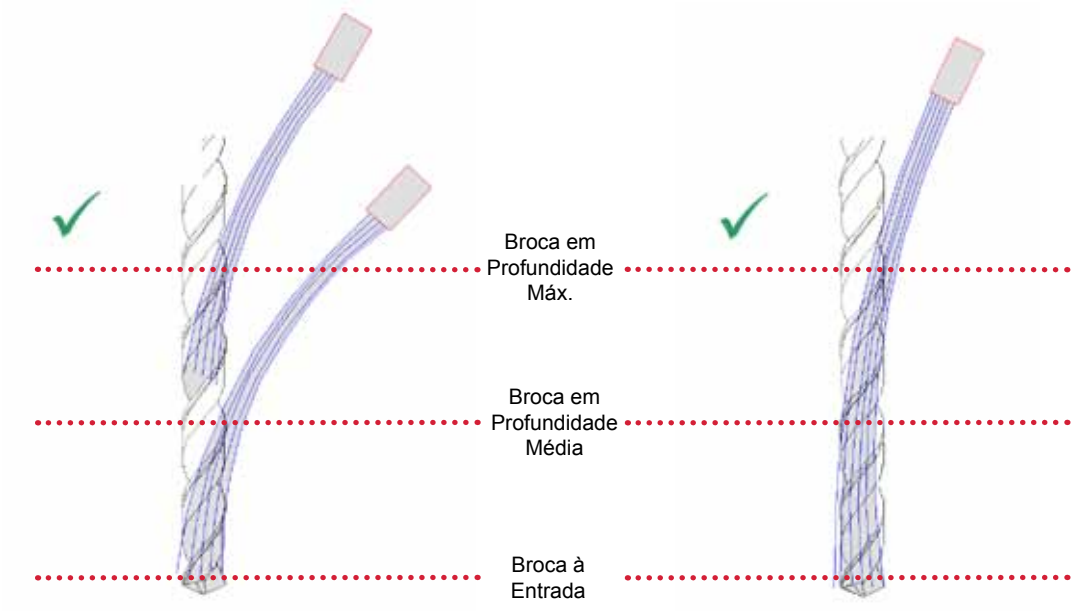
	Furação Intermitente	Furação de um Único Passo
N.º de brocas	1 (10xD)	1 (10xD)
Tipo de broca	Geometria normalizada, fins gerais	Ferramentas para usos específicos
+ / -	Lenta	Rentável Rápida

PRESSÃO INTERNA DO REFRIGERANTE

A utilização de sistemas de refrigeração de ferramentas por emulsão consiste em manter um fluxo abundante de refrigerante directamente na ponta da broca, reduzindo o calor gerado e aumentando, consequentemente, a vida da ferramenta. As brocas de alto desempenho requerem um aumento da pressão do refrigerante, já que o fluxo de refrigeração não só arrefece a área de corte, como contribui para a remoção eficaz das aparas em níveis elevados de penetração. Resumindo, quanto maior for a pressão de refrigeração, mais eficazes serão a refrigeração e remoção das aparas. Para obter uma produtividade acrescida e um alto desempenho, a pressão do refrigerante deve ser, no mínimo, de 20 bar.

POSICIONAMENTO DO REFRIGERANTE EXTERNO

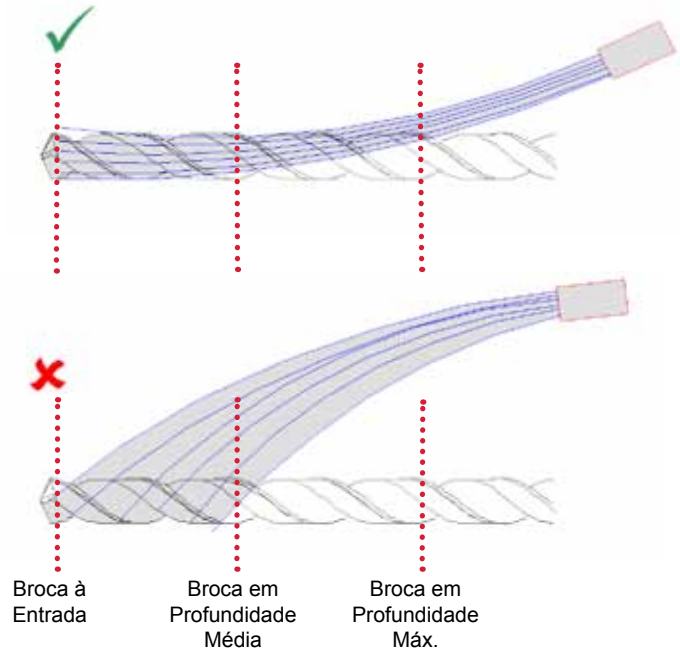
Maquinagem vertical



Assegurar que o refrigerante chega à zona de corte ao longo de toda a profundidade

Se o fluxo de refrigeração for baixo ou se houver poucos bicos, assegurar que o refrigerante flui para o orifício através do sulco

Maquinagem Horizontal



Se houver poucos tubos de refrigeração, aumentar a pressão e volume, para assegurar que o refrigerante chega à zona de corte com profundidade máxima de corte

Se os bicos não estiverem montados correctamente, o refrigerante será deflectido e não chegará à zona de corte, provocando uma possível falha prematura da ferramenta.

RESOLUÇÃO DE PROBLEMAS DURANTE A FURAÇÃO

PROBLEMA	**CAUSA**	**SOLUÇÃO**
Patilhas quebradas ou torcidas	Má adequação da haste à anilha	Certificar-se de que a haste e a anilha estão limpas e sem danos
Divisão da alma da broca	Avanço demasiado elevado	Reduzir avanço a uma taxa óptima
	Folga inicial insuficiente	Rectificar para a especificação correcta
	Adelgaçamento excessivo da alma	Rectificar para a especificação correcta
	Forte impacto na ponta da broca	Evitar impacto na ponta da broca. Ter cuidado com as brocas de haste cónica ao inserir/ejectar do eixo
Esquinas de corte gastas	Velocidade excessiva	Reduzir a velocidade para óptima - poderá aumentar o avanço
Esquinas de corte quebradas	Montagem instável do componente	Reduzir o movimento no componente
Bordos de corte lascados	Folga inicial excessiva	Rectificar para a especificação correcta
Vazamento por ruptura no sulco	Afogamento de sulcos	Adoptar um conceito de furação por intermitente/em série
	Deslizamento da broca	Assegurar que a broca está bem apoiada no mandril porta-ferramentas e eixo
Acabamento no orifício em espiral	Avanço insuficiente	Aumentar avanço
	Má precisão posicional	Utilizar uma broca de marcação antes da furação
Tamanho do orifício demasiado grande	Geometria da ponta incorrecta	Verificar a geometria da ponta
	Remoção ineficaz das aparas	Ajustar velocidade, avanço e comprimento de furação, para obter aparas mais fáceis de remover

REAMING

GENERAL HINTS ON REAMING

To obtain the best results when using reamers it is essential to make them 'work'. It is a common fault to prepare holes for reaming with too little stock left in. If insufficient stock is left in the hole before reaming, then the reamer will rub, quickly show wear and will result in loss of diameter. It is equally important for performance not to leave too much stock in the hole. (See Stock Removal below).

1. Select the optimum type of reamer and the optimum speeds and feeds for the application. Ensure that pre-drilled holes are the correct diameter.

2. The workpiece must be held rigid and the machine spindle should have no play.

3. The chuck in which a straight shank reamer is held must be good quality. If the reamer slips in the chuck and the feed is automatic, breakage of the reamer may occur.

4. Keep tool overhang from machine spindle to a minimum.

5. Use recommended lubricants to enhance the life of the reamer and ensure the fluid reaches the cutting edges. As reaming is not a heavy cutting operation, soluble oil 40:1 dilution is normally satisfactory. Air blasting may be used with grey cast iron, if dry machining.

6. Do not allow the flutes of a reamer to become blocked with swarf.

7. Before the reamer is reground, check concentricity between centres. In most instances only the bevel lead will need regrinding.

8. Keep reamers sharp. Frequent regrinding is good economy, but it is important to understand that reamers cut only on the bevel and taper leads and not on the lands. Consequently only these leads need regrinding. Accuracy of regrinding is important to hole quality and tool life.

STOCK REMOVAL

The recommended stock removal in reaming is dependent on the application material and the surface finish of the pre-drilled hole. General guidelines for stock removal are shown in the following tables:

Size of reamed hole (mm)	When pre-drilled	When pre-core-drilled
Below 4	0.1	0.1
Over 4 to 11	0.2	0.15
Over 11 to 39	0.3	0.2
Over 39 to 50	0.4	0.3

Size of reamed hole (inches)	When pre-drilled	When pre-drilled
Below 3/16	0.004	0.004
3/16 to ½	0.008	0.006
½ to 1.½	0.010	0.008
1.½ to 2	0.016	0.010

TOLERANCE LIMITS

1. ON THE CUTTING DIAMETER OF STANDARD REAMERS
   The diameter (d_1) is measured across the circular land immediately behind the bevel or taper lead. The tolerance is in accordance with DIN 1420 and is intended to produce H7 holes.

REAMER TOLERANCE			
Diameter (mm)		Tolerance Limit (mm)	
Over	Up to and including	High +	Low +
	3	0.008	0.004
3	6	0.010	0.005
6	10	0.012	0.006
10	18	0.015	0.008

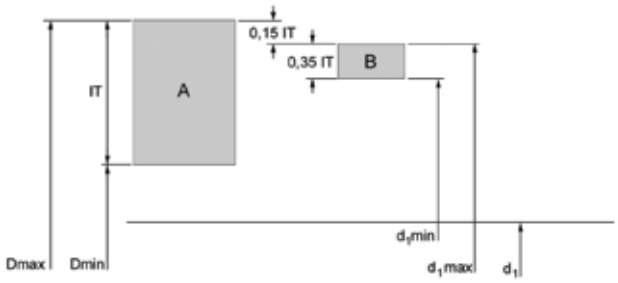
REAMER TOLERANCE			
Diameter (mm)		Tolerance Limit (mm)	
Over	Up to and including	High +	Low +
18	30	0.017	0.009
30	50	0.021	0.012
50	80	0.025	0.014

2. ON A H7 HOLE
   The most common tolerance on a finished hole is H7 (see table below). For any other tolerance the figure and table beneath point 3 can be used to calculate the reamers tolerance location and width.

HOLE TOLERANCE			
Diameter (mm)		Tolerance Limit (mm)	
Over	Up to and including	High +	Low +
	3	0.010	0
3	6	0.012	0
6	10	0.015	0
10	18	0.018	0

HOLE TOLERANCE			
Diameter (mm)		Tolerance Limit (mm)	
Over	Up to and including	High +	Low +
18	30	0.021	0
30	50	0.025	0
50	80	0.030	0

3. When it is necessary to define the dimensions of a special reamer intended to cut to a specific tolerance, e.g. D8, this well proven guide can be used.



A = Hole Tolerance
B = Reamer Tolerance
IT = Tolerance Width
Dmax = Max Diameter of Hole
Dmin = Min Diameter of Hole
d_1 = Nominal Diameter
$d_1$max = Max Diameter of Reamer
$d_1$min = Min Diameter of Reamer

	Diameter Tolerance Width (mm)							
Tolerance width (microns)	over 1 incl. 3	over 3 incl. 6	over 6 incl. 10	over 10 incl. 18	over 18 incl. 30	over 30 incl. 50	over 50 incl. 80	over 80 incl. 120
IT5	4	5	6	8	9	11	13	15
IT6	6	8	9	11	13	16	19	22
IT7	10	12	15	18	21	25	30	35
IT8	14	18	22	27	33	39	46	54
IT9	25	30	36	43	52	62	74	87
IT10	40	48	58	70	84	100	120	140
IT11	60	75	90	110	130	160	190	220
IT12	100	120	150	180	210	250	300	350

e.g. 10mm hole with tolerance D8, Max dia = 10.062, Min dia = 10.040, Hole tol (IT8) = 0.022

Maximum limit: 0.15 x hole tolerance (IT8) = 0.0033, rounded up = 0.004
Minimum limit: 0.35 x hole tolerance (IT8) = 0.0077, rounded up = 0.008

Maximum limit for reamer = 10.062 - 0.004 = 10.058
Minimum limit for reamer = 10.058 - 0.008 = 10.050

TROUBLE SHOOTING WHEN REAMING

PROBLEM	CAUSE	REMEDY
Broken or twisted tangs	Incorrect fit between shank and socket	Ensure the shank and socket are clean and free from damage
Rapid tool wear	Insufficient stock to remove	Increase the amount of stock to be removed
Oversize hole	Excessive lip height variation	Regrind to correct specification
	Displacement in the machine spindle	Repair and rectify spindle displacement
	Deflects on the tool holder	Replace tool holder
	Tool shank is damaged	Replace or regrind the shank
	Ovality of the tool	Replace or regrind the tool
	Asymmetric bevel lead angle	Regrind to correct specification
	Too high feed or cutting speed	Adjust cutting conditions in accordance with Catalogue
Undersize hole	Insufficient stock to remove	Increase the amount of stock to be removed
	Too much heat generated while reaming. The hole widens and shrinks	Increase coolant flow
	The tool diameter is worn and is undersize	Regrind to correct specification
	Too low feed or cutting speed	Adjust cutting conditions in accordance with the Catalogue
	Pre-drilled hole is too small	Decrease the amount of stock to be removed
Oval and conical holes	Displacement in the machine spindle	Repair and rectify spindle displacement
	Misalignment between tool and hole	Use a bridge reamer
	Asymmetric bevel lead angle	Regrind to correct specification
Bad hole finish	Excessive stock to remove	Decrease the amount of stock to be removed
	Worn out tool	Regind to correct specification
	Too small cutting rake angle	Regind to correct specification
	Too diluted emulsion or cutting oil	Increase % concentration
	Feed and/or speed too low	Adjust cutting conditions in accordance with Catalogue
	Cutting speed too high	Adjust cutting conditions in accordance with Catalogue
The tool clamps and breaks	Worn out tool	Regind to correct specification
	Back taper of the tool is too small	Check and replace/modify the tool
	The width of the land is too wide	Check and replace/modify the tool
	Workpiece material tend to squeeze	Use an adjustable reamer to compensate for the displacement
	Pre-drilled hole is too small	Decrease the amount of stock to be removed
	Heterogeneous material with hard inclusions	Use solid carbide reamer

REIBEN

ALLGEMEINE HINWEISE ZUM REIBEN

Um die besten Ergebnisse bei der Benutzung von Reibahlen zu erzielen, ist es wichtig, dass sie zerspanen. Es ist ein typischer Fehler, die Bohrung, die gerieben werden soll, mit zu wenig Aufmaß vorzubereiten. Wenn vor dem Reiben zu wenig Material in der Bohrung verbleibt, wird die Reibahle anfangen zu schaben bzw. sehr schnell verschleißen, was zu einem geringeren Durchmesser führt. Es ist aber auch wichtig, nicht zu viel Material in der Bohrung zu belassen. (Siehe Materialabtragung weiter unten).

1. Den optimalen Reibahlen-Typ sowie die optimalen Drehzahlen und Vorschübe für die Anwendung auswählen. Die vorgebohrten Kernlöcher sollten den korrekten Durchmesser haben.

2. Das Werkstück muss fest eingespannt sein und die Maschinenspindel sollte kein Spiel haben.

3. Das Spannfutter für Reibahlen mit Zylinderschaft sollte über eine gute Qualität verfügen. Wenn die Reibahle bei automatischem Vorschub im Spannfutter rutscht, kann diese zerbrechen.

4. Der Überhang vom Werkzeug zur Maschinenspindel sollte so gering wie möglich gehalten werden.

5. Empfohlene Schmiermittel verwenden, um eine möglichst hohe Standzeit des Werkzeugs zu erreichen. Darauf achten, dass es die Schnittkanten erreicht. Da Reiben keine schwere Schnittoperation darstellt, ist eine lösliche Öl 40:1-Verdünnung normalerweise zufriedenstellend. Bei Trockenbearbeitung in Grauguss kann mit Pressluft gearbeitet werden.

6. Die Nuten einer Reibahle dürfen nicht durch Späne blockiert werden.

7. Bevor die Reibahle nachgeschliffen wird, sollte die Rundlaufgenauigkeit zwischen den Zentrierbohrungen überprüft werden. In den meisten Fällen muss nur der Anschnitt nachgeschliffen werden.

8. Reibahlen scharf halten. Regelmäßiges Nachschleifen ist ökonomisch sinnvoll, allerdings ist es wichtig zu verstehen, dass die Reibahle nur mit dem Anschnitt schneidet, nicht mit der Fase. Aus diesem Grund muss nur der Anschnitt nachgeschliffen werden. Die Genauigkeit beim Nachschleifen ist wichtig für Lochqualität und Standzeit des Werkzeugs.

MATERIALABTRAGUNG

Die empfohlene Materialmenge, die abgetragen werden soll, hängt vom Anwendungsmaterial und der Oberfläche des vorgebohrten Loches ab. Allgemeine Richtlinien für Materialabtragungen werden in der folgenden Tabelle aufgelistet:

Größe der aufgeriebenen Bohrung (mm)	Wenn vorgebohrt	Wenn aufgebohrt
Unter 4	0.1	0.1
Über 4 bis 11	0.2	0.15
Über 11 bis 39	0.3	0.2
Über 39 bis 50	0.4	0.3

Größe der aufgeriebenen Bohrung (Zoll)	Wenn vorgebohrt	Wenn aufgebohrt
Unter 3/16	0.004	0.004
3/16 bis ½	0.008	0.006
½ bis 1,½	0.010	0.008
1,½ bis 2	0.016	0.010

TOLERANZGRENZEN

1. AUF DEM SCHNEIDENDURCHMESSER VON STANDARD-REIBAHLEN
   Der Durchmesser (d1) wird über die kreisförmige Fase hinweg direkt hinter dem Anschnitt oder der Kegelführung gemessen. Die Toleranz in Übereinstimmung mit der DIN 1420 ist dazu gedacht, H7 Bohrungen zu erzeugen.

REIBAHLEN-TOLERANZ			
Durchmesser (mm)		Toleranzgrenze (mm)	
Über	Bis einschließlich	Hoch +	Niedrig +
	3	0.008	0.004
3	6	0.010	0.005
6	10	0.012	0.006
10	18	0.015	0.008

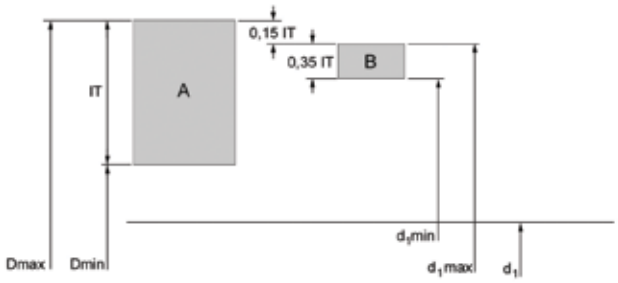
REIBAHLEN-TOLERANZ			
Durchmesser (mm)		Toleranzgrenze (mm)	
Über	Bis einschließlich	Hoch +	Niedrig +
18	30	0.017	0.009
30	50	0.021	0.012
50	80	0.025	0.014

2. BEI EINER H7 BOHRUNG
   Die normale Toleranz einer fertigen Bohrung ist H7 (siehe Tabelle unten). Für alle anderen Toleranzen können die Werte aus der Abbildung und der Tabelle unter Punkt 3 zur Berechnung des gewünschten Toleranzbereiches verwendet werden.

BOHRUNGSTOLERANZ			
Durchmesser (mm)		Toleranzgrenze (mm)	
Über	Bis einschließlich	Hoch +	Niedrig +
	3	0.010	0
3	6	0.012	0
6	10	0.015	0
10	18	0.018	0

BOHRUNGSTOLERANZ			
Durchmesser (mm)		Toleranzgrenze (mm)	
Über	Bis einschließlich	Hoch +	Niedrig +
18	30	0.021	0
30	50	0.025	0
50	80	0.030	0

3. Diese Tabelle kann zur Definition der Dimensionen einer speziellen Reibahle genutzt werden, um gemäß einer spezifischen Toleranz zu zerspanen, z. B. D8.



A = Bohrungstoleranz
B = Reibahlen-Toleranz
IT = Toleranzbereich
Dmax = Maximaler Bohrungsdurchmesser
Dmin = Minimaler Bohrungsdurchmesser
d_1 = Nominaler Durchmesser
$d_1$max = Maximaler Durchmesser der Reibahle
$d_1$min = Minimaler Durchmesser der Reibahle

	Durchmesser Toleranzbereich (mm)							
Toleranzbereich (Mikron)	Über 1 bis 3	Über 3 bis 6	Über 6 bis 10	Über 10 bis 18	Über 18 bis 30	Über 30 bis 50	Über 50 bis 80	Über 80 bis 120
IT5	4	5	6	8	9	11	13	15
IT6	6	8	9	11	13	16	19	22
IT7	10	12	15	18	21	25	30	35
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IT12	100	120	150	180	210	250	300	350

z. B. 10 mm Bohrung mit Toleranz D8; Maximaler Bohrungsdurchmesser = 10,062; Minimaler Bohrungsdurchmesser = 10,040; Bohrungstoleranz (IT8) = 0,022

Maximalgrenze: 0,15 x Bohrungstoleranz (IT8) = 0,0033; aufgerundet = 0,004
Minimalgrenze: 0,35 x Bohrungstoleranz (IT8) = 0,0077; aufgerundet = 0,008

Maximalgrenze für Reibahle = 10,062 - 0,004 = 10,058
Minimalgrenze für Reibahle = 10,058 - 0,008 = 10,050

FEHLERSUCHE BEIM REIBEN

PROBLEM	URSACHE	ABHILFE
Abgebrochene oder verdrehte Mitnehmer	Inkorrekter Sitz zwischen Schaft und Spannmittel	Schaft und Spannmittel sauber und unbeschädigt halten
Schneller Werkzeugverschleiß	Zu wenig Aufmaß	Aufmaß vergrößern
Übermaß Bohrung	Übermäßige Schneidhöhen-Differenz	Nach korrekten Spezifikationen nachschleifen
	Kein korrekter Sitz in der Maschinenspindel	Spindel reparieren und Sitz korrigieren
	Beschädigungen am Werkzeughalter	Werkzeughalter ersetzen
	Werkzeugschaft ist beschädigt	Werkzeug ersetzen oder Schaft nachschleifen
	Rundlauffehler	Werkzeug ersetzen oder nachschleifen
	Asymmetrischer Anschnittwinkel	Nach korrekten Spezifikationen nachschleifen
	Vorschub oder Schnittgeschwindigkeit zu groß	Schnittbedingungen gemäß Katalog anpassen
Untermaß Bohrung	Zu wenig Aufmaß	Aufmaß vergrößern
	Zu große Hitzeentwicklung beim Reiben. Die Bohrung weitet sich und zieht sich wieder zusammen	Kühlmittelfluss erhöhen
	Der Werkzeugdurchmesser ist abgenutzt und Untermaß	Nach korrekten Spezifikationen nachschleifen
	Vorschub oder Schnittgeschwindigkeit zu gering	Schnittbedingungen gemäß Katalog anpassen
	Vorgebohrtes Kernloch zu eng	Aufmaß verringern
Ovale oder konische Bohrungen	Kein korrekter Sitz in der Maschinenspindel	Spindel reparieren und Sitz korrigieren
	Ausrichtungsfehler zwischen Werkzeug und Bohrung	Eine stirnschneidende Reibahle verwenden
	Asymmetrischer Anschnittwinkel	Nach korrekten Spezifikationen nachschleifen
Schlechte Oberflächenqualität der Bohrung	Zu viel Aufmaß	Aufmaß verringern
	Abgenutztes Werkzeug	Nach korrekten Spezifikationen nachschleifen
	Zu geringer Spanwinkel	Nach korrekten Spezifikationen nachschleifen
	Emulsion oder Bohröl zu stark verdünnt	Konzentration (%) erhöhen
	Vorschub und/oder Drehzahl zu gering	Schnittbedingungen gemäß Katalog anpassen
	Schnittgeschwindigkeit zu hoch	Schnittbedingungen gemäß Katalog anpassen
Das Werkzeug klemmt und zerbricht	Abgenutztes Werkzeug	Nach korrekten Spezifikationen nachschleifen
	Die “Halslänge” des Werkzeugs ist zu kurz	Werkzeug überprüfen und ersetzen/anpassen
	Die Breite der Fase ist zu groß	Werkzeug überprüfen und ersetzen/anpassen
	Werkstück-Material neigt zum Klemmen	Einstellbare Reibahle zur Kompensation der Toleranz benutzen
	Vorgebohrtes Kernloch zu eng	Aufmaß verringern
	Heterogenes Material mit Einschlüssen	Vollhartmetall-Reibahle verwenden

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1. Select the optimum type of reamer and the optimum speeds and feeds for the application. Ensure that pre-drilled holes are the correct diameter.

2. The workpiece must be held rigid and the machine spindle should have no play.

3. The chuck in which a straight shank reamer is held must be good quality. If the reamer slips in the chuck and the feed is automatic, breakage of the reamer may occur.

4. Keep tool overhang from machine spindle to a minimum.

5. Use recommended lubricants to enhance the life of the reamer and ensure the fluid reaches the cutting edges. As reaming is not a heavy cutting operation, soluble oil 40:1 dilution is normally satisfactory. Air blasting may be used with grey cast iron, if dry machining.

6. Do not allow the flutes of a reamer to become blocked with swarf.

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The recommended stock removal in reaming is dependent on the application material and the surface finish of the pre-drilled hole. General guidelines for stock removal are shown in the following tables:

Size of reamed hole (mm)	When pre-drilled	When pre-core-drilled
Below 4	0.1	0.1
Over 4 to 11	0.2	0.15
Over 11 to 39	0.3	0.2
Over 39 to 50	0.4	0.3

Size of reamed hole (inches)	When pre-drilled	When pre-drilled
Below 3/16	0.004	0.004
3/16 to ½	0.008	0.006
½ to 1.½	0.010	0.008
1.½ to 2	0.016	0.010

TOLERANCE LIMITS

1. ON THE CUTTING DIAMETER OF STANDARD REAMERS
   The diameter (d_1) is measured across the circular land immediately behind the bevel or taper lead. The tolerance is in accordance with DIN 1420 and is intended to produce H7 holes.

REAMER TOLERANCE			
Diameter (mm)		Tolerance Limit (mm)	
Over	Up to and including	High +	Low +
	3	0.008	0.004
3	6	0.010	0.005
6	10	0.012	0.006
10	18	0.015	0.008

REAMER TOLERANCE			
Diameter (mm)		Tolerance Limit (mm)	
Over	Up to and including	High +	Low +
18	30	0.017	0.009
30	50	0.021	0.012
50	80	0.025	0.014

2. ON A H7 HOLE
   The most common tolerance on a finished hole is H7 (see table below). For any other tolerance the figure and table beneath point 3 can be used to calculate the reamers tolerance location and width.

HOLE TOLERANCE			
Diameter (mm)		Tolerance Limit (mm)	
Over	Up to and including	High +	Low +
	3	0.010	0
3	6	0.012	0
6	10	0.015	0
10	18	0.018	0

HOLE TOLERANCE			
Diameter (mm)		Tolerance Limit (mm)	
Over	Up to and including	High +	Low +
18	30	0.021	0
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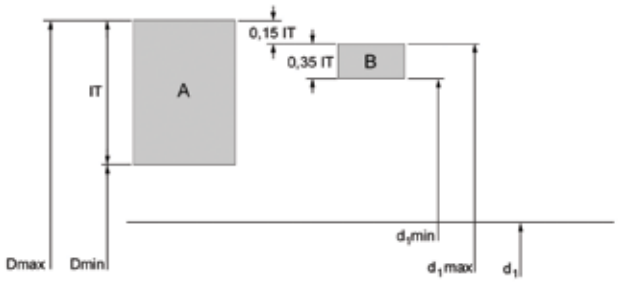
3. When it is necessary to define the dimensions of a special reamer intended to cut to a specific tolerance, e.g. D8, this well proven guide can be used.



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Dmax = Max Diameter of Hole
Dmin = Min Diameter of Hole
d_1 = Nominal Diameter
$d_1$max = Max Diameter of Reamer
$d_1$min = Min Diameter of Reamer

	Diameter Tolerance Width (mm)							
Tolerance width (microns)	over 1 incl. 3	over 3 incl. 6	over 6 incl. 10	over 10 incl. 18	over 18 incl. 30	over 30 incl. 50	over 50 incl. 80	over 80 incl. 120
IT5	4	5	6	8	9	11	13	15
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IT12	100	120	150	180	210	250	300	350

e.g. 10mm hole with tolerance D8, Max dia = 10.062, Min dia = 10.040, Hole tol (IT8) = 0.022

Maximum limit: 0.15 x hole tolerance (IT8) = 0.0033, rounded up = 0.004
Minimum limit: 0.35 x hole tolerance (IT8) = 0.0077, rounded up = 0.008

Maximum limit for reamer = 10.062 - 0.004 = 10.058
Minimum limit for reamer = 10.058 - 0.008 = 10.050

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PROBLEM	CAUSE	REMEDY
Broken or twisted tangs	Incorrect fit between shank and socket	Ensure the shank and socket are clean and free from damage
Rapid tool wear	Insufficient stock to remove	Increase the amount of stock to be removed
Oversize hole	Excessive lip height variation	Regrind to correct specification
	Displacement in the machine spindle	Repair and rectify spindle displacement
	Deflects on the tool holder	Replace tool holder
	Tool shank is damaged	Replace or regrind the shank
	Ovality of the tool	Replace or regrind the tool
	Asymmetric bevel lead angle	Regrind to correct specification
	Too high feed or cutting speed	Adjust cutting conditions in accordance with Catalogue
Undersize hole	Insufficient stock to remove	Increase the amount of stock to be removed
	Too much heat generated while reaming. The hole widens and shrinks	Increase coolant flow
	The tool diameter is worn and is undersize	Regrind to correct specification
	Too low feed or cutting speed	Adjust cutting conditions in accordance with Catalogue
	Pre-drilled hole is too small	Decrease the amount of stock to be removed
Oval and conical holes	Displacement in the machine spindle	Repair and rectify spindle displacement
	Misalignment between tool and hole	Use a bridge reamer
	Asymmetric bevel lead angle	Regrind to correct specification
Bad hole finish	Excessive stock to remove	Decrease the amount of stock to be removed
	Worn out tool	Regind to correct specification
	Too small cutting rake angle	Regind to correct specification
	Too diluted emulsion or cutting oil	Increase % concentration
	Feed and/or speed too low	Adjust cutting conditions in accordance with Catalogue
	Cutting speed too high	Adjust cutting conditions in accordance with Catalogue
The tool clamps and breaks	Worn out tool	Regind to correct specification
	Back taper of the tool is too small	Check and replace/modify the tool
	The width of the land is too wide	Check and replace/modify the tool
	Workpiece material tend to squeeze	Use an adjustable reamer to compensate for the displacement
	Pre-drilled hole is too small	Decrease the amount of stock to be removed
	Heterogeneous material with hard inclusions	Use solid carbide reamer

ALESAGE

RECOMMANDATIONS GENERALES POUR L'ALESAGE

Pour obtenir les meilleurs résultats avec les alésoirs, il est important de les faire « travailler ». On fait souvent l'erreur de préparer les trous à aléser en y laissant une surépaisseur insuffisante. Si on ne laisse pas assez de surépaisseur dans le trou à aléser, le frottement entraîne une usure rapide de l'alésoir, avec pour conséquence une perte de diamètre. Pour de bons résultats, il est tout aussi important que la surépaisseur ne soit pas excessive. (Voir la section Enlèvement de matière ci-dessous).

1. Sélectionner le type d'alésoir le plus adapté ainsi que les conditions de vitesse de coupe et d'avance optimales pour l'application. Vérifiez que les trous percés ont un diamètre correct.

2. La pièce doit être maintenue de manière rigide et la broche de la machine ne doit pas avoir de jeu.

3. Le mandrin utilisé pour monter un alésoir à queue cylindrique doit être de bonne qualité. Si l'alésoir glisse dans le mandrin et si l'avance est automatique, l'alésoir risque de se casser.

4. Réduisez au minimum le porte-à-faux de l'outil par rapport à l'axe de la machine.

5. Utilisez les lubrifiants recommandés pour prolonger la durée de vie de l'alésoir et veillez à ce que le fluide atteigne toute les arêtes de coupe. Comme l'alésage n'est pas une opération de coupe difficile, une dilution 40:1 d'huile soluble convient généralement. De l'air comprimé peut être utilisé pour l'alésage à sec de la fonte grise.

6. Evitez le bourrage des copeaux dans les goujures d'un alésoir.

7. Avant d'affûter l'alésoir, vérifiez sa concentricité entre pointes. Dans la plupart des cas, seul le chanfrein d'entrée a besoin d'être réaffûté.

8. Veillez à ce que les alésoirs soient toujours bien affûtés. Un affûtage fréquent se justifie d'un point de vue économique, mais il ne faut pas oublier que les alésoirs ne coupent que sur le chanfrein et le cône d'entrée et non pas sur les listels de guidage. Par conséquent, seuls le chanfrein et le cône d'entrée doivent être réaffûtés. La précision de l'affûtage est importante tant pour la qualité du trou que pour la durée de vie de l'outil.

ENLEVEMENT DE SUREPAISSEUR

L'enlèvement de surépaisseur recommandé en alésage dépend du matériau de l'application et de la finition de surface du trou à aléser. Les recommandations de surépaisseur à enlever sont décrites dans les tableaux ci-dessous :

Diamètre du trou alésé (mm)	Sur avant trou au foret	Sur avant trou au foret aléseur
En dessous de 3/16	0.1	0.1
De 4 à 11	0.2	0.15
De 11 à 39	0.3	0.2
De 39 à 50	0.4	0.3

Diamètre du trou alésé (pouce)	Sur avant trou au foret	Sur avant trou au foret aléseur
En dessous de 3/16	0.004	0.004
3/16 à ½	0.008	0.006
½ à 1,½	0.010	0.008
1,½ à 2	0.016	0.010

ECARTS DE TOLERANCE

1. SUR LE DIAMETRE DE COUPE D'ALESOIRS STANDARDS
   Le diamètre se mesure sur le listel de guidage juste derrière le chanfrein ou le cône d'entrée. La tolérance selon la DIN 1420 est destinée à produire des alésages H7.

TOLERANCE DE L'ALESOIR			
Diamètre (mm)		Ecart de tolérance (mm)	
Supérieur	Jusqu'à et y compris	Elevé +	Faible +
	3	0.008	0.004
3	6	0.010	0.005
6	10	0.012	0.006
10	18	0.015	0.008

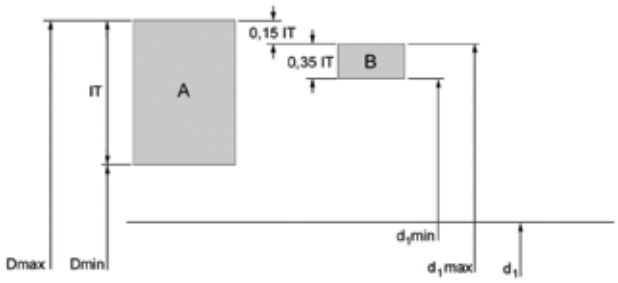
TOLERANCE DE L'ALESOIR			
Diamètre (mm)		Ecart de tolérance (mm)	
Supérieur	Jusqu'à et y compris	Elevé +	Faible +
18	30	0.017	0.009
30	50	0.021	0.012
50	80	0.025	0.014

2. SUR UN ALESAGE H7
   La tolérance la plus commune pour un trou fini est H7 (voir le tableau ci-dessous). Pour toute autre tolérance les données en dessous du point 3 peuvent être utilisées pour la calculer.

TOLERANCE DU TROU			
Diamètre (mm)		Ecart de tolérance (mm)	
Supérieur	Jusqu'à et y compris	Elevé +	Faible +
	3	0.010	0
3	6	0.012	0
6	10	0.015	0
10	18	0.018	0

TOLERANCE DU TROU			
Diamètre (mm)		Ecart de tolérance (mm)	
Supérieur	Jusqu'à et y compris	Elevé +	Faible +
18	30	0.021	0
30	50	0.025	0
50	80	0.030	0

3. Lorsqu'il est nécessaire de définir les dimensions d'un alésoir spécial destiné à produire une tolérance spécifique, par ex. D8, utilisez la formule suivante :



A = Tolerance du Trou
B = Tolerance de l'alésoir
IT = Amplitude de tolérance
Dmax = Diamètre de trou max
Dmin = Diamètre de trou min
d_1 = Diamètre nominal
$d_1$max = Diamètre max de l'alésoir
$d_1$min = Diamètre min de l'alésoir

	Amplitude de tolérance du diamètre (mm)							
Amplitude de tolérance (microns)	de 1 à 3	de 3 à 6	de 6 à 10	de 10 à 18	de 18 à 30	de 30 à 50	de 50 à 80	de 80 à 120
IT5	4	5	6	8	9	11	13	15
IT6	6	8	9	11	13	16	19	22
IT7	10	12	15	18	21	25	30	35
IT8	14	18	22	27	33	39	46	54
IT9	25	30	36	43	52	62	74	87
IT10	40	48	58	70	84	100	120	140
IT11	60	75	90	110	130	160	190	220
IT12	100	120	150	180	210	250	300	350

par ex. trou de 10 mm avec une tolérance D8, diam. max. = 10,062, diam. min. = 10,040, tol. alésage (IT8) = 0,022

Diamètre maximal : 0,15 x tolérance de l'alésage (IT8) = 0,0033, soit = 0,004
Diamètre minimal : 0,35 x tolérance de l'alésage (IT8) = 0,0077, soit = 0,008

Diamètre maximal de l'alésoir = 10,062 - 0,004 = 10,058
Diamètre minimal de l'alésoir = 10,058 - 0,008 = 10,050

INTERRUPTIONS LORS DE L'ALESAGE

PROBLÈME	CAUSE	REMÈDE
Tenon cassé ou tordu	Mauvais contact entre la pince et la queue	S'assurer du bon état de la queue et de la douille
Usure rapide de l'outil	Enlèvement de matière insuffisant	Accroître la surépaisseur de matière
Trou surdimensionné	Variation excessive de la hauteur de lèvre	Réaffûter selon les spécifications correctes
	Jeu dans la broche de la machine	Réparer et rectifier l'axe
	Défaut du porte-outil	Remplacer le porte-outil
	Queue de l'outil endommagée	Remplacer ou réaffûter la queue
	Ovalisation de l'outil	Remplacer ou rectifier l'outil
	Angle de chanfrein d'entrée asymétrique	Réaffûter selon les spécifications correctes
	Avance ou vitesse de coupe trop élevées	Ajuster les conditions de coupe selon le catalogue
Trou sous dimensionné	Enlèvement de matière insuffisant	Accroître la surépaisseur de matière
	Trop de chaleur dégagée lors de l'alésage. Le trou s'élargit et se rétrécit	Accroître le flux d'huile
	Le diamètre de l'outil est détérioré et sous-dimensionné	Réaffûter selon les spécifications correctes
	Avance et vitesse de coupe trop faibles	Ajuster les conditions de coupe selon le catalogue
	Le trou de pré perçage est trop petit	Diminuer la surépaisseur de matière
Trous ovales et coniques	Jeu dans la broche de la machine	Réparer et rectifier l'axe
	Mauvais alignement entre l'outil et le trou	Utiliser un alésoir guide
	Angle de chanfrein d'entrée asymétrique	Réaffûter selon les spécifications correctes
Mauvaise finition de trou	Enlèvement de surépaisseur excessif	Diminuer la surépaisseur de matière
	Détérioration de l'outil	Réaffûter selon les spécifications correctes
	Angle de coupe trop faible	Réaffûter selon les spécifications correctes
	Huile de coupe ou émulsion trop diluée	Accroître le % de concentration
	Avance et/ou vitesse trop faibles	Ajuster les conditions de coupe selon le catalogue
	Vitesse de coupe trop élevée	Ajuster les conditions de coupe selon le catalogue
L'outil se bloque et casse	Détérioration de l'outil	Réaffûter selon les spécifications correctes
	La conicité arrière de l'outil est trop faible	Vérifier et remplacer / modifier l'outil
	Une dépouille trop grande	Vérifier et remplacer / modifier l'outil
	Le matériau de la pièce usinée a tendance à se resserrer	Utiliser un alésoir réglable pour compenser le jeu
	Le trou de pré perçage est trop petit	Diminuer la surépaisseur de matière
	Matériau hétérogène avec inclusions dures	Utiliser un alésoir en carbure monobloc

ESCARIADO

INSTRUCCIONES GENERALES PARA EL ESCARIADO

Para obtener los mejores resultados con los escariadores, es esencial hacerlos 'trabajar'. Un error frecuente es el de preparar orificios para escariar dejando dentro poco material. Si se deja en el orificio material insuficiente antes de escariar, el escariador rozará, se desgastará rápidamente y el resultado será la pérdida de diámetro. Para garantizar un buen rendimiento, también es importante no dejar demasiado material en el agujero. (Véase el apartado "Eliminación de material" a continuación).

1. Seleccionar el tipo óptimo de escariador y las velocidades y avances óptimos para la aplicación. Asegurar que los agujeros pretaladrados sean del diámetro correcto.

2. La pieza de trabajo debe sujetarse rígida y el husillo de la máquina no debe tener juego.

3. El portapinzas en el que se sujeta un escariador de mango recto debe ser de buena calidad. Si el escariador resbala en el portapinzas y el avance es automático, el escariador podría romperse.

4. Mantener al mínimo el vuelo de la herramienta respecto al husillo de la máquina.

5. Usar los lubricantes recomendados para prolongar la vida útil del escariador y asegurar que el fluido llegue a los filos de corte. Como la operación de escariar no es un trabajo de corte pesado, normalmente bastará una disolución 40:1 de aceite soluble. Cuando se trata de mecanizado en seco, se puede emplear aire a presión (ej. con el mecanizado de acero de fundición gris).

6. No permitir que las estrías del escariador se atasquen de virutas.

7. Antes de volver a reafilar el escariador, comprobar la concentricidad entre centros. En la mayoría de los casos, sólo habrá que rectificar el paso del bisel.

8. Mantener afilados los escariadores. El reafilado frecuente es rentable, pero es importante entender que los escariadores sólo cortan en el chaflán de entrada y no en las superficies entre estrías. Por lo tanto, sólo hay que rectificar dichas superficies. La exactitud de la rectificación es importante para la calidad del acabado del orificio y la vida útil de la herramienta.

ELIMINACIÓN DE MATERIAL

La eliminación de material recomendada al escariar depende del material de aplicación y el acabado de la superficie del orificio pretaladrado. En la siguiente tabla se dan las directrices generales para la eliminación de material:

Tamaño del agujero escariado (mm)	Con pretaladrado	Con pretaladrado de núcleo
Menos de 4	0.1	0.1
De 4 a 11	0.2	0.15
De 11 a 39	0.3	0.2
De 39 a 50	0.4	0.3

Tamaño del agujero escariado (pulgadas)	Con pretaladrado	Con pretaladrado de núcleo
Menos de 3/16	0.004	0.004
3/16 a ½	0.008	0.006
½ a 1.½	0.010	0.008
1.½ a 2	0.016	0.010

LÍMITES DE TOLERANCIA

1. EN EL DIÁMETRO DE CORTE DE LOS ESCARIADORES ESTÁNDAR
   El diámetro (d1) se mide sobre la superficie circular entre estrías inmediatamente detrás del bisel o paso cónico. La tolerancia se ajusta a DIN 1420 y sirve para producir agujeros H7.

TOLERANCIA DEL ESCARIADOR			
Diámetro (mm)		Límite de tolerancia (mm)	
Por encima de	Hasta e incluido	Alto +	Bajo +
	3	0.008	0.004
3	6	0.010	0.005
6	10	0.012	0.006
10	18	0.015	0.008

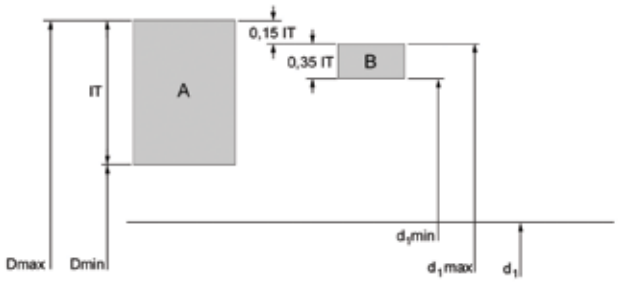
TOLERANCIA DEL ESCARIADOR			
Diámetro (mm)		Límite de tolerancia (mm)	
Por encima de	Hasta e incluido	Alto +	Bajo +
18	30	0.017	0.009
30	50	0.021	0.012
50	80	0.025	0.014

2. EN UN AGUJERO H7
   La tolerancia más común en un agujero acabado es H7 (ver la tabla de abajo). Para cualquier otra tolerancia, ver la figura y la tabla del punto 3 (se muestra más abajo); esta tabla se puede usar para calcular el ancho y la ubicación de tolerancia de los escariadores.

TOLERANCIA DEL AGUJERO			
Diámetro (mm)		Límite de tolerancia (mm)	
Por encima de	Hasta e incluido	Alto +	Bajo +
	3	0.010	0
3	6	0.012	0
6	10	0.015	0
10	18	0.018	0

TOLERANCIA DEL AGUJERO			
Diámetro (mm)		Límite de tolerancia (mm)	
Por encima de	Hasta e incluido	Alto +	Bajo +
18	30	0.021	0
30	50	0.025	0
50	80	0.030	0

3. Cuando es necesario definir las dimensiones para un escariador especial para cortar según una tolerancia específica, por ejemplo D8, se puede usar esta guía.



A = Tolerancia del Agujero
B = Tolerancia del Escariador
IT = Ancho de tolerancia
Dmax = Diámetro máx. del agujero
Dmin = Diámetro mín. del agujero
d_1 = Diámetro nominal
$d_1$max = Diámetro máx. del escariador
$d_1$min = Diámetro mín. del escariador

	Ancho de tolerancia del diámetro (mm)							
Ancho de tolerancia (microns)	por encima de 1 incl. 3	por encima de 3 incl. 6	por encima de 6 incl. 10	por encima de 10 incl. 18	por encima de 18 incl. 30	por encima de 30 incl. 50	por encima de 50 incl. 80	por encima de 80 incl. 120
IT5	4	5	6	8	9	11	13	15
IT6	6	8	9	11	13	16	19	22
IT7	10	12	15	18	21	25	30	35
IT8	14	18	22	27	33	39	46	54
IT9	25	30	36	43	52	62	74	87
IT10	40	48	58	70	84	100	120	140
IT11	60	75	90	110	130	160	190	220
IT12	100	120	150	180	210	250	300	350

por ejemplo: agujero de 10 mm con tolerancia D8, diám. máx. = 10,062, diám. mín. = 10,040, toler. del agujero (IT8) = 0,022

Límite máximo: 0.15 x tolerancia de agujero (IT8) = 0.0033, redondeado = 0.004
Límite mínimo: 0.35 x tolerancia de agujero (IT8) = 0.0077, redondeado = 0.008

Límite máximo para escariador = 10.062 - 0.004 = 10.058
Límite mínimo para escariador = 10.058 - 0.008 = 10.050

PROBLEMAS EN EL ESCARIADO

PROBLEMA	CAUSA	REMEDIO
Rotura o torsión en la espiga	Ajuste incorrecto entre el mango y el portaherramientas	Comprobar que el mango y el portaherramientas están limpios y no están dañados
Desgaste rápido de la herramienta	Material insuficiente que eliminar	Aumentar la cantidad de material que eliminar
Agujero sobredimensionado	Excesiva variación de la altura del labio	Reafilar según las especificaciones correctas
	Desplazamiento en el husillo de la máquina	Reparar y rectificar el desplazamiento del husillo
	Desviaciones en el portaherramientas	Reemplazar el portaherramientas
	El mango de la herramienta esta dañado	Sustituir o rectificar el mango
	Forma ovalada de la herramienta	Sustituir o rectificar la herramienta
	Ángulo del paso biselado asimétrico	Reafilar según las especificaciones correctas
	Avance o velocidad de corte de la herramienta demasiado alto	Ajustar las condiciones de corte de acuerdo con el catálogo
Menor tamaño del agujero	Material insuficiente que eliminar	Aumentar la cantidad de material que eliminar
	Excesiva generación de calor en el escariado El agujero se amplía y se contrae	Incrementar la refrigeración
	El diámetro de la herramienta esta desgastado e infradimensionado	Reafilar según las especificaciones correctas
	Avance o velocidad de corte de la herramienta demasiado baja	Ajustar las condiciones de corte de acuerdo con el catálogo
	El agujero pretaladrado es demasiado pequeño	Reducir la cantidad de material que eliminar
Agujeros ovalados y cónicos	Desplazamiento en el husillo de la máquina	Reparar y rectificar el desplazamiento del husillo
	Mal centraje entre la herramienta y el agujero	Usar un escariador guiado
	Ángulo de avance del bisel asimétrico	Reafilar según las especificaciones correctas
Acabado del agujero deficiente	Excesivo material a eliminar	Reducir la cantidad de material que eliminar
	Herramienta muy gastada	Reafilar según las especificaciones correctas
	Ángulo de desprendimiento demasiado pequeño	Reafilar según las especificaciones correctas
	Emulsión o aceite de corte demasiado diluido	Incrementar el % de concentración
	Avance y/o velocidad demasiado baja	Ajustar las condiciones de corte de acuerdo con el catálogo
	Velocidad de corte demasiado alta	Ajustar las condiciones de corte de acuerdo con el catálogo
La herramienta se clava o se rompe	Herramienta muy gastada	Reafilar según las especificaciones correctas
	Chaflán de salida de la herramienta demasiado pequeño	Verificar y remplazar o modificar la herramienta
	Ancho entre estrías demasiado grande	Verificar y remplazar o modificar la herramienta
	El material de la pieza de trabajo tiende a retorcerse	Utilizar un escariador regulable para compensar el desplazamiento
	El agujero pretaladrado es demasiado pequeño	Reducir la cantidad de material que eliminar
	Material heterogéneo con inclusiones duras	Usar un escariador de metal duro

MANDRILAGEM

SUGESTÕES GERAIS SOBRE MANDRILAGEM

Para obter os melhores resultados ao utilizar mandris, é fundamental fazê-los “funcionar”. Um erro comum passa por preparar orifícios para mandrilar com muito pouco material restante. Se existir material restante insuficiente no orifício antes da mandrilagem, a broca irá lixar, desgastar rapidamente e resultar na perda de diâmetro. É igualmente importante, para o desempenho, não deixar demasiado material restante no orifício. (Ver Remoção de material restante abaixo).

1. Seleccionar o tipo óptimo de mandril, bem como as velocidades e avanços óptimos para a aplicação. Assegurar que os orifícios pré-abertos têm o diâmetro certo.

2. A peça tem de estar segura com força, sem que o eixo da máquina interfira.

3. O mandril porta-ferramentas onde a haste do mandril está pousada deve ser de boa qualidade. Se o mandril deslizar no mandril porta-ferramentas e o avanço for automático, o mandril poderá partir-se.

4. Manter a ferramenta inclinada do eixo da máquina, no mínimo.

5. Utilizar lubrificantes recomendados, para melhorar a vida do mandril e assegurar que o fluido chega aos extremos de corte. Como a mandrilagem não é um trabalho de corte pesado, opta-se, normalmente, pela diluição de óleo solúvel 40:1. O jacto de ar pode ser utilizado com ferro fundido cinzento, no caso de maquinagem a seco.

6. Não permitir que os sulcos do mandril fiquem bloqueados por aparas.

7. Antes de o mandril ser reafiado, verificar a concentricidade entre os centros. Na maior parte dos casos, apenas o avanço bisel precisará ser reafiado.

8. Manter os mandris afiados. A reafiação frequente é um bom método, mas é importante perceber que os mandris apenas cortam nos biséis e inclinações, e não nas costuras. Consequentemente, apenas estes avanços precisam ser reafiados. A exactidão da reafiação é importante para a qualidade do orifício e vida da ferramenta.

REMOÇÃO DE MATERIAL RESTANTE

A remoção de material restante recomendada na mandrilagem depende do material da aplicação e do acabamento da superfície do orifício pré-aberto. As orientações gerais para a remoção de material restante estão apresentadas nas seguintes tabelas:

Tamanho do orifício mandrilado (mm)	Quando pré-aberto	Quando pré-aberto no centro
Inferior a 4	0.1	0.1
Superior a 4 até 11	0.2	0.15
Superior a 11 até 39	0.3	0.2
Superior a 39 até 50	0.4	0.3

Tamanho do orifício mandrilado (polegadas)	Quando pré-aberto	Quando pré-aberto no centro
Inferior a 3/16	0.004	0.004
3/16 a ½	0.008	0.006
½ a 1.½	0.010	0.008
1.½ a 2	0.016	0.010

LIMITES DE TOLERÂNCIA

1. NO DIÂMETRO DE CORTE DE BROCAS NORMALIZADAS
   O diâmetro (d1) é medido ao longo da costura circular, imediatamente atrás do bisel ou inclinação. A tolerância está de acordo com a DIN 1420 e tem o objectivo de criar orifícios H7.

TOLERÂNCIA DO MANDRIL			
Diâmetro (mm)		Limite de tolerância (mm)	
Superior a	Até e incluindo	Alto +	Low +
	3	0.008	0.004
3	6	0.010	0.005
6	10	0.012	0.006
10	18	0.015	0.008

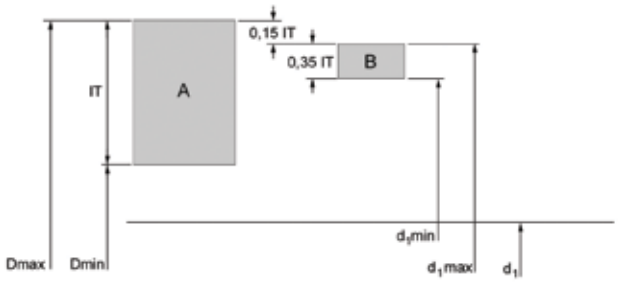
TOLERÂNCIA DO MANDRIL			
Diâmetro (mm)		Limite de tolerância (mm)	
Superior a	Até e incluindo	Alto +	Low +
18	30	0.017	0.009
30	50	0.021	0.012
50	80	0.025	0.014

2. NUM ORIFÍCIO H7
   A tolerância mais comum num orifício acabado é a H7 (ver tabela abaixo). Para qualquer outra tolerância, o valor e a tabela abaixo do ponto 3 podem ser utilizados para calcular a localização e largura da tolerância dos mandris.

TOLERÂNCIA DO ORIFÍCIO			
Diâmetro (mm)		Limite de tolerância (mm)	
Superior a	Até e incluindo	Alto +	Low +
	3	0.010	0
3	6	0.012	0
6	10	0.015	0
10	18	0.018	0

TOLERÂNCIA DO ORIFÍCIO			
Diâmetro (mm)		Limite de tolerância (mm)	
Superior a	Até e incluindo	Alto +	Low +
18	30	0.021	0
30	50	0.025	0
50	80	0.030	0

3. Se for necessário definir as dimensões de um mandril especial, destinado a cortar a uma tolerância específica, p. ex. D8, pode ser utilizado este guia aprovado.



A = Tolerância do Orifício
B = Tolerância do Mandril
IT = Largura da Tolerância
Dmax = Diâmetro Máx. do Orifício
Dmin = Diâmetro Mín. do Orifício
d_1 = Diâmetro Nominal
$d_1$max = Diâmetro Máx. do Mandril
$d_1$min = Diâmetro Mín. do Mandril

	Largura da Tolerância do Diâmetro (mm)							
Largura da Tolerância (mícrones)	Superior a 1 incl. 3	Superior a 3 incl. 6	Superior a 6 incl. 10	Superior a 10 incl. 18	Superior a 18 incl. 30	Superior a 30 incl. 50	Superior a 50 incl. 80	Superior a 80 incl. 120
IT5	4	5	6	8	9	11	13	15
IT6	6	8	9	11	13	16	19	22
IT7	10	12	15	18	21	25	30	35
IT8	14	18	22	27	33	39	46	54
IT9	25	30	36	43	52	62	74	87
IT10	40	48	58	70	84	100	120	140
IT11	60	75	90	110	130	160	190	220
IT12	100	120	150	180	210	250	300	350

p. ex. um orifício de 10 mm com tolerância D8, Máx. dia = 10,062, Mín. dia = 10,040, tol Orifício (IT8) = 0,022

Limite máximo: 0,15 x tolerância orifício (IT8) = 0,0033, arredondado = 0,004
Limite mínimo: 0,35 x tolerância orifício (IT8) = 0,0077, arredondado = 0,008

Limite máximo para a broca = 10,062 - 0,004 = 10,058
Limite mínimo para a broca = 10,058 - 0,008 = 10,050

RESOLUÇÃO DE PROBLEMAS DURANTE A MANDRILAGEM

PROBLEMA	CAUSA	SOLUÇÃO
Patilhas quebradas ou torcidas	Adequação incorrecta da haste à anilha	Certificar-se de que a haste e a anilha estão limpas e sem danos
Rápido desgaste da ferramenta	Material restante insuficiente para remover	Aumentar a quantidade de material restante a ser removida
Orifício de tamanho excessivo	Variação excessiva da altura do bordo	Rectificar para a especificação correcta
	Deslocação no eixo da máquina	Reparar e rectificar a deslocação do eixo
	Deformações no apoio da ferramenta	Substituir apoio da ferramenta
	A haste da ferramenta está danificada	Substituir ou reafiar a haste
	Ovalização da ferramenta	Substituir ou reafiar a ferramenta
	Ângulo do bisel assimétrico	Rectificar para a especificação correcta
	Avanço ou velocidade de corte demasiado elevados	Ajustar as condições de corte em conformidade com o Catálogo
Orifício de tamanho insuficiente	Material restante insuficiente para remover	Aumentar a quantidade de material restante a ser removida
	Demasiado calor gerado durante a mandrilagem. O orifício alarga e encolhe	Aumentar o fluxo de refrigeração
	O diâmetro da ferramenta está gasto e sem tamanho suficiente	Rectificar para a especificação correcta
	Avanço ou velocidade de corte demasiado baixos	Ajustar as condições de corte em conformidade com o Catálogo
	O orifício pré-aberto é demasiado pequeno	Diminuir a quantidade de material restante a ser removida
Orifícios ovais e cónicos	Deslocação no eixo da máquina	Repair and rectify spindle displacement
	Desalinhamento entre a ferramenta e o orifício	Utilizar uma broca de ponte
	Ângulo do bisel assimétrico	Rectificar para a especificação correcta
Mau acabamento do orifício	Demasiado material restante para remover	Diminuir a quantidade de material restante a ser removida
	Ferramenta desgastada	Rectificar para a especificação correcta
	Ângulo de corte demasiado pequeno	Rectificar para a especificação correcta
	Emulsão ou óleo de corte demasiado diluídos	Increase % concentration
	Avanço e/ou velocidade demasiado baixos	Ajustar as condições de corte em conformidade com o Catálogo
	Velocidade de corte demasiado elevada	Ajustar as condições de corte em conformidade com o Catálogo
A ferramenta bloqueia e quebra	Ferramenta desgastada	Rectificar para a especificação correcta
	A inclinação traseira da ferramenta é demasiado pequena	Verificar e substituir/alterar a ferramenta
	A largura da costura é demasiado grande	Verificar e substituir/alterar a ferramenta
	O material da peça tem tendência para comprimir	Utilizar uma broca ajustável para compensar a deslocação
	O orifício pré-aberto é demasiado pequeno	Diminuir a quantidade de material restante a ser removida
	Material heterogéneo com inclusões duras	Utilizar uma broca de carboneto sólido

THREADING

GENERAL HINTS ON TAPPING

The success of any tapping operation depends on a number of factors, all of which effect the quality of the finished product.

1. Select the correct design of tap for the component material and type of hole, i.e. through or blind, from the Materials Classification chart.
2. Ensure the component is securely clamped - lateral movement may cause tap breakage or poor quality threads.
3. Select the correct size of drill from the relevant catalogue page. Always ensure that work hardening of the component material is kept to a minimum.
4. Select the correct cutting speed as shown on the catalogue product page.
5. Use appropriate cutting fluid for correct application.
6. In NC applications ensure that the feed value chosen for the program is correct. When using a tapping attachment, 95% to 97% of the pitch is recommended to allow the tap to generate its own pitch.
7. Where possible, hold the tap in a good quality torque limiting tapping attachment, which ensures free axial movement of the tap and presents it squarely to the hole. It also protects the tap from breakage if accidentally ‘bottomed’ in a blind hole.
8. Ensure smooth entry of the tap into the hole, as an uneven feed may cause ‘bell mouthing’.

CUTTING TAPS CLASSES 2B & 3B: UNIFIED INCH SCREW THREADS

	TPI		Tap limits	
Size	UNC	UNF	Class 2B	Class 3B
0		80	H2	H1
1	64		H2	H1
1		72	H2	H1
2	56		H2	H1
2		64	H2	H1
3	48		H2	H1
3		56	H2	H1
4	40		H2	H2
4		48	H2	H1
5	40		H2	H2
5		44	H2	H1
6	32		H3	H2
6		40	H2	H2
8	32		H3	H2
8		36	H2	H2
10	24		H3	H3
10		32	H3	H2
12	24		H3	H3
12		28	H3	H3
1/4	20		H5	H3
1/4		28	H4	H3
5/16	18		H5	H3
5/16		24	H4	H3
3/8	16		H5	H3

	TPI		Tap limits	
Size	UNC	UNF	Class 2B	Class 3B
3/8		24	H4	H3
7/16	14		H5	H3
7/16		20	H5	H3
1/2	13		H5	H3
1/2		20	H5	H3
9/16	12		H5	H3
9/16		18	H5	H3
5/8	11		H5	H3
5/8		18	H5	H3
3/4	10		H5	H5
3/4		16	H5	H3
7/8	9		H6	H4
7/8		14	H6	H4
1”	8		H6	H4
1”		12	H6	H4
1.1/8	7		H8	H4
1.1/8		12	H6	H4
1.1/4	7		H8	H4
1.1/4		12	H6	H4
1.3/8	6		H8	H4
1.3/8		12	H6	H4
1.1/2	6		H8	H4
1.1/2		12	H6	H4

GEWINDEBOHREN

ALLGEMEINE HINWEISE ZUM GEWINDEBOHREN

Der Erfolg jeder Gewindebohr-Operation hängt von einer Anzahl Faktoren ab, welche alle die Qualität des fertigen Produktes beeinflussen.

1. Die korrekte Geometrie des Gewindebohrers aufgrund des zu bearbeitenden Materials und des Bohrungstyps (z. B. Durchgangs- oder Sackloch-Bohrung) aus der Materialklassifizierungstabelle wählen.
2. Das Werkzeug muss fest eingespannt sein - Rundlauffehler können zu einer schlechten Qualität des Gewindes und im schlimmsten Falle zu einem Bruch des Gewindebohrers führen.
3. Auswahl der korrekten Bohrergröße aus den Tabellen der entsprechenden Katalogseite. Eine Materialverhärtungen des zu fertigenden Bauteils sollte immer minimal gehalten werden.
4. Die korrekte Schnittgeschwindigkeit aus der Produktseite im Katalog wählen.
5. Das passende Kühlschmiermittel für die Anwendung benutzen.
6. Bei NC-Anwendungen sollten die Vorschubwerte für das gewählte Programm korrekt sein. Beim Einsatz einer Gewindebohr-Vorrichtung sollte der Vorschub auf 95% bis 97% der Steigung gewählt werden, damit der Gewindebohrer ohne Druck ins Material läuft.
7. Wenn man mit einer Gewindeschneidvorrichtung mit Kupplung arbeitet, ist es sehr wichtig, dass der Gewindebohrer ohne Druck und Zug arbeitet. Bei höherem Drehmoment schaltet die Kupplung ab (z. B. bei Berührung des Bohrungsgrundes).
8. Der Gewindebohrer sollte mit einem gleichmäßigen Vorschub in die Bohrung einlaufen, da ein ungleichmäßiger Vorschub zu einer ‘Gewindeflanken-Verschiebung’ führen kann.

GEWINDEBOHRER KLASSEN 2B & 3B: VEREINHEITLICHTE ZOLLGEWINDESCHRAUBEN

	TPI		Gewindegrenzen	
Größe	**UNC**	**UNF**	**Klasse 2B**	**Klasse 3B**
0		80	H2	H1
1	64		H2	H1
1		72	H2	H1
2	56		H2	H1
2		64	H2	H1
3	48		H2	H1
3		56	H2	H1
4	40		H2	H2
4		48	H2	H1
5	40		H2	H2
5		44	H2	H1
6	32		H3	H2
6		40	H2	H2
8	32		H3	H2
8		36	H2	H2
10	24		H3	H3
10		32	H3	H2
12	24		H3	H3
12		28	H3	H3
1/4	20		H5	H3
1/4		28	H4	H3
5/16	18		H5	H3
5/16		24	H4	H3
3/8	16		H5	H3

	TPI		Gewindegrenzen	
Größe	**UNC**	**UNF**	**Klasse 2B**	**Klasse 3B**
3/8		24	H4	H3
7/16	14		H5	H3
7/16		20	H5	H3
1/2	13		H5	H3
1/2		20	H5	H3
9/16	12		H5	H3
9/16		18	H5	H3
5/8	11		H5	H3
5/8		18	H5	H3
3/4	10		H5	H5
3/4		16	H5	H3
7/8	9		H6	H4
7/8		14	H6	H4
1”	8		H6	H4
1”		12	H6	H4
1.1/8	7		H8	H4
1.1/8		12	H6	H4
1.1/4	7		H8	H4
1.1/4		12	H6	H4
1.3/8	6		H8	H4
1.3/8		12	H6	H4
1.1/2	6		H8	H4
1.1/2		12	H6	H4

DRAADSNIJDEN

ALGEMENE TIPS BIJ HET TAPPEN

Het succes van de tapbewerking hangt van een aantal factoren af, die alle de kwaliteit van het tapgat beïnvloeden.

1. Gebruik de juiste tap overeenkomstig het te bewerken materiaal en het type gat, d.w.z. blind of doorlopend, overeenkomstig de “Materiaalclassificatie” tabel.
2. Verzeker u van een goede opspanning van het werkstuk – verschuiven van het stuk kan tapbreuk of slechte draadkwaliteit tot gevolg hebben.
3. Selecteer de correcte maat van de boor op de betreffende pagina van de catalogus. Sluit zoveel mogelijk zelfharding van het werkstuk uit.
4. Gebruik de juiste snijsnelheid zoals deze vermeld wordt op de pagina van de productcatalogus.
5. Gebruik de juiste snijolie.
6. Bij NC-toepassingen dient de geprogrammeerde voeding juist te zijn. Bij gebruik van een tapkop met lengtecompensatie moet men 95% tot 97% van de spoed gebruiken teneinde de tap de mogelijkheid te geven zijn eigen spoed te genereren.
7. Indien mogelijk kan men de tap het best opspannen in een tapkop van goede kwaliteit voorzien van een slipkoppeling, zodat vrije axiale beweging mogelijk is. De slipkoppeling kan de tap ook tegen breuk beschermen wanneer het draaimoment te hoog wordt of de tap per vergissing de bodem van het gat zou raken bij het tappen van een blind gat.
8. Zorg ervoor dat de tap soepel in het gat kan komen omdat een onregelmatige voeding in het begin van gat kan resulteren in spoedverschil.

SNIJTAPPEN KLASSE 2B & 3B: UNIFIED INCH SCHROEFDRADEN

	TPI		Tap limieten	
Maat	**UNC**	**UNF**	**Klasse 2B**	**Klasse 3B**
0		80	H2	H1
1	64		H2	H1
1		72	H2	H1
2	56		H2	H1
2		64	H2	H1
3	48		H2	H1
3		56	H2	H1
4	40		H2	H2
4		48	H2	H1
5	40		H2	H2
5		44	H2	H1
6	32		H3	H2
6		40	H2	H2
8	32		H3	H2
8		36	H2	H2
10	24		H3	H3
10		32	H3	H2
12	24		H3	H3
12		28	H3	H3
1/4	20		H5	H3
1/4		28	H4	H3
5/16	18		H5	H3
5/16		24	H4	H3
3/8	16		H5	H3

	TPI		Tap limieten	
Maat	**UNC**	**UNF**	**Klasse 2B**	**Klasse 3B**
3/8		24	H4	H3
7/16	14		H5	H3
7/16		20	H5	H3
1/2	13		H5	H3
1/2		20	H5	H3
9/16	12		H5	H3
9/16		18	H5	H3
5/8	11		H5	H3
5/8		18	H5	H3
3/4	10		H5	H5
3/4		16	H5	H3
7/8	9		H6	H4
7/8		14	H6	H4
1”	8		H6	H4
1”		12	H6	H4
1.1/8	7		H8	H4
1.1/8		12	H6	H4
1.1/4	7		H8	H4
1.1/4		12	H6	H4
1.3/8	6		H8	H4
1.3/8		12	H6	H4
1.1/2	6		H8	H4
1.1/2		12	H6	H4

TARAUDAGE

RECOMMANDATIONS GENERALES POUR LE TARAUDAGE

Le succès de toute opération de taraudage est fonction d'un nombre de facteurs, chacun affectant la qualité du produit fini.

1. Sélectionner le type de taraud qui convient à la matière de la pièce et au type de trou, borgne ou débouchant, dans le tableau de classification des matériaux.
2. Veiller à la rigidité du bridage de la pièce, tout mouvement latéral pouvant causer la rupture du taraud ou la production d'un filetage de mauvaise qualité.
3. Sélectionner le diamètre de foret correct sur la page adéquate du catalogue. Veiller toujours à éviter autant que possible l'écrouissage de la pièce.
4. Sélectionner la vitesse de coupe correcte comme il est décrit sur la page produit du catalogue.
5. Utiliser le liquide de coupe adapté à l'application.
6. Sur les machines à commandes numériques, veiller à ce que le programme utilise une valeur de pas correcte. Avec un adaptateur de taraudage, utiliser 95 % à 97 % du pas pour permettre au taraud de générer son propre pas.
7. Si possible, utiliser un adaptateur de taraudage à limiteur de couple de bonne qualité, qui laisse le taraud libre de se déplacer dans le sens axial tout en garantissant sa perpendicularité par rapport au trou. Ces adaptateurs protègent également le taraud et évitent sa rupture s'il touche accidentellement le fond d'un trou borgne.
8. Veiller à la régularité de l'entrée du taraud dans le trou, car une avance irrégulière peut produire un évasement.

TARAUDS DE COUPE CLASSES 2B et 3B : FILETAGES DE VIS UNIFIES

	Filets au pouce		Limites du taraud	
Diamètre	UNC	UNF	Classe 2B	Classe 3B
0		80	H2	H1
1	64		H2	H1
1		72	H2	H1
2	56		H2	H1
2		64	H2	H1
3	48		H2	H1
3		56	H2	H1
4	40		H2	H2
4		48	H2	H1
5	40		H2	H2
5		44	H2	H1
6	32		H3	H2
6		40	H2	H2
8	32		H3	H2
8		36	H2	H2
10	24		H3	H3
10		32	H3	H2
12	24		H3	H3
12		28	H3	H3
1/4	20		H5	H3
1/4		28	H4	H3
5/16	18		H5	H3
5/16		24	H4	H3
3/8	16		H5	H3

	Filets au pouce		Limites du taraud	
Diamètre	UNC	UNF	Classe 2B	Classe 3B
3/8		24	H4	H3
7/16	14		H5	H3
7/16		20	H5	H3
1/2	13		H5	H3
1/2		20	H5	H3
9/16	12		H5	H3
9/16		18	H5	H3
5/8	11		H5	H3
5/8		18	H5	H3
3/4	10		H5	H5
3/4		16	H5	H3
7/8	9		H6	H4
7/8		14	H6	H4
1”	8		H6	H4
1”		12	H6	H4
1.1/8	7		H8	H4
1.1/8		12	H6	H4
1.1/4	7		H8	H4
1.1/4		12	H6	H4
1.3/8	6		H8	H4
1.3/8		12	H6	H4
1.1/2	6		H8	H4
1.1/2		12	H6	H4

ROSCADO

INSTRUCCIONES GENERALES PARA EL ROSCADO

El éxito de toda operación de roscado depende de diversos factores; todos ellos afectan a la calidad del producto acabado.

1. Seleccione el diseño correcto del macho para el material del componente y el tipo de agujero, es decir, pasante o ciego, de la tabla Clasificación de materiales.
2. Asegurar que el componente esté bien sujeto, ya que el movimiento lateral podría causar la rotura del macho o la formación de roscas de mala calidad.
3. Seleccionar el tamaño correcto de la broca de la página del catálogo correspondiente. Asegurarse siempre de mantener al mínimo el endurecimiento del material del componente.
4. Seleccionar la velocidad de corte correcta, según se muestra en la página de productos del catálogo.
5. Usar el fluido de corte adecuado para la aplicación correcta.
6. En aplicaciones NC, asegurar que el valor de avance escogido para el programa sea el correcto. Al usar un accesorio de roscar, se recomienda un 95% a 97% del paso para permitir que el macho genere su propio paso.
7. Siempre que sea posible, sujetar el macho con un dispositivo de roscar de alta calidad con limitador de par; esto asegura el movimiento axial libre del macho y lo sitúa encuadrado en el agujero. Además protege el macho de una posible rotura si “toca fondo” accidentalmente en un agujero ciego.
8. Asegurar la introducción suave del macho en el agujero, ya que un avance desigual podría producir “abocinamiento”.

MACHOS CLASE 2B y 3B: ROSCAS DE TORNILLO DE UNA PULGADA UNIFICADAS

	TPI		Límites del macho	
Tamaño	UNC	UNF	Clase 2B	Clase 3B
0		80	H2	H1
1	64		H2	H1
1		72	H2	H1
2	56		H2	H1
2		64	H2	H1
3	48		H2	H1
3		56	H2	H1
4	40		H2	H2
4		48	H2	H1
5	40		H2	H2
5		44	H2	H1
6	32		H3	H2
6		40	H2	H2
8	32		H3	H2
8		36	H2	H2
10	24		H3	H3
10		32	H3	H2
12	24		H3	H3
12		28	H3	H3
1/4	20		H5	H3
1/4		28	H4	H3
5/16	18		H5	H3
5/16		24	H4	H3
3/8	16		H5	H3

	TPI		Límites del macho	
Tamaño	UNC	UNF	Clase 2B	Clase 3B
3/8		24	H4	H3
7/16	14		H5	H3
7/16		20	H5	H3
1/2	13		H5	H3
1/2		20	H5	H3
9/16	12		H5	H3
9/16		18	H5	H3
5/8	11		H5	H3
5/8		18	H5	H3
3/4	10		H5	H5
3/4		16	H5	H3
7/8	9		H6	H4
7/8		14	H6	H4
1”	8		H6	H4
1”		12	H6	H4
1.1/8	7		H8	H4
1.1/8		12	H6	H4
1.1/4	7		H8	H4
1.1/4		12	H6	H4
1.3/8	6		H8	H4
1.3/8		12	H6	H4
1.1/2	6		H8	H4
1.1/2		12	H6	H4

ROSCAGEM

DICAS GERAIS SOBRE A ABERTURA DE ROSCAS

O sucesso de qualquer trabalho de fundição depende de um número de factores, influenciando todos eles a qualidade do produto acabado.

1. Seleccionar o “design” correcto da tarraxa para o material componente e tipo de orifício, ou seja, profundo ou cego, da tabela de Classificação de Materiais.
2. Assegurar que o componente está bem fixo - os movimentos laterais podem provocar a ruptura da tarraxa ou roscas de má qualidade.
3. Seleccionar o tamanho correcto da broca da página do catálogo relevante. Assegurar sempre que a têmpera do material componente é reduzida ao mínimo.
4. Seleccionar a velocidade de corte correcta, conforme apresentado na página do catálogo do produto.
5. Utilizar fluido de corte apropriado para uma aplicação correcta.
6. Em aplicações NC, assegurar que o valor de avanço escolhido para o programa está correcto. Ao utilizar um aparelho de roscagem, recomenda-se 95% a 97% do passo, para permitir que a válvula gere o seu próprio passo.
7. Sustentar a tarraxa, quando possível, com um binário de boa qualidade, limitando o acessório de abertura de roscas, assegurando, assim, um movimento axial livre da tarraxa e apresentando-a perfeitamente ao orifício. Isso também evita que a tarraxa quebre, caso “caia” acidentalmente num orifício cego.
8. Assegurar uma penetração suave da tarraxa no orifício, pois um avanço irregular poderá causar o afilamento do orifício.

TARRAXAS DE CORTE DE CLASSE 2B & 3B: ROSCAS DE POLEGADA UNIFICADAS

	TPI		Limites da tarraxa	
Tamanho	UNC	UNF	Classe 2B	Classe 3B
0		80	H2	H1
1	64		H2	H1
1		72	H2	H1
2	56		H2	H1
2		64	H2	H1
3	48		H2	H1
3		56	H2	H1
4	40		H2	H2
4		48	H2	H1
5	40		H2	H2
5		44	H2	H1
6	32		H3	H2
6		40	H2	H2
8	32		H3	H2
8		36	H2	H2
10	24		H3	H3
10		32	H3	H2
12	24		H3	H3
12		28	H3	H3
1/4	20		H5	H3
1/4		28	H4	H3
5/16	18		H5	H3
5/16		24	H4	H3
3/8	16		H5	H3

	TPI		Limites da tarraxa	
Tamanho	UNC	UNF	Classe 2B	Classe 3B
3/8		24	H4	H3
7/16	14		H5	H3
7/16		20	H5	H3
1/2	13		H5	H3
1/2		20	H5	H3
9/16	12		H5	H3
9/16		18	H5	H3
5/8	11		H5	H3
5/8		18	H5	H3
3/4	10		H5	H5
3/4		16	H5	H3
7/8	9		H6	H4
7/8		14	H6	H4
1”	8		H6	H4
1”		12	H6	H4
1.1/8	7		H8	H4
1.1/8		12	H6	H4
1.1/4	7		H8	H4
1.1/4		12	H6	H4
1.3/8	6		H8	H4
1.3/8		12	H6	H4
1.1/2	6		H8	H4
1.1/2		12	H6	H4

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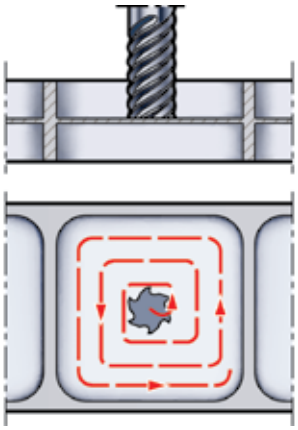

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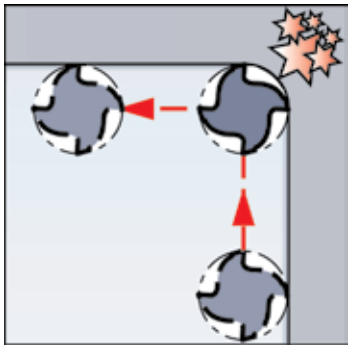

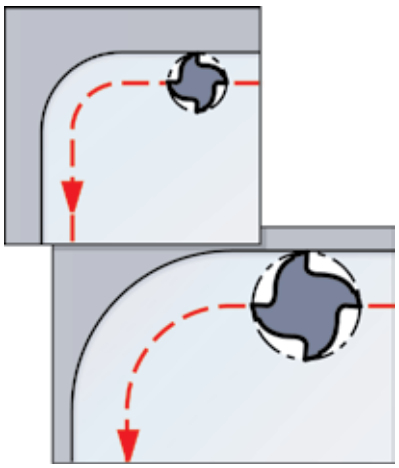

HIGH SPEED MACHINING (HSM)

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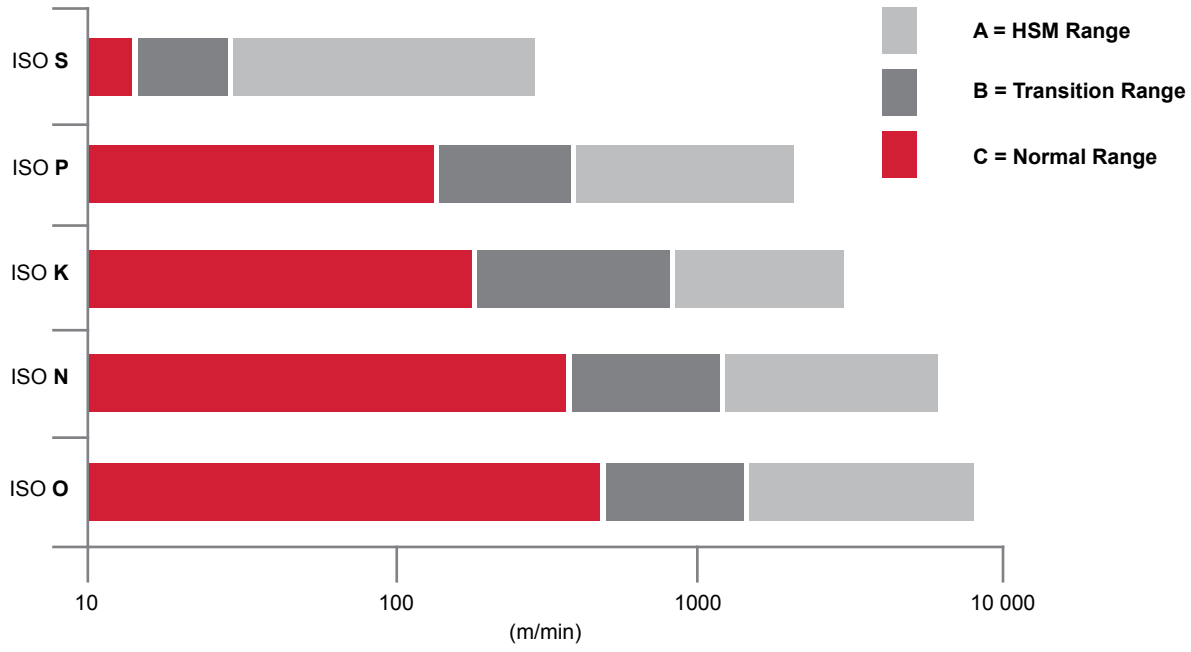
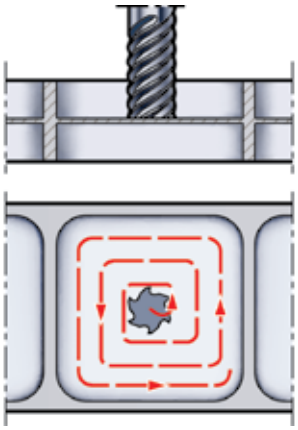


BEARBEITUNG VON DÜNNEN BÖDEN

Wie bei der Bearbeitung von dünnen Stegen sind auch hier die häufigsten Probleme Vibration und Maßhaltigkeit. Aus diesem Grund die Steifigkeit des gesamten Systems (Spannvorrichtung, Werkzeug, Werkstück) maximieren. Dadurch wird sowohl die Vibration verringert als auch die Dimensionskontrolle unterstützt.

EMPFEHLUNGEN:

- Für geschlossene Taschen mit dünnen Böden zunächst eine Startbohrung vorbohren oder alternativ mit Kreisinterpolation im Zentrum der Grundfläche beginnen und dann von diesem Punkt nach außen in einer spiralförmigen Bahn fräsen
- Nach Möglichkeit die Grundfläche von der anderen Seite aus abstützen
- Bei einem Bauteil mit einer Öffnung im Zentrum der Grundfläche, einen Stützfuß bei der Bearbeitung der ersten Seite belassen, dann die zweite Seite bearbeiten



OBERFLÄCHENQUALITÄT – VIBRATIONSPROBLEME

Jedes Bauteil hat allgemeine oder spezifische Anforderungen zur Oberflächenqualität. Die am weitesten verbreiteten Messgrößen sind Ra (arithmetische Rauheit) und Rz (durchschnitt von 5 max. Rautiefen), die Verschleißverhalten, Korrosionsbeständigkeit und Qualitätsgrad des Bauteils beeinflussen. Die Parameter, die die Rauheit beim Fräsen am meisten beeinflussen, sind: Vorschub/Zahn, Rundlaufabweichung, Werkzeuglänge und Stabilität der Spannvorrichtung. Vibrationen so gering wie möglich halten, da dadurch Ra-Rz erheblich reduziert werden können.

EMPFEHLUNGEN:

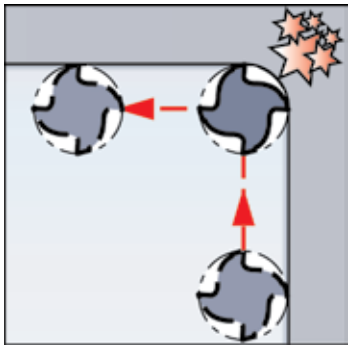
- Vorschub/Zahn verringern, um Oberflächenqualität zu verbessern
- Rundlaufabweichung möglichst gering halten, indem z. B. bei der Endbearbeitung ein Präzisionsspannfutter genutzt wird
- Bei Oberflächen mit besonderen Ra-Rz Anforderungen, ein Aufmaß von 0,2 – 0,5 mm belassen, das bei der Endbearbeitung abgetragen wird
- Fräser mit der kleinstmöglichen Schnittlänge für die programmierte axiale Schnitttiefe wählen
- Fräser mit dem größtmöglichen Durchmesser für die auszuführende Operation wählen
- Zur Minimierung von Vibrationen, Fräser von Dormer mit ungleicher Spiralwinkelgeometrie verwenden

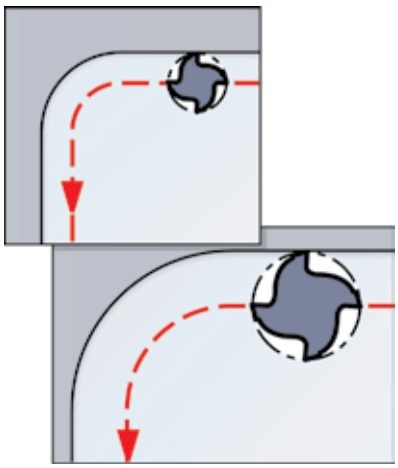
ECKBEARBEITUNG

Innere und äußere Ecken müssen mit der richtigen Strategie bearbeitet werden, um Vibrationen, Werkzeugausbrüche und schlechte Oberflächenqualität so gering wie möglich zu halten. Optimal ist die Wahl eines Fräsers mit einem kleineren Durchmesser als die Ecke in Kombination mit Kreisinterpolation und der entsprechenden Reduzierung des Vorschubs. Für Außenkanten die Schnitte entlang der beiden Seiten der Ecke mit Kreisinterpolation verbinden (Roll-on Technik).

EMPFEHLUNGEN:

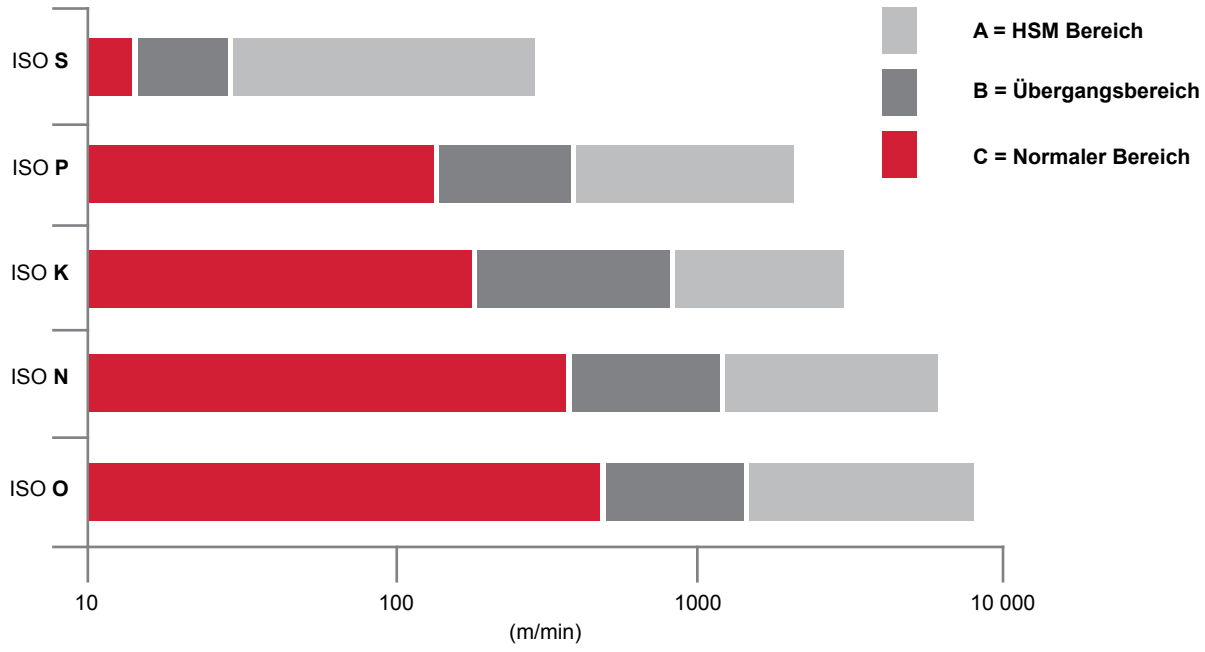
- Den Einsatz eines Fräsers mit demselben Durchmesser wie die Ecke vermeiden
- Um Vibration zu reduzieren und die Oberflächenqualität zu erhöhen, einen Fräserradius von < ⅔ Eckradius auswählen





HOCHGESCHWINDIGKEITSBEARBEITUNG (HSM)

Bei der Hochgeschwindigkeitsbearbeitung (HSM) wird mit erheblich höheren Schnittgeschwindigkeiten (5-10 Mal) als bei der herkömmlichen Bearbeitung gearbeitet. Das hat die folgenden Vorteile: Niedrigere Temperaturen an den Schnittkanten (geringer Verschleiß), weniger Vibrationsprobleme, höhere Stabilität sowie höhere Abtragungsraten (MRR) und verkürzte Bearbeitungszeit. Die Werkzeugmaschine muss für HSM geeignet sein. Um die Maschinenleistung maximal zu nutzen, muss außerdem die richtige Bearbeitungsstrategie gewählt werden.



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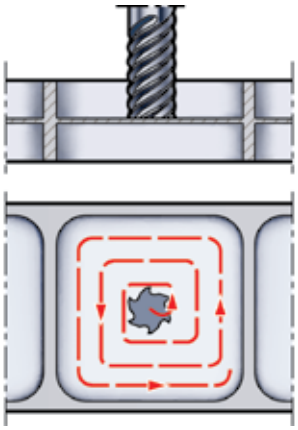

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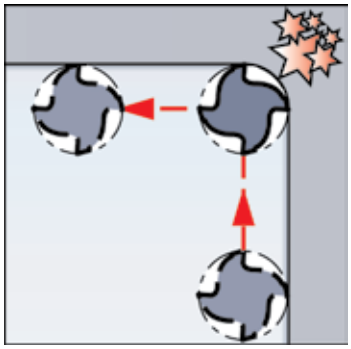

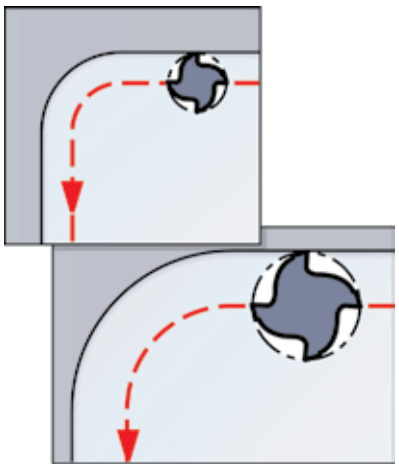

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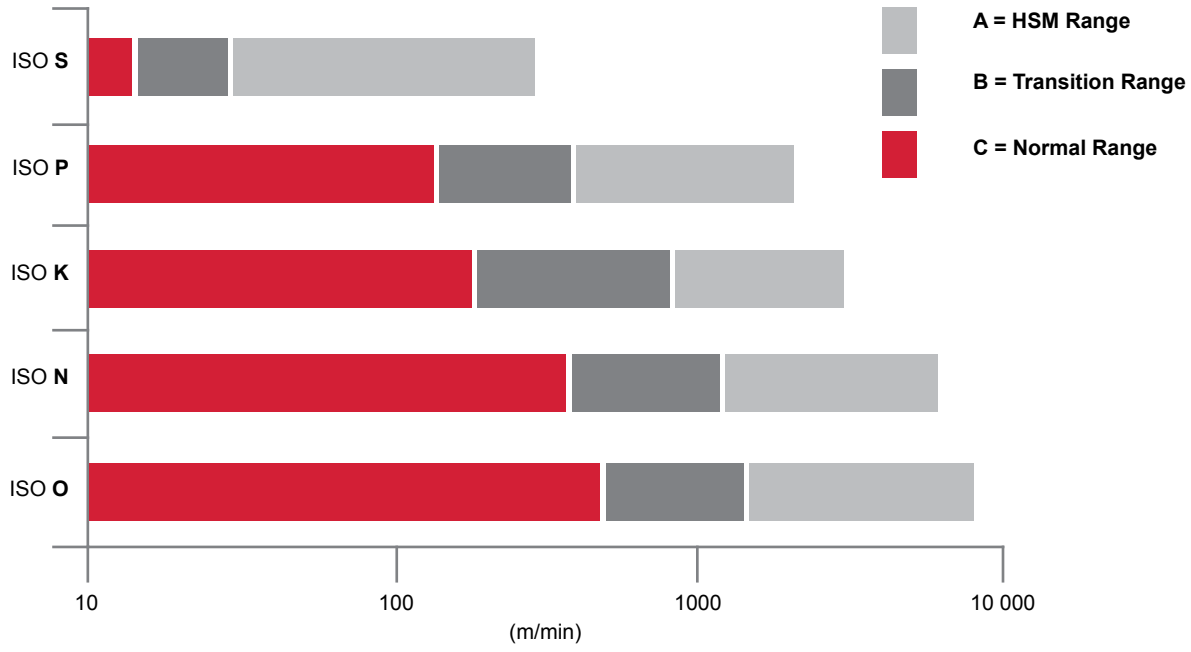
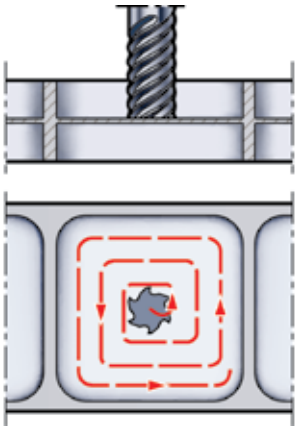


USINAGE DE BASES FINES

Comme pour l'usinage de parois fines, les problèmes les plus courants ici sont liés aux vibrations et aux tolérances. La rigidité de tout le système (fixation, outil, pièce) doit donc être maximale afin de réduire les vibrations et d'aider au contrôle dimensionnel.

RECOMMANDATIONS :

- Pour les poches fermées avec des bases fines, utiliser un avant-trou ou une approche par interpolation hélicoïdale au centre de la surface de base, puis fraiser vers l'extérieur sur un chemin hélicoïdal à partir de ce point
- Lorsque c'est possible, soutenir la base du côté opposé (avec des tringles)
- Si la pièce comporte un trou au centre de la base, laisser un pied support en place lors de l'usinage du premier côté, puis usiner le deuxième côté et enfin enlever le pied support à l'origine du trou



QUALITE DE SURFACE – PROBLEMES DE VIBRATION

Chaque pièce a des exigences générales ou spécifiques quant à la qualité de surface. Les paramètres généralement les plus mesurés sont Ra (rugosité arithmétique) et Rz (5 hauteurs maximales moyennes de saillies et de creux) qui affectent le comportement d'usure, la résistance à la corrosion et la nuance de qualité. Lors du fraisage de finition, les paramètres ayant la plus grande influence sur la rugosité sont : avance/relief, le faux rond de l'outil, longueur de l'outil et rigidité de la fixation. Les vibrations doivent être toujours gardées sous contrôle, car cela permet de réduire les rugosités Ra et Rz de manière significative.

RECOMMANDATIONS :

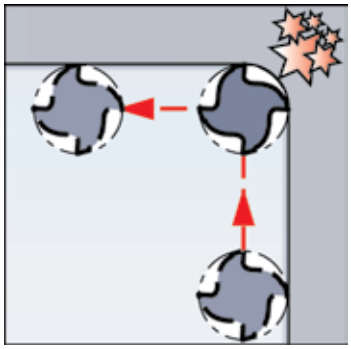
- Réduire l'avance/le relief pour accroître la qualité de surface
- Essayer de réduire le faux rond de l'outil, c.-à-d. pour les opérations de finition, utiliser un mandrin de haute précision
- Laisser 0,2–0,5 mm de matière à enlever lors d'une passe de finition sur les surfaces ayant des exigences Ra-Rz critiques
- Choisir une fraise ayant la longueur de coupe la plus basse compatible avec la profondeur de coupe axiale programmée
- Choisir une fraise ayant le diamètre maximal compatible avec l'opération à réaliser
- Utiliser des fraises équipées de la géométrie à hélice inégale de Dormer pour réduire les vibrations

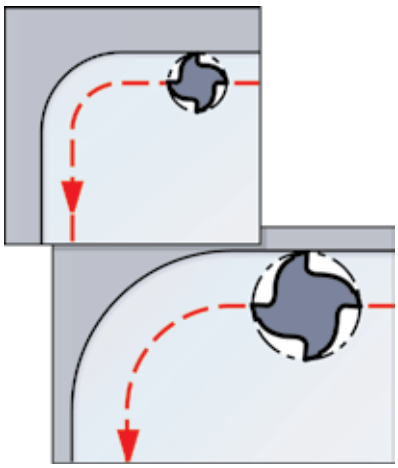
USINAGE DES ANGLES

Les angles internes et externes doivent être abordés avec une stratégie correcte pour minimiser les vibrations, l'écaillage de l'outil et la mauvaise qualité de surface. Le choix optimal est une fraise ayant un diamètre inférieur à celui de l'angle combinée à une stratégie d'interpolation circulaire en réduisant la vitesse d'avance comme il se doit. Pour les angles externes, connecter les passes le long des deux arêtes de l'angle avec une interpolation circulaire (technique du roulage).

RECOMMANDATIONS :

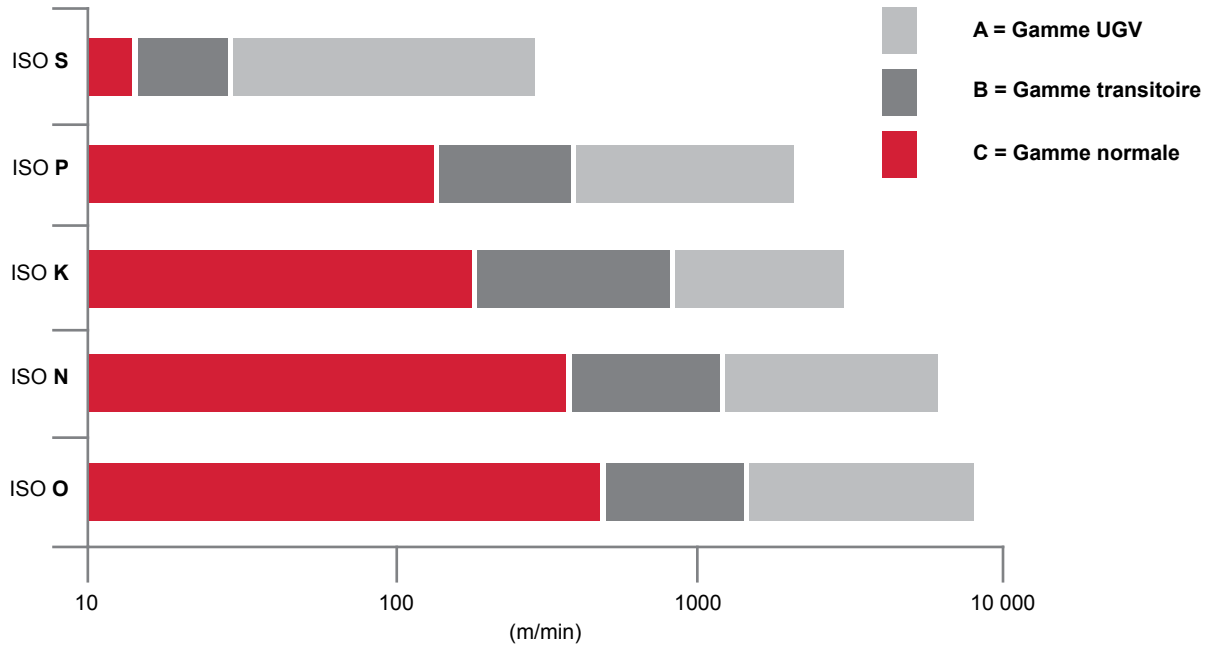
- Eviter d'utiliser une fraise avec un diamètre correspondant à celui de l'angle
- Pour minimiser les vibrations et améliorer la qualité de surface, choisir un rayon de fraise < ⅔ du rayon de l'angle





USINAGE À GRANDE VITESSE (UGV)

L'usinage à grande vitesse (UGV) peut être défini comme une opération de coupe avec des vitesses supérieures (entre 5 et 10 fois) aux vitesses habituellement utilisées en usinage conventionnel et fournit les principaux avantages suivants :réduction des températures au niveau des arêtes de coupe (faible usure), réduction des problèmes de vibration et stabilité accrue, débit de copeaux en volume accrue et temps d'usinage réduit.La machine-outil doit être conçue spécifiquement pour l'usinage à grande vitesse et une stratégie d'usinage correcte doit être sélectionnée pour optimiser les performances de la machine.

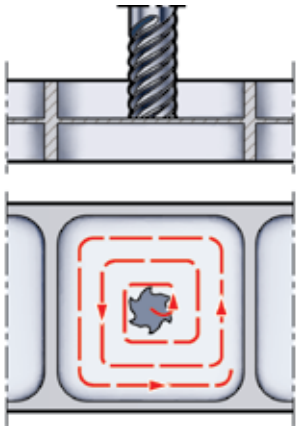


MECANIZADO DE BASES DELGADAS

Como sucede con el mecanizado de paredes delgadas, los problemas más comunes relacionados con esta operación están relacionados con la vibración y las tolerancias. Por lo tanto, debe maximizarse la rigidez del sistema completo (sujeción, conjunto de la herramienta, pieza de trabajo), con el efecto positivo doble de reducir la vibración y apoyar el control dimensional.

RECOMENDACIONES:

- En el caso de cavidades cerradas con bases delgadas, utilice el pretaladrado o un agujero inicial o, de forma alternativa, una aproximación en interpolación helicoidal en el centro del área de la base y, a continuación, frese hacia afuera siguiendo una trayectoria helicoidal a partir de ese punto
- En la medida de lo posible, sujete la base desde el lado contrario (por ejemplo, con varillas de empuje)
- Si el componente presenta un agujero en el centro de la base, coloque un soporte de apoyo en la posición adecuada al mecanizar el primer lado, mecanice a continuación el segundo y finalmente, retire el soporte para producir el agujero



CALIDAD SUPERFICIAL – PROBLEMAS DE VIBRACIÓN

Cada componente presenta unos requisitos específicos en cuanto a calidad superficial. Los parámetros medidos con mayor asiduidad son Ra (rugosidad aritmética) y Rz (media de 5 picos-valles máx.), los cuales afectan al comportamiento del desgaste, a la resistencia a la corrosión y al nivel de calidad del componente. En operaciones de fresado radial, los parámetros con mayor influencia en la rugosidad son: avance/diente, excentricidad del conjunto de la herramienta, longitud del conjunto de la herramienta y rigidez de la sujeción. La vibración debe mantenerse bajo control en todo momento ya que puede reducir de forma drástica los valores de Ra-Rz.

RECOMENDACIONES:

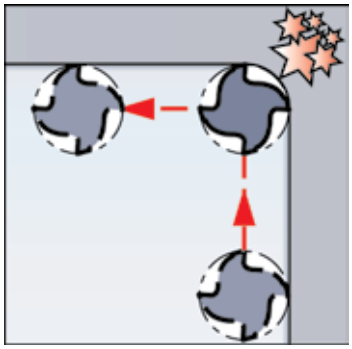
- Reduzca el avance/diente para aumentar la calidad superficial
- Trate de minimizar la excentricidad del conjunto de la herramienta; por ejemplo, para operaciones de acabado, utilice un portapinzas de alta precisión
- Deje de 0,2 a 0,5 mm de material para eliminarlo en una pasada de acabado en superficies con requisitos críticos en cuanto a Ra-Rz
- Seleccione una fresa con la longitud de corte más reducida posible que sea compatible con la profundidad de corte axial programada
- Seleccione una fresa con el diámetro máximo posible que sea compatible con la operación que va a llevarse a cabo
- Utilice fresas equipadas con la geometría de hélice desigual de Dormer para minimizar la vibración

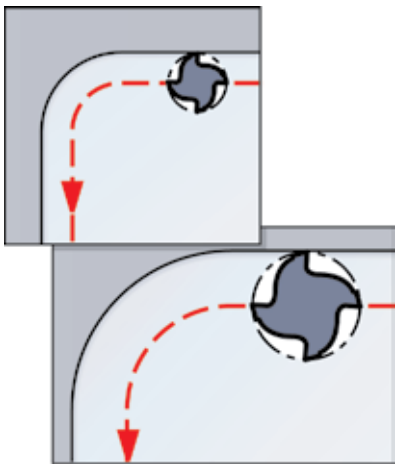
MECANIZADO DE VÉRTICES

Para llevar a cabo la aproximación a los vértices tanto internos como externos, es preciso utilizar la estrategia adecuada con el fin de minimizar la vibración y el astillamiento de la herramienta y evitar que se obtenga un acabado superficial deficiente. La elección óptima consiste en una fresa con un diámetro más reducido que el del vértice, combinada con una estrategia de interpolación circular, reduciendo así adecuadamente la velocidad de avance. En el caso de vértices externos, conecte las pasadas en los dos lados del vértice utilizando interpolación circular (técnica de pasadas sucesivas).

RECOMENDACIONES:

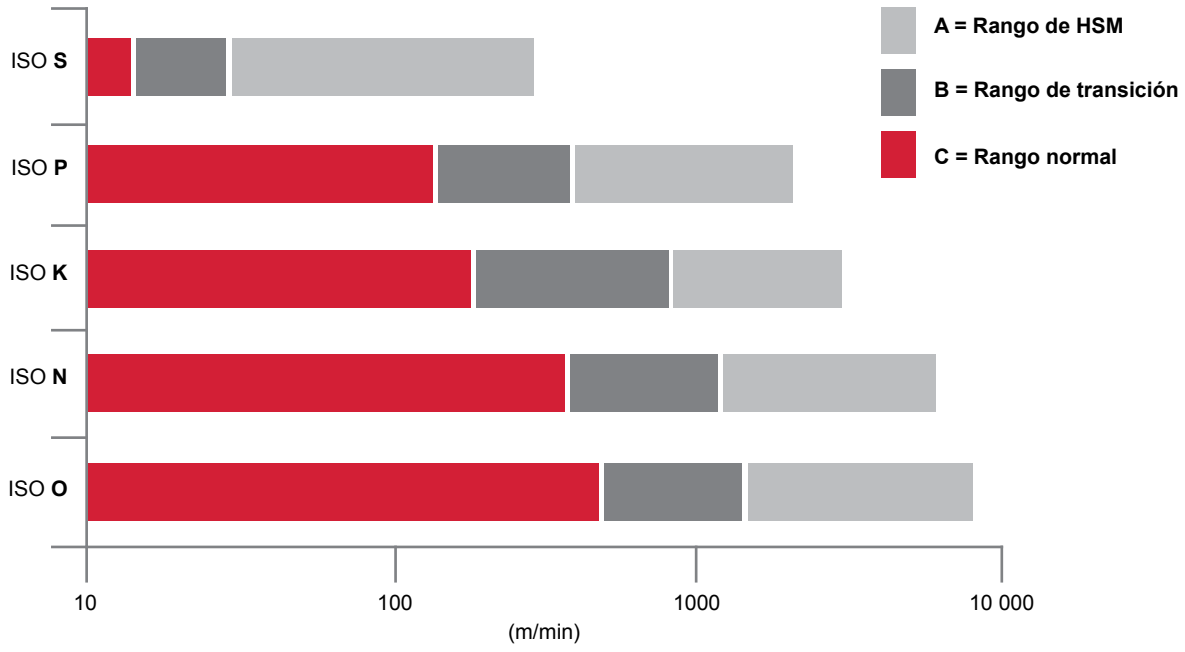
- Evitar utilizar una fresa con un diámetro correspondiente al del vértice
- Para minimizar la vibración y aumentar la calidad superficial, seleccionar un radio de fresa < ⅔ radio en la punta





MECANIZADO DE ALTA VELOCIDAD (HSM)

El mecanizado de alta velocidad (HSM, por sus siglas en inglés) puede definirse como el funcionamiento a una velocidad de corte significativamente superior (5-10 veces) en comparación con la utilizada en el mecanizado convencional, lo que se traduce en las siguientes ventajas principales: reducción de la temperatura en los filos de corte (desgaste reducido), reducción de los problemas relacionados con la vibración y mayor estabilidad, aumento de la proporción de material eliminado y reducción del tiempo de mecanizado. La máquina herramienta debe estar específicamente diseñada para HSM y debe seleccionarse la estrategia de mecanizado correcta para maximizar el rendimiento de la máquina.

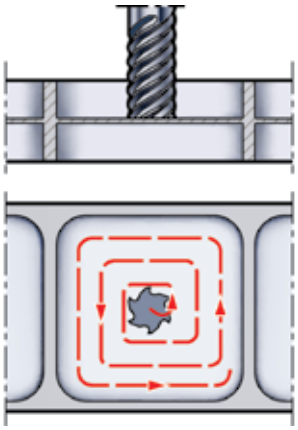


MAQUINAGEM DE BASES FINAS

À semelhança da maquinagem de paredes finas, os problemas comuns, neste caso, relacionam-se com a vibração e limites. Por isso, a rigidez de todo o sistema (bloqueamento, montagem de ferramentas, peça) tem de ser maximizada, com o efeito duplamente positivo de reduzir a vibração e assistir o controlo dimensional.

RECOMENDAÇÕES:

- Para compartimentos fechados com bases finas, utilizar a pré-fresagem de um orifício iniciante ou, em alternativa, uma abordagem de interpolação helicoidal no centro da área de base, fresando, depois, para fora num percurso helicoidal a partir desse ponto
- Sempre que possível, apoiar a base do lado oposto (ou seja, com barras)
- Se o componente tiver um orifício no centro da base, deixar um apoio no local ao maquinar o primeiro lado, maquinando, em seguida, o segundo lado e, finalmente, remover o apoio que cria o orifício



QUALIDADE DA SUPERFÍCIE - PROBLEMAS DE VIBRAÇÃO

Cada componente tem requisitos gerais ou específicos para a qualidade da superfície. Os parâmetros mais vulgarmente medidos são a Ra (rigidez aritmética) e Rz (pico-vale médio 5 máx), que afecta o comportamento de desgaste, resistência à corrosão e grau de qualidade do componente. Na fresagem, os parâmetros com mais influência na rugosidade são: avanço/dente, saída na montagem da ferramenta, comprimento da montagem da ferramenta e rigidez de bloqueamento. A vibração deve estar sempre sob controlo, pois pode reduzir drasticamente Ra-Rz.

RECOMENDAÇÕES:

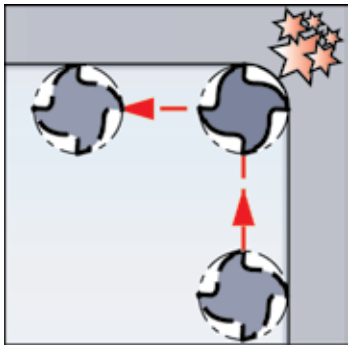
- Reduzir avanço/dente, para aumentar a qualidade da superfície
- Tentar minimizar a saída na montagem da ferramenta, ou seja, para operações de acabamento, utilizar mandril porta-ferramentas com alta precisão
- Deixar um material restante de 0,2 – 0,5 m, para remover num passo de acabamento em superfícies com requisitos Ra-Rz críticos
- Escolher uma fresa com o comprimento de corte mais baixo, compatível com a profundidade axial programada de corte
- Escolher uma fresa com o diâmetro máximo, compatível com a operação a desempenhar
- Utilizar fresas equipadas com a geometria de hélice inigualável da Dormer, para minimizar a vibração

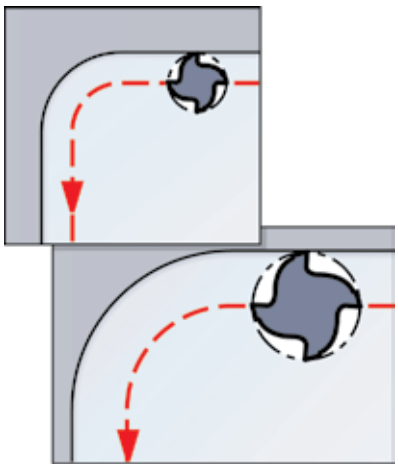
MAQUINAGEM DE CANTOS

Tanto os cantos internos como externos precisam ser abordados com a estratégia certa, para minimizar a vibração, lascagem da ferramenta e má qualidade da superfície. A opção ideal é uma fresa com um diâmetro mais pequeno do que o do canto, em combinação com uma estratégia de interpolação circular, reduzindo adequadamente a taxa de avanço. Para cantos externos, conectar os passos ao longo dos dois lados do canto com interpolação circular (técnica de enrolamento).

RECOMENDAÇÕES:

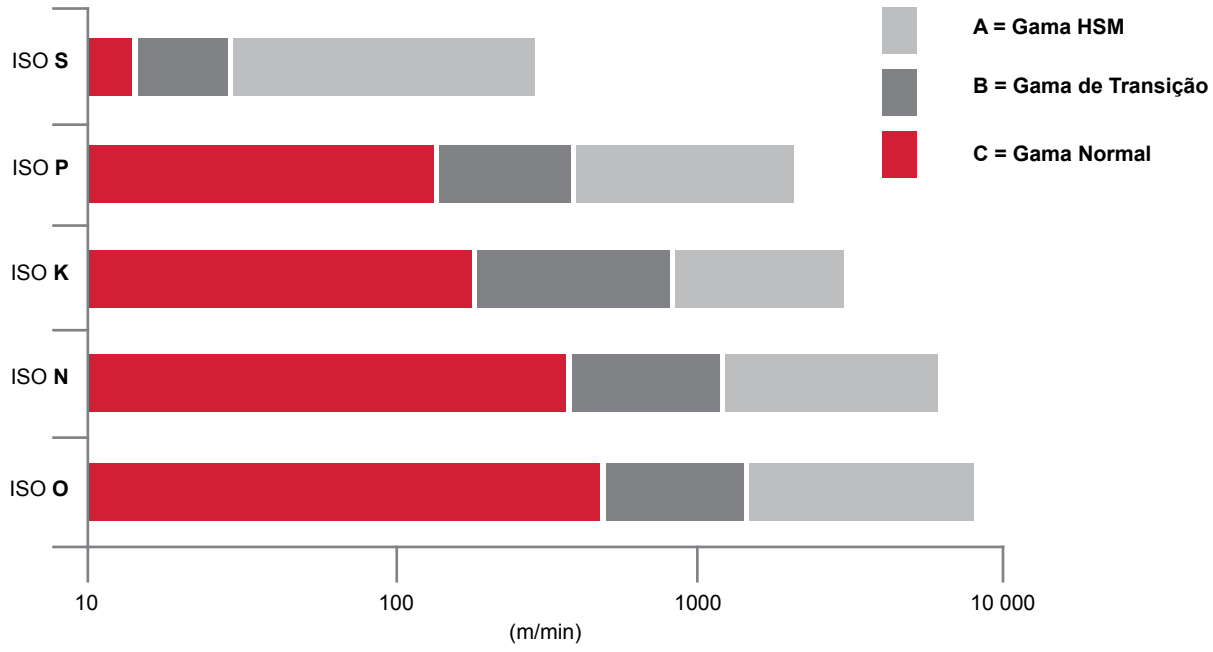
- Evitar a utilização da uma fresa com diâmetro igual ao do canto
- Para minimizar a vibração e aumentar a qualidade da superfície, escolher um raio de fresa < ⅔ ao do canto





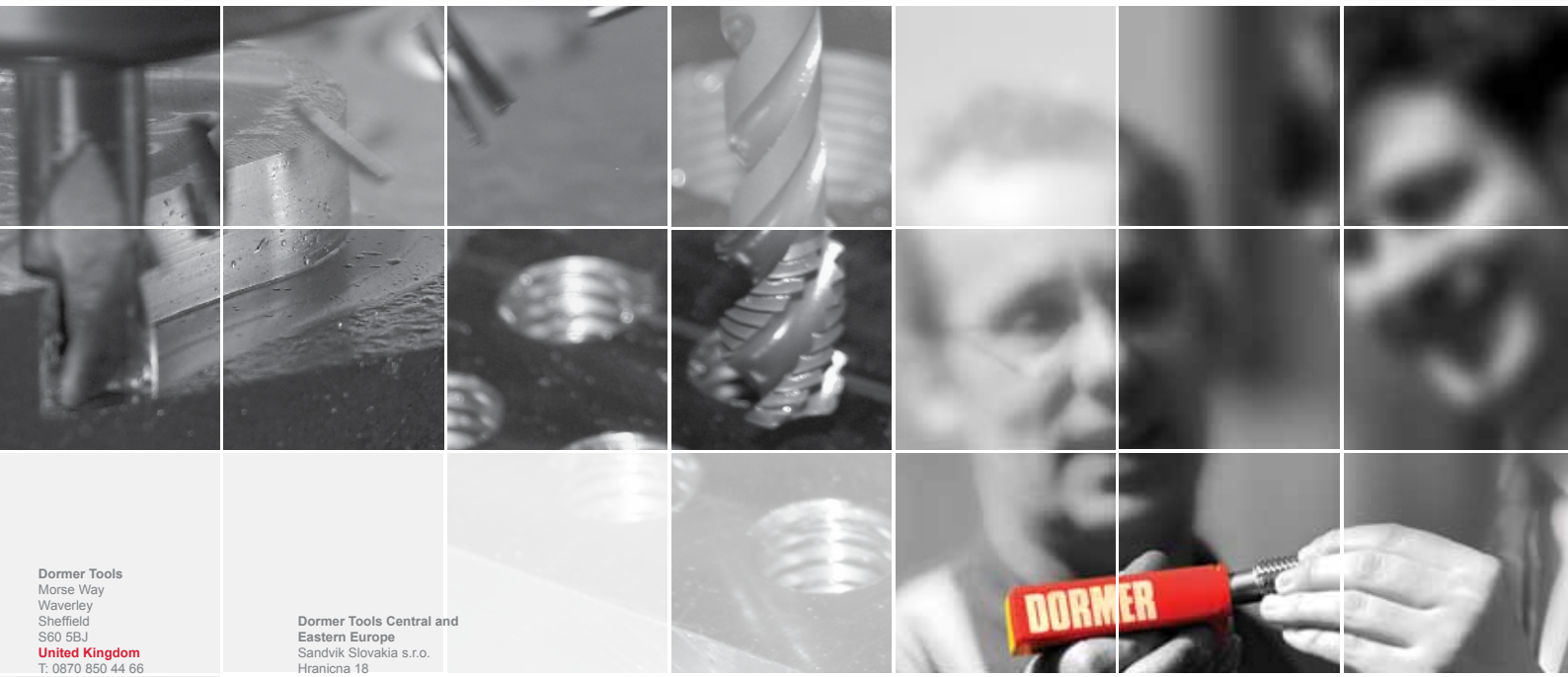
MAQUINAGEM A ALTA VELOCIDADE (HSM)

A Maquinagem a Alta Velocidade (HSM) poderá definir-se pelo trabalho a velocidades de corte bastante mais elevadas (5-10 vezes) do que aquelas tipicamente utilizadas na maquinagem convencional, com as seguintes vantagens principais: redução de temperatura nos extremos de corte (pouco desgaste), redução de problemas de vibração e maior estabilidade, MRR acrescido e tempo de maquinagem reduzido. A ferramenta da máquina tem de ser especificamente concebida para o HSM e a estratégia correcta de maquinagem seleccionada, para maximizar o desempenho da máquina.



DORMER

The Right Tool at the Right Time



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