Jongen Werkzeugtechnik

VHM 495W HI06

Made in Germany

Products from Willich → North-Rhine Westphalia → Germany → Europe for Europe and the

The tool VHM 495W HI06

Jongen has developed the solid carbide end mill VHM 495W HI06, so that chipping manufacturers can realize the benefits of their investments in more modern and more dynamic machines, especially in terms of productivity. These tools with latest development level enable to transform the high dynamic and stiffness of the most recent machine generation, into highest economic efficiency.

The homogeneous cutting edge with defined cutting edge radius enables extremely long tool lives and reliable process security, even under difficult conditions.

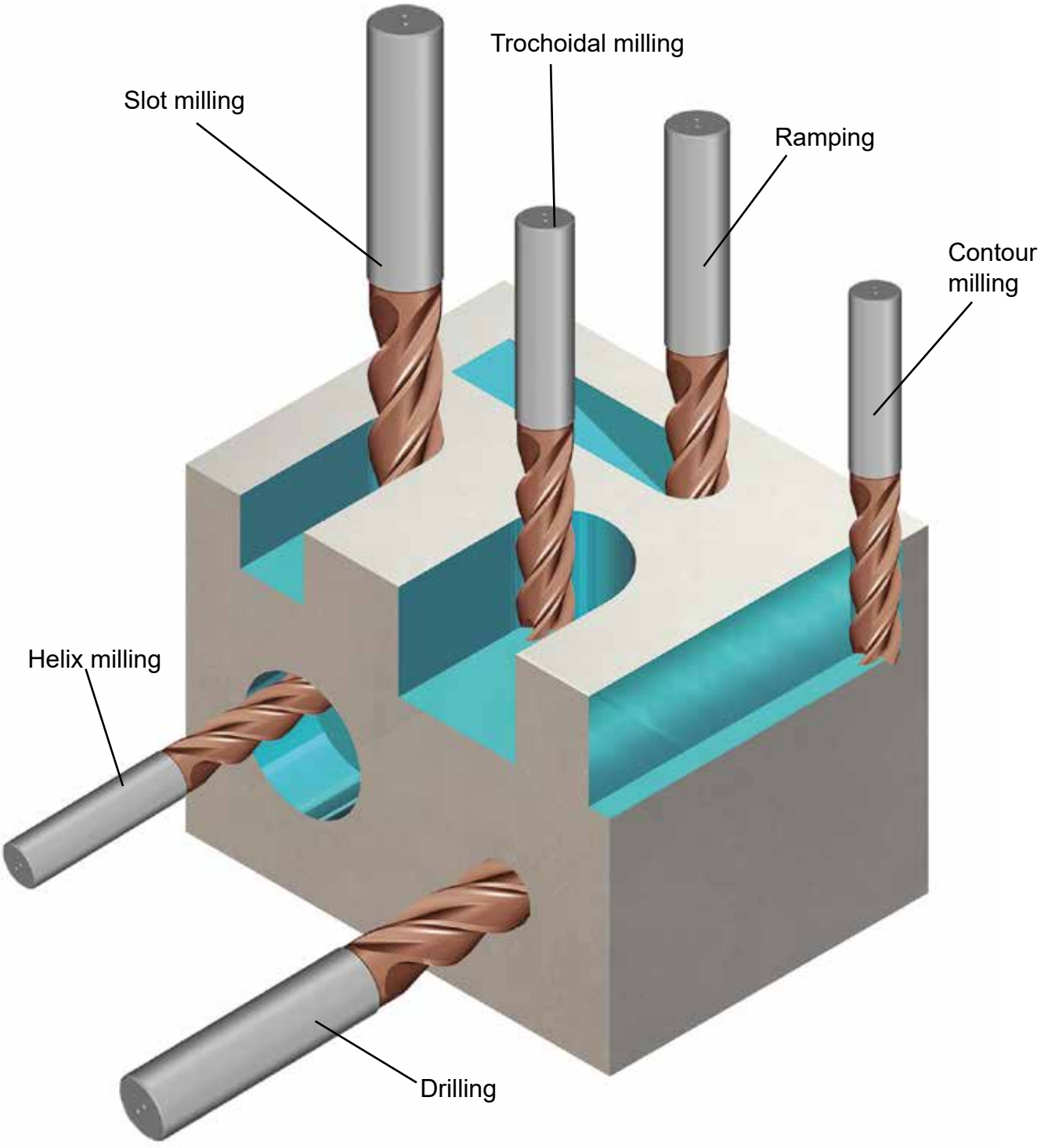
Internal coolant channels (starting from front diam. D = 6) ensure optimum cooling of the cutting edge and an improved chip flow.

The VHM 495W HI06 are suitable for the machining of all common steels, right up to stainless steel and cast iron materials, thus the applicability is given for a wide range of machining tasks.

The VHM 494W HI06 belongs to this product line. This Jongen UNI-MILL solid carbide milling cutter, that has already occupied a high market position, is geometrically identical, but compared to the new VHM 495W HI06 it has a shorter cutting edge and a shorter working depth.

VHM 495W HI06 **VHM 494W HI06**

Application areas



Characteristics

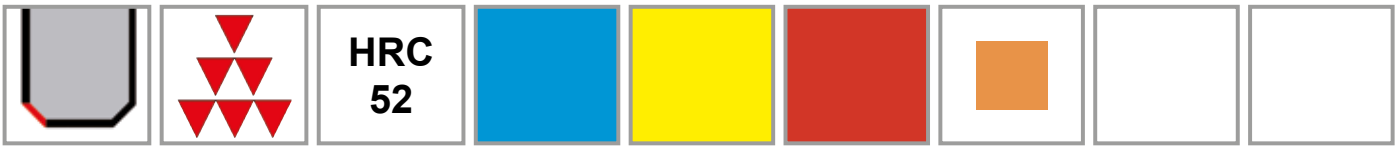
Characteristic	Advantages
High performance shank tool	- Highest Productivity
Multifunctional application areas	- Drilling up to 1xD - Helix milling - Ramping with a ramping angle up to 45° - Slot milling - Contour milling - Trochoidal milling, especially of closed cavities (pocket milling) - Roughing and finishing
Internal cooling channels starting from front diam. D = 6	- Better cooling and chip flow for full slot milling, ramping, helix- and pocket milling, as well as for drilling.
Edge chamfer	- High edge stability
Defined cutting edge preparation	- Better layer adhesion - Avoid high-frequency vibrations - Improved surface quality of the cutting edge → high wear resistance
Coupling made to DIN 6535-HB (Weldon)	- Safe pull out protection of the tool holder
Toric cut	- Increment of the utility length up to the DIN-clamping length
Unequal spiral angle and cutting pitch	- Prevent reliably vibrations - Smooth running and process security - Excellent surface finish
Special front surface geometry	- Allows very steep ramping angles and helix spirals, thus high removal rates - Very smooth machine running for milling operations with an high axial share - The tools can promptly penetrate up to the final working depth, to process from there with high a_p-values the material
Optimized macro geometry	- High chip removal rate - Large chip spaces allow a very high chip flow - Low power consumption by lower cutting forces
Optimized micro geometry	- Highest tool lives and at the same time highest feed rates

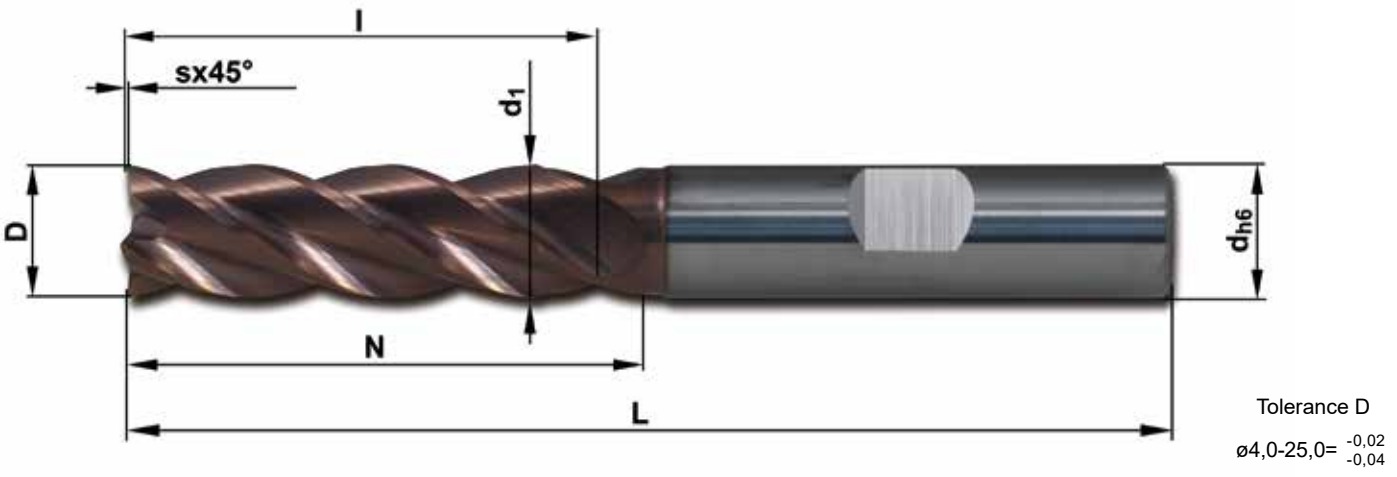
Characteristics

Characteristic	Advantages
The carbide	- Finest grain quality (0,6µm grain size) in the field K10-K20, with middle hardness and good tenacity - Suitable for machining rust, acid, and heat resistant steels, such as chrome, nickel and cobalt alloyed steels
The coating	TiAlSiN based HiPIMS-layer of latest development step - High level of hardness and temperature stability thanks to Silicon-doping - Due to the HiPIMS technology extremely homogenous and high performance layer structure - Max. operating temperature up to 1.100°C
Carbide + Coating = Quality HI06	- Perfectly matched to one another - Suitable for wet milling, dry milling and minimal lubrication
Regrinding capability	- High cost-benefit factor

* HiPIMS = **Hi**gh **P**ower **I**mpulse **M**agnetron **S**puttering

Technical data





Order-No.	D	s	l	N	d_1	d	L	Z	IC
VHM 495W-04 HI06	4	0,04x45°	14	21	3,6	6	63	4	×
VHM 495W-05 HI06	5	0,05x45°	17	23	4,6	6	63	4	×
VHM 495W-06 HI06	6	0,06x45°	20	27	5,4	6	63	4	✓
VHM 495W-08 HI06	8	0,08x45°	24	32	7,4	8	70	4	✓
VHM 495W-10 HI06	10	0,10x45°	30	41	9,4	10	81	4	✓
VHM 495W-12 HI06	12	0,12x45°	36	47	10,4	12	93	4	✓
VHM 495W-14 HI06	14	0,14x45°	42	53	13,4	14	100	4	✓
VHM 495W-16 HI06	16	0,16x45°	48	62	15,4	16	112	4	✓
VHM 495W-20 HI06	20	0,20x45°	60	74	19,6	20	126	4	✓
VHM 495W-25 HI06	25	0,25x45°	75	93	24,4	25	150	4	✓

IC = internal cooling channels

Key to symbols

Roughing

Pre-finishing

Finishing

Steel

High grade steel

Cast iron GG(G)

Highly heat-resistant materials

Edge chamfer

Defined cutting edge preparation

Uneven cutting pitch

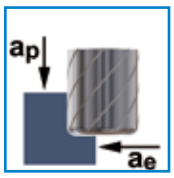
~36,5° Average spiral angle

DIN 6535-HB Shaft shape made to DIN 6535-HB (Weldon)

Submersible milling tool

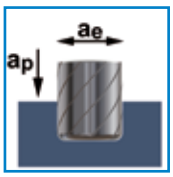
The tool has multiple internal channels with front side exit

Cutting data recommendation - STEP MILLING



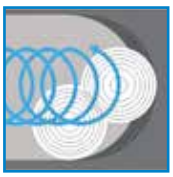
Material	D [mm]	Z	V_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min-1]	V_f [mm/min]	Q [cm3/min]
General structural steel, unalloyed steel	4	4	210 (180-230)	0,022 (0,020 - 0,025)	11	1,448	16.795	1.489	23,72
	5	4	210 (180-230)	0,028 (0,025 - 0,032)	14	1,816	13.422	1.487	37,81
	6	4	210 (180-230)	0,033 (0,030 - 0,038)	17	2,14	11.178	1.486	54,16
	8	4	210 (180-230)	0,045 (0,040 - 0,051)	22	2,86	8.376	1.495	94,20
	10	4	210 (180-230)	0,056 (0,050 - 0,064)	28	3,58	6.697	1.501	150,63
	12	4	210 (180-230)	0,068 (0,062 - 0,079)	34	4,31	5.579	1.526	223,72
	14	4	210 (180-230)	0,080 (0,072 - 0,092)	40	5,03	4.781	1.526	307,15
	16	4	210 (180-230)	0,091 (0,082 - 0,105)	45	5,75	4.183	1.525	394,73
	20	4	210 (180-230)	0,113 (0,102 - 0,130)	57	7,19	3.345	1.512	619,84
	25	4	210 (180-230)	0,142 (0,127 - 0,163)	70	8,99	2.675	1.514	952,97
Low alloyed steel	4	4	175 (145-195)	0,016 (0,014 - 0,018)	11	1,28	13.996	886	12,47
	5	4	175 (145-195)	0,020 (0,018 - 0,023)	14	1,60	11.185	885	19,82
	6	4	175 (145-195)	0,024 (0,021 - 0,027)	17	1,90	9.315	884	28,61
	8	4	175 (145-195)	0,031 (0,028 - 0,036)	22	2,54	6.980	875	48,97
	10	4	175 (145-195)	0,040 (0,036 - 0,046)	28	3,18	5.581	890	79,35
	12	4	175 (145-195)	0,049 (0,044 - 0,057)	34	3,83	4.649	918	119,60
	14	4	175 (145-195)	0,057 (0,051 - 0,066)	40	4,47	3.984	908	162,42
	16	4	175 (145-195)	0,066 (0,059 - 0,075)	45	5,11	3.485	913	210,03
	20	4	175 (145-195)	0,082 (0,074 - 0,094)	57	6,39	2.787	910	331,55
	25	4	175 (145-195)	0,102 (0,091 - 0,117)	70	7,99	2.229	906	506,85
INOX, ferritic, sulphurised	4	4	150 (120-170)	0,016 (0,014 - 0,018)	11	1,45	11.996	759	12,09
	5	4	150 (120-170)	0,020 (0,018 - 0,023)	14	1,82	9.587	758	19,27
	6	4	150 (120-170)	0,024 (0,021 - 0,027)	17	2,14	7.984	758	27,63
	8	4	150 (120-170)	0,031 (0,028 - 0,036)	22	2,86	5.983	750	47,26
	10	4	150 (120-170)	0,039 (0,035 - 0,045)	28	3,58	4.784	745	74,76
	12	4	150 (120-170)	0,048 (0,044 - 0,056)	34	4,31	3.985	772	113,18
	14	4	150 (120-170)	0,056 (0,050 - 0,064)	40	5,03	3.415	765	153,98
	16	4	150 (120-170)	0,065 (0,058 - 0,074)	45	5,75	2.987	771	199,57
	20	4	150 (120-170)	0,080 (0,072 - 0,092)	57	7,19	2.389	762	312,38
	25	4	150 (120-170)	0,100 (0,090 - 0,115)	70	8,99	1.911	762	479,63
INOX, martensitic	4	4	95 (65-115)	0,016 (0,014 - 0,018)	11	1,45	7.597	481	7,66
	5	4	95 (65-115)	0,020 (0,018 - 0,023)	14	1,82	6.072	480	12,20
	6	4	95 (65-115)	0,024 (0,021 - 0,027)	17	2,14	5.056	480	17,50
	8	4	95 (65-115)	0,031 (0,028 - 0,036)	22	2,86	3.789	475	29,93
	10	4	95 (65-115)	0,039 (0,035 - 0,045)	28	3,58	3.030	472	47,37
	12	4	95 (65-115)	0,048 (0,044 - 0,056)	34	4,31	2.524	489	71,69
	14	4	95 (65-115)	0,056 (0,050 - 0,064)	40	5,03	2.163	484	97,42
	16	4	95 (65-115)	0,065 (0,058 - 0,074)	45	5,75	1.892	488	126,31
	20	4	95 (65-115)	0,080 (0,072 - 0,092)	57	7,19	1.513	482	197,59
	25	4	95 (65-115)	0,100 (0,090 - 0,115)	70	8,99	1.210	482	303,39
INOX, austenitic	4	4	115 (85-135)	0,016 (0,014 - 0,018)	11	1,28	9.197	582	8,19
	5	4	115 (85-135)	0,020 (0,018 - 0,023)	14	1,60	7.350	581	13,01
	6	4	115 (85-135)	0,024 (0,021 - 0,027)	17	1,90	6.121	581	18,81
	8	4	115 (85-135)	0,031 (0,028 - 0,036)	22	2,54	4.587	575	32,18
	10	4	115 (85-135)	0,039 (0,035 - 0,045)	28	3,18	3.667	571	50,91
	12	4	115 (85-135)	0,048 (0,044 - 0,056)	34	3,83	3.055	592	77,13
	14	4	115 (85-135)	0,056 (0,050 - 0,064)	40	4,47	2.618	586	104,82
	16	4	115 (85-135)	0,065 (0,058 - 0,074)	45	5,11	2.290	591	135,95
	20	4	115 (85-135)	0,081 (0,073 - 0,093)	57	6,39	1.832	591	215,33
	25	4	115 (85-135)	0,101 (0,091 - 0,116)	70	7,99	1.465	590	330,07
Grey cast iron GJL	4	4	190 (160-210)	0,022 (0,020 - 0,025)	11	1,45	15.195	1.347	21,46
	5	4	190 (160-210)	0,028 (0,025 - 0,032)	14	1,82	12.144	1.345	34,20
	6	4	190 (160-210)	0,033 (0,030 - 0,038)	17	2,14	10.113	1.345	49,02
	8	4	190 (160-210)	0,045 (0,040 - 0,051)	22	2,86	7.578	1.353	85,25
	10	4	190 (160-210)	0,056 (0,050 - 0,064)	28	3,58	6.060	1.358	136,28
	12	4	190 (160-210)	0,068 (0,062 - 0,079)	34	4,31	5.048	1.381	202,47
	14	4	190 (160-210)	0,080 (0,072 - 0,092)	40	5,03	4.326	1.380	277,77
	16	4	190 (160-210)	0,091 (0,082 - 0,105)	45	5,75	3.784	1.380	357,20
	20	4	190 (160-210)	0,114 (0,103 - 0,131)	57	7,19	3.026	1.379	565,31
	25	4	190 (160-210)	0,142 (0,127 - 0,163)	70	8,99	2.421	1.370	862,33
Grey cast iron GJS	4	4	145 (115-165)	0,022 (0,020 - 0,025)	11	1,45	11.596	1.028	16,37
	5	4	145 (115-165)	0,028 (0,025 - 0,032)	14	1,82	9.268	1.027	26,11
	6	4	145 (115-165)	0,033 (0,030 - 0,038)	17	2,14	7.718	1.026	37,40
	8	4	145 (115-165)	0,045 (0,040 - 0,051)	22	2,86	5.783	1.032	65,02
	10	4	145 (115-165)	0,056 (0,050 - 0,064)	28	3,58	4.624	1.036	103,96
	12	4	145 (115-165)	0,068 (0,062 - 0,079)	34	4,31	3.852	1.053	154,38
	14	4	145 (115-165)	0,080 (0,072 - 0,092)	40	5,03	3.301	1.053	211,95
	16	4	145 (115-165)	0,091 (0,082 - 0,105)	45	5,75	2.888	1.053	272,56
	20	4	145 (115-165)	0,114 (0,103 - 0,131)	57	7,19	2.310	1.053	431,67
	25	4	145 (115-165)	0,142 (0,127 - 0,163)	70	8,99	1.847	1.045	657,76
High-heat resistant steel	4	4	55 (25-75)	0,011 (0,010 - 0,012)	11	1,12	4.398	189	2,33
	5	4	55 (25-75)	0,013 (0,012 - 0,015)	14	1,40	3.515	189	3,70
	6	4	55 (25-75)	0,016 (0,015 - 0,019)	17	1,66	2.927	189	5,35
	8	4	55 (25-75)	0,022 (0,020 - 0,025)	22	2,22	2.193	191	9,35
	10	4	55 (25-75)	0,028 (0,025 - 0,032)	28	2,78	1.754	193	15,04
	12	4	55 (25-75)	0,034 (0,031 - 0,039)	34	3,35	1.461	199	22,68
	14	4	55 (25-75)	0,040 (0,036 - 0,046)	40	3,91	1.252	199	31,14
	16	4	55 (25-75)	0,046 (0,041 - 0,052)	45	4,47	1.095	199	40,05
	20	4	55 (25-75)	0,056 (0,050 - 0,064)	57	5,59	876	196	62,47
	25	4	55 (25-75)	0,070 (0,063 - 0,081)	70	6,99	700	196	95,93

Cutting data recommendation - FULL SLOT MILLING



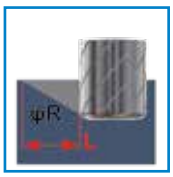
Material	D [mm]	Z	V_C [m/min]	f_Z [mm]	a_p [mm]	a_e [mm]	n [min-1]	V_f [mm/min]	Q [cm3/min]
General structural steel, unalloyed steel	4	4	180 (150-200)	0,019 (0,017 - 0,022)	4,3	4,00	14.395	1.102	19,04
	5	4	180 (150-200)	0,024 (0,022 - 0,028)	5,4	5,00	11.505	1.101	29,73
	6	4	180 (150-200)	0,029 (0,026 - 0,033)	6,5	6,00	9.581	1.100	42,77
	8	4	180 (150-200)	0,038 (0,034 - 0,044)	8,6	8,00	7.179	1.099	75,96
	10	4	180 (150-200)	0,048 (0,043 - 0,055)	10,8	10,00	5.741	1.099	118,69
	12	4	180 (150-200)	0,057 (0,052 - 0,066)	13,0	12,00	4.782	1.098	170,76
	14	4	180 (150-200)	0,067 (0,060 - 0,077)	15,1	14,00	4.098	1.098	232,42
	16	4	180 (150-200)	0,077 (0,069 - 0,088)	17,3	16,00	3.585	1.098	303,58
	20	4	180 (150-200)	0,096 (0,086 - 0,110)	21,6	20,00	2.867	1.097	473,90
	25	4	180 (150-200)	0,120 (0,108 - 0,138)	27,0	25,00	2.293	1.097	740,48
Low alloyed steel	4	4	145 (115-165)	0,013 (0,012 - 0,016)	4,0	4,00	11.596	626	9,92
	5	4	145 (115-165)	0,017 (0,015 - 0,019)	5,0	5,00	9.268	625	15,47
	6	4	145 (115-165)	0,020 (0,018 - 0,023)	5,9	6,00	7.718	625	22,28
	8	4	145 (115-165)	0,027 (0,024 - 0,031)	7,9	8,00	5.783	624	39,54
	10	4	145 (115-165)	0,034 (0,030 - 0,039)	9,9	10,00	4.624	624	61,78
	12	4	145 (115-165)	0,040 (0,036 - 0,047)	11,9	12,00	3.852	623	88,81
	14	4	145 (115-165)	0,047 (0,043 - 0,054)	13,9	14,00	3.301	623	120,89
	16	4	145 (115-165)	0,054 (0,049 - 0,062)	15,8	16,00	2.888	623	157,89
	20	4	145 (115-165)	0,067 (0,061 - 0,078)	19,8	20,00	2.310	623	246,71
	25	4	145 (115-165)	0,084 (0,076 - 0,097)	24,8	25,00	1.847	623	385,48
INOX, ferritic, sulphurised	4	4	105 (75-125)	0,013 (0,012 - 0,016)	4,0	4,00	8.397	453	7,18
	5	4	105 (75-125)	0,017 (0,015 - 0,019)	5,0	5,00	6.711	452	11,19
	6	4	105 (75-125)	0,020 (0,018 - 0,023)	5,9	6,00	5.589	452	16,11
	8	4	105 (75-125)	0,027 (0,024 - 0,031)	7,9	8,00	4.188	452	28,64
	10	4	105 (75-125)	0,034 (0,030 - 0,039)	9,9	10,00	3.348	451	44,65
	12	4	105 (75-125)	0,040 (0,036 - 0,047)	11,9	12,00	2.789	451	64,29
	14	4	105 (75-125)	0,047 (0,043 - 0,054)	13,9	14,00	2.390	451	87,51
	16	4	105 (75-125)	0,054 (0,049 - 0,062)	15,8	16,00	2.091	451	114,30
	20	4	105 (75-125)	0,067 (0,061 - 0,078)	19,8	20,00	1.672	451	178,60
	25	4	105 (75-125)	0,084 (0,076 - 0,097)	24,8	25,00	1.337	451	279,06
INOX, martensitic	4	4	70 (40-90)	0,013 (0,012 - 0,016)	4,0	4,00	5.598	302	4,78
	5	4	70 (40-90)	0,017 (0,015 - 0,019)	5,0	5,00	4.474	301	7,45
	6	4	70 (40-90)	0,020 (0,018 - 0,023)	5,9	6,00	3.726	301	10,73
	8	4	70 (40-90)	0,027 (0,024 - 0,031)	7,9	8,00	2.792	301	19,07
	10	4	70 (40-90)	0,034 (0,030 - 0,039)	9,9	10,00	2.232	301	29,80
	12	4	70 (40-90)	0,040 (0,036 - 0,047)	11,9	12,00	1.859	301	42,91
	14	4	70 (40-90)	0,047 (0,043 - 0,054)	13,9	14,00	1.593	301	58,41
	16	4	70 (40-90)	0,054 (0,049 - 0,062)	15,8	16,00	1.394	301	76,29
	20	4	70 (40-90)	0,067 (0,061 - 0,078)	19,8	20,00	1.115	301	119,20
	25	4	70 (40-90)	0,084 (0,076 - 0,097)	24,8	25,00	891	300	185,63
INOX, austenitic	4	4	85 (55-105)	0,013 (0,012 - 0,016)	4,0	4,00	6.798	367	5,81
	5	4	85 (55-105)	0,017 (0,015 - 0,019)	5,0	5,00	5.433	366	9,06
	6	4	85 (55-105)	0,020 (0,018 - 0,023)	5,9	6,00	4.524	366	13,04
	8	4	85 (55-105)	0,027 (0,024 - 0,031)	7,9	8,00	3.390	366	23,19
	10	4	85 (55-105)	0,034 (0,030 - 0,039)	9,9	10,00	2.711	365	36,14
	12	4	85 (55-105)	0,040 (0,036 - 0,047)	11,9	12,00	2.258	365	52,03
	14	4	85 (55-105)	0,047 (0,043 - 0,054)	13,9	14,00	1.935	365	70,82
	16	4	85 (55-105)	0,054 (0,049 - 0,062)	15,8	16,00	1.693	365	92,51
	20	4	85 (55-105)	0,067 (0,061 - 0,078)	19,8	20,00	1.354	365	144,54
	25	4	85 (55-105)	0,084 (0,076 - 0,097)	24,8	25,00	1.083	365	225,84
Grey cast iron GJL	4	4	135 (105-155)	0,019 (0,017 - 0,022)	4,3	4,00	10.796	812	14,03
	5	4	135 (105-155)	0,024 (0,021 - 0,027)	5,4	5,00	8.628	811	21,90
	6	4	135 (105-155)	0,028 (0,025 - 0,032)	6,5	6,00	7.185	811	31,53
	8	4	135 (105-155)	0,038 (0,034 - 0,043)	8,6	8,00	5.384	810	55,99
	10	4	135 (105-155)	0,047 (0,042 - 0,054)	10,8	10,00	4.305	809	87,37
	12	4	135 (105-155)	0,056 (0,051 - 0,065)	13,0	12,00	3.586	809	125,82
	14	4	135 (105-155)	0,066 (0,059 - 0,076)	15,1	14,00	3.073	809	171,25
	16	4	135 (105-155)	0,075 (0,068 - 0,087)	17,3	16,00	2.689	809	223,67
	20	4	135 (105-155)	0,094 (0,085 - 0,108)	21,6	20,00	2.150	809	349,49
	25	4	135 (105-155)	0,118 (0,106 - 0,135)	27,0	25,00	1.720	809	546,08
Grey cast iron GJS	4	4	105 (75-125)	0,019 (0,017 - 0,022)	4,3	4,00	8.397	631	10,90
	5	4	105 (75-125)	0,024 (0,021 - 0,027)	5,4	5,00	6.711	631	17,04
	6	4	105 (75-125)	0,028 (0,025 - 0,032)	6,5	6,00	5.589	630	24,49
	8	4	105 (75-125)	0,038 (0,034 - 0,043)	8,6	8,00	4.188	630	43,55
	10	4	105 (75-125)	0,047 (0,042 - 0,054)	10,8	10,00	3.348	629	67,93
	12	4	105 (75-125)	0,056 (0,051 - 0,065)	13,0	12,00	2.789	629	97,82
	14	4	105 (75-125)	0,066 (0,059 - 0,076)	15,1	14,00	2.390	629	133,15
	16	4	105 (75-125)	0,075 (0,068 - 0,087)	17,3	16,00	2.091	629	173,91
	20	4	105 (75-125)	0,094 (0,085 - 0,108)	21,6	20,00	1.672	629	271,73
	25	4	105 (75-125)	0,118 (0,106 - 0,135)	27,0	25,00	1.337	628	423,90
High-heat resistant steel	4	4	40 (10-60)	0,009 (0,008 - 0,011)	3,1	4,00	3.199	119	1,46
	5	4	40 (10-60)	0,012 (0,010 - 0,013)	3,8	5,00	2.556	118	2,26
	6	4	40 (10-60)	0,014 (0,013 - 0,016)	4,6	6,00	2.129	118	3,25
	8	4	40 (10-60)	0,019 (0,017 - 0,021)	6,1	8,00	1.595	118	5,78
	10	4	40 (10-60)	0,023 (0,021 - 0,027)	7,7	10,00	1.275	118	9,03
	12	4	40 (10-60)	0,028 (0,025 - 0,032)	9,2	12,00	1.062	118	13,00
	14	4	40 (10-60)	0,033 (0,029 - 0,037)	10,7	14,00	910	118	17,70
	16	4	40 (10-60)	0,037 (0,033 - 0,043)	12,2	16,00	796	118	23,12
	20	4	40 (10-60)	0,047 (0,042 - 0,054)	15,3	20,00	637	118	36,12
	25	4	40 (10-60)	0,058 (0,052 - 0,067)	19,1	25,00	509	118	56,44

Cutting data recommendation - TROCHOIDAL MILLING



Material	D [mm]	Z	V_c [m/min]	f_z [mm]	h_m max [mm]	a_p [mm]	a_e [mm]	n [min-1]	V_f [mm/min]	Q [cm3/min]
General structural steel, unalloyed steel	4	4	250 (220-270)	0,020 (0,018 - 0,023)	0,020	11,0	0,72	19.994	1.583	12,51
	5	4	250 (220-270)	0,025 (0,023 - 0,029)	0,025	14,0	0,90	15.979	1.582	19,88
	6	4	250 (220-270)	0,030 (0,027 - 0,035)	0,030	17,0	1,08	13.307	1.581	28,96
	8	4	250 (220-270)	0,041 (0,037 - 0,047)	0,040	22,0	1,44	9.972	1.579	49,90
	10	4	250 (220-270)	0,051 (0,046 - 0,058)	0,050	28,0	1,80	7.973	1.578	79,34
	12	4	250 (220-270)	0,061 (0,055 - 0,070)	0,059	34,0	2,15	6.642	1.578	115,60
	14	4	250 (220-270)	0,071 (0,064 - 0,082)	0,069	40,0	2,51	5.692	1.578	158,67
	16	4	250 (220-270)	0,081 (0,073 - 0,093)	0,079	45,0	2,87	4.979	1.577	203,88
	20	4	250 (220-270)	0,101 (0,091 - 0,117)	0,099	57,0	3,59	3.982	1.577	322,81
	25	4	250 (220-270)	0,127 (0,114 - 0,146)	0,124	70,0	4,49	3.185	1.576	495,22
Low alloyed steel	4	4	230 (200-250)	0,017 (0,015 - 0,019)	0,016	11,0	0,69	18.394	1.189	8,98
	5	4	230 (200-250)	0,021 (0,019 - 0,024)	0,020	14,0	0,86	14.701	1.188	14,27
	6	4	230 (200-250)	0,025 (0,022 - 0,029)	0,024	17,0	1,03	12.242	1.187	20,78
	8	4	230 (200-250)	0,033 (0,030 - 0,038)	0,032	22,0	1,37	9.174	1.187	35,86
	10	4	230 (200-250)	0,041 (0,037 - 0,048)	0,040	28,0	1,72	7.335	1.186	57,00
	12	4	230 (200-250)	0,050 (0,045 - 0,057)	0,049	34,0	2,06	6.111	1.186	83,06
	14	4	230 (200-250)	0,058 (0,052 - 0,067)	0,057	40,0	2,40	5.236	1.185	113,90
	16	4	230 (200-250)	0,066 (0,060 - 0,076)	0,065	45,0	2,75	4.581	1.185	146,45
	20	4	230 (200-250)	0,083 (0,075 - 0,095)	0,081	57,0	3,43	3.664	1.185	231,87
	25	4	230 (200-250)	0,104 (0,093 - 0,119)	0,101	70,0	4,29	2.930	1.184	355,64
INOX, ferritic, sulphurised	4	4	170 (140-190)	0,017 (0,015 - 0,019)	0,016	11,0	0,65	13.596	879	6,25
	5	4	170 (140-190)	0,021 (0,019 - 0,024)	0,020	14,0	0,81	10.866	878	9,93
	6	4	170 (140-190)	0,025 (0,022 - 0,029)	0,024	17,0	0,97	9.048	878	14,47
	8	4	170 (140-190)	0,033 (0,030 - 0,038)	0,032	22,0	1,29	6.781	877	24,94
	10	4	170 (140-190)	0,041 (0,037 - 0,048)	0,040	28,0	1,62	5.422	876	39,63
	12	4	170 (140-190)	0,050 (0,045 - 0,057)	0,049	34,0	1,94	4.516	876	57,74
	14	4	170 (140-190)	0,058 (0,052 - 0,067)	0,057	40,0	2,26	3.870	876	79,25
	16	4	170 (140-190)	0,066 (0,060 - 0,076)	0,065	45,0	2,58	3.386	876	101,90
	20	4	170 (140-190)	0,083 (0,075 - 0,095)	0,081	57,0	3,23	2.708	875	161,16
	25	4	170 (140-190)	0,104 (0,093 - 0,119)	0,101	70,0	4,04	2.166	875	247,39
INOX, martensitic	4	4	110 (80-130)	0,017 (0,015 - 0,019)	0,016	11,0	0,61	8.797	569	3,82
	5	4	110 (80-130)	0,021 (0,019 - 0,024)	0,020	14,0	0,76	7.030	568	6,07
	6	4	110 (80-130)	0,025 (0,022 - 0,029)	0,024	17,0	0,92	5.855	568	8,84
	8	4	110 (80-130)	0,033 (0,030 - 0,038)	0,032	22,0	1,22	4.387	567	15,22
	10	4	110 (80-130)	0,041 (0,037 - 0,048)	0,040	28,0	1,53	3.508	567	24,22
	12	4	110 (80-130)	0,050 (0,045 - 0,057)	0,049	34,0	1,83	2.922	567	35,29
	14	4	110 (80-130)	0,058 (0,052 - 0,067)	0,057	40,0	2,14	2.504	566	48,36
	16	4	110 (80-130)	0,066 (0,060 - 0,076)	0,065	45,0	2,44	2.191	566	62,17
	20	4	110 (80-130)	0,083 (0,075 - 0,095)	0,081	57,0	3,05	1.752	566	98,44
	25	4	110 (80-130)	0,104 (0,093 - 0,119)	0,101	70,0	3,81	1.401	566	151,11
INOX, austenitic	4	4	130 (100-150)	0,013 (0,012 - 0,015)	0,013	11,0	0,59	10.397	535	3,49
	5	4	130 (100-150)	0,017 (0,015 - 0,019)	0,016	14,0	0,74	8.309	535	5,55
	6	4	130 (100-150)	0,020 (0,018 - 0,023)	0,019	17,0	0,89	6.919	534	8,07
	8	4	130 (100-150)	0,026 (0,024 - 0,03)	0,026	22,0	1,18	5.185	534	13,92
	10	4	130 (100-150)	0,033 (0,030 - 0,038)	0,032	28,0	1,48	4.146	534	22,14
	12	4	130 (100-150)	0,040 (0,036 - 0,046)	0,039	34,0	1,78	3.454	534	32,26
	14	4	130 (100-150)	0,046 (0,042 - 0,053)	0,045	40,0	2,07	2.959	533	44,20
	16	4	130 (100-150)	0,053 (0,048 - 0,061)	0,052	45,0	2,37	2.589	533	56,83
	20	4	130 (100-150)	0,066 (0,059 - 0,076)	0,064	57,0	2,96	2.071	533	89,98
	25	4	130 (100-150)	0,083 (0,074 - 0,095)	0,081	70,0	3,70	1.656	533	138,12
Grey cast iron GJL	4	4	215 (185-235)	0,020 (0,018 - 0,023)	0,020	11,0	0,72	17.195	1.362	10,76
	5	4	215 (185-235)	0,025 (0,023 - 0,029)	0,025	14,0	0,90	13.742	1.360	17,09
	6	4	215 (185-235)	0,030 (0,027 - 0,035)	0,030	17,0	1,08	11.444	1.359	24,89
	8	4	215 (185-235)	0,041 (0,037 - 0,047)	0,040	22,0	1,44	8.576	1.358	42,92
	10	4	215 (185-235)	0,051 (0,046 - 0,058)	0,050	28,0	1,80	6.857	1.357	68,23
	12	4	215 (185-235)	0,061 (0,055 - 0,070)	0,059	34,0	2,15	5.712	1.357	99,41
	14	4	215 (185-235)	0,071 (0,064 - 0,082)	0,069	40,0	2,51	4.895	1.357	136,45
	16	4	215 (185-235)	0,081 (0,073 - 0,093)	0,079	45,0	2,87	4.282	1.356	175,31
	20	4	215 (185-235)	0,101 (0,091 - 0,117)	0,099	57,0	3,59	3.425	1.356	277,57
	25	4	215 (185-235)	0,127 (0,114 - 0,146)	0,124	70,0	4,49	2.739	1.356	426,09
Grey cast iron GJS	4	4	170 (140-190)	0,020 (0,018 - 0,023)	0,020	11,0	0,72	13.596	1.077	8,51
	5	4	170 (140-190)	0,025 (0,023 - 0,029)	0,025	14,0	0,90	10.866	1.075	13,51
	6	4	170 (140-190)	0,030 (0,027 - 0,035)	0,030	17,0	1,08	9.048	1.075	19,69
	8	4	170 (140-190)	0,041 (0,037 - 0,047)	0,040	22,0	1,44	6.781	1.074	33,94
	10	4	170 (140-190)	0,051 (0,046 - 0,058)	0,050	28,0	1,80	5.422	1.073	53,95
	12	4	170 (140-190)	0,061 (0,055 - 0,070)	0,059	34,0	2,15	4.516	1.073	78,61
	14	4	170 (140-190)	0,071 (0,064 - 0,082)	0,069	40,0	2,51	3.870	1.072	107,79
	16	4	170 (140-190)	0,081 (0,073 - 0,093)	0,079	45,0	2,87	3.386	1.072	138,59
	20	4	170 (140-190)	0,101 (0,091 - 0,117)	0,099	57,0	3,59	2.708	1.072	219,44
	25	4	170 (140-190)	0,127 (0,114 - 0,146)	0,124	70,0	4,49	2.166	1.072	336,85
High-heat resistant steel	4	4	60 (30-80)	0,011 (0,009 - 0,012)	0,010	11,0	0,41	4.798	197	0,89
	5	4	60 (30-80)	0,013 (0,012 - 0,015)	0,013	14,0	0,52	3.835	197	1,42
	6	4	60 (30-80)	0,016 (0,014 - 0,018)	0,015	17,0	0,62	3.193	196	2,06
	8	4	60 (30-80)	0,021 (0,019 - 0,024)	0,021	22,0	0,82	2.393	196	3,56
	10	4	60 (30-80)	0,026 (0,024 - 0,030)	0,026	28,0	1,03	1.913	196	5,66
	12	4	60 (30-80)	0,032 (0,028 - 0,036)	0,031	34,0	1,24	1.594	196	8,24
	14	4	60 (30-80)	0,037 (0,033 - 0,042)	0,036	40,0	1,44	1.366	196	11,31
	16	4	60 (30-80)	0,042 (0,038 - 0,048)	0,041	45,0	1,65	1.195	196	14,55
	20	4	60 (30-80)	0,053 (0,047 - 0,061)	0,051	57,0	2,06	955	196	23,03
	25	4	60 (30-80)	0,066 (0,059 - 0,076)	0,064	70,0	2,58	764	196	35,36

Cutting data recommendation - RAMPING



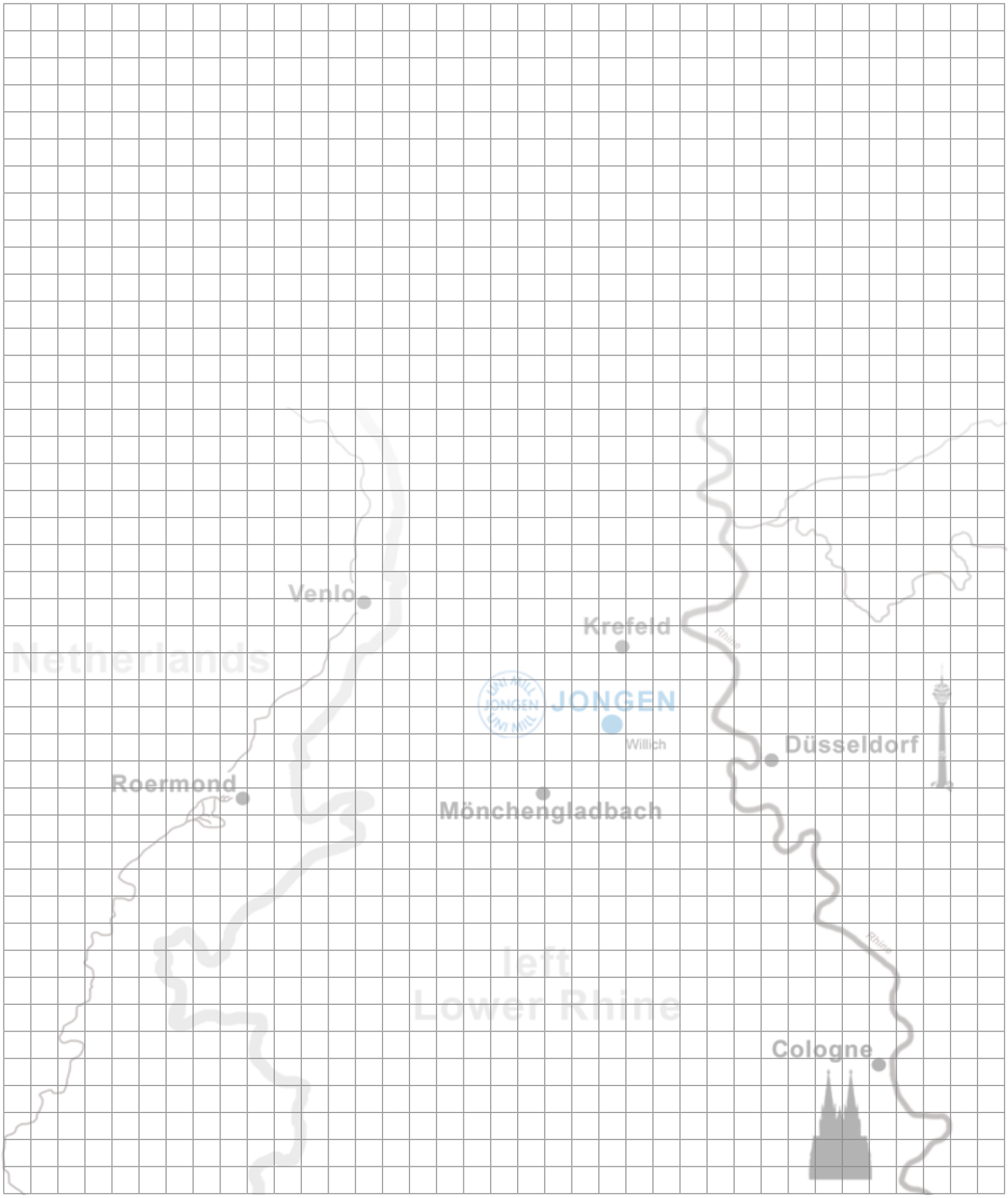
Material	D [mm]	Z	V_c [m/min]	f_z [mm]	a_p max. [mm]	a_e [mm]	φR max. [°]	L [mm]	n [min-1]	V_f [mm/min]
General structural steel, unalloyed steel	4	4	180 (150-200)	0,018 (0,016 - 0,021)	4,0	4,0	45	4,00	14.395	1.044
	5	4	180 (150-200)	0,023 (0,020 - 0,026)	5,0	5,0	45	5,00	11.505	1.043
	6	4	180 (150-200)	0,027 (0,024 - 0,031)	6,0	6,0	45	6,00	9.581	1.042
	8	4	180 (150-200)	0,036 (0,033 - 0,042)	8,0	8,0	45	8,00	7.179	1.041
	10	4	180 (150-200)	0,045 (0,041 - 0,052)	10,0	10,0	45	10,00	5.741	1.041
	12	4	180 (150-200)	0,054 (0,049 - 0,063)	12,0	12,0	45	12,00	4.782	1.040
	14	4	180 (150-200)	0,063 (0,057 - 0,073)	14,0	14,0	45	14,00	4.098	1.040
	16	4	180 (150-200)	0,073 (0,065 - 0,083)	16,0	16,0	45	16,00	3.585	1.040
	20	4	180 (150-200)	0,091 (0,082 - 0,104)	20,0	20,0	45	20,00	2.867	1.040
	25	4	180 (150-200)	0,113 (0,102 - 0,13)	25,0	25,0	45	25,00	2.293	1.039
Low alloyed steel	4	4	145 (115-165)	0,013 (0,012 - 0,015)	4,0	4,0	30	6,93	11.596	593
	5	4	145 (115-165)	0,016 (0,014 - 0,018)	5,0	5,0	30	8,66	9.268	592
	6	4	145 (115-165)	0,019 (0,017 - 0,022)	6,0	6,0	30	10,39	7.718	592
	8	4	145 (115-165)	0,026 (0,023 - 0,029)	8,0	8,0	30	13,86	5.783	591
	10	4	145 (115-165)	0,032 (0,029 - 0,037)	10,0	10,0	30	17,32	4.624	591
	12	4	145 (115-165)	0,038 (0,035 - 0,044)	12,0	12,0	30	20,78	3.852	591
	14	4	145 (115-165)	0,045 (0,040 - 0,051)	14,0	14,0	30	24,25	3.301	590
	16	4	145 (115-165)	0,051 (0,046 - 0,059)	16,0	16,0	30	27,71	2.888	590
	20	4	145 (115-165)	0,064 (0,058 - 0,074)	20,0	20,0	30	34,64	2.310	590
	25	4	145 (115-165)	0,080 (0,072 - 0,092)	25,0	25,0	30	43,30	1.847	590
INOX, ferritic, sulphurised	4	4	120 (90-140)	0,013 (0,012 - 0,015)	4,0	4,0	15	14,93	9.597	490
	5	4	120 (90-140)	0,016 (0,014 - 0,018)	5,0	5,0	15	18,66	7.670	490
	6	4	120 (90-140)	0,019 (0,017 - 0,022)	6,0	6,0	15	22,39	6.387	490
	8	4	120 (90-140)	0,026 (0,023 - 0,029)	8,0	8,0	15	29,86	4.786	489
	10	4	120 (90-140)	0,032 (0,029 - 0,037)	10,0	10,0	15	37,32	3.827	489
	12	4	120 (90-140)	0,038 (0,035 - 0,044)	12,0	12,0	15	44,78	3.188	489
	14	4	120 (90-140)	0,045 (0,040 - 0,051)	14,0	14,0	15	52,25	2.732	489
	16	4	120 (90-140)	0,051 (0,046 - 0,059)	16,0	16,0	15	59,71	2.390	489
	20	4	120 (90-140)	0,064 (0,058 - 0,074)	20,0	20,0	15	74,64	1.911	488
	25	4	120 (90-140)	0,080 (0,072 - 0,092)	25,0	25,0	15	93,30	1.529	488
INOX, martensitic	4	4	80 (50-100)	0,013 (0,012 - 0,015)	4,0	4,0	12	18,82	6.398	327
	5	4	80 (50-100)	0,016 (0,014 - 0,018)	5,0	5,0	12	23,52	5.113	326
	6	4	80 (50-100)	0,019 (0,017 - 0,022)	6,0	6,0	12	28,23	4.258	326
	8	4	80 (50-100)	0,026 (0,023 - 0,029)	8,0	8,0	12	37,64	3.191	326
	10	4	80 (50-100)	0,032 (0,029 - 0,037)	10,0	10,0	12	47,05	2.551	326
	12	4	80 (50-100)	0,038 (0,035 - 0,044)	12,0	12,0	12	56,46	2.125	326
	14	4	80 (50-100)	0,045 (0,040 - 0,051)	14,0	14,0	12	65,86	1.821	326
	16	4	80 (50-100)	0,051 (0,046 - 0,059)	16,0	16,0	12	75,27	1.593	325
	20	4	80 (50-100)	0,064 (0,058 - 0,074)	20,0	20,0	12	94,09	1.274	325
	25	4	80 (50-100)	0,080 (0,072 - 0,092)	25,0	25,0	12	117,62	1.019	325
INOX, austenitic	4	4	100 (70-120)	0,013 (0,012 - 0,015)	4,0	4,0	12	18,82	7.997	409
	5	4	100 (70-120)	0,016 (0,014 - 0,018)	5,0	5,0	12	23,52	6.391	408
	6	4	100 (70-120)	0,019 (0,017 - 0,022)	6,0	6,0	12	28,23	5.322	408
	8	4	100 (70-120)	0,026 (0,023 - 0,029)	8,0	8,0	12	37,64	3.988	407
	10	4	100 (70-120)	0,032 (0,029 - 0,037)	10,0	10,0	12	47,05	3.189	407
	12	4	100 (70-120)	0,038 (0,035 - 0,044)	12,0	12,0	12	56,46	2.657	407
	14	4	100 (70-120)	0,045 (0,040 - 0,051)	14,0	14,0	12	65,86	2.276	407
	16	4	100 (70-120)	0,051 (0,046 - 0,059)	16,0	16,0	12	75,27	1.991	407
	20	4	100 (70-120)	0,064 (0,058 - 0,074)	20,0	20,0	12	94,09	1.593	407
	25	4	100 (70-120)	0,080 (0,072 - 0,092)	25,0	25,0	12	117,62	1.274	407
Grey cast iron GJL	4	4	170 (140-190)	0,018 (0,016 - 0,020)	4,0	4,0	45	4,00	13.596	969
	5	4	170 (140-190)	0,022 (0,020 - 0,026)	5,0	5,0	45	5,00	10.866	968
	6	4	170 (140-190)	0,027 (0,024 - 0,031)	6,0	6,0	45	6,00	9.048	967
	8	4	170 (140-190)	0,036 (0,032 - 0,041)	8,0	8,0	45	8,00	6.781	966
	10	4	170 (140-190)	0,045 (0,040 - 0,051)	10,0	10,0	45	10,00	5.422	966
	12	4	170 (140-190)	0,053 (0,048 - 0,061)	12,0	12,0	45	12,00	4.516	965
	14	4	170 (140-190)	0,062 (0,056 - 0,072)	14,0	14,0	45	14,00	3.870	965
	16	4	170 (140-190)	0,071 (0,064 - 0,082)	16,0	16,0	45	16,00	3.386	965
	20	4	170 (140-190)	0,089 (0,080 - 0,102)	20,0	20,0	45	20,00	2.708	965
	25	4	170 (140-190)	0,111 (0,100 - 0,128)	25,0	25,0	45	25,00	2.166	965
Grey cast iron GJS	4	4	90 (60-110)	0,018 (0,016 - 0,020)	4,0	4,0	45	4,00	7.197	513
	5	4	90 (60-110)	0,022 (0,020 - 0,026)	5,0	5,0	45	5,00	5.752	512
	6	4	90 (60-110)	0,027 (0,024 - 0,031)	6,0	6,0	45	6,00	4.790	512
	8	4	90 (60-110)	0,036 (0,032 - 0,041)	8,0	8,0	45	8,00	3.589	511
	10	4	90 (60-110)	0,045 (0,040 - 0,051)	10,0	10,0	45	10,00	2.870	511
	12	4	90 (60-110)	0,053 (0,048 - 0,061)	12,0	12,0	45	12,00	2.391	511
	14	4	90 (60-110)	0,062 (0,056 - 0,072)	14,0	14,0	45	14,00	2.049	511
	16	4	90 (60-110)	0,071 (0,064 - 0,082)	16,0	16,0	45	16,00	1.792	511
	20	4	90 (60-110)	0,089 (0,080 - 0,102)	20,0	20,0	45	20,00	1.433	510
	25	4	90 (60-110)	0,111 (0,100 - 0,128)	25,0	25,0	45	25,00	1.146	510
High-heat resistant steel	4	4	40 (10-60)	0,009 (0,008 - 0,010)	2,7	4,0	6	25,37	3.199	112
	5	4	40 (10-60)	0,011 (0,010 - 0,013)	3,3	5,0	6	31,71	2.556	112
	6	4	40 (10-60)	0,013 (0,012 - 0,015)	4,0	6,0	6	38,06	2.129	112
	8	4	40 (10-60)	0,018 (0,016 - 0,020)	5,0	8,0	6	47,57	1.595	112
	10	4	40 (10-60)	0,022 (0,020 - 0,025)	6,0	10,0	6	57,09	1.275	112
	12	4	40 (10-60)	0,026 (0,024 - 0,030)	8,0	12,0	6	76,11	1.062	112
	14	4	40 (10-60)	0,031 (0,028 - 0,035)	9,0	14,0	6	85,63	910	112
	16	4	40 (10-60)	0,035 (0,032 - 0,041)	10,0	16,0	6	95,14	796	112
	20	4	40 (10-60)	0,044 (0,040 - 0,051)	13,0	20,0	6	123,69	637	112
	25	4	40 (10-60)	0,055 (0,050 - 0,063)	16,0	25,0	6	152,23	509	112

For drilling operations (φR =90°), we recommend to reduce f_Z (feed speed per tooth) by 50%.

Cutting data recommendation - HELIX MILLING

Material	D [mm]	Z	V_c [m/min]	f_z [mm]	a_p max./turn [mm]	a_e [mm]	φZ max. [°]	Bd [mm]	n [min-1]	V_f [mm/min]
General structural steel, unalloyed steel	4	4	210 (180-230)	0,018 (0,016 - 0,021)	4,0	4,0	20,53	11,10	16.795	1.218
	5	4	210 (180-230)	0,023 (0,020 - 0,026)	5,0	5,0	20,53	11,10	13.422	1.217
	6	4	210 (180-230)	0,027 (0,024 - 0,031)	6,0	6,0	20,53	11,10	11.178	1.216
	8	4	210 (180-230)	0,036 (0,033 - 0,042)	8,0	8,0	20,53	14,80	8.376	1.215
	10	4	210 (180-230)	0,045 (0,041 - 0,052)	10,0	10,0	20,53	18,50	6.697	1.214
	12	4	210 (180-230)	0,054 (0,049 - 0,063)	12,0	12,0	20,53	22,20	5.579	1.214
	14	4	210 (180-230)	0,063 (0,057 - 0,073)	14,0	14,0	20,53	25,90	4.781	1.214
	16	4	210 (180-230)	0,073 (0,065 - 0,083)	16,0	16,0	20,53	29,60	4.183	1.213
	20	4	210 (180-230)	0,091 (0,082 - 0,104)	20,0	20,0	20,53	37,00	3.345	1.213
	25	4	210 (180-230)	0,113 (0,102 - 0,130)	25,0	25,0	20,53	46,25	2.675	1.212
Low alloyed steel	4	4	175 (145-195)	0,013 (0,012 - 0,015)	4,0	4,0	20,53	11,10	13.996	715
	5	4	175 (145-195)	0,016 (0,014 - 0,018)	5,0	5,0	20,53	11,10	11.185	715
	6	4	175 (145-195)	0,019 (0,017 - 0,022)	6,0	6,0	20,53	11,10	9.315	714
	8	4	175 (145-195)	0,026 (0,023 - 0,029)	8,0	8,0	20,53	14,80	6.980	714
	10	4	175 (145-195)	0,032 (0,029 - 0,037)	10,0	10,0	20,53	18,50	5.581	713
	12	4	175 (145-195)	0,038 (0,035 - 0,044)	12,0	12,0	20,53	22,20	4.649	713
	14	4	175 (145-195)	0,045 (0,040 - 0,051)	14,0	14,0	20,53	25,90	3.984	713
	16	4	175 (145-195)	0,051 (0,046 - 0,059)	16,0	16,0	20,53	29,60	3.485	713
	20	4	175 (145-195)	0,064 (0,058 - 0,074)	20,0	20,0	20,53	37,00	2.787	712
	25	4	175 (145-195)	0,080 (0,072 - 0,092)	25,0	25,0	20,53	46,25	2.229	712
INOX, ferritic, sulphurised	4	4	120 (90-140)	0,013 (0,012 - 0,015)	4,0	4,0	20,53	11,10	9.597	490
	5	4	120 (90-140)	0,016 (0,014 - 0,018)	5,0	5,0	20,53	11,10	7.670	490
	6	4	120 (90-140)	0,019 (0,017 - 0,022)	6,0	6,0	20,53	11,10	6.387	490
	8	4	120 (90-140)	0,026 (0,023 - 0,029)	8,0	8,0	20,53	14,80	4.786	489
	10	4	120 (90-140)	0,032 (0,029 - 0,037)	10,0	10,0	20,53	18,50	3.827	489
	12	4	120 (90-140)	0,038 (0,035 - 0,044)	12,0	12,0	20,53	22,20	3.188	489
	14	4	120 (90-140)	0,045 (0,040 - 0,051)	14,0	14,0	20,53	25,90	2.732	489
	16	4	120 (90-140)	0,051 (0,046 - 0,059)	16,0	16,0	20,53	29,60	2.390	489
	20	4	120 (90-140)	0,064 (0,058 - 0,074)	20,0	20,0	20,53	37,00	1.911	488
	25	4	120 (90-140)	0,080 (0,072 - 0,092)	25,0	25,0	20,53	46,25	1.529	488
INOX, martensitic	4	4	80 (50-100)	0,013 (0,012 - 0,015)	4,0	4,0	20,53	11,10	6.398	327
	5	4	80 (50-100)	0,016 (0,014 - 0,018)	5,0	5,0	20,53	11,10	5.113	326
	6	4	80 (50-100)	0,019 (0,017 - 0,022)	6,0	6,0	20,53	11,10	4.258	326
	8	4	80 (50-100)	0,026 (0,023 - 0,029)	8,0	8,0	20,53	14,80	3.191	326
	10	4	80 (50-100)	0,032 (0,029 - 0,037)	10,0	10,0	20,53	18,50	2.551	326
	12	4	80 (50-100)	0,038 (0,035 - 0,044)	12,0	12,0	20,53	22,20	2.125	326
	14	4	80 (50-100)	0,045 (0,040 - 0,051)	14,0	14,0	20,53	25,90	1.821	326
	16	4	80 (50-100)	0,051 (0,046 - 0,059)	16,0	16,0	20,53	29,60	1.593	325
	20	4	80 (50-100)	0,064 (0,058 - 0,074)	20,0	20,0	20,53	37,00	1.274	325
	25	4	80 (50-100)	0,080 (0,072 - 0,092)	25,0	25,0	20,53	46,25	1.019	325
INOX, austenitic	4	4	100 (70-120)	0,013 (0,012 - 0,015)	4,0	4,0	20,53	11,10	7.997	409
	5	4	100 (70-120)	0,016 (0,014 - 0,018)	5,0	5,0	20,53	11,10	6.391	408
	6	4	100 (70-120)	0,019 (0,017 - 0,022)	6,0	6,0	20,53	11,10	5.322	408
	8	4	100 (70-120)	0,026 (0,023 - 0,029)	8,0	8,0	20,53	14,80	3.988	407
	10	4	100 (70-120)	0,032 (0,029 - 0,037)	10,0	10,0	20,53	18,50	3.189	407
	12	4	100 (70-120)	0,038 (0,035 - 0,044)	12,0	12,0	20,53	22,20	2.657	407
	14	4	100 (70-120)	0,045 (0,040 - 0,051)	14,0	14,0	20,53	25,90	2.276	407
	16	4	100 (70-120)	0,051 (0,046 - 0,059)	16,0	16,0	20,53	29,60	1.991	407
	20	4	100 (70-120)	0,064 (0,058 - 0,074)	20,0	20,0	20,53	37,00	1.593	407
	25	4	100 (70-120)	0,080 (0,072 - 0,092)	25,0	25,0	20,53	46,25	1.274	407
Grey cast iron GJL	4	4	170 (140-190)	0,018 (0,016 - 0,02)	4,0	4,0	20,53	11,10	13.596	969
	5	4	170 (140-190)	0,022 (0,020 - 0,026)	5,0	5,0	20,53	11,10	10.866	968
	6	4	170 (140-190)	0,027 (0,024 - 0,031)	6,0	6,0	20,53	11,10	9.048	967
	8	4	170 (140-190)	0,036 (0,032 - 0,041)	8,0	8,0	20,53	14,80	6.781	966
	10	4	170 (140-190)	0,045 (0,040 - 0,051)	10,0	10,0	20,53	18,50	5.422	966
	12	4	170 (140-190)	0,053 (0,048 - 0,061)	12,0	12,0	20,53	22,20	4.516	965
	14	4	170 (140-190)	0,062 (0,056 - 0,072)	14,0	14,0	20,53	25,90	3.870	965
	16	4	170 (140-190)	0,071 (0,064 - 0,082)	16,0	16,0	20,53	29,60	3.386	965
	20	4	170 (140-190)	0,089 (0,080 - 0,102)	20,0	20,0	20,53	37,00	2.708	965
	25	4	170 (140-190)	0,111 (0,100 - 0,128)	25,0	25,0	20,53	46,25	2.166	965
Grey cast iron GJS	4	4	90 (60-110)	0,018 (0,016 - 0,020)	4,0	4,0	20,53	11,10	7.197	513
	5	4	90 (60-110)	0,022 (0,020 - 0,026)	5,0	5,0	20,53	11,10	5.752	512
	6	4	90 (60-110)	0,027 (0,024 - 0,031)	6,0	6,0	20,53	11,10	4.790	512
	8	4	90 (60-110)	0,036 (0,032 - 0,041)	8,0	8,0	20,53	14,80	3.589	511
	10	4	90 (60-110)	0,045 (0,040 - 0,051)	10,0	10,0	20,53	18,50	2.870	511
	12	4	90 (60-110)	0,053 (0,048 - 0,061)	12,0	12,0	20,53	22,20	2.391	511
	14	4	90 (60-110)	0,062 (0,056 - 0,072)	14,0	14,0	20,53	25,90	2.049	511
	16	4	90 (60-110)	0,071 (0,064 - 0,082)	16,0	16,0	20,53	29,60	1.792	511
	20	4	90 (60-110)	0,089 (0,080 - 0,102)	20,0	20,0	20,53	37,00	1.433	510
	25	4	90 (60-110)	0,111 (0,100 - 0,128)	25,0	25,0	20,53	46,25	1.146	510
High-heat resistant steel	4	4	40 (10-60)	0,009 (0,008 - 0,010)	2,0	4,0	10,61	11,10	3.199	112
	5	4	40 (10-60)	0,011 (0,010 - 0,013)	2,5	5,0	10,61	11,10	2.556	112
	6	4	40 (10-60)	0,013 (0,012 - 0,015)	3,0	6,0	10,61	11,10	2.129	112
	8	4	40 (10-60)	0,018 (0,016 - 0,020)	4,0	8,0	10,61	14,80	1.595	112
	10	4	40 (10-60)	0,022 (0,020 - 0,025)	5,0	10,0	10,61	18,50	1.275	112
	12	4	40 (10-60)	0,026 (0,024 - 0,030)	6,0	12,0	10,61	22,20	1.062	112
	14	4	40 (10-60)	0,031 (0,028 - 0,035)	7,0	14,0	10,61	25,90	910	112
	16	4	40 (10-60)	0,035 (0,032 - 0,041)	8,0	16,0	10,61	29,60	796	112
	20	4	40 (10-60)	0,044 (0,040 - 0,051)	10,0	20,0	10,61	37,00	637	112
	25	4	40 (10-60)	0,055 (0,050 - 0,063)	12,5	25,0	10,61	46,25	509	112

Notes



All mentioned cutting parameters are standard values that may vary depending on processing, type of machine and material grade.

Jongen Werkzeugtechnik GmbH
Siemensring 11 · 47877 Willich · Germany
Phone: +49 2154 / 9285-2900 · Fax: +49 2154 / 9285 929000
Free Fax: 00 800 / 56 64 36 33
www.jongen.de · email: export@jongen.de