TK VRTÁKY UNIVERZÁLNE

Conventional drills

panas
rezné nástroje a údržba foriem

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Punta elicoidale autocentrante in metallo duro integrale

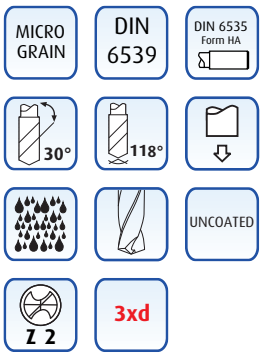
Solid carbide autocentering twist drill

VHM - Spiralbohrer Selbstzentrierend - Foret carbure hélicoidale autocentrage
Сверло спиральное твердосплавное автоцентрирующееся - Sk centrovací vrták

CODE	d1h6 mm	d2h6 mm	l1 mm	L mm
120.004	**0.4**	0.4	6	26
120.005	**0.5**	0.5	6	26
120.006	**0.6**	0.6	6	26
120.007	**0.7**	0.7	6	26
120.008	**0.8**	0.8	6	26
120.009	**0.9**	0.9	6	26
120.010	**1.0**	1.0	6	26
120.011	**1.1**	1.1	7	28
120.012	**1.2**	1.2	8	30
120.013	**1.3**	1.3	8	30
120.014	**1.4**	1.4	9	32
120.015	**1.5**	1.5	9	32
120.016	**1.6**	1.6	10	34
120.017	**1.7**	1.7	10	34
120.018	**1.8**	1.8	11	36
120.019	**1.9**	1.9	11	36
120.020	**2.0**	2.0	12	38
120.021	**2.1**	2.1	12	38
120.022	**2.2**	2.2	13	40
120.023	**2.3**	2.3	13	40
120.024	**2.4**	2.4	14	43
120.025	**2.5**	2.5	14	43
120.026	**2.6**	2.6	14	43
120.027	**2.7**	2.7	16	46
120.028	**2.8**	2.8	16	46
120.029	**2.9**	2.9	16	46
120.030	**3.0**	3.0	16	46
120.031	**3.1**	3.1	18	49
120.032	**3.2**	3.2	18	49
120.033	**3.3**	3.3	18	49
120.034	**3.4**	3.4	20	52
120.035	**3.5**	3.5	20	52
120.036	**3.6**	3.6	20	52
120.037	**3.7**	3.7	20	52
120.038	**3.8**	3.8	22	55
120.039	**3.9**	3.9	22	55
120.040	**4.0**	4.0	22	55
120.041	**4.1**	4.1	22	55
120.042	**4.2**	4.2	22	55
120.043	**4.3**	4.3	24	58
120.044	**4.4**	4.4	24	58
120.045	**4.5**	4.5	24	58
120.046	**4.6**	4.6	24	58
120.047	**4.7**	4.7	24	58
120.048	**4.8**	4.8	26	62
120.049	**4.9**	4.9	26	62
120.050	**5.0**	5.0	26	62
120.051	**5.1**	5.1	26	62
120.052	**5.2**	5.2	26	62
120.053	**5.3**	5.3	26	62
120.054	**5.4**	5.4	28	66
120.055	**5.5**	5.5	28	66
120.056	**5.6**	5.6	28	66
120.057	**5.7**	5.7	28	66
120.058	**5.8**	5.8	28	66
120.059	**5.9**	5.9	28	66
120.060	**6.0**	6.0	28	66
120.061	**6.1**	6.1	31	70
120.062	**6.2**	6.2	31	70
120.063	**6.3**	6.3	31	70
120.064	**6.4**	6.4	31	70
120.065	**6.5**	6.5	31	70

CODE	d1h6 mm	d2h6 mm	l1 mm	L mm
120.066	**6.6**	6.6	31	70
120.067	**6.7**	6.7	31	70
120.068	**6.8**	6.8	34	74
120.069	**6.9**	6.9	34	74
120.070	**7.0**	7.0	34	74
120.071	**7.1**	7.1	34	74
120.072	**7.2**	7.2	34	74
120.073	**7.3**	7.3	34	74
120.074	**7.4**	7.4	34	74
120.075	**7.5**	7.5	34	74
120.076	**7.6**	7.6	37	79
120.077	**7.7**	7.7	37	79
120.078	**7.8**	7.8	37	79
120.079	**7.9**	7.9	37	79
120.080	**8.0**	8.0	37	79
120.081	**8.1**	8.1	37	79
120.082	**8.2**	8.2	37	79
120.083	**8.3**	8.3	37	79
120.084	**8.4**	8.4	37	79
120.085	**8.5**	8.5	37	79
120.086	**8.6**	8.6	40	84
120.087	**8.7**	8.7	40	84
120.088	**8.8**	8.8	40	84
120.089	**8.9**	8.9	40	84
120.090	**9.0**	9.0	40	84
120.091	**9.1**	9.1	40	84
120.092	**9.2**	9.2	40	84
120.093	**9.3**	9.3	40	84
120.094	**9.4**	9.4	40	84
120.095	**9.5**	9.5	40	84
120.096	**9.6**	9.6	43	89
120.097	**9.7**	9.7	43	89
120.098	**9.8**	9.8	43	89
120.099	**9.9**	9.9	43	89
120.100	**10.0**	10.0	43	89
120.102	**10.2**	10.2	43	89
120.105	**10.5**	10.5	43	89
120.107	**10.7**	10.7	43	89
120.108	**10.8**	10.8	47	95
120.110	**11.0**	11.0	47	95
120.112	**11.2**	11.2	47	95
120.114	**11.4**	11.4	47	95
120.115	**11.5**	11.5	47	95
120.117	**11.7**	11.7	47	95
120.118	**11.8**	11.8	47	95
120.120	**12.0**	12.0	51	102
120.125	**12.5**	12.5	51	102
120.130	**13.0**	13.0	51	107
120.135	**13.5**	13.5	54	107
120.140	**14.0**	14.0	54	107
120.145	**14.5**	14.5	56	111
120.150	**15.0**	15.0	56	111
120.155	**15.5**	15.5	58	115
120.160	**16.0**	16.0	58	115
120.165	**16.5**	16.5	60	119
120.170	**17.0**	17.0	60	119
120.180	**18.0**	18.0	62	123
120.185	**18.5**	18.5	64	127
120.190	**19.0**	19.0	64	127
120.195	**19.5**	19.5	66	131
120.200	**20.0**	20.0	66	131

→ Help 197



Punta elicoidale autocentrante in metallo duro integrale

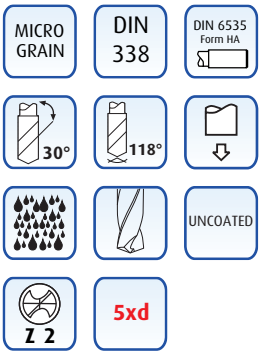
Solid carbide autocentering twist drill

VHM - Spiralbohrer Selbstzentrierend - Foret carbure hélicoidale autocentrage
Сверло спиральное твердосплавное автоцентрирующееся - Sk centrovací vrták

CODE	d1h6 mm	d2h6 mm	l1 mm	L mm
130.004	**0.4**	0.4	6	26
130.005	**0.5**	0.5	6	26
130.006	**0.6**	0.6	6	26
130.007	**0.7**	0.7	9	28
130.008	**0.8**	0.8	10	30
130.009	**0.9**	0.9	11	32
130.010	**1.0**	1.0	12	34
130.011	**1.1**	1.1	14	36
130.012	**1.2**	1.2	16	38
130.013	**1.3**	1.3	16	38
130.014	**1.4**	1.4	18	40
130.015	**1.5**	1.5	18	40
130.016	**1.6**	1.6	20	43
130.017	**1.7**	1.7	20	43
130.018	**1.8**	1.8	22	46
130.019	**1.9**	1.9	22	46
130.020	**2.0**	2.0	24	49
130.021	**2.1**	2.1	24	49
130.022	**2.2**	2.2	27	53
130.023	**2.3**	2.3	27	53
130.024	**2.4**	2.4	30	57
130.025	**2.5**	2.5	30	57
130.026	**2.6**	2.6	30	57
130.027	**2.7**	2.7	33	61
130.028	**2.8**	2.8	33	61
130.029	**2.9**	2.9	33	61
130.030	**3.0**	3.0	33	61
130.031	**3.1**	3.1	36	65
130.032	**3.2**	3.2	36	65
130.033	**3.3**	3.3	36	65
130.034	**3.4**	3.4	39	70
130.035	**3.5**	3.5	39	70
130.036	**3.6**	3.6	39	70
130.037	**3.7**	3.7	39	70
130.038	**3.8**	3.8	43	75
130.039	**3.9**	3.9	43	75
130.040	**4.0**	4.0	43	75
130.041	**4.1**	4.1	43	75
130.042	**4.2**	4.2	43	75
130.043	**4.3**	4.3	47	80
130.044	**4.4**	4.4	47	80
130.045	**4.5**	4.5	47	80
130.046	**4.6**	4.6	47	80
130.047	**4.7**	4.7	47	80
130.048	**4.8**	4.8	52	86
130.049	**4.9**	4.9	52	86
130.050	**5.0**	5.0	52	86
130.051	**5.1**	5.1	52	86
130.052	**5.2**	5.2	52	86
130.053	**5.3**	5.3	52	86
130.054	**5.4**	5.4	57	93
130.055	**5.5**	5.5	57	93
130.056	**5.6**	5.6	57	93
130.057	**5.7**	5.7	57	93
130.058	**5.8**	5.8	57	93
130.059	**5.9**	5.9	57	93
130.060	**6.0**	6.0	57	93
130.061	**6.1**	6.1	63	101
130.062	**6.2**	6.2	63	101
130.063	**6.3**	6.3	63	101
130.064	**6.4**	6.4	63	101

CODE	d1h6 mm	d2h6 mm	l1 mm	L mm
130.065	**6.5**	6.5	63	101
130.066	**6.6**	6.6	63	101
130.067	**6.7**	6.7	63	101
130.068	**6.8**	6.8	69	109
130.069	**6.9**	6.9	69	109
130.070	**7.0**	7.0	69	109
130.071	**7.1**	7.1	69	109
130.072	**7.2**	7.2	69	109
130.073	**7.3**	7.3	69	109
130.074	**7.4**	7.4	69	109
130.075	**7.5**	7.5	69	109
130.076	**7.6**	7.6	75	117
130.077	**7.7**	7.7	75	117
130.078	**7.8**	7.8	75	117
130.079	**7.9**	7.9	75	117
130.080	**8.0**	8.0	75	117
130.081	**8.1**	8.1	75	117
130.082	**8.2**	8.2	75	117
130.083	**8.3**	8.3	75	117
130.084	**8.4**	8.4	75	117
130.085	**8.5**	8.5	75	117
130.086	**8.6**	8.6	81	125
130.087	**8.7**	8.7	81	125
130.088	**8.8**	8.8	81	125
130.089	**8.9**	8.9	81	125
130.090	**9.0**	9.0	81	125
130.091	**9.1**	9.1	81	125
130.092	**9.2**	9.2	81	125
130.093	**9.3**	9.3	81	125
130.094	**9.4**	9.4	81	125
130.095	**9.5**	9.5	81	125
130.096	**9.6**	9.6	87	133
130.097	**9.7**	9.7	87	133
130.098	**9.8**	9.8	87	133
130.099	**9.9**	9.9	87	133
130.100	**10.0**	10.0	87	133
130.102	**10.2**	10.2	87	133
130.105	**10.5**	10.5	87	133
130.107	**10.7**	10.7	94	142
130.108	**10.8**	10.8	94	142
130.109	**10.9**	10.9	94	142
130.110	**11.0**	11.0	94	142
130.112	**11.2**	11.2	94	142
130.115	**11.5**	11.5	94	142
130.120	**12.0**	12.0	101	151
130.121	**12.1**	12.1	101	151
130.122	**12.2**	12.2	101	151
130.125	**12.5**	12.5	101	151
130.129	**12.9**	12.9	101	151
130.130	**13.0**	13.0	101	151
130.131	**13.1**	13.1	101	151
130.135	**13.5**	13.5	108	160
130.140	**14.0**	14.0	108	160
130.142	**14.2**	14.2	114	169
130.145	**14.5**	14.5	114	169
130.150	**15.0**	15.0	114	169
130.155	**15.5**	15.5	120	178
130.160	**16.0**	16.0	120	178
130.180	**18.0**	18.0	130	191
130.200	**20.0**	20.0	140	205

→ Help 197



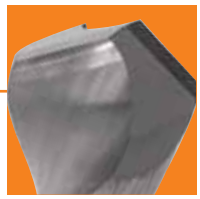
Punta a centrare 90° per C.N. in metallo duro integrale

Solid carbide N.C. center drill 90°

VHM - N.C. Anböhrer - Foret carbure à centrer N.C.
Сверло центровочное твердосплавное - Sk nc centrovací vrták

CODE	d1h6 mm	d2h6 mm	l1 mm	L mm	Z no.
190.030	**3.0**	3.0	10	40	2
190.040	**4.0**	4.0	12	50	2
190.050	**5.0**	5.0	15	50	2
190.060	**6.0**	6.0	15	50	2
190.080	**8.0**	8.0	20	60	2
190.100	**10.0**	10.0	25	70	2
190.120	**12.0**	12.0	25	75	2
190.140	**14.0**	14.0	25	75	2
190.160	**16.0**	16.0	30	75	2
190.200	**20.0**	20.0	30	100	2

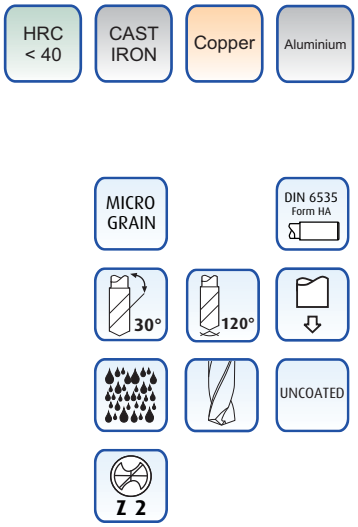
Punta a centrare 120° per C.N. in metallo duro integrale



Solid carbide N.C. center drill 120°

VHM - N.C. Anböhrer - Foret carbure à centrer N.C.
Сверло центровочное твердосплавное - Sk nc centrovací vrták

CODE	d1h6 mm	d2h6 mm	l1 mm	L mm	Z no.
190.030.1	**3.0**	3.0	10	40	2
190.040.1	**4.0**	4.0	12	50	2
190.050.1	**5.0**	5.0	15	50	2
190.060.1	**6.0**	6.0	15	50	2
190.080.1	**8.0**	8.0	20	60	2
190.100.1	**10.0**	10.0	25	70	2
190.120.1	**12.0**	12.0	25	75	2
190.140.1	**14.0**	14.0	25	75	2
190.160.1	**16.0**	16.0	30	75	2
190.200.1	**20.0**	20.0	30	100	2



Punta a centrare in metallo duro integrale

Solid carbide center drill

VHM - Zentrierbohrer - Foret carbure à centrer
Сверло центровочное твердосплавное - Sk nc centrovací vrták

CODE	d1h12 mm	d2h6 mm	l1* mm	L mm	Z no.
140.008	**0.8**	3.15	1.10	30	2
140.010	**1.0**	3.15	1.45	31	2
140.010.1	**1.0**	4.0	1.45	31	2
140.0125	**1.25**	3.15	1.75	31	2
140.015	**1.5**	5.0	2.10	40	2
140.016	**1.6**	4.0	2.10	40	2
140.016.1	**1.6**	5.0	2.10	40	2
140.020	**2.0**	5.0	2.70	40	2
140.020.1	**2.0**	6.0	2.70	45	2
140.020.2	**2.0**	6.3	2.70	45	2
140.025	**2.5**	6.3	3.35	45	2
140.025.1	**2.5**	8.0	3.35	50	2
140.030	**3.0**	8.0	4.15	50	2
140.030.1	**3.0**	10.0	4.15	56	2
140.0315	**3.15**	8.0	4.15	50	2
140.0315.1	**3.15**	10.0	4.15	56	2
140.040	**4.0**	10.0	5.30	56	2

Formulas

Formel - Formules
Формулы

Fz (mm) = Avanzamento per Dente
Feed per tooth
Vorschub pro Zain
Avance par dent
Подача на зуб
Posuv na zub

N (1/min) = Velocità di rotazione
Rotation number
Drehzahl
Frequence de rotation
Частота вращения шпинделя
Otáčky

Vc (m/min) = Velocità di taglio
Cutting speed
Schnittgeschwindigkeit
Vitesse de coupe
Скорость резания
Řezná rychlost

Vf (mm/min) = Velocità di avanzamento
Feed Speed
Vorschubgeschwindigkeit
Vitesse d'avance
Скорость подачи
Rychlost posuvu

Q (cm3/min) = Volume truciolo asportato
Quantity of removed chip
Swarf Volumen
Coupeau volume
Количество снимаемой стружки
Množství odebraného materiálu

$$Fz = \frac{Vf}{Z \times N} \text{ mm}$$

$$N = \frac{Vc \times 1000}{\pi \times Ø} \text{ 1/min.}$$

$$Vf = Z \times N \times fz \text{ mm/min.}$$

$$Vc = \frac{\pi \times Ø \times N}{1000} \text{ m/min.}$$

$$Q = \frac{a\,e \times a\,p \times V\,f}{1000} \text{ cm3/min.}$$

Cutting speed

Richtwerte - Paramétres - Режимы обработки - Řezná rychlost

CODE: 122T - 122TL

VRTÁKY CODE 120 a 130 = x 0,7

MATERIAL	HARDNESS	Type	VC	Ø				
				Ø 3-5	Ø 5.1-8	Ø 8.1-12	Ø 12.1-16	Ø 16.1-20
				FZ	FZ	FZ	FZ	FZ
Stainless Steel ЛИТАЯ СТАЛЬ			20 ÷ 30	0.04 ÷ 0.10	0.05 ÷ 0.15	0.05 ÷ 0.18	0.08 ÷ 0.20	0.10 ÷ 0.20
Cast steel	< 600 N/mm	GS 38	30 - 60	0.05 - 0.15	0.05 - 0.20	0.10 - 0.22	0.10 - 0.25	0.10 - 0.25
	< 700 N/mm	GS 52	25 - 50	0.04 - 0.10	0.05 - 0.15	0.05 - 0.18	0.08 - 0.20	0.10 - 0.20
	> 700 N/mm	GS 62	20 - 45	0.04 - 0.10	0.05 - 0.15	0.10 - 0.18	0.08 - 0.20	0.10 - 0.20
Cast Iron ЧУГУН	< 200 N/mm	GG 20 GGG 40 GTS 45	70 - 110	0.10 - 0.25	0.15 - 0.30	0.20 - 0.40	0.25 - 0.45	0.30 - 0.50
	< 250 N/mm	GG 30 GGG 50 GTS 40	60 - 95	0.10 - 0.20	0.12 - 0.25	0.15 - 0.35	0.20 - 0.40	0.25 - 0.45
	> 250 N/mm	GG 40 GGG 70 GTS 70	50 - 80	0.10 - 0.20	0.12 - 0.25	0.15 - 0.35	0.20 - 0.40	0.25 - 0.45
	350 HB 450 HB		20 - 55	0.04 - 0.10	0.06 - 0.12	0.08 - 0.15	0.08 - 0.15	0.10 - 0.18
Copper - Bronze - Brass МЕДЬ - БРОНЗА - ЛАТУНЬ			60 - 220	0.07 - 0.18	0.12 - 0.25	0.20 - 0.35	0.25 - 0.45	0.30 - 0.50
Aluminium АЛЮМИНИЙ		< 10% Si > 10% Si	80 - 200 70 - 200	0.10 - 0.25 0.10 - 0.25	0.15 - 0.35 0.15 - 0.35	0.25 - 0.45 0.25 - 0.45	0.30 - 0.50 0.30 - 0.50	0.35 - 0.55 0.35 - 0.55
Titanium Титан			15 - 40	0.02 - 0.07	0.04 - 0.10	0.06 - 0.12	0.08 - 0.15	0.08 - 0.15
Inconel ИНКОНЕЛЬ			10 - 30	0.02 - 0.07	0.04 - 0.10	0.06 - 0.12	0.08 - 0.15	0.08 - 0.15

CORRECTION FACTORS - УТОЧНЯЮЩИЕ ДАННЫЕ

5 x d = x 0,8
8 x d = x 0,7
Code 120 = x 0,7
Code 130 = x 0,7