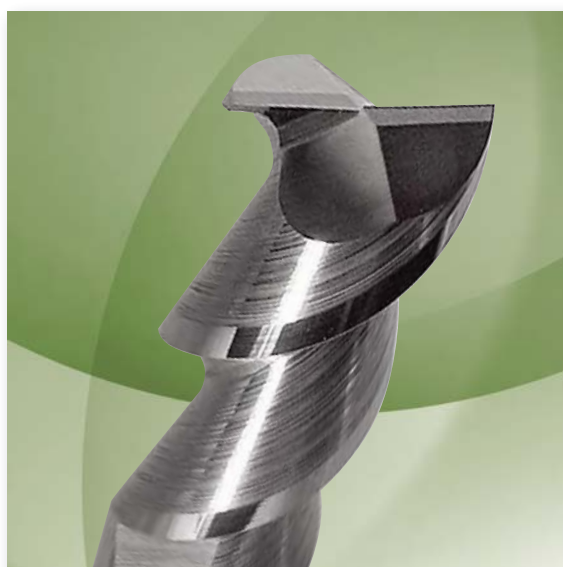


# FRÉZY TVRDOKOVOVÉ

## HLINÍK

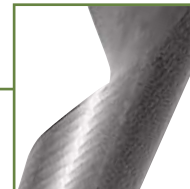


## Fresa monotagliante in metallo duro integrale

### Solid carbide one-tooth end mill

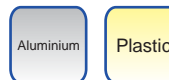
VHM - Einzahn-Schaftfräser - Fraise carbure, 1 lèvre

Фреза концевая твердосплавная с одним зубом - Sk jednozubé frézy



CODE	d1h8 mm	d2h6 mm	l1 mm	L mm	Z no.
100.010	1	2	5	40	1
100.020	2	2	10	40	1
100.030	3	3	10	40	1
100.030.1	3	6	12	50	1
100.040	4	4	15	50	1
100.040.1	4	6	15	50	1
100.050	5	5	15	50	1
100.060	6	6	20	50	1
100.080	8	8	22	60	1
100.100	10	10	25	70	1
100.120	12	12	35	75	1

→ Help 181



## Fresa con fori in elica testa piana in metallo duro integrale

### Solid carbide coolant feed flat nose end mill

VHM - Gesenkfräser mit Durchgewendelten Kühlkanälen - Fraise carbure à trous de refrigeration à bout plat

Фреза концевая твердосплавная с подачей СОЖ - Sk rohová fréza s chlazením všch zubů



CODE	d1h8 mm	d2h6 mm	l1 mm	L mm	Z no.
210.060	6	6	20	50	2
210.080	8	8	22	60	2
210.100	10	10	25	70	2
210.120	12	12	27	75	2
210.140	14	14	30	85	2
210.160	16	16	30	85	2
210.200	20	20	40	100	2
210.250	25	25	40	100	2

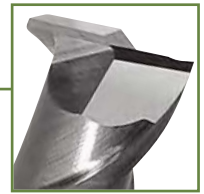
→ Help 192



## Fresa con fori in elica testa piana in metallo duro integrale

### Solid carbide coolant feed flat nose end mill

VHM - Gesenkfräser mit Durchgewendelten Kühlkanälen - Fraise carbure à trous de refrigeration à bout plat  
Фреза концевая твердосплавная с подачей СОЖ - Sk rohová fréza s chlazením všech zubů



CODE	d1h8 mm	d2h6 mm	l1 mm	L mm	Z no.
750.060	6	6	20	50	2
75006100	6	6	40	100	2
750.080	8	8	25	60	2
75008100	8	8	40	100	2
75008100.1	8	8	60	100	2
750.100	10	10	25	70	2
75010100	10	10	50	100	2
75010150	10	10	75	150	2
750.120	12	12	30	75	2
75012100	12	12	50	100	2
75012150	12	12	75	150	2
750.140	14	14	30	85	2
75014100	14	14	50	100	2
75014150	14	14	75	150	2
75014160	14	14	100	160	2
750.160	16	16	30	85	2
75016100	16	16	50	100	2
75016150	16	16	75	150	2
75016160	16	16	100	160	2
750.180	18	18	40	100	2
75018150	18	18	65	150	2
75018150.1	18	18	75	150	2
75018160	18	18	100	160	2
750.200	20	20	40	100	2
75020150	20	20	65	150	2
75020150.1	20	20	75	150	2
75020160	20	20	100	160	2
750.250	25	25	40	100	2
75025150	25	25	65	150	2
75025150.1	25	25	75	150	2
75025160	25	25	100	160	2

→ Help 181



Aluminium  
<6% Si

Plastic

MICRO  
GRAIN

DIN 6535  
Form HA

45°



HSC



OIL



Z 2

UNCOATED



## Fresa testa piana in metallo duro integrale

### Solid carbide flat nose end mill

VHM - Gesenkfräser - Fraise carbure à bout plat

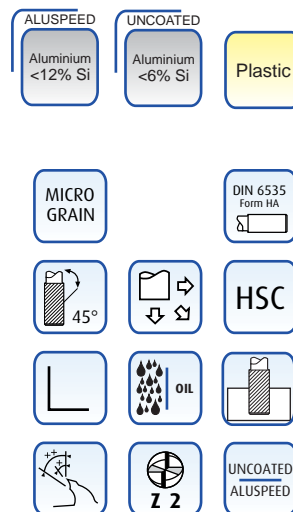
Фреза концевая твердосплавная с плоским торцом - Sk rohová fréza

LOW SPEED



Code UNCOATED	Code ALUSPEED	d1h8 mm	d2h6 mm	l1 mm	L mm	Z no.
700.020	700T.020	2	6	6	50	2
700.030	700T.030	3	6	10	50	2
700.040	700T.040	4	6	15	50	2
70004060	700T04060	4	6	25	60	2
700.050	700T.050	5	6	20	50	2
70005060	700T05060	5	6	30	60	2
700.060	700T.060	6	6	20	50	2
70006100	700T06100	6	6	40	100	2
700.080	700T.080	8	8	25	60	2
70008100	700T08100	8	8	40	100	2
70008100.1	700T08100.1	8	8	60	100	2
700.100	700T.100	10	10	25	70	2
70010100	700T10100	10	10	50	100	2
70010150	700T10150	10	10	75	150	2
700.120	700T.120	12	12	30	75	2
70012100	700T12100	12	12	50	100	2
70012150	700T12150	12	12	75	150	2
700.140	700T.140	14	14	30	85	2
70014100	700T14100	14	14	50	100	2
70014150	700T14150	14	14	75	150	2
70014160	700T14160	14	14	100	160	2
700.160	700T.160	16	16	30	85	2
70016100	700T16100	16	16	50	100	2
70016150	700T16150	16	16	75	150	2
70016160	700T16160	16	16	100	160	2
700.180	700T.180	18	18	40	100	2
70018150	700T18150	18	18	65	150	2
70018150.1	700T18150.1	18	18	75	150	2
70018160	700T18160	18	18	100	160	2
700.200	700T.200	20	20	40	100	2
70020150	700T20150	20	20	65	150	2
70020150.1	700T20150.1	20	20	75	150	2
70020160	700T20160	20	20	100	160	2
700.250	700T.250	25	25	40	100	2
70025150	700T25150	25	25	65	150	2
70025150.1	700T25150.1	25	25	75	150	2
70025160	700T25160	25	25	100	160	2
700.320	700T.320	32	32	40	100	2

→ Help 181



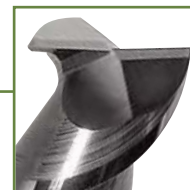
## Fresa Alufast testa piana in metallo duro itegrale

### Alufast solid carbide flat nose end mill

VHM-Alufast Gesenkfräser - Fraise carbure Alufast à bout plat

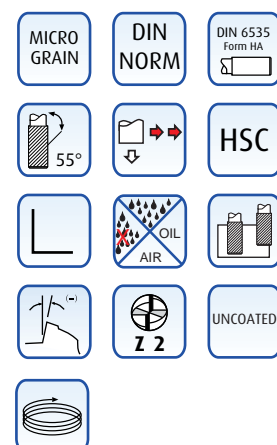
Sk rohová fréza alufast

HIGH SPEED



CODE	d1h8 mm	d2h6 mm	l1 mm	L mm	Z no.
755.030	3	6	9	57	2
755.040	4	6	12	57	2
755.050	5	6	15	57	2
755.060	6	6	18	57	2
755.080	8	8	20	63	2
755.100	10	10	25	70	2
755.120	12	12	25	75	2
755.140	14	14	32	85	2
755.160	16	16	32	85	2
755.200	20	20	40	100	2

→ Help 181



## Fresa testa torcia ad alta velocità in metallo duro integrale

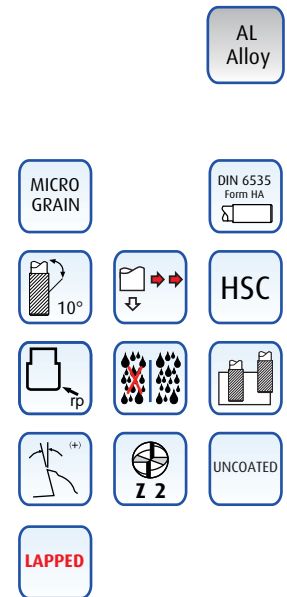
### Solid carbide corner radius end mill high speed

VHM - Stirn RadiusFräser High speed - Fraise carbure avec rayon d'angle à Haute vitesse  
Sk vysokorychlostní fréza s rohovým rádiusem



CODE	d1h8 mm	d2h6 mm	rp mm	l1 mm	l2 mm	L mm	d3 mm	Z no.
Y703.060.05	6	6	0.5	6	18	60	5.8	2
Y703.060.1	6	6	1	6	18	60	5.8	2
Y703.060.15	6	6	1.5	6	18	60	5.8	2
Y703.080.05	8	8	0.5	8	24	75	7.8	2
Y703.080.1	8	8	1	8	24	75	7.8	2
Y703.080.15	8	8	1.5	8	24	75	7.8	2
Y703.080.2	8	8	2	8	24	75	7.8	2
Y703.100.05	10	10	0.5	10	30	80	9.7	2
Y703.100.1	10	10	1	10	30	80	9.7	2
Y703.100.15	10	10	1.5	10	30	80	9.7	2
Y703.100.2	10	10	2	10	30	80	9.7	2
Y703.120.05	12	12	0.5	12	36	100	11.7	2
Y703.120.1	12	12	1	12	36	100	11.7	2
Y703.120.15	12	12	1.5	12	36	100	11.7	2
Y703.120.2	12	12	2	12	36	100	11.7	2
Y703.120.3	12	12	3	12	36	100	11.7	2
Y703.160.05	16	16	0.5	16	50	100	15.5	2
Y703.160.1	16	16	1	16	50	100	15.5	2
Y703.160.15	16	16	1.5	16	50	100	15.5	2
Y703.160.2	16	16	2	16	50	100	15.5	2
Y703.160.3	16	16	3	16	50	100	15.5	2
Y703.200.1	20	20	1	20	60	109	19.5	2
Y703.200.15	20	20	1.5	20	60	109	19.5	2
Y703.200.2	20	20	2	20	60	109	19.5	2
Y703.200.25	20	20	2.5	20	60	109	19.5	2
Y703.200.3	20	20	3	20	60	109	19.5	2
Y703.200.4	20	20	4	20	60	109	19.5	2

→ Help 182



## Fresa testa torica in metallo duro integrale

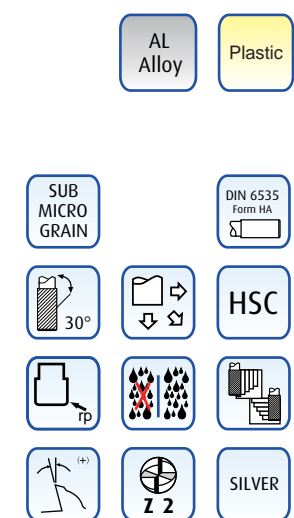
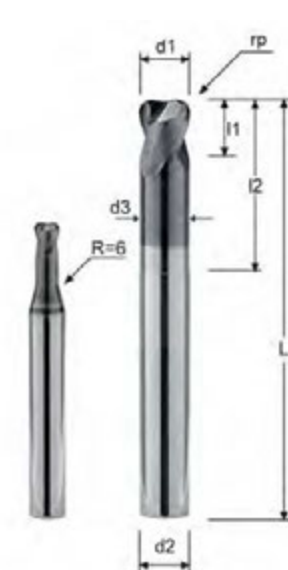
### Solid carbide corner radius end mill

VHM - Gesenkfräser mit Eckenradius - Fraise carbure avec rayon d'angle  
Фреза концевая твердосплавная с угловым радиусом - Sk fréza s rohovým rádiusem



CODE	d1h8 mm	d2h6 mm	rp mm	l1 mm	l2 mm	L mm	d3 mm	Z no.
Y700R.030.05	3	6	0.5	4	10	75	2.95	2
Y700R.040.1	4	6	1.0	5	13	75	3.95	2
Y700R.050.15	5	6	1.5	6	14	75	4.8	2
Y700R.060.15	6	6	1.5	8	30	100	5.8	2
Y700R.080.2	8	8	2.0	10	30	100	7.8	2
Y700R.100.25	10	10	2.5	12	35	100	9.7	2
Y700R.120.3	12	12	3.0	12	40	100	11.7	2
Y700R.160.4	16	16	4.0	16	50	100	15.5	2

→ Help 182-183

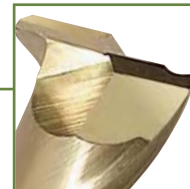




## Fresa testa torica in metallo duro integrale

### Solid carbide corner radius end mill

VHM - Gesenkfräser mit Eckenradius - Fraise carbure avec rayon d'angle  
Фреза концевая твердосплавная с угловым радиусом - Sk fréza s rohovým rádiusem



CODE	d1h8 mm	d2h6 mm	rp mm	l1 mm	L mm	Z no.
730.030	3	6	0.2	10	50	2
730.040	4	6	0.2	15	50	2
730.050	5	6	0.2	20	50	2
730.060	6	6	0.2	20	50	2
730.080	8	8	0.3	25	60	2
730.100	10	10	0.3	25	70	2
730.120	12	12	0.3	30	75	2
730.140	14	14	0.5	30	85	2
730.160	16	16	0.5	30	85	2
730.180	18	18	0.5	40	100	2
730.200	20	20	0.5	40	100	2

→ Help 181



Aluminium  
<12% Si

Plastic

MICRO  
GRAIN

DIN 6535  
Form HA



HSC



ALU  
SPEED

rp  
± 0.01

## Fresa testa sferica 3D in metallo duro integrale

### Solid carbide 3D ball nose end mill

VHM - 3D Radiusfräser - Fraise carbure 3D hémisphérique  
Фреза концевая твердосплавная полусферическая 3D - Sk 3D kulová fréza



Code UNCOATED	Code ALUSPEED	d1h8 mm	d2h6 mm	l1 mm	L mm	Z no.
700SR.030	700SRT.030	3	6	10	75	2
700SR.040	700SRT.040	4	6	10	75	2
700SR.060	700SRT.060	6	6	15	100	2
700SR.080	700SRT.080	8	8	20	100	2
700SR.100	700SRT.100	10	10	25	100	2
700SR.120	700SRT.120	12	12	25	100	2
700SR.160	700SRT.160	16	16	30	100	2
700SR.200	700SRT.200	20	20	30	100	2

→ Help 184



ALUSPEED

Aluminium  
<12% Si

UNCOATED

Aluminium  
<6% Si

Plastic

MICRO  
GRAIN

DIN 6535  
Form HA



HSC



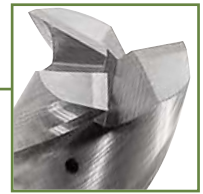
UNCOATED  
ALUSPEED

R  
± 0.01

## Fresa con fori in elica in metallo duro integrale

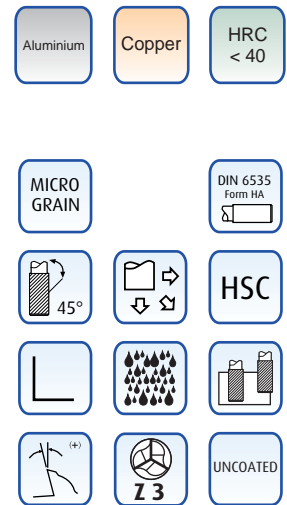
### Solid carbide coolant feed end mill

VHM - Schlichtfräser mit Durchgewendelten Kühlkanälen - Fraise carbure à trous de réfrigération  
Фреза концевая твердосплавная с подачей СОЖ - Sk fréza s chlazením všech zubů



CODE	d1h8 mm	d2h6 mm	l1 mm	L mm	Z no.
453.060	6	6	20	50	3
453.080	8	8	22	60	3
453.100	10	10	25	70	3
45310100	10	10	45	100	3
453.120	12	12	27	75	3
45312100	12	12	45	100	3
453.140	14	14	30	85	3
453.160	16	16	30	85	3
45316100	16	16	45	100	3
453.200	20	20	40	100	3
45320150	20	20	65	150	3
453.250	25	25	40	100	3
45325150	25	25	65	150	3

→ Help 189



## Fresa testa piana in metallo duro integrale

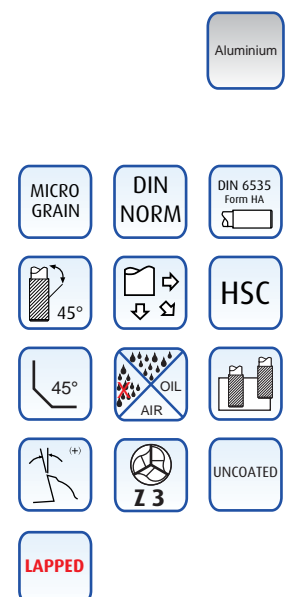
### Solid carbide flat nose end mill

VHM - Gesenkfräser - Fraise carbure à bout plat  
Фреза концевая твердосплавная с плоским торцом - Sk rohová fréza



CODE	d1h8 mm	d2h6 mm	CH mm	l1 mm	L mm	Z no.
456.030	3	6	0.05	10	57	3
456.040	4	6	0.05	15	57	3
456.050	5	6	0.05	18	57	3
456.060	6	6	0.05	20	57	3
456.080	8	8	0.05	25	63	3
456.100	10	10	0.05	25	70	3
456.120	12	12	0.05	30	83	3
456.160	16	16	0.05	32	92	3
456.200	20	20	0.05	38	100	3

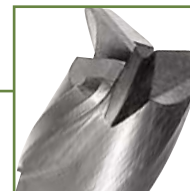
→ Help 181



## Fresa testa torica per alta velocità in metallo duro integrale

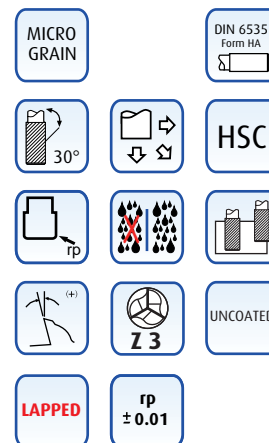
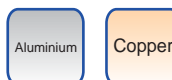
### Solid carbide corner radius end mill for high speed

VHM-stirn radius fräser für High Speed - Fraise carbure avec rayon angle pour haut vitesse  
Фреза твердосплавная концевая с угловым радиусом для высокоскоростной обработки  
Sk vysokorychlostní fréza s rohovým rádiusem



CODE	d1h8 mm	d2h6 mm	rp mm	l1 mm	l2 mm	L mm	d3 mm	Z no.
756.060.1	6	6	1	7	20	75	5.5	3
756.080.1	8	8	1	9	26	75	7.5	3
756.100.15	10	10	1.5	11	31	80	9.5	3
756.100.25	10	10	2.5	11	31	80	9.5	3
756.120.15	12	12	1.5	13	37	100	11.5	3
756.120.25	12	12	2.5	13	37	100	11.5	3
756.160.2	16	16	2	17	43	100	15.5	3
756.160.25	16	16	2.5	17	43	100	15.5	3
756.200.2	20	20	2	21	53	100	19.5	3
756.200.25	20	20	2.5	21	53	100	19.5	3

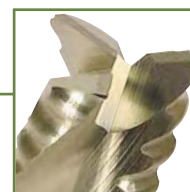
→ Help 185



## Frese rompitrucolo in metallo duro itegrale

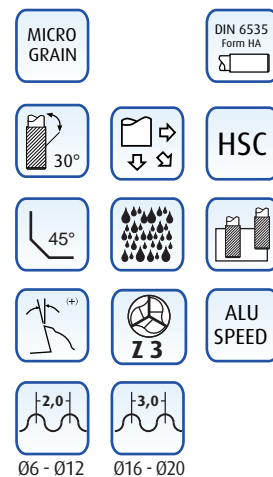
### Solid carbide roughing end mill

VHM-Schrupfräser - Fraise carbure à degrossir  
Фреза твердосплавная концевая черновая - Sk hrubovací fréza



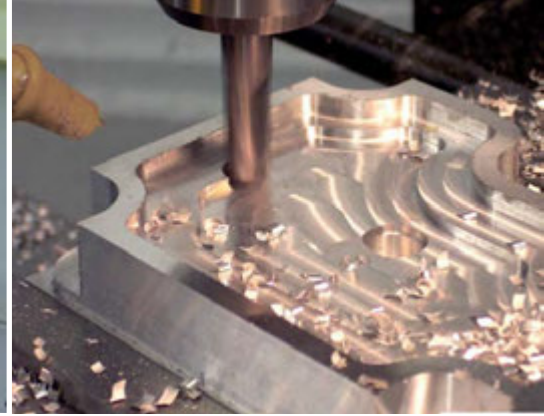
CODE	d1h11 mm	d2h6 mm	l1 mm	l2 mm	L mm	d3 mm	Z no.
T220206057	6	6	13	-	57	-	3
T220208063	8	8	19	-	63	-	3
T220208075	8	8	19	35	75	7.4	3
T220208075.1	8	8	28	-	75	-	3
T220210072	10	10	22	-	72	-	3
T220210080	10	10	22	43	80	9.5	3
T220210080.1	10	10	34	-	80	-	3
T220212083	12	12	26	-	83	-	3
T220212100	12	12	26	50	100	11.5	3
T220212100.1	12	12	40	-	100	-	3
T220214085	14	14	26	-	85	-	3
T220216092	16	16	32	-	92	-	3
T220216109	16	16	32	60	109	15.5	3
T220216100	16	16	45	-	100	-	3
T220220100	20	20	40	-	100	-	3
T220220120	20	20	40	70	120	19.5	3
T220220150	20	20	65	-	150	-	3

→ Help 185



06 - 012 016 - 020





**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 (cm<sup>3</sup>/min) =** Volume truciolo asportato  
Quantity of removed chip  
Swarf Volumen  
Coupeau volume  
Количество снимаемой стружки  
Množství odebraného materiálu

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

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

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

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

$$Q = \frac{a \times e \times a \times p \times Vf}{1000} \text{ cm}^3/\text{min.}$$

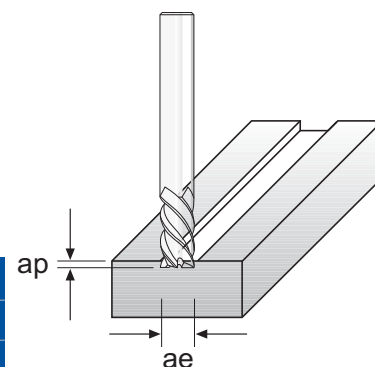
# REZNÉ PARAMETRE

## Cutting speed

Richtwerte - Paramètres - Режимы обработки - Řežná rychlost

CODE: 200 - 200T - 200D - 200DT - 200S - 200ST - 201 - 210  
300 - 300T - 300C - 400 - 400T - 400D - 400DT - 401 - 410

MATERIAL	Steel - СТАЛЬ							
HARDNESS	< 170 HB				< 50HRC			
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap
1 - 3	110	0.008	1 x d	0.1 x d	90	0.007	1 x d	0.1 x d
4	110	0.016	1 x d	0.1 x d	90	0.012	1 x d	0.1 x d
5	110	0.016	1 x d	0.1 x d	90	0.012	1 x d	0.1 x d
6	110	0.016	1 x d	0.1 x d	90	0.012	1 x d	0.1 x d
8	110	0.032	1 x d	0.1 x d	90	0.024	1 x d	0.1 x d
10	110	0.032	1 x d	0.1 x d	90	0.024	1 x d	0.1 x d
12	110	0.048	1 x d	0.1 x d	90	0.036	1 x d	0.1 x d
14 - 18	110	0.048	1 x d	0.1 x d	90	0.036	1 x d	0.1 x d
20 - 25	110	0.080	1 x d	0.1 x d	90	0.060	1 x d	0.1 x d



For finishing:  
ae < 0,02 - 0,03 x d  
ap < 0,8 x d  
Vc = 1,2 x Vc (Parameter List)  
Fz = 0,7 x Vc (Parameter List)

**HSC** = Standard Cutting Speed X 2

MATERIAL	Steel - СТАЛЬ				Cast Iron							
HARDNESS	HRC 48 - 56				Nodulaire - ЧУГУН				Lamellaire - ЛАМЕЛАР			
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap	Vc	Fz	ae	ap
1-3	40	0.006	1 x d	0.05 x d	90	0.006	1 x d	0.1 x d	100	0.009	1 x d	0.2 x d
4	40	0.008	1 x d	0.05 x d	90	0.013	1 x d	0.1 x d	100	0.018	1 x d	0.2 x d
5	40	0.008	1 x d	0.05 x d	90	0.013	1 x d	0.1 x d	100	0.018	1 x d	0.2 x d
6	40	0.008	1 x d	0.05 x d	90	0.013	1 x d	0.1 x d	100	0.018	1 x d	0.2 x d
8	40	0.016	1 x d	0.05 x d	90	0.026	1 x d	0.1 x d	100	0.036	1 x d	0.2 x d
10	40	0.016	1 x d	0.05 x d	90	0.026	1 x d	0.1 x d	100	0.036	1 x d	0.2 x d
12	40	0.024	1 x d	0.05 x d	90	0.038	1 x d	0.1 x d	100	0.054	1 x d	0.2 x d
14 - 18	40	0.024	1 x d	0.05 x d	90	0.038	1 x d	0.1 x d	100	0.054	1 x d	0.2 x d
20 - 25	40	0.040	1 x d	0.05 x d	90	0.064	1 x d	0.1 x d	100	0.090	1 x d	0.2 x d

### CODE: T2204R SIDE MILLING

MATERIAL	Aluminum		Cast Aluminum		Steel - СТАЛЬ								Inox		Cast Iron - ЧУГУН	
HARDNESS			>10%Si		<500N		<750N		<900N		<1100N		<900N			
Ø	VC m/'	FZ mm	VC m/'	FZ mm	VC m/'	FZ mm	VC m/'	FZ mm	VC m/'	FZ mm	VC m/'	FZ mm	VC m/'	FZ mm	VC	FZ
5	350	0.023	250	0.023	160	0.023	140	0.023	130	0.023	80	0.023	90	0.023	120	0.023
6	350	0.033	250	0.033	160	0.033	140	0.033	130	0.033	80	0.033	90	0.033	120	0.033
8	350	0.045	250	0.045	160	0.045	140	0.045	130	0.045	80	0.045	90	0.045	120	0.045
10	350	0.060	250	0.060	160	0.060	140	0.060	130	0.060	80	0.060	90	0.060	120	0.060
12	350	0.080	250	0.080	160	0.080	140	0.080	130	0.080	80	0.080	90	0.080	120	0.080
14	350	0.080	250	0.080	160	0.080	140	0.080	130	0.080	80	0.080	90	0.080	120	0.080
16	350	0.100	250	0.100	160	0.100	140	0.100	130	0.100	80	0.100	90	0.100	120	0.100
18	350	0.100	250	0.100	160	0.100	140	0.100	130	0.100	80	0.100	90	0.100	120	0.100
20	350	0.120	250	0.120	160	0.120	140	0.120	130	0.120	80	0.120	90	0.120	120	0.120

### CODE: T2204R SLOT MILLING

MATERIAL	Aluminum		Cast Aluminum		Steel - СТАЛЬ								Inox		Cast Iron - ЧУГУН	
HARDNESS			>10%Si		<500N		<750N		<900N		<1100N		<900N			
Ø	VC m/'	FZ mm	VC m/'	FZ mm	VC m/'	FZ mm	VC m/'	FZ mm	VC m/'	FZ mm	VC m/'	FZ mm	VC m/'	FZ mm	VC m/'	FZ mm
5	350	0.025	250	0.025	160	0.025	140	0.025	130	0.025	80	0.025	90	0.025	120	0.025
6	350	0.037	250	0.037	160	0.037	140	0.037	130	0.037	80	0.037	90	0.037	120	0.037
8	350	0.051	250	0.051	160	0.051	140	0.051	130	0.051	80	0.051	90	0.051	120	0.051
10	350	0.068	250	0.068	160	0.068	140	0.068	130	0.068	80	0.068	90	0.068	120	0.068
12	350	0.090	250	0.090	160	0.090	140	0.090	130	0.090	80	0.090	90	0.090	120	0.090
14	350	0.090	250	0.090	160	0.090	140	0.090	130	0.090	80	0.090	90	0.090	120	0.090
16	350	0.113	250	0.113	160	0.113	140	0.113	130	0.113	80	0.113	90	0.113	120	0.113
18	350	0.113	250	0.113	160	0.113	140	0.113	130	0.113	80	0.113	90	0.113	120	0.113
20	350	0.135	250	0.135	160	0.135	140	0.135	130	0.135	80	0.135	90	0.135	120	0.135



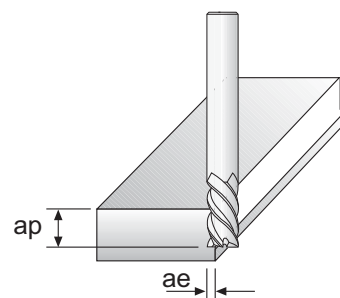
# REZNÉ PARAMETRE

## Cutting speed

Richtwerte - Paramètres - Режимы обработки - Řezná rychlost

CODE: 300 - 300T - 450 - 450T - 453 - 500 - 500T

MATERIAL	Aluminium - АЛЮМИНИЙ				Copper - МЕДЬ			
HARDNESS								
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap
3	Max	0.018	0.4 x d	1 x d	300	0.016	0.3 x d	1 x d
4	Max	0.036	0.4 x d	1 x d	300	0.032	0.3 x d	1 x d
5	Max	0.036	0.4 x d	1 x d	300	0.032	0.3 x d	1 x d
6	Max	0.036	0.4 x d	1 x d	300	0.032	0.3 x d	1 x d
8	Max	0.072	0.4 x d	1 x d	300	0.064	0.3 x d	1 x d
10	Max	0.072	0.4 x d	1 x d	300	0.064	0.3 x d	1 x d
12	Max	0.108	0.4 x d	1 x d	300	0.096	0.3 x d	1 x d
14 - 18	Max	0.108	0.4 x d	1 x d	300	0.096	0.3 x d	1 x d
20 - 25	Max	0.180	0.4 x d	1 x d	300	0.160	0.3 x d	1 x d



CODE: 410 - 450 - 450T - 453 - 500 - 500T

MATERIAL	Titanium - ТИТАН				Stainless Steel - НЕРЖАВЕЮЩАЯ СТАЛЬ			
HARDNESS								
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap
3	80	0.011	0.1 x d	1 x d	70	0.012	0.1 x d	1 x d
4	80	0.023	0.1 x d	1 x d	70	0.024	0.1 x d	1 x d
5	80	0.023	0.1 x d	1 x d	70	0.024	0.1 x d	1 x d
6	80	0.023	0.1 x d	1 x d	70	0.024	0.1 x d	1 x d
8	80	0.046	0.1 x d	1 x d	70	0.047	0.1 x d	1 x d
10	80	0.046	0.1 x d	1 x d	70	0.047	0.1 x d	1 x d
12	80	0.068	0.1 x d	1 x d	70	0.071	0.1 x d	1 x d
14 - 18	80	0.068	0.1 x d	1 x d	70	0.071	0.1 x d	1 x d
20 - 25	80	0.114	0.1 x d	1 x d	70	0.118	0.1 x d	1 x d

CODE: 450 - 450T - 453 - 500 - 500T

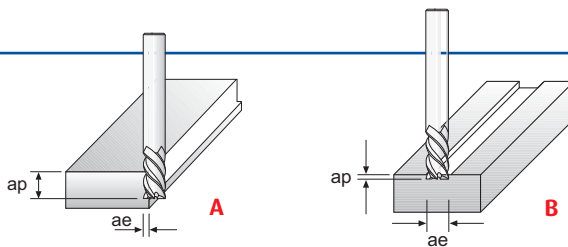
MATERIAL	Super Alloy - СУПЕР СПЛАВ				Steel - СТАЛЬ							
HARDNESS					< 35 HRC				< 50 HRC			
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap	Vc	Fz	ae	ap
3	30	0.012	0.08 x d	1 x d	130	0.012	0.2 x d	1 x d	110	0.013	0.1 x d	1 x d
4	30	0.024	0.08 x d	1 x d	130	0.024	0.2 x d	1 x d	110	0.026	0.1 x d	1 x d
5	30	0.024	0.08 x d	1 x d	130	0.024	0.2 x d	1 x d	110	0.026	0.1 x d	1 x d
6	30	0.024	0.08 x d	1 x d	130	0.024	0.2 x d	1 x d	110	0.026	0.1 x d	1 x d
8	30	0.048	0.08 x d	1 x d	130	0.048	0.2 x d	1 x d	110	0.052	0.1 x d	1 x d
10	30	0.048	0.08 x d	1 x d	130	0.048	0.2 x d	1 x d	110	0.052	0.1 x d	1 x d
12	30	0.072	0.08 x d	1 x d	130	0.072	0.2 x d	1 x d	110	0.078	0.1 x d	1 x d
14 - 18	30	0.072	0.08 x d	1 x d	130	0.072	0.2 x d	1 x d	110	0.078	0.1 x d	1 x d
20 - 25	30	0.120	0.08 x d	1 x d	130	0.120	0.2 x d	1 x d	110	0.130	0.1 x d	1 x d

# REZNÉ PARAMETRE

## Cutting speed

Richtwerte - Paramètres

Режимы обработки - Режимы обработки



### CODE: 756

MATERIAL	Side Milling A						Slot Milling B					
	Aluminium Alloy - АЛЮМИНИЙ						Aluminium Alloy - АЛЮМИНИЙ					
HARDNESS Ø	Vc m/min	Fz mm	n min/'	Vf mm/min	ae mm	ap mm	Vc m/min	Fz mm	n min/'	Vf mm/min	ae mm	ap mm
6	400	0.095	21231	6051	1.50	3.6	500	0.110	26539	8758	0.35	0.35
8	400	0.130	15924	6210	2.00	4.8	500	0.145	19904	8658	0.40	0.40
10	400	0.160	12739	6115	2.50	6.0	500	0.180	15924	8599	0.45	0.45
12	400	0.175	10616	5573	3.00	7.2	500	0.240	13270	9554	0.50	0.50
16	400	0.195	7962	4658	4.00	9.6	500	0.320	9952	9554	0.60	0.60
20	400	0.230	6369	4395	5.00	12.0	500	0.400	7962	9554	0.75	0.75

### CODE: T2202

MATERIAL	Side Milling A											
	Aluminium Alloy - АЛЮМИНИЙ						Copper - МЕДЬ					
HARDNESS Ø	Vc m/min	Fz mm	n min/'	Vf mm/min	ae mm	ap mm	Vc m/min	Fz mm	n min/'	Vf mm/min	ae mm	ap mm
6	600	0.070	31847	6688	2.4	9.0	400	0.070	21231	4459	2.4	9.0
8	600	0.090	23885	6449	3.2	12.0	400	0.090	15924	4299	3.2	12.0
10	600	0.110	19108	6306	4.0	15.0	400	0.110	12739	4299	4.0	15.0
12	600	0.135	15924	6449	4.8	18.0	400	0.135	10616	4299	4.8	18.0
16	600	0.180	11943	6449	6.4	24.0	400	0.180	7962	4299	6.4	24.0
20	600	0.220	9554	6306	8.0	30.0	400	0.220	6369	4299	8.0	30.0

### CODE: T2202

MATERIAL	Slot Milling B											
	Aluminium Alloy - АЛЮМИНИЙ						Copper - МЕДЬ					
HARDNESS Ø	Vc m/min	Fz mm	n min/'	Vf mm/min	ae mm	ap mm	Vc m/min	Fz mm	n min/'	Vf mm/min	ae mm	ap mm
6	500	0.060	26539	4777	6	4.8	270	0.060	14331	2580	6	4.8
8	500	0.080	19904	4777	8	6.4	270	0.080	10748	2580	8	6.4
10	500	0.100	15924	4777	10	8.0	270	0.100	8599	2580	10	8.0
12	500	0.120	13270	4777	12	9.6	270	0.120	7166	2580	12	9.6
16	500	0.160	9952	4777	16	12.8	270	0.160	5374	2580	16	12.8
20	500	0.200	7962	4777	20	16.0	270	0.200	4299	2580	20	16.0

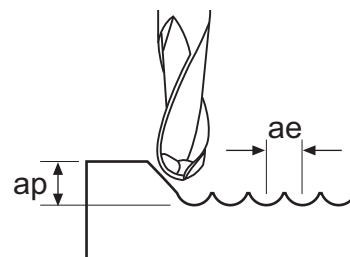
# REZNÉ PARAMETRE

## Cutting speed

Richtwerte - Paramètres - Режимы обработки - Řezná rychlost

### CODE: 700SR ROUGHING STANDARD CUTTING SPEED

MATERIAL	Steel - СТАЛЬ				Aluminium - АЛЮМИНИЙ			
HARDNESS								
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap
1 - 3	140	0.016	0.03 x d	0.03 x d	Max	0.021	0.30 x d	0.03 x d
4	140	0.032	0.03 x d	0.03 x d	Max	0.042	0.30 x d	0.03 x d
6	140	0.032	0.03 x d	0.03 x d	Max	0.042	0.30 x d	0.03 x d
8	140	0.064	0.03 x d	0.03 x d	Max	0.084	0.30 x d	0.03 x d
10	140	0.064	0.03 x d	0.03 x d	Max	0.084	0.30 x d	0.03 x d
12 - 18	140	0.096	0.03 x d	0.03 x d	Max	0.126	0.30 x d	0.03 x d
20 - 25	140	0.160	0.03 x d	0.03 x d	Max	0.210	0.30 x d	0.03 x d



### CODE: 700SR

MATERIAL	Copper - МЕДЬ				Titanium - ТИТАН			
HARDNESS								
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap
1 - 3	350	0.020	0.03 x d	0.03 x d	90	0.014	0.30 x d	0.03 x d
4	350	0.040	0.03 x d	0.03 x d	90	0.028	0.30 x d	0.03 x d
6	350	0.040	0.03 x d	0.03 x d	90	0.028	0.30 x d	0.03 x d
8	350	0.080	0.03 x d	0.03 x d	90	0.057	0.30 x d	0.03 x d
10	350	0.080	0.03 x d	0.03 x d	90	0.057	0.30 x d	0.03 x d
12 - 18	350	0.120	0.03 x d	0.03 x d	90	0.085	0.30 x d	0.03 x d
20 - 25	350	0.200	0.03 x d	0.03 x d	90	0.142	0.30 x d	0.03 x d

For finishing:  
 $ae < 0,02 - 0,03 \times d$   
 $ap < 0,8 \times d$   
 $Vc = 1,2 \times Vc$  (Parameter List)  
 $Fz = 0,7 \times Vc$  (Parameter List)

### CODE: 700SR

MATERIAL	Super Alloy - СУПЕР СПЛАВ								Thermo Plastic - ТЕРМО ПЛАСТИК			
HARDNESS									Harder			
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap	Vc	Fz	ae	ap
1 - 3	40	0.015	0.03 x d	0.03 x d	350	0.020	0.03 x d	0.03 x d	170	0.008	0.03 x d	0.03 x d
4	40	0.030	0.03 x d	0.03 x d	350	0.040	0.03 x d	0.03 x d	170	0.016	0.03 x d	0.03 x d
6	40	0.030	0.03 x d	0.03 x d	350	0.040	0.03 x d	0.03 x d	170	0.016	0.03 x d	0.03 x d
8	40	0.060	0.03 x d	0.03 x d	350	0.080	0.03 x d	0.03 x d	170	0.031	0.03 x d	0.03 x d
10	40	0.060	0.03 x d	0.03 x d	350	0.080	0.03 x d	0.03 x d	170	0.031	0.03 x d	0.03 x d
12 - 18	40	0.090	0.03 x d	0.03 x d	350	0.120	0.03 x d	0.03 x d	170	0.047	0.03 x d	0.03 x d
20 - 25	40	0.150	0.03 x d	0.03 x d	350	0.200	0.03 x d	0.03 x d	170	0.078	0.03 x d	0.03 x d

HSC

= Standard Cutting Speed X 1,4



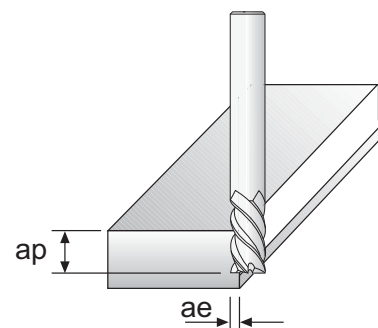
# REZNÉ PARAMETRE

## Cutting speed

Richtwerte - Paramètres - Режимы обработки - Řezná rychlost

### CODE: Y700R ROUGHING HIGH SPEED CUTTING

MATERIAL	Aluminium - АЛЮМИНИЙ				Copper - МЕДЬ			
HARDNESS								
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap
3	500	0.045	0.250 x d	1 x d	300	0.030	0.150 x d	1 x d
4	500	0.057	0.250 x d	1 x d	300	0.038	0.150 x d	1 x d
5	500	0.075	0.250 x d	1 x d	300	0.050	0.150 x d	1 x d
6	500	0.109	0.250 x d	1 x d	300	0.060	0.150 x d	1 x d
8	500	0.120	0.250 x d	1 x d	300	0.076	0.150 x d	1 x d
10	500	0.150	0.250 x d	1 x d	300	0.100	0.150 x d	1 x d
12	500	0.160	0.250 x d	1 x d	300	0.120	0.150 x d	1 x d
16	500	0.240	0.250 x d	1 x d	300	0.140	0.150 x d	1 x d



### CODE: Y700R ROUGHING HIGH SPEED CUTTING

MATERIAL	Thermo Plastic - ТЕРМО ПЛАСТИК							
HARDNESS					Harder			
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap
3	500	0.045	0.080 x d	1 x d	300	0.036	0.020 x d	1 x d
4	500	0.060	0.080 x d	1 x d	300	0.048	0.020 x d	1 x d
5	500	0.075	0.080 x d	1 x d	300	0.060	0.020 x d	1 x d
6	500	0.090	0.080 x d	1 x d	300	0.072	0.020 x d	1 x d
8	500	0.120	0.080 x d	1 x d	300	0.096	0.020 x d	1 x d
10	500	0.150	0.080 x d	1 x d	300	0.120	0.020 x d	1 x d
12	500	0.180	0.080 x d	1 x d	300	0.144	0.020 x d	1 x d
16	500	0.200	0.080 x d	1 x d	300	0.168	0.020 x d	1 x d

### CODE: Y700R FINISHING HIGH SPEED CUTTING

MATERIAL	Aluminium - АЛЮМИНИЙ				Copper - МЕДЬ			
HARDNESS								
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap
3	500	0.045	0.050 x d	0.820 x d	300	0.030	0.040 x d	1.750 x d
4	500	0.060	0.050 x d	0.820 x d	300	0.040	0.040 x d	1.750 x d
5	500	0.075	0.050 x d	0.820 x d	300	0.050	0.040 x d	1.750 x d
6	500	0.109	0.050 x d	0.820 x d	300	0.060	0.040 x d	1.750 x d
8	500	0.120	0.050 x d	0.820 x d	300	0.080	0.040 x d	1.750 x d
10	500	0.150	0.050 x d	0.820 x d	300	0.100	0.040 x d	1.750 x d
12	500	0.160	0.050 x d	0.820 x d	300	0.120	0.040 x d	1.750 x d
16	500	0.240	0.050 x d	0.820 x d	300	0.140	0.040 x d	1.750 x d

### CODE: Y700R FINISHING HIGH SPEED CUTTING

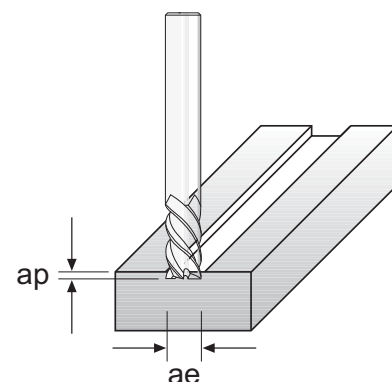
MATERIAL	Thermo Plastic - ТЕРМО ПЛАСТИК							
HARDNESS	Soft				Harder			
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap
3	500	0.045	0.040 x d	0.630 x d	300	0.030	0.010 x d	0.320 x d
4	500	0.060	0.040 x d	0.630 x d	300	0.038	0.010 x d	0.320 x d
5	500	0.075	0.040 x d	0.630 x d	300	0.050	0.010 x d	0.320 x d
6	500	0.109	0.040 x d	0.630 x d	300	0.060	0.010 x d	0.320 x d
8	500	0.120	0.040 x d	0.630 x d	300	0.075	0.010 x d	0.320 x d
10	500	0.150	0.040 x d	0.630 x d	300	0.100	0.010 x d	0.320 x d
12	500	0.160	0.040 x d	0.630 x d	300	0.110	0.010 x d	0.320 x d
16	500	0.240	0.040 x d	0.630 x d	300	0.140	0.010 x d	0.320 x d

## Cutting speed

Richtwerte - Paramètres - Режимы обработки - Řezná rychlost

### CODE: Y700R - Y703 ROUGHING HIGH SPEED CUTTING

MATERIAL	Aluminium - АЛЮМИНИЙ				Copper - МЕДЬ			
HARDNESS								
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap
3	500	0.021	1 x d	0.5 x d	300	0.015	1 x d	0.5 x d
4	500	0.028	1 x d	0.5 x d	300	0.016	1 x d	0.5 x d
5	500	0.035	1 x d	0.5 x d	300	0.020	1 x d	0.5 x d
6	500	0.045	1 x d	0.5 x d	300	0.024	1 x d	0.5 x d
8	500	0.056	1 x d	0.5 x d	300	0.032	1 x d	0.5 x d
10	500	0.070	1 x d	0.5 x d	300	0.040	1 x d	0.5 x d
12	500	0.084	1 x d	0.5 x d	300	0.048	1 x d	0.5 x d
16	500	0.112	1 x d	0.5 x d	300	0.064	1 x d	0.5 x d



### CODE: Y700R - Y703 ROUGHING HIGH SPEED CUTTING

MATERIAL	Thermo Plastic - ТЕРМО ПЛАСТИК							
HARDNESS	Soft				Harder			
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap
3	500	0.021	1 x d	0.5 x d	300	0.013	1 x d	0.5 x d
4	500	0.028	1 x d	0.5 x d	300	0.020	1 x d	0.5 x d
5	500	0.033	1 x d	0.5 x d	300	0.026	1 x d	0.5 x d
6	500	0.042	1 x d	0.5 x d	300	0.030	1 x d	0.5 x d
8	500	0.056	1 x d	0.5 x d	300	0.040	1 x d	0.5 x d
10	500	0.060	1 x d	0.5 x d	300	0.051	1 x d	0.5 x d
12	500	0.084	1 x d	0.5 x d	300	0.060	1 x d	0.5 x d
16	500	0.112	1 x d	0.5 x d	300	0.075	1 x d	0.5 x d

Y703: +30%

### CODE: Y700R - Y703 FINISHING HIGH SPEED CUTTING

MATERIAL	Aluminium - АЛЮМИНИЙ				Copper - МЕДЬ			
HARDNESS								
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap
3	500	0.021	1 x d	0.050 x d	300	0.015	1 x d	0.030 x d
4	500	0.028	1 x d	0.050 x d	300	0.016	1 x d	0.030 x d
5	500	0.035	1 x d	0.050 x d	300	0.020	1 x d	0.030 x d
6	500	0.045	1 x d	0.050 x d	300	0.024	1 x d	0.030 x d
8	500	0.056	1 x d	0.050 x d	300	0.032	1 x d	0.030 x d
10	500	0.070	1 x d	0.050 x d	300	0.040	1 x d	0.030 x d
12	500	0.084	1 x d	0.050 x d	300	0.048	1 x d	0.030 x d
16	500	0.112	1 x d	0.050 x d	300	0.064	1 x d	0.030 x d

### CODE: Y700R - Y703 FINISHING HIGH SPEED CUTTING

MATERIAL	Thermo Plastic - ТЕРМО ПЛАСТИК							
HARDNESS	Soft				Harder			
Ø	Vc	Fz	ae	ap	Vc	Fz	ae	ap
3	500	0.021	1 x d	0.030 x d	300	0.013	1 x d	0.020 x d
4	500	0.028	1 x d	0.030 x d	300	0.016	1 x d	0.020 x d
5	500	0.035	1 x d	0.030 x d	300	0.020	1 x d	0.020 x d
6	500	0.045	1 x d	0.030 x d	300	0.024	1 x d	0.020 x d
8	500	0.056	1 x d	0.030 x d	300	0.032	1 x d	0.020 x d
10	500	0.070	1 x d	0.030 x d	300	0.040	1 x d	0.020 x d
12	500	0.084	1 x d	0.030 x d	300	0.048	1 x d	0.020 x d
16	500	0.128	1 x d	0.030 x d	300	0.064	1 x d	0.020 x d

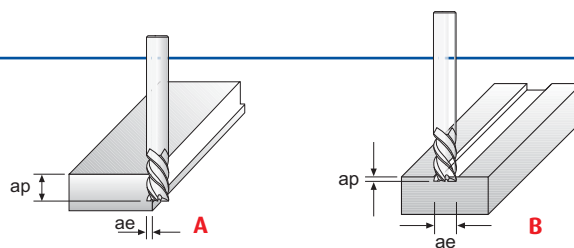
Y703: +30%

# REZNÉ PARAMETRE

## Cutting speed

Richtwerte - Paramètres

Режимы обработки - Режимы обработки



CODE: 100 - 700 - 730 - 750

MATERIAL	Side Milling A						Slot Milling B					
	Aluminium Alloy - АЛЮМИНИЙ						Aluminium Alloy - АЛЮМИНИЙ					
HARDNESS	Vc	Fz	n	Vf	ae	ap	Vc	Fz	n	Vf	ae	ap
Ø	m/min	mm	min/°	mm/min	mm	mm	m/min	mm	min/°	mm/min	mm	mm
3	250	0.030	26539	1592	0.80	4.5	150	0.020	15924	637	3	2
4	250	0.040	19904	1592	1.00	6.0	150	0.030	11943	717	4	2
5	250	0.050	15924	1592	1.30	7.5	150	0.035	9554	669	5	3
6	250	0.060	13270	1592	1.50	9.0	150	0.045	7962	717	6	3
8	250	0.080	9952	1592	2.00	12.0	150	0.055	5971	657	8	4
10	250	0.100	7962	1592	2.50	15.0	150	0.070	4777	669	10	5
12	250	0.120	6635	1592	3.00	18.0	150	0.085	3981	677	12	6
16	250	0.130	4976	1294	4.00	24.0	150	0.115	2986	687	16	8
20	250	0.150	3981	1194	5.00	30.0	150	0.145	2389	693	20	10

CODE: 755

MATERIAL	Slot Milling B						
	Aluminium Alloy - АЛЮМИНИЙ						
HARDNESS	Vc	Fz	n	Vf Min.	Vf Max	ae	ap
Ø	m/min	mm	min/°	mm/min	mm/min	mm	mm
3	200	0.024	21231	1000	1200	3.0	3.0
4	250	0.025	19904	1000	1200	4.0	4.0
5	300	0.026	19108	1000	1200	5.0	5.0
6	400	0.066	21231	2800	4000	6.0	6.0
8	400	0.094	15924	3000	4000	8.0	8.0
10	400	0.141	12739	3600	4500	10.0	10.0
12	400	0.170	10616	3600	4500	12.0	12.0
16	450	0.201	8957	3600	4500	16.0	16.0
20	450	0.223	7166	3200	4300	20.0	20.0

CODE: 456

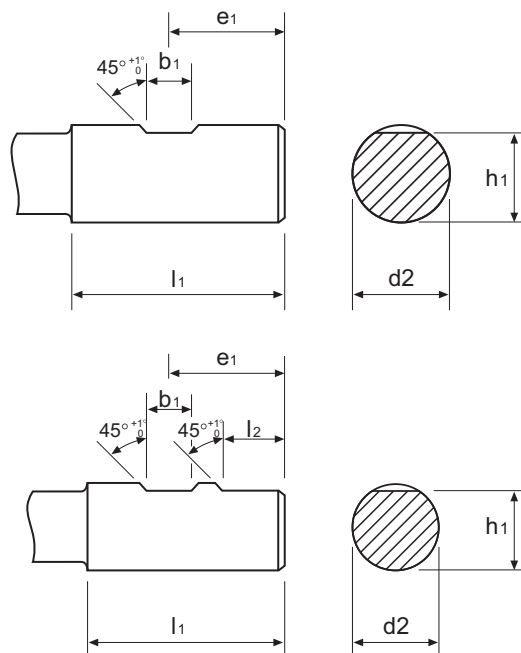
MATERIAL	Side Milling A						Slot Milling B					
	Aluminium Alloy - АЛЮМИНИЙ						Aluminium Alloy - АЛЮМИНИЙ					
HARDNESS	Vc	Fz	n	Vf	ae	ap	Vc	Fz	n	Vf	ae	ap
Ø	m/min	mm	min/°	mm/min	mm	mm	m/min	mm	min/°	mm/min	mm	mm
3	550	0.045	58400	7880	1.20	3.6	450	0.030	47800	4300	3	1
4	550	0.060	43770	7880	1.60	4.8	450	0.040	35900	4300	4	2
5	550	0.075	35015	7880	2.00	6.0	450	0.055	28700	4725	5	2
6	550	0.100	29200	8760	2.40	7.2	450	0.070	23900	5015	6	2
8	550	0.120	21900	7890	3.20	9.6	450	0.085	17900	4656	8	3
10	550	0.150	17510	7890	4.00	12.0	450	0.105	14300	4510	10	4
12	550	0.180	14600	7890	4.80	14.4	450	0.125	11940	4475	12	5
16	550	0.190	10950	6235	6.40	19.2	450	0.135	9000	3625	16	6
20	550	0.225	8760	5900	8.00	24.0	450	0.160	7160	3435	20	8

## Dimensioni gambi weldon DIN 6535 HB a richiesta

### Weldon shank dimentions DIN 6535 HB on request

Dimension Weldon DIN 6535 HB auf Anfrage - Dimensions queue weldon DIN 6535 HB sur demande  
Хвостовик типа Weldon DIN 6535 HB

d2 mm	b1 mm	e1 mm	h1 mm	l1 mm	l2 mm
6	4.2	18.0	5.1	36	-
8	5.5	18.0	6.9	36	-
10	7.0	20.0	8.5	40	-
12	8.0	22.5	10.4	45	-
14	8.0	22.5	12.7	45	-
16	10.0	24.0	14.2	48	-
18	10.0	24.0	16.2	48	-
20	11.0	25.0	18.2	50	-
25	12.0	32.0	23.0	56	17
32	14.0	36.0	30.0	60	19



## Dimensioni gambi flat DIN 6535 HE a richiesta

### Whistle notch shank dimentions DIN 6535 HE on request

Dimension spannflache DIN 6535 HE auf anfrage - Dimensions queue flat DIN 6535 HE sur demande  
Хвостовик типа HEWeldon DIN 6535

d2 mm	b1 mm	b2 mm	h2 mm	h1 mm	l1 mm	l3 mm	l2 mm	r mm
6	3.5	4.8	5.4	4.8	36	25	18	1.2
8	4.7	6.1	7.2	6.6	36	25	18	1.2
10	5.7	7.3	9.1	8.4	40	28	20	1.2
12	6.0	8.2	11.2	10.4	45	33	22.5	1.2
16	7.6	10.1	15.0	14.2	48	36	24	1.6
20	8.4	11.5	19.1	18.2	50	38	25	1.6
25	9.3	13.6	24.1	23.0	56	44	32	1.6
32	9.4	15.5	31.2	30.0	60	48	35	1.6

