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Leading Through Innovation

## HSS PM60 ONLY ONE COATED PM60 END MILLS Only One, beschichtete Pulvermetall PM60 Schaftfräser

- Perfect Solution of Carbide Chipping under Vibrations

- Perfekte Lösung bei Zerspanung unter Vibrationen

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6	4\I	Z	D	IJ	

4G MILL

X-POWER

ALU-POWER

K-2 END MILLS

ONLY ONE COATED PM60 END MILLS

TANK-POWER

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SEL	.E(	CTION G	UIDE	nup	.,,	SERIES	GYG77 GYF97	GYG72 GYF99	GYG01
						FLUTE	2	2	3
					HE	LIX ANGLE	30°	30°	30°
					CUTTING EI	DGE SHAPE	BALL NOSE	SOUARE	SQUARE
						SIZE MIN	R0.5	D1.0	D1.0
		G T	AILLING			SIZE MAX	R12.5	D1.0	D1.0
			OOLS				618	619	620
		·					SHORT LENGTH	SHORT LENGTH	SHORT LENGTH
				COATE	D PI	/60			(Center Cut)
			<b>—</b> – – –				Y-Coating	Y-Coating	Y-Coating
			ON	LY C					
				END A	ΛΠ	IS			P
				Perfect solution to			K		
				chipping problems	under vi	brations			
目に相同		se visit		(0	) : Excellent	⊖:Good			2 <b>1</b> 1
	globa for m	a <mark>lyg1.com/mat</mark> naterial search	F	Recommended cutting					
	VDI	Material							
ISO	3323	Description	Composition / Struc	ture / Heat Treatment	HB	HRc			
	1		About 0.15% C	Annealed	125		0	0	0
	2 3	Non-alloy steel	About 0.45% C About 0.45% C	Annealed Quenched & Tempered	190 250	13 25	0	0	0
	4	Non-anoy steel	About 0.45% C	Annealed	230	23	0	0	0
	5		About 0.75% C	Quenched & Tempered	300	32	O	O	0
Ρ	6			Annealed	180	10	0	0	0
	7	Low alloy steel		Quenched & Tempered Quenched & Tempered	275 300	29 32	0	0	0
	9			Quenched & Tempered	350	38	0	0	0
	10	High alloyed steel,		Annealed	200	15	O	O	O
	11 12	and tool steel	Ferritic / Martensitic	Quenched & Tempered	325 200	35 15	0 0	0	0
м	12	Stainless steel	Martensitic	Quenched & Tempered	200	23	0	0	0
	14		Austenitic	·	180	10	O	O	O
	15 16	Grey cast iron	Pearlitic / ferritic Pearlitic (Martensitic	\ \	180	10 26	0	0	0
	10		Ferritic	)	260 160	3	0	0	0
K	18	Nodular cast iron	Pearlitic		250	25	O	O	O
	19	Malleable cast iron	Ferritic		130	24	0	0	0
	20 21	Aluminum-	Pearlitic Not Curable		230 60	21	Ø	O	0
	22	wrought alloy	Curable	Hardened	100				
	23	Aluminum-cast,	≤ 12% Si, Not Curabl		75				
	24 25	alloyed	≤ 12% Si, Curable > 12% Si, Not Curabl	Hardened	90 130				
Ν	26	Copper and	Cutting Alloys, PB>1		110		0	0	0
	27	Copper Alloys	CuZn, CuSnZn (Brass		90		0	0	0
	28 29	(Bronze / Brass) Non Metallic	CuSn, lead-free coppe Duroplastic, Fiber Re	r and electrolytic copper inforced Plastic	100		0	0	0
	30	Materials	Rubber, Wood, etc.	morecultustic					
	31		Fe Based	Annealed	200	15			
	32 33	Heat Resistant		Cured Annealed	280 250	30 25			
S	33 34	Super Alloys	Ni or Co Based	Cured	350	38			
	35			Cast	320	34			
	36	Titanium Alloys	Pure Titanium	Llavdon - d	400 Rm				
	37 38		Alpha + Beta Alloys	Hardened Hardened	1050 Rm 550	55			
н	39	Hardened steel		Hardened	630	60			
	40	Chilled Cast Iron		Cast	400	42	0	0	0
	41	Hardened Cast Iron		Hardened	550	55			

TECHNICAL DATA

616

X-POWER

TitaNox-POWER

K-2 END MILLS

ONLY ONE COATED PM60 END MILLS

TANK-

HSS



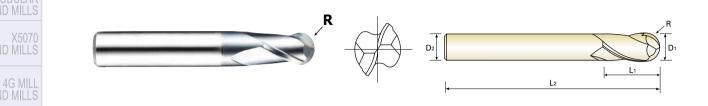
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FLAT SHANK



#### PM60, 2 FLUTE BALL NOSE SHORT LENGTH

- PM60, 2 Schneiden, Stirnradius kurz
- Revêtue YG-AICrN PM60, 2 dents, série courte, hémisphérique
- Rivestita PM60, 2 TAGLIENTE SERIE CORTA SEMISFERICA



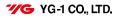


						Unit : mr
EDF	'No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
PLAIN	FLAT	R(±0.02)	D1	D2	L <sub>1</sub>	L2
GYG77010	GYF97010	R0.5	1.0	6	2.5	47
GYG77020	GYF97020	R1.0	2.0	6	4	48
GYG77030	GYF97030	R1.5	3.0	6	5	49
GYG77040	GYF97040	R2.0	4.0	6	7	51
GYG77050	GYF97050	R2.5	5.0	6	8	52
GYG77060	GYF97060	R3.0	6.0	6	8	52
GYG77070	GYF97070	R3.5	7.0	8	10	60
GYG77080	GYF97080	R4.0	8.0	8	11	61
GYG77090	GYF97090	R4.5	9.0	10	11	61
GYG77100	GYF97100	R5.0	10.0	10	13	63
GYG77120	GYF97120	R6.0	12.0	12	16	73
GYG77140	GYF97140	R7.0	14.0	12	16	73
GYG77160	GYF97160	R8.0	16.0	16	19	79
GYG77180	GYF97180	R9.0	18.0	16	19	79
GYG77200	GYF97200	R10.0	20.0	20	22	88
GYG77250	GYF97250	R12.5	25.0	25	26	102

Mill Dia.	Shank Dia.
Tolerance (mm)	Tolerance
0~-0.03	h6

																				п.,	
																		Q	0 · EXC	ellent	⊖∶Good
ISO						P								M					K		
Material Description		N	on-alloy s	steel			Low a	alloy stee	el	High ar	alloyed	l steel, steel	Sta	ain <b>l</b> ess s	teel	Grey ca	st iron		lar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1	0	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1:	5	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	00 :	325	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
ISO					N									S						н	
Material Description	Alumi wrough	inum- nt a <b>ll</b> oy	Aluminu	ım-cast, a	a <b>ll</b> oyed	Copper ai (Broi	nd Coppe nze / Bras	erAlloys ss)	Non Me Materi			Heat R	esistant	Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 34	4 35	36	37	38	39	40	41
HRc											15	30						55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 35	0 320	400 Rm	1050 Rm	550	630	400	550
Recommend						0	0	0												0	

618





FLAT SHANK

Length

of Cut

L1

3

7

8

11

13

13

16

19

19

22

26

26

32

32

38

38

45

M

Stainless steel

13

23 240

0

34 38

350

14 10 180

0

35

320

12 15 200

0

Heat Resistant Super Alloys

33 25

250



#### PM60, 3 FLUTE SHORT LENGTH (Center Cut)

- PM60, 3 Schneiden, kurz, Zentrumschnitt
- Revêtue YG-AICrN PM60, 3 dents, série courte (Coupe au centre)

p.630-631

Mill

Diameter

D1

1.0

2.0

3.0

4.0

5.0

6.0

7.0

8.0

9.0

10.0

12.0

14.0

16.0

18.0

20.0

22.0

25.0

Shank Dia.

h6

5

300

ര

Aluminumwrought alloy Aluminum-cast, alloyed Copper and Copper Alloys (Bronze / Brass) Non Metallic (Bronze / Brass) Materials

6

180

0

Non-alloy steel

3 25

250

0

21 22 23 24 25

60 100 75 90 130

4

28

270

0

2

13

0

1

0

125 190

Rivestita PM60, 3 TAGLIENTI SERIE CORTA (Tagliente al centro)



30

EDP No.

GYG01010

GYG01020

GYG01030

GYG01040

GYG01050

GYG01060

GYG01070

GYG01080

GYG01090

GYG01100

GYG01120

GYG01140

GYG01160

GYG01180

GYG01200

GYG01220 GYG01250

 $0 \sim -0.03$ 

ISO

Material Description VDI 3323

HRc

HB

Recommend

ISO Material Description VDI 3323

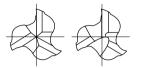
HRc

HB

Recommend

620

FI AT



up to Ø 1mm over Ø 1mm

Shank

Diameter

D2

6

6

6

6

6

6

8

8

10

10

12

12

16

16

20

20

25

High alloyed steel and tool steel

31 15

200

11

35

325

 $\bigcirc$ 

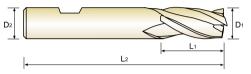
32 30

280

10 15

200

0



Unit : mm

Overall

Length

L2

47

51

52

55

57

57

66

69

69

72

83

83

92

92

104

104

121



TitaNox-POWER

РМ 60

JET-POWER END MILLS

V7 PLUS END MILLS

END MILLS

END MILL D-POWE GRAPHIT

D-POWER

DOUTED

TKO O TERM

END MILLS

K-2 END MILLS

ONLY ONE COATED PM60 END MILLS

FANK-POWER END MILLS GENERAL HSS

MILLING CUTTERS

TECHNICAL DATA

phone:+82-32-526-0909, www.yg1.kr, E-mail:yg1@yg1.kr

110 90

Ο

Low alloy steel

29

275

0

26 27 28

Ο

8

32

300

0

100

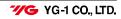
Ο

9

350

 $\cap$ 

29 30



©∶Excellent ○∶Good

19

130

0

Chilled Cast Iron

40

42

400

Nodular cast

Hardened steel

39

60

18

250

0

17

160

0

38 55

Grey cast iron

16

26

260

0

Titanium Alloys

36 37

400 Rm 1050 Rm 550 630

15 10

180

0

Malleable cast

20

21 230

0

Hardened Cast Iron

> 41 55

550

4G MILL

X-POWER

TitaNox-

K-2 END MILLS

ONLY ONE COATED PM60 END MILLS

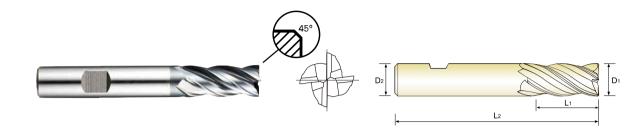


FLAT SHANK

GYG52 SERIES

#### PM60, 4 FLUTE MULTIPLE HELIX SHORT LENGTH (Center Cut)

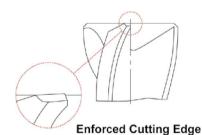
- PM60, 4 Schneiden, mit ungleichem Drall, kurz, Zentrumschnitt
- () Revêtue YG-AlCrN PM60, 4 dents, hélice multiple, série courte (Coupe au centre)
- () Rivestita PM60, 4 TAGLIENTI elica variabile SERIE CORTA (Tagliente al centro)





					Unit
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer
	D1	D2	L <sub>1</sub>	L2	
GYG52030	3.0	6	8	52	0.1
GYG52040	4.0	6	11	55	0.1
GYG52050	5.0	6	13	57	0.1
GYG52060	6.0	6	13	57	0.1
GYG52070	7.0	8	16	66	0.1
GYG52080	8.0	8	19	69	0.1
GYG52090	9.0	10	19	69	0.1
GYG52100	10.0	10	22	72	0.1
GYG52120	12.0	12	26	83	0.1
GYG52140	14.0	12	26	83	0.2
GYG52160	16.0	16	32	92	0.2
GYG52180	18.0	16	32	92	0.2
GYG52200	20.0	20	38	104	0.2
GYG52220	22.0	20	38	104	0.2
GYG52250	25.0	25	45	121	0.2

Mill Dia.	Shank Dia.
Tolerance (mm)	Tolerance
0~-0.03	h6



																		©	Exc	ellent	⊖:Good
ISO						P								M					K		
Material Description		No	on-alloy s	steel			Low	alloy ste	el		n a <b>l</b> oyed nd tool s		St	ainless s	teel	Grey ca	st iron		ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1	0	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1	5	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	) 350	20	)O (	325	200	240	180	180	260	160	250	130	230
Recommend	0	O	0	0	0	0	0	0	0	(	)	0	0	0	O	0	0	$\odot$	0	0	0
ISO															;					н	
Material Description	Alumi wrough		Aluminu	um-cast,	a <b>ll</b> oyed	Copper a (Bro	nd Copp nze / Bra		Non Me Mater		l I	Heat R	esistan	t Super.	Alloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	3	3 3	4 35	36	37	38	39	40	41
HRc											15	30	2	53	3 34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	50 35	0 320	) 400 Rm	1050 Rm	550	630	400	550
Recommend						0	0	0												0	

622



TitaNox-

K-2 END MILLS

ONLY ONE COATED PM60 END MILLS

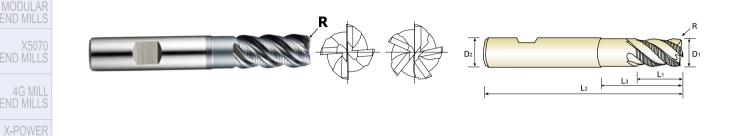


FLAT SHANK



#### PM60, MULTI FLUTE MULTIPLE HELIX SHORT LENGTH CORNER RADIUS ROUGHING - FINE (Center Cut)

PM60, Mehrschneiden, mit ungleichem Drall, kurz, Eckenradius, Feinkordel-Schruppfräser, Zentrumschnitt
 Revêtue YG-AICrN - PM60, multi-dents, hélice multiple, série courte, rayonnée, ravageuse, pas fins (Coupe au centre)
 Rivestita PM60, MULTI TAGLIENTE ELICA VARIABILE SERIE CORTA TORICA PER SGROSSATURA - BOMBATO FINE (Tagliente al centro)



PM 4-5 44°/44.5° HR	FLAT P.634
---------------------	------------

							Unit : mm
EDP No.	Corner Radius	Mill Diameter	Shank iameter	Length of Cut	Length Below Shank	Overall ength	No. of Flute
	R	D1(js12)	D2(h6)	L1	L3	L2	T TOTO
GYF95060	R0.5	6.0	6	13	-	57	4
GYF95070	R0.5	7.0	10	16	-	66	4
GYF95080	R0.5	8.0	10	19	-	69	4
GYF95090	R0.5	9.0	10	19	-	69	4
GYF95100	R0.5	10.0	10	22	31	72	4
GYF95120	R0.5	12.0	12	26	37	83	4
GYF95140	R1.0	14.0	12	26	-	83	5
GYF95160	R1.0	16.0	16	32	44	92	5
GYF95180	R1.0	18.0	16	32	-	92	5
GYF95200	R1.0	20.0	20	38	54	104	5
GYF95250	R1.0	25.0	25	45	63	121	5

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in µm										
	Nominal-Diameter in mm										
	over 6 to 10 over 10 to 18 over 18 to 30										
js12	±75	±90	±105								
h6	- 9	0 - 11	0 - 13								

																		©	Exc	ellent (	⊖∶Good
ISO						P								M					K		
Material Description		No	on-alloy s	steel			Low	alloy ste	el		n alloyed nd tool s		Sta	ainless st	eel	Grey ca	st iron		lar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9		0	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32				35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	) 35	0 20	00 3	325	200	240	180	180	260	160	250	130	230
Recommend	0	O	0	0	0	0	0	0	C	) (	0	0	0	0	0	O	0	0	0	O	0
ISO					N									S						н	
Material Description	Alumi wrougł		Aluminu	um-cast, a	alloyed <sup>(</sup>	Copper a (Bro	nd Copp nze / Bra	er A <b>l</b> oys ss)	Non Mate		H	Heat R	esistant	t Super A	lloys	Titaniu	m Alloys		ened eel	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32				36	37	38	39	40	41
HRc											15	30						55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 35	) 320	400 Rm	1050 Rm	550	630	400	550
Recommend						0	0	0												0	





X-POWER

TitaNox-

ONLY ONE COATED PM60 END MILLS

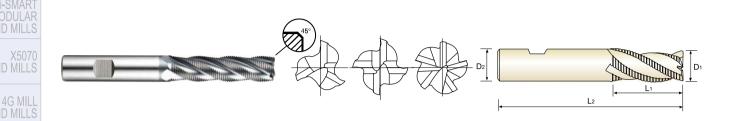


FLAT SHANK

**GYF98** series

#### PM60, MULTI FLUTE LONG LENGTH ROUGHING - FINE (Center Cut)

- PM60, Mehrschneiden, lang, Feinkordel-Schruppfräser, Zentrumschnitt
- Revêtue YG-AICrN PM60, multi-dents, série longue, ravageuse, pas fins (Coupe au centre)
- Rivestita PM60, MULTI TAGLIENTE SERIE LUNGA PER SGROSSATURA BOMBATO FINE (Tagliente al centro)

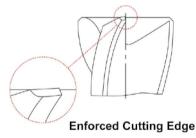




						Unit : mm
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute	Chamfer
	D1(js12)	D2(h6)	L1	L2	- Tatte	
GYF98060	6.0	6	24	68	3	0.18
GYF98070	7.0	10	30	80	3	0.18
GYF98080	8.0	10	38	88	3	0.18
GYF98090	9.0	10	38	88	3	0.18
GYF98100	10.0	10	45	95	4	0.18
GYF98120	12.0	12	53	110	4	0.18
GYF98140	14.0	12	53	110	4	0.25
GYF98160	16.0	16	63	123	4	0.25
GYF98180	18.0	16	63	123	4	0.25
GYF98200	20.0	20	75	141	4	0.25
GYF98250	25.0	25	90	166	5	0.36

#### Tolerances according to DIN 7160 & 7161

	Tolerar	nce range in μm	
	Nomina	I-Diameter in m	
	over 6 to 10	over 10 to 18	over 18 to 30
js12	±75	±90	±105
h6	- 9	0 - 11	0 - 13



																		0	Exc	ellent (	Good
ISO						Р								М					<ul> <li>• Exc.</li> </ul>	chefte (	J • 0000
Material Description		No	on-alloy s	steel			Low	alloy ste	el	High ar	alloyed nd tool st	steel, eel	Sta	ainless s	teel	Grey cas	st iron		ar cast on		able cast ron
VDI 3323	1	2	3	4	5	6	7	8	9	1		11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1:		35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	) 350	20	0 3	325	200	240	180	180	260	160	250	130	230
Recommend	0	O	0	0	0	0	0	0	0	0		0	0	0	O	O	0	0	0	0	O
ISO					N									S						н	
Material Description	Alumi wrough		Aluminu	um-cast, a	alloyed <sup>C</sup>	opper al (Broi	nd Copp nze / Bra	er A <b>l</b> oys ss)	Non Me Mater		H	leat R	esistant	Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 34	35	36	37	38	39	40	41
HRc											15	30	25	5 38	3 34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 35	0 320	400 Rm	1050 Rm	550	630	400	550
Recommend						0	0	0												0	

626





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#### **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

#### GYG77, GYF97 SERIES

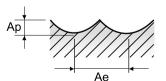
#### **2 FLUTE BALL NOSE**

**ONLY ONE** 

COATED PM60 END MILLS

Vc = m/min.fz = mm/toothRPM = rev./min.

			,											RF	PM = rev./min. ED = mm/min.
i-Xmill	ISO	VDI	Material	٨٥	4.0	Daramotor				[	Diameter (Ø	i)			
ND MILLS	150	3323	Description	Ae	Ар	Parameter	3.0	4.0	6.0	8.0	10.0	12.0	16.0	20.0	25.0
						Vc	83	90	100	101	104	104	103	102	90
i-SMART				0.5D	0.2D	fz RPM	0.023 8807	0.036 7162	0.054 5305	0.079 4019	0.109 3310	0.115 2759	0.141 2049	0.156 1623	0.162 1146
MODULAR END MILLS						FEED	405	516	573	635	722	634	2049 578	506	371
IND WILLS						Vc	66	70	79	78	79	81	78	75	70
X5070		2		0.5D	0.2D	fz	0.020	0.032	0.046	0.067	0.095	0.097	0.123	0.140	0.140
IND MILLS		2		0.50	0.20	RPM	7003	5570	4191	3104	2515	2149	1552	1194	891
			Non-alloy steel			FEED	280	357	386	416	478	417	382	334	250
			, í			Vc fz	44 0.016	45 0.026	52 0.039	54 0.056	53 0.082	54 0.083	54 0.1	52 0.11	44 0.125
4G MILL END MILLS		3-4		0.5D	0.2D	RPM	4669	3581	2759	2149	1687	1432	1074	828	560
IND WILLS						FEED	149	186	215	241	277	238	215	182	140
X-POWER						Vc	23	24	27	27	26	26	27	27	24
PRO		5		0.5D	0.2D	fz	0.014	0.023	0.035	0.047	0.073	0.071	0.090	0.099	0.100
ND MILLS				0.52	0.20	RPM	2440	1910	1432	1074	828	690	537	430	306
						FEED Vc	68	88	100	101	121	98	97 78	85	61
TitaNox-						vc fz	66 0.020	70 0.032	79 0.046	78 0.067	79 0.095	81 0.097	0.123	75 0.140	70 0.140
POWER ND MILLS		6		0.5D	0.2D	RPM	7003	5570	4191	3104	2515	2149	1552	1194	891
	Р					FEED	280	357	386	416	478	417	382	334	250
T-POWER	P					Vc	44	45	52	54	53	54	54	52	44
ND MILLS		7	Low alloy steel	0.5D	0.2D	fz	0.016	0.026	0.039	0.056	0.082	0.083	0.1	0.11	0.125
			Low anoy seen	0.00	0.22	RPM	4669	3581	2759	2149	1687	1432	1074	828	560
						FEED Vc	149 23	186 24	215 27	241 27	277 26	238 26	215 27	182 27	140 24
V7 PLUS ND MILLS						fz	0.014	0.023	0.035	0.047	0.073	0.071	0.090	0.099	0.100
IND WILLS		8-9		0.5D	0.2D	RPM	2440	1910	1432	1074	828	690	537	430	306
LU-POWER						FEED	68	88	100	101	121	98	97	85	61
HPC						Vc	66	70	79	78	79	81	78	75	70
ND MILLS		10		0.5D	0.2D	fz	0.020	0.032	0.046	0.067	0.095	0.097	0.123	0.140	0.140
						RPM FEED	7003 280	5570 357	4191 386	3104 416	2515 478	2149 417	1552 382	1194 334	891 250
ALU- POWER						Vc	280	24	27	27	26	26	27	27	230
END MILLS			High alloyed steel,			fz	0.014	0.023	0.035	0.047	0.073	0.071	0.090	0.099	0.100
		11.1	steel, and tool steel	0.5D	0.2D	RPM	2440	1910	1432	1074	828	690	537	430	306
D-POWER						FEED	68	88	100	101	121	98	97	85	61
GRAPHITE						Vc	16	17	19	19	18	18	19	19	16
ND MILLS		11.2		0.3D	0.2D	fz RPM	0.013 1698	0.024 1353	0.035 1008	0.047 756	0.075 573	0.071 477	0.088 378	0.1 302	0.095 204
D-POWER						FEED	44	65	71	756	573 86	477 68	378 67	302 60	204 39
CFRP						Vc	25	27	30	30	28	29	30	30	26
ND MILLS	м	14.1	Stainless steel	0.5D	0.2D	fz	0.013	0.023	0.036	0.049	0.072	0.075	0.093	0.099	0.098
		14.1	Stamess steel	0.50	0.20	RPM	2653	2149	1592	1194	891	769	597	477	331
ROUTERS						FEED	69	99	115	117	128	115	111	95	65
			Grey cast iron			Vc	66	70	79	78	79	81	78	75	70
	K	15-20	Nodular cast iron	0.5D	0.2D	fz RPM	0.02 7003	0.032 5570	0.046 4191	0.067 3104	0.095 2515	0.097 2149	0.123 1552	0.14 1194	0.14 891
CRX S			Malleable cast iron			FEED	280	357	386	416	478	417	382	334	250
ND MILLS						Vc	16	17	19	19	18	18	19	19	16
	н	40	Chilled Cast	0.3D	0.2D	fz	0.013	0.024	0.035	0.047	0.075	0.071	0.088	0.1	0.095
K-2		40	Iron	0.30	0.20	RPM	1698	1353	1008	756	573	477	378	302	204
ND MILLS						FEED	44	65	71	71	86	68	67	60	39



ONLY ONE COATED PM60 END MILLS

TANK-POWER

628

4G MILL

X-POWER

TitaNox-POWER

CFRP END MILLS

K-2 END MILLS

ONLY ONE COATED PM60 END MILLS

TANK-POWER

630



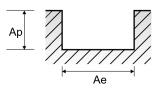
#### **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

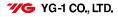
#### **3 FLUTE - SLOTTING**

**ONLY ONE** 

COATED PM60 END MILLS

	GYG	01 SERIES	3 FLL	JTE - <mark>S</mark>	BLOTT	ING													
ISO	VDI	Material	Ae	Ар	Parameter							1	eter (Ø)						
	3323	Description	1.0D	0.5D	Vc fz RPM	2.0 49 0.004 7799	3.0 52 0.007 5517	4.0 65 0.011 5173	5.0 72 0.014 4584	6.0 76 0.023 4032	8.0 78 0.031 3104	10.0 79 0.04 2515	12.0 81 0.051 2149	14.0 84 0.052 1910	16.0 81 0.06 1611	18.0 78 0.07 1379	20.0 72 0.08 1146	22.0 70 0.091 1013	25.0 71 0.10 904
	2		1.0D	0.5D	FEED Vc fz RPM FEED	94 41 0.003 6525 59	116 44 0.007 4669 98	171 54 0.011 4297 142	193 60 0.013 3820 149	278 63 0.023 3342 231	289 66 0.032 2626 252	302 68 0.039 2165 253	329 66 0.053 1751 278	298 71 0.055 1614 266	290 69 0.06 1373 247	290 61 0.072 1079 233	275 60 0.081 955 232	276 61 0.089 883 236	290 60 0.1 764 252
	3-4	Non-alloy steel	1.0D	0.5D	Vc fz RPM FEED	36 0.003 5730 52	38 0.005 4032 60	45 0.009 3581 97	49 0.012 3119 112	52 0.021 2759 174	54 0.028 2149 180	53 0.038 1687 192	54 0.047 1432 202	53 0.053 1205 192	54 0.056 1074 180	54 0.063 955 180	53 0.067 844 170	50 0.083 723 180	46 0.10 580 188
	5		1.0D	0.5D	Vc fz RPM FEED	23 0.004 3661 44	25 0.007 2653 56	29 0.009 2308 62	32 0.012 2037 73	33 0.021 1751 110	35 0.029 1393 121	34 0.044 1082 143	34 0.052 902 141	35 0.055 796 131	34 0.06 676 122	34 0.064 601 115	33 0.069 525 109	33 0.08 477 115	34 0.09 433 121
	6		1.0D	0.5D	Vc fz RPM FEED	41 0.003 6525 59	44 0.007 4669 98	54 0.011 4297 142	60 0.013 3820 149	63 0.023 3342 231	66 0.032 2626 252	68 0.039 2165 253	66 0.053 1751 278	71 0.055 1614 266	69 0.06 1373 247	61 0.072 1079 233	60 0.081 955 232	61 0.089 883 236	60 0.1 764 252
Ρ	7		1.0D	0.5D	Vc fz RPM FEED	36 0.003 5730 52	38 0.005 4032 60	45 0.009 3581 97	49 0.012 3119 112	52 0.021 2759 174	54 0.028 2149 180	53 0.038 1687 192	54 0.047 1432 202	53 0.053 1205 192	54 0.056 1074 180	54 0.063 955 180	53 0.067 844 170	50 0.083 723 180	46 0.10 586 188
	8	Low alloy steel	1.0D	0.5D	Vc fz RPM FEED	23 0.004 3661 44	25 0.007 2653 56	29 0.009 2308 62	32 0.012 2037 73	33 0.021 1751 110	35 0.029 1393 121	34 0.044 1082 143	34 0.052 902 141	35 0.055 796 131	34 0.06 676 122	34 0.064 601 115	33 0.069 525 109	33 0.08 477 115	34 0.09 433
	9		1.0D	0.3D	Vc fz RPM FEED	14 0.005 2228 33	20 0.008 2122 51	23 0.012 1830 66	25 0.014 1592 67	25 0.023 1326 92	27 0.031 1074 100	26 0.045 828 112	26 0.052 690 108	26 0.056 591 99	27 0.063 537 102	27 0.066 477 95	27 0.074 430 95	26 0.088 376 99	24 0.11 306
	10		1.0D	0.5D	Vc fz RPM FEED	41 0.003 6525 59	44 0.007 4669 98	54 0.011 4297 142	60 0.013 3820 149	63 0.023 3342 231	66 0.032 2626 252	68 0.039 2165 253	66 0.053 1751 278	71 0.055 1614 266	69 0.06 1373 247	61 0.072 1079 233	60 0.081 955 232	61 0.089 883 236	60 0.1 76 25
	11.1	High alloyed steel, and tool steel	1.0D	0.5D	Vc fz RPM FEED	23 0.004 3661 44	25 0.007 2653 56	29 0.009 2308 62	32 0.012 2037 73	33 0.021 1751 110	35 0.029 1393 121	34 0.044 1082 143	34 0.052 902 141	35 0.055 796 131	34 0.06 676 122	34 0.064 601 115	33 0.069 525 109	33 0.08 477 115	34 0.09 43 12
	11.2		1.0D	0.3D	Vc fz RPM FEED	10 0.005 1592 24	14 0.009 1485 40	16 0.012 1273 46	17 0.014 1082 45	17 0.024 902 65	19 0.031 756 70	18 0.044 573 76	18 0.051 477 73	18 0.056 409 69	19 0.063 378 71	19 0.064 336 65	19 0.072 302 65	19 0.086 275 71	16 0.11 20 68
м	14.1	Stainless steel	1.0D	0.5D	Vc fz RPM FEED	41 0.003 6525 59	44 0.007 4669 98	54 0.011 4297 142	60 0.013 3820 149	63 0.023 3342 231	66 0.032 2626 252	68 0.039 2165 253	66 0.053 1751 278	71 0.055 1614 266	69 0.06 1373 247	61 0.072 1079 233	60 0.081 955 232	61 0.089 883 236	60 0.1 764 252
к	15-20	Grey cast iron Nodular cast iron Malleable cast iron	1.0D	0.5D	Vc fz RPM FEED	41 0.003 6525 59	44 0.007 4669 98	54 0.011 4297 142	60 0.013 3820 149	63 0.023 3342 231	66 0.032 2626 252	68 0.039 2165 253	66 0.053 1751 278	71 0.055 1614 266	69 0.06 1373 247	61 0.072 1079 233	60 0.081 955 232	61 0.089 883 236	60 0.1 764 252
H	40	Chilled Cast Iron	1.0D	0.3D	Vc fz RPM FEED	10 0.005 1592 24	14 0.009 1485 40	16 0.012 1273 46	17 0.014 1082 45	17 0.024 902 65	19 0.031 756 70	18 0.044 573 76	18 0.051 477 73	18 0.056 409 69	19 0.063 378 71	19 0.064 336 65	19 0.072 302 65	19 0.086 275 71	16 0.11 204 68





4G MILL

X-POWER

TitaNox-POWER

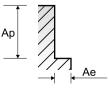


#### **RECOMMENDED CUTTING CONDITIONS** EMPFOHLENE SCHNEIDPARAMETER

#### GYG74, GYF96, GYG76, GYG02 SERIES 4 FLUTE - SIDE CUTTING

 $\begin{array}{l} Vc = m/min. \\ fz = mm/tooth \\ RPM = rev./min. \\ FEED = mm/min. \end{array}$ 

ISO	VDI 3323	Material																	
	2222		Ae	Ар	Parameter							Diame	eter (Ø)						
	5525	Description		,,,p	-r aranieter	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	25.
					Vc	69	75	80	83	88	93	87	90	95	97	102	94	87	94
	1		0.1D	1.50	fz	0.008	0.015	0.023	0.029	0.035	0.046	0.068	0.071	0.076	0.079	0.076	0.088	0.097	0.0
			0.1D	1.5D	RPM	10982	7958	6366	5284	4669	3700	2769	2387	2160	1930	1804	1496	1259	119
					FEED	351	477	586	613	654	681	753	678	657	610	548	527	488	44
					Vc	63	68	71	75	81	78	79	81	84	84	85	79	79	79
	2		0.1D	1.50	fz	0.007	0.015	0.021	0.026	0.031	0.046	0.063	0.067	0.072	0.077	0.08	0.088	0.084	0.0
	2		0.1D	1.5D	RPM	10027	7215	5650	4775	4297	3104	2515	2149	1910	1671	1503	1257	1143	100
		Non-alloy steel			FEED	281	433	475	497	533	571	634	576	550	515	481	443	384	36
		Non-alloy steel			Vc	46	50	54	55	59	60	60	63	58	60	61	59	57	60
	3-4		0.1D	1.5D	fz	0.007	0.014	0.021	0.028	0.032	0.046	0.059	0.066	0.08	0.085	0.086	0.088	0.093	0.0
	5-4		0.10	1.50	RPM	7321	5305	4297	3501	3130	2387	1910	1671	1319	1194	1079	939	825	76
					FEED	205	297	361	392	401	439	451	441	422	406	371	331	307	27
					Vc	31	31	35	38	41	42	38	40	42	41	43	40	39	39
	F		0.1D	1.50	fz	0.008	0.017	0.022	0.028	0.032	0.043	0.067	0.068	0.072	0.081	0.077	0.082	0.085	0.0
	5		0.1D	1.5D	RPM	4934	3289	2785	2419	2175	1671	1210	1061	955	816	760	637	564	49
					FEED	158	224	245	271	278	287	324	289	275	264	234	209	192	17
					Vc	63	68	71	75	81	78	79	81	84	84	85	79	79	79
	6		0.10	1.60	fz	0.007	0.015	0.021	0.026	0.031	0.046	0.063	0.067	0.072	0.077	0.08	0.088	0.084	0.0
	6		0.1D	1.5D	RPM	10027	7215	5650	4775	4297	3104	2515	2149	1910	1671	1503	1257	1143	10
					FEED	281	433	475	497	533	571	634	576	550	515	481	443	384	36
					Vc	46	50	54	55	59	60	60	63	58	60	61	59	57	6
P	7		0.1D	1.50	fz	0.007	0.014	0.021	0.028	0.032	0.046	0.059	0.066	0.08	0.085	0.086	0.088	0.093	0.0
P			0.10	1.5D	RPM	7321	5305	4297	3501	3130	2387	1910	1671	1319	1194	1079	939	825	76
		Low alloy steel			FEED	205	297	361	392	401	439	451	441	422	406	371	331	307	27
		Low anoy steel			Vc	31	31	35	38	41	42	38	40	42	41	43	40	39	39
	8		0.1D	1.5D	fz	0.008	0.017	0.022	0.028	0.032	0.043	0.067	0.068	0.072	0.081	0.077	0.082	0.085	0.0
	0		0.10	1.50	RPM	4934	3289	2785	2419	2175	1671	1210	1061	955	816	760	637	564	49
					FEED	158	224	245	271	278	287	324	289	275	264	234	209	192	17
					Vc	25	27	30	32	33	35	34	32	33	33	34	33	33	34
	9		0.05D	1.5D	fz	0.006	0.013	0.019	0.023	0.031	0.04	0.056	0.064	0.067	0.076	0.075	0.08	0.081	0.0
	9		0.050	1.50	RPM	3979	2865	2387	2037	1751	1393	1082	849	750	657	601	525	477	43
					FEED	95	149	181	187	217	223	242	217	201	200	180	168	155	15
					Vc	63	68	71	75	81	78	79	81	84	84	85	79	79	79
	10		0.1D	1.5D	fz	0.007	0.015	0.021	0.026	0.031	0.046	0.063	0.067	0.072	0.077	0.08	0.088	0.084	0.0
			0.10	1.50	RPM	10027	7215	5650	4775	4297	3104	2515	2149	1910	1671	1503	1257	1143	100
					FEED	281	433	475	497	533	571	634	576	550	515	481	443	384	36
		High a <b>ll</b> oyed			Vc	31	31	35	38	41	42	38	40	42	41	43	40	39	39
	11.1	steel,	0.1D	1.5D	fz	0.008	0.017	0.022	0.028	0.032	0.043	0.067	0.068	0.072	0.081	0.077	0.082	0.085	0.0
	11.1	and tool steel	0.10	1.50	RPM	4934	3289	2785	2419	2175	1671	1210	1061	955	816	760	637	564	49
					FEED	158	224	245	271	278	287	324	289	275	264	234	209	192	17
					Vc	17	19	21	22	23	24	24	23	23	23	24	23	23	24
	11.2		0.05D	1.5D	fz	0.006	0.013	0.019	0.024	0.031	0.04	0.057	0.065	0.068	0.076	0.074	0.081	0.081	0.0
	11,2		0.050	1.50	RPM	2706	2016	1671	1401	1220	955	764	610	523	458	424	366	333	30
					FEED	65	105	127	134	151	153	174	159	142	139	126	119	108	10
					Vc	27	30	33	35	36	38	37	36	37	37	37	36	37	3
Μ	14.1	Stainless steel	0.1D	1.5D	fz	0.006	0.013	0.019	0.023	0.031	0.039	0.056	0.063	0.067	0.075	0.076	0.08	0.08	0.0
		Stanie SS Steel	0.10		RPM	4297	3183	2626	2228	1910	1512	1178	955	841	736	654	573	535	47
					FEED	103	166	200	205	237	236	264	241	225	221	199	183	171	16
		Grey cast iron			Vc	63	68	71	75	81	78	79	81	84	84	85	79	79	79
ĸ	15-20		0.1D	1.5D	fz	0.007	0.015	0.021	0.026	0.031	0.046	0.063	0.067	0.072	0.077	0.08	0.088	0.084	0.0
	15 20	Malleable cast iron	0.10	1.50	RPM	10027	7215	5650	4775	4297	3104	2515	2149	1910	1671	1503	1257	1143	100
					FEED	281	433	475	497	533	571	634	576	550	515	481	443	384	36
					Vc	17	19	21	22	23	24	24	23	23	23	24	23	23	24
н	40	Chilled Cast	0.05D	1 5D	fz	0.006	0.013	0.019	0.024	0.031	0.04	0.057	0.065	0.068	0.076	0.074	0.081	0.081	0.08
	40	Iron	0.050	1.5D	RPM	2706	2016	1671	1401	1220	955	764	610	523	458	424	366	333	306
					FEED	65	105	127	134	151	153	174	159	142	139	126	119	108	108



K-2 END MILLS

ONLY ONE COATED PM60 END MILLS

TANK-

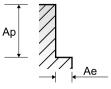
632



GYF95 SERIES MUI	TI FLUTE ROUGHING - SIDE CUTTING
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Vc = m/min.fz = mm/tooth RPM = rev./min. in

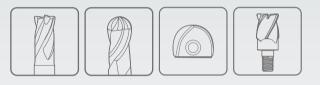
																PM = rev./min. ED = mm/min.
i-Xmill	_		VDI	Materia												
END MILLS		ISO	3323	Description	Ae	Ар	Parameter -	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	25.0
							Vc	76	87	86	87	89	87	85	87	90
i-SMART			1		0.5D	1.5D	fz	0.02	0.03	0.055	0.065	0.059	0.069	0.079	0.088	0.105
MODULAR					0.52		RPM	4032	3462	2737	2308	2024	1731	1503	1385	1146
END MILLS							FEED Vc	323 60	415 69	602 68	600 65	597 66	597 69	594 72	609 68	602 68
X5070							fz	0.021	0.03	0.053	0.069	0.063	0.069	0.074	0.087	0.106
END MILLS			2		0.5D	1.5D	RPM	3183	2745	2165	1724	1501	1373	1273	1082	866
							FEED	267	329	459	476	473	474	471	471	459
4G MILL							Vc fz	43 0.018	51 0.028	47 0.046	49 0.063	48 0.061	48 0.069	50 0.075	48 0.086	47 0.107
END MILLS			3	Non-alloy steel	0.5D	1.5D	RPM	2281	2029	1496	1300	1091	955	884	764	598
							FEED	164	227	275	328	333	329	332	328	320
X-POWER							Vc	43	51	47	49	48	48	50	48	47
PRO			4		0.5D	1.5D	fz RPM	0.018 2281	0.028 2029	0.046 1496	0.063 1300	0.061 1091	0.069 955	0.075 884	0.086 764	0.107 598
END MILLS							FEED	164	2025	275	328	266	264	265	263	256
TitaNox-							Vc	35	38	40	40	40	40	40	40	41
POWER			5		0.5D	1.5D	fz	0.02	0.03	0.045	0.061	0.057	0.066	0.073	0.081	0.1
END MILLS							_ RPM FEED	1857 149	1512 181	1273 229	1061 259	909 259	796 263	707 258	637 258	522 261
							Vc	60	69	68	65	66	69	72	68	68
JET-POWER END MILLS		P	6		0.5D	1.5D	fz	0.021	0.03	0.053	0.069	0.063	0.069	0.074	0.087	0.106
			0		0.50	1.50	RPM	3183	2745	2165	1724	1501	1373	1273	1082	866
							FEED Vc	267 43	329 51	459 47	476 49	473 48	474 48	471 50	471 48	459 47
V7 PLUS END MILLS			_				fz	43 0.018	0.028	0.046	0.063	40 0.061	0.069	0.075	48 0.086	0.107
			7	Low alloy steel	0.5D	1.5D	RPM	2281	2029	1496	1300	1091	955	884	764	598
ALU-POWER							FEED	164	227	275	328	333	329	332	328	320
HPC							Vc fz	35 0.02	38 0.03	40 0.045	40 0.061	40 0.057	40 0.066	40 0.073	40 0.081	41 0.1
END MILLS			8-9		0.5D	1.5D	RPM	1857	1512	1273	1061	909	796	707	637	522
ALU-							FEED	149	181	229	259	259	263	258	258	261
POWER							Vc	60	69	68	65	66	69	72	68	68
END MILLS			10		0.5D	1.5D	fz RPM	0.021 3183	0.03 2745	0.053 2165	0.069 1724	0.063 1501	0.069 1373	0.074 1273	0.087 1082	0.106 866
D-POWER							FEED	267	329	459	476	473	474	471	471	459
GRAPHITE							Vc	35	38	40	40	40	40	40	40	41
END MILLS			11.1	High a <b>ll</b> oyed steel,	0.5D	1.5D	fz	0.02	0.03	0.045	0.061	0.057	0.066	0.073	0.081	0.1
D-POWER				and tool steel			RPM FEED	1857 149	1512 181	1273 229	1061 259	909 259	796 263	707 258	637 258	522 261
CFRP							Vc	25	27	229	239	239	203	238	238	201
END MILLS			11.2		0.3D	1.5D	fz	0.02	0.029	0.044	0.06	0.056	0.065	0.072	0.08	0.1
			11,2		0.50	1.50	RPM	1326	1074	891	743	637	557	495	446	357
ROUTERS							FEED Vc	106 39	125 43	157 43	178 43	178 44	181 43	178 45	178 44	178 44
							fz	0.019	0.03	0.045	0.064	0.059	0.069	0.075	0.084	0.104
CDV C		Μ	14.1	Stainless steel	0.5D	1.5D	RPM	2069	1711	1369	1141	1000	855	796	700	560
CRX S END MILLS							FEED	157	205	246	292	295	295	298	294	291
				Grey cast iron			Vc fz	60 0.021	69 0.03	68 0.053	65 0.069	66 0.063	69 0.069	72 0.074	68 0.087	68 0.106
14.0		K	15-20	Nodular cast iron	0.5D	1.5D	RPM	3183	2745	2165	1724	1501	1373	1273	1082	866
K-2 END MILLS				Malleable cast iron			FEED	267	329	459	476	473	474	471	471	459
							Vc	25	27	28	28	28	28	28	28	28
ONLY ONE		H	40	Chilled Cast Iron	0.3D	1.5D	fz RPM	0.02 1326	0.029 1074	0.044 891	0.06 743	0.056 637	0.065 557	0.072 495	0.08 446	0.1 357
COATED PM60							FEED	106	125	157	178	178	181	178	178	178
END MILLS																



TANK-POWER



## Global Cutting Tool Leader YG-1



# MILLING

Leading Through Innovation

# HSS-PM TANK-POWER HSS-PM - Fräser

- High Toughness for Stainless Steels, Carbon steels and Alloy Steels

- Hohe Zähigkeit, für rostfreie Stähle, Kohlenstoffstähle und legierte Stähle

	DDIDE	C A
- 1		LΑ

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	SEL	ECTION G	UIDE	intp	.,, •••••••	SERIES	E9940	E9A32	E9936	E9A29
HSS						FLUTE	GA940 2	GAA32 2	GA936	GAA29 2
					HE	LIX ANGLE		30°	30°	
CBN					CUTTING EL	OGE SHAPE	BALL NOSE	BALL NOSE	SQUARE	SQUARE
END MILLS			AILLING			SIZE MIN	R0.5	R1.0	D1.0	D1.0
		G T	OOLS			SIZE MAX	R12.5	R12.5	D25.0	D25.0
i-Xmill END MILLS						PAGE	640	641	642	643
i-SMART					HSS	-PM	SHORT LENGTH	LONG LENGTH	SHORT LENGTH	LONG LENGTH
MODULAR END MILLS		ТЛ					TiAIN	TiAIN	TiAIN	TiAIN
X5070 END MILLS				РОИ END II				P		
4G MILL END MILLS		High Tough		s Steels, Carbon st General Application	eels, Alloy	/ Steels	27		K	
X-POWER PRO END MILLS		Please visit globalyg1.com/mat		¢	):Excellent	⊖∶Good	T			
TitaNox-		for material search	Ē	Recommended cutting	conditions	: P 654				
POWER END MILLS	ISO	VDI Material 3323 Description	Composition / Struc	cture / Heat Treatment	HB	HRc	T	T	T	T
ET-POWER		1	About 0.15% C	Annealed	125		0	0	0	0
END MILLS	-	2 3 Non-alloy steel	About 0.45% C About 0.45% C	Annealed Quenched & Tempered	190 250	13 25	0	0	0	0
V/7 DI 110		4	About 0.75% C	Annealed	270	28	0	0	0	0
V7 PLUS END MILLS		5	About 0.75% C	Quenched & Tempered	300	32	0	0	٥	0
	Р	6 7		Annealed Quenched & Tempered	180 275	10 29	0	0	0	0
LU-POWER HPC	-	Low alloy steel		Quenched & Tempered	300	32	0	0	0	0
END MILLS		9		Quenched & Tempered	350	38	0	0	0	0
ALU-	-	10 High alloyed steel, 11 and tool steel		Annealed	200	15	0	0	0	0
POWER END MILLS		11 and tool steel 12	Ferritic / Martensitic	Quenched & Tempered	325 200	35 15	0 0	0 (0)	0 0	0 0
	M	13 Stainless steel	Martensitic	Quenched & Tempered	240	23	0	O	O	0
D-POWER GRAPHITE		14 15	Austenitic		180	10	0	0	0	0
END MILLS	-	15 Grey cast iron	Pearlitic / ferritic Pearlitic (Martensitic	)	180 260	10 26	0	0	0	0
D-POWER	ĸ	17 Nodular cast iron	Ferritic	,	160	3	0	0	0	0
CFRP END MILLS		18	Pearlitic		250	25	0	0	0	0
	-	19 20 Malleable cast iron	Ferritic Pearlitic		130 230	21	0	0	0	0
ROUTERS		21 Aluminum-	Not Curable		60					
		22 wrought alloy	Curable	Hardened	100					
CRX S	-	23 24 Aluminum-cast,	≤ 12% Si, Not Curabl ≤ 12% Si, Curable	e Hardened	75 90					
END MILLS		25 alloyed	> 12% Si, Curable		130					
14.0	N	26 Copper and	Cutting Alloys, PB>1	%	110		0	0	0	0
K-2 END MILLS	-	<ul><li>27 Copper Alloys</li><li>28 (Bronze / Brass)</li></ul>	CuZn, CuSnZn (Brass	-	90		0	0	0	0
	-	<ul><li>28 (Bronze / Brass)</li><li>29 Non Metallic</li></ul>	Duroplastic, Fiber Re	r and electrolytic copper inforced Plastic	100		0	0	0	0
ONLY ONE DATED PM60		30 Materials	Rubber, Wood, etc.							
END MILLS		31	Fe Based	Annealed	200	15				
TANK-		32 Heat Resistant		Cured Annealed	280 250	30 25				
POWER END MILLS	S	34 Super Alloys	Ni or Co Based	Cured	350	38				
GENERAL		35		Cast	320	34				
HSS		36 37 Titanium Alloys	Pure Titanium Alpha + Beta Alloys	Hardened	400 Rm 1050 Rm					
END MILLS		38	Alpha + beta Alloys	Hardened	550 km	55				
MILLING	H	39 Hardened steel		Hardened	630	60				
CUTTERS		40 Chilled Cast Iron		Cast	400	42				
COTIENS		41 Hardened Cast Iron		Hardened	550	55				
TECHNICAL										

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4G MILL

X-POWER

TitaNox-

K-2 END MILLS

TANK-POWER END MILLS TANK-POWER HSS-PM END MILLS

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UNCOATED

TiAIN based COATED

E9940 SERIES

**GA940** SERIES

#### HSS-PM, 2 FLUTE SHORT LENGTH BALL NOSE

HSS-PM, 2 SCHNEIDEN KURZ STIRNRADIUS

() FRAISES HSS-PM, 2 DENTS À BOUT HÉMISPHÉRIQUE, SÉRIE COURTE

- () 2 TAGLIENTI, SERIE CORTA, HSS-PM, SEMISFERICA
- Designed to machine carbon steels, alloyed steels, stainless steels.
- Designed for milling of radius bottom slots, fillets and special contours.
- ► YG-1's new developed TANK-POWER Coating suitable for high speed cutting.
- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Entworfen zum Fräsen von Nuten mit Radien, Rippen und speziellen Konturen.
- ▶ Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.





		1			1	Unit : mm
EDP	No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAIN based	R(±0.02)	Bidifictor	Blameter	01001	Longth
E9940010	GA940010	R0.5	1.0	6	2.5	47
E9940020	GA940020	R1.0	2.0	6	4	48
E9940030	GA940030	R1.5	3.0	6	5	49
E9940040	GA940040	R2.0	4.0	6	7	51
E9940050	GA940050	R2.5	5.0	6	8	52
E9940060	GA940060	R3.0	6.0	6	8	52
E9940070	GA940070	R3.5	7.0	10	10	60
E9940080	GA940080	R4.0	8.0	10	11	61
E9940090	GA940090	R4.5	9.0	10	11	61
E9940100	GA940100	R5.0	10.0	10	13	63
E9940120	GA940120	R6.0	12.0	12	16	73
E9940140	GA940140	R7.0	14.0	12	16	73
E9940160	GA940160	R8.0	16.0	16	19	79
E9940180	GA940180	R9.0	18.0	16	19	79
E9940200	GA940200	R10.0	20.0	20	22	88
E9940220	GA940220	R11.0	22.0	20	22	88
E9940250	GA940250	R12.5	25.0	25	26	102

Mill Dia.	Shank Dia.
Tolerance (mm)	Tolerance
0~-0.03	h6

																		6	·Evo	ollont (	Good
ISO						P								М					K		J • 0000
Material Description		No	on-alloy s	steel			Low	alloy ste	el		n a <b>l</b> oyed nd tool st		Sta	ainless st	el	Grey ca	st iron	Nodu	lar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1	0	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1	5 :	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	00 3	325	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	0	(		0	0	0	0	0	0	0	0	0	0
ISO					N									S						н	
Material Description	Alumi wrougł	inum- nt a <b>ll</b> oy	Aluminu	um-cast,	alloyed (	Copper a (Bro	nd Copp nze / Bra	er A <b>l</b> oys Iss)	Non Me Materi		F	leat R	esistant	Super A	loys	Titaniu	m A <b>ll</b> oys		ened ee <b>l</b>	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32			35	36	37	38	39	40	41
HRc											15	30			34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 350	320	400 Rm	1050 Rm	550	630	400	550
Recommend						0	0	0													

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4G MILL

X-POWER

TitaNox-



642

Tolerances according to DIN 7160 & 7161 Tolerance range in um

	Nominal-Diameter in mm											
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30							
e8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73							
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13							

																		C	Exc	ellent (	⊖:Good
ISO						P								M					К		
Material Description		No	on-alloy s	teel			Low alloy steel			High an	gh alloyed steel, Stainless steel			teel	Grey cas	st iron	Nodular cast iron			able cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	0	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1	5 :	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	0 3	25	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	0	C		С	0	0	0	0	0	0	0	0	0
ISO					N									S						Н	
Material Description	Aluminum- wrought alloy Aluminum-cast, alloyed Copper and Copper Alloys (Bronze / Brass)				Non Me Mater	etallic ials	H	leat R	esistant	Super A	lloys	Titaniu	m A <b>ll</b> oys		lened ee <b>l</b>	Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 34	4 35	36	37	38	39	40	41
HRc											15	30	25	5 38	3 34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 35	0 320	) 400 Rm	1050 Rm	550	630	400	550
Recommend						0	0	0													

phone:+82-32-526-0909, www.yg1.kr, E-mail:yg1@yg1.kr



- 2 Schneiden, Geeignet für Nutenfräsen.
- Geeignet für Hochgeschwindigkeitsfräsen von schwer zu zerspanenden Materialien.

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**TiAIN based COATED** 

UNCOATED

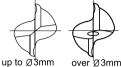
E9936 SERIES

GA936 SERIES

http://www.foxitsoftware.com For

Neuentwickelte Beschichtung f
ür Hochgeschwindigkeitsfr
äsen.





HSS PM	DIN 327	2	30°	DIN 1835B		P.656~657

HSS-PM, 2 FLUTE SHORT LENGTH

() FRAISES HSS-PM, 2 DENTS, SÉRIE COURTE

▶ Designed to machine carbon steels, alloyed steels, stainless

Suitable for high speed cutting of difficult-to-cut materials.

▶ YG-1's new developed TANK-POWER Coating suitable for high

1 2 TAGLIENTI, SERIE CORTA, HSS-PM

HSS-PM. 2 SCHNEIDEN KURZ

steels.

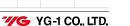
speed cutting.

▶ 2 Flute design for slotting.

**TANK-POWER** 

HSS-PM END MILLS

					Unit : mm
EDF	۹No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAIN based	e8	h6	orout	Length
E9936010	GA936010	1.0	6	2.5	47
E9936020	GA936020	2.0	6	4	48
E9936030	GA936030	3.0	6	5	49
E9936040	GA936040	4.0	6	7	51
E9936050	GA936050	5.0	6	8	52
E9936060	GA936060	6.0	6	8	52
E9936070	GA936070	7.0	10	10	60
E9936080	GA936080	8.0	10	11	61
E9936090	GA936090	9.0	10	11	61
E9936100	GA936100	10.0	10	13	63
E9936120	GA936120	12.0	12	16	73
E9936140	GA936140	14.0	12	16	73
E9936160	GA936160	16.0	16	19	79
E9936180	GA936180	18.0	16	19	79
E9936200	GA936200	20.0	20	22	88
E9936220	GA936220	22.0	20	22	88
E9936250	GA936250	25.0	25	26	102



4G MILL

X-POWER

TitaNox-

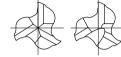
TANK-POWER HSS-PM END MILLS

#### HSS-PM, 3 FLUTE STUB LENGTH

🛑 HSS-PM, 3 SCHNEIDEN EXTRA KURZ

- FRAISES HSS-PM, 3 DENTS, SÉRIE EXTRA-COURTE
   3 TAGLIENTI, SERIE EXTRA CORTA, HSS-PM
- Designed to machine carbon steels, alloyed steels, stainless steels.
- Well balanced web design to minimize deflection and chattering.
   3 flute design possess the advantage of 2 flute and 4 flute end mill.
- ► YG-1's new developed TANK-POWER Coating suitable for high speed cutting.
- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Verstärkter Kern zur Erhöhung der Stabilität.
- 3 Schneiden Design besitzt die Vorteile von 2-bzw 4 Schneiden Fräsern.
- Neuentwickelte Beschichtung f
  ür Hochgeschwindigkeitsfr
  äsen.





up to Ø1mm over Ø1mm



					Unit : mm
EDF	۷No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAIN based	e8	h6	orcut	Length
E9942010	GA942010	1.0	6	2.5	47
E9942020	GA942020	2.0	6	4	48
E9942030	GA942030	3.0	6	5	49
E9942040	GA942040	4.0	6	7	51
E9942050	GA942050	5.0	6	8	52
E9942060	GA942060	6.0	6	8	52
E9942070	GA942070	7.0	10	10	60
E9942080	GA942080	8.0	10	11	61
E9942090	GA942090	9.0	10	11	61
E9942100	GA942100	10.0	10	13	63
E9942120	GA942120	12.0	12	16	73
E9942140	GA942140	14.0	12	16	73
E9942160	GA942160	16.0	16	19	79
E9942180	GA942180	18.0	16	19	79
E9942200	GA942200	20.0	20	22	88
E9942220	GA942220	22.0	20	22	88
E9942250	GA942250	25.0	25	26	102

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in µm											
	Nominal-Diameter in mm											
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30							
e8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73							
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13							

																		Ø	Exc	ellent (	⊖:Good
ISO						P								M					Κ		
Material Description		No	on-alloy s	teel			Low	alloy ste	el		alloyed s d tool ste		Sta	inless s	teel	Grey ca	st iron		ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	) 1	1	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15			15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	0 32	25	200	240	180	180	260	160	250	130	230
Recommend	0	O	0	0	0	O	0	0	0	Ô			0	0	0	O	0	$\odot$	0	0	O
ISO					N									S	;					н	
Material Description	Alumi						Non Met Materia		He	eat Re	esistant	Super A	Alloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 34	4 35	36	37	38	39	40	41
HRc											15	30	25	5 38	3 34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	25	0 35	0 320	) 400 Rm	1050 Rm	550	630	400	550
Recommend						0	0	0													

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TANK-POWER END MILLS

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TiAIN based COATED

UNCOATED

E9942 SERIES

GA942 SERIES

4G MILL

X-POWER

TitaNox-



#### HSS-PM, 4 FLUTE SHORT LENGTH

#### HSS-PM. 4 SCHNEIDEN KURZ

- FRAISES HSS-PM, 4 DENTS, SÉRIE COURTE 4 TAGLIENTI, SERIE CORTA, HSS-PM
- Designed to machine carbon steels, alloyed steels, stainless steels.
- ▶ Recommended for pocketing, cam milling, die sinking and slotting...
- ▶ Designed for high speed cutting of difficult-to-cut materials.
- ► YG-1's new developed TANK-POWER Coating suitable for high speed cutting.
- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.

E9938 SERIES

GA938 SERIES

- Empfohlen für Taschenfräsen, Nockenfräsen, Gussformen und Nutenfräsen.
- Geeignet für Hochgeschwindigkeitsfräsen von schwer zu zerspanenden Materialien.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.





ED	P No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAIN based	Diameter	Diameter	oreat	Length
E9938010	GA938010	1.0	6	3	49
E9938020	GA938020	2.0	6	7	51
E9938030	GA938030	3.0	6	8	52
E9938040	GA938040	4.0	6	11	55
E9938050	GA938050	5.0	6	13	57
E9938060	GA938060	6.0	6	13	57
E9938070	GA938070	7.0	10	16	66
E9938080	GA938080	8.0	10	19	69
E9938090	GA938090	9.0	10	19	69
E9938100	GA938100	10.0	10	22	72
E9938120	GA938120	12.0	12	26	83
E9938140	GA938140	14.0	12	26	83
E9938160	GA938160	16.0	16	32	92
E9938180	GA938180	18.0	16	32	92
E9938200	GA938200	20.0	20	38	104
E9938220	GA938220	22.0	20	38	104
E9938250	GA938250	25.0	25	45	121

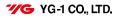
#### Mill Diameter 1mm: Center match end teeth

Mill Dia.	Shank Dia.
Tolerance (mm)	Tolerance
0 ~ -0.03	h6

																			Ø	Exc	ellent (	Good
ISO						Р								М						K		
Material Description						alloy ste	el		alloyed		Sta	inless s	eel	G	rey cas	st iron		ar cast on		able cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	1	0	11	12	13	14		15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1	5	35	15	23	10	-	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	00 3	325	200	240	180	1	80	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	0	0	)	0	O	0	0	(	0	0	0	0	0	0
ISO					N									S							н	
Material Description	Aluminum-			er A <b>l</b> oys Iss)	Non Me Materi		H	leat Re	esistant	Super A	lloys	-	Titaniur	m Alloys	Hard ste	ened eel		Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34		5	36	37	38	39	40	41
HRc											15	30	25	38		4			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	) 35	) 3:	20 4	400 Rm	1050 Rm	550	630	400	550
Recommend						0	0	0														



TANK-POWER END MILLS





CBN END MILLS

i-Xmill END MILLS

END MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWEF HPC END MILLS

ALU-POWER END MILLS

GRAPHITE END MILLS

CFRF END MILLS

ROUTERS

CRX S END MILLS

K-END MILL

ONLY ONE COATED PM60 END MILLS



HSS END MILLS

MILLING CUTTERS

ECHNICAL DATA

648

TANK-POWER HSS-PM END MILLS

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UNCOATED

TiAIN based COATED

E9941 SERIES

TED GA941 SERIES

#### HSS-PM, MULTI FLUTE SHORT LENGTH ROUGHING - FINE

- 🗢 HSS-PM, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER FEIN
- () FRAISES HSS-PM, MULTI-DENTS RAVAGEUSE PAS FINS, SÉRIE COURTE
- () MULTI TAGL., PER SGROSSATURA, SERIE CORTA, BOMBATO FINE HSS PM
- ► Suitable for high-feed roughing milling.
- Designed to machine carbon steels, alloyed steels, stainless steels.
- ► Providing excellent finished surfaces in many cases.
- ► YG-1's new developed TANK-POWER Coating suitable for high speed cutting.
- up to  $\emptyset 20$  : center cut, over  $\emptyset 20$  : non center cut
- ▶ Geeignet zum HSC Schrupp Fräsen.
- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Liefert in vielen Fällen exzellent bearbeitete Oberflächen.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.
   Nie De 20mme Mit Zerbruchbreite über De 20mme Mit Zerbruchbreite
- ▶ Bis D=20mm : Mit Zentrumschneide, über D=20mm : Ohne Zentrumschneide.

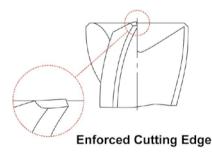




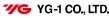
EDF	۷No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute	Chamfer
UNCOATED	X-COATING	js12	h6	oreat	Length	1140	
E9941060	GA941060	6.0	6	13	57	3	0.18
E9941070	GA941070	7.0	10	16	66	3	0.18
E9941080	GA941080	8.0	10	19	69	3	0.18
E9941090	GA941090	9.0	10	19	69	3	0.18
E9941100	GA941100	10.0	10	22	72	4	0.18
E9941120	GA941120	12.0	12	26	83	4	0.18
E9941140	GA941140	14.0	12	26	83	4	0.25
E9941160	GA941160	16.0	16	32	92	4	0.25
E9941180	GA941180	18.0	16	32	92	4	0.25
E9941200	GA941200	20.0	20	38	104	4	0.25
E9941220	GA941220	22.0	20	38	104	5	0.36
E9941250	GA941250	25.0	25	45	121	5	0.36

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in µm														
Nominal-Diameter in mm															
	from 1 to 3 over 3 to 6 over 6 to 10 over 10 to 18 over 18 to 30 over 30 to 50														
js12	± 50	± 60	± 75	± 90	± 105	± 125									
h6	0 -6	0 - 8	- 9	0 - 11	0 - 13	0 - 16									



																			©	Exce	ellent (	∋∶Good
ISO						P								Ν	M					Κ		
Material Description		No	on-alloy s	steel			Low a	lloy ste	el		n alloyed nd tool s		S	tainle	ss ste	el	Grey cas	t iron		ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9		0	11	12		3	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38			35	15		23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	00 :	325	200	24	40	180	180	260	160	250	130	230
Recommend	$\odot$	0	0	0	O	0	0	0	0	(	)	0	0	(	0	$\odot$	O	0	0	0	0	0
ISO					N										S						н	
Material Description		inum- ht a <b>ll</b> oy	Aluminu	um-cast,	alloyed (	Copper an (Bron	d Coppe ze / Bras	rA <b>l</b> oys s)	Non Me Mater			Heat R	lesistar	nt Sup	oer Allo	oys	Titaniur	n A <b>ll</b> oys		ened eel		Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32		33	34	35	36	37	38	39	40	41
HRc											15	30	) 2	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 2	50	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend						0	0	0														





CBN END MILLS

i-Xmill END MILLS

X5070 END MILLS

4G MILL

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWE HP END MILL

ALU POWEF END MILLS

GRAPHITI END MILLS

CFRI END MILLS

ROUTERS

CRX S END MILLS

K-

ONLY ONE COATED PM60 END MILLS



HSS END MILLS

MILLING CUTTERS

TECHNICAL DATA

650

TANK-POWER HSS-PM END MILLS

Generated by Foxit PDF Creator © Foxit Software http://www.foxitsoftware.com For evaluation only. UNCOATED E9A26 series

TiAIN based COATED

GAA26 SERIES

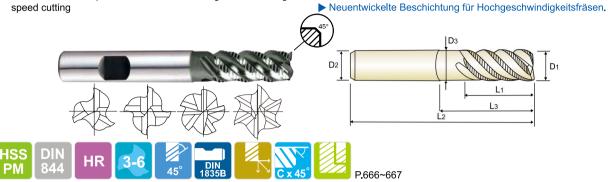
#### HSS-PM, MULTI FLUTE 45°HELIX SHORT LENGTH ROUGHING - FINE

HSS-PM, MULTI SCHNEIDEN 45°RECHTSSPIRALE KURZ SCHRUPFRÄSER - FEIN FRAISES HSS-PM. MULTI-DENTS RAVAGEUSE HÉLICE À 45° - PAS FINS. SÉRIE COURTE

MULTI TAGL., ELICA 45°, PER SGROS., SERIE CORTA, BOMBATO FINE - HSS PM

High chip removal and minimizing breakages of cutting edges.
 Designed to machine carbon steels, alloyed steels, stainless steels
 YG-1's new developed TANK-POWER Coating suitable for high

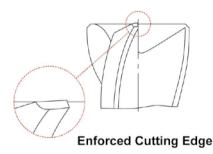
- Schnelle Spanabfuhr und Minimierung von
- Schneidkantenausbrüchen
- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.



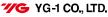
									Unit : mm
EDF	° No.	Mill Diameter	Shank Diameter	Length of Cut	Length Below Shank	Overall Length	Neck Diameter	No. of Flute	Chamfer
UNCOATED	X-COATING	D1(js12)	D2(h6)	L1	L3	L2	D3	Trate	
E9A26040	GAA26040	4.0	6	11	-	57	-	3	0.1
E9A26050	GAA26050	5.0	6	13	-	57	-	4	0.13
E9A26060	GAA26060	6.0	6	13	-	57	-	4	0.15
E9A26070	GAA26070	7.0	10	16	-	66	-	4	0.15
E9A26080	GAA26080	8.0	10	19	-	69	-	4	0.18
E9A26090	GAA26090	9.0	10	19	-	69	-	4	0.18
E9A26100	GAA26100	10.0	10	22	31	72	9.5	4	0.20
E9A26120	GAA26120	12.0	12	26	37	83	11.5	4	0.20
E9A26140	GAA26140	14.0	12	26	-	83	-	5	0.20
E9A26160	GAA26160	16.0	16	32	44	92	15	5	0.20
E9A26180	GAA26180	18.0	16	32	-	92	-	6	0.20
E9A26200	GAA26200	20.0	20	38	54	104	19	6	0.20
E9A26250	GAA26250	25.0	25	45	63	121	24	6	0.20

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in $\mu$ m														
	Nominal-Diameter in mm														
	from 1 to 3 over 3 to 6 over 6 to 10 over 10 to 18 over 18 to 30 over 30 to 50														
js12	± 50	± 60	± 75	± 90	± 105	± 125									
h6	0 -6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16									



																		©	Exc	ellent (	⊖:Good
ISO						P								M					K		
Material Description		No	on-alloy s	steel			Low a	alloy ste	el		alloyed Id tool st		Sta	inless s	teel	Grey ca	st iron	Nodul	ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	0	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38			35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	) 20	0 3	325	200	240	180	180	260	160	250	130	230
Recommend	O	0	0	0	0	0	0	0	0	C		0	0	O	O	O	0	$\odot$	0	0	O
ISO					N									S						н	
Material Description	Alumi wrougi		Aluminu	ım-cast,	alloyed	Copper a (Bro	nd Coppe nze / Bra	er A <b>l</b> oys ss)	Non M Mate		H	leat R	esistant	Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 34	35	36	37	38	39	40	41
HRc											15	30						55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 35	0 320	400 Rm	1050 Rm	550	630	400	550
Recommend						0	0	0													



4G MILL

X-POWER

TitaNox-



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**TiAIN based COATED** 

UNCOATED E9A34 SERIES GAA34 SERIES

#### HSS-PM, MULTI FLUTE LONG LENGTH ROUGHING - COARSE

- HSS-PM. MULTI SCHNEIDEN LANG SCHRUPFRÄSER GROB
- FRAISES HSS-PM, MULTI-DENTS RAVAGEUSE PAS GROSSIERS, SÉRIE LONGUE
- MULTI TAGL., PER SGROSSATURA, SERIE LUNGA, BOMBATO GROSSO HSS PM
- ► Suitable for high-feed roughing milling.
- Designed to machine carbon steels, alloyed steels, stainless steels.
- YG-1's new developed TANK-POWER Coating suitable for high speed cutting.
- ▶ up to Ø20 : center cut, over Ø20 : non center cut
- ► Geeignet zum HSC Schrupp Fräsen.
- Geeignet zum Fräsen von Stahl, legiertem Stahl und rostfreier Stahl.
- Neuentwickelte Beschichtung für Hochgeschwindigkeitsfräsen.
- ▶ Bis D<=20mm : mit Zentrumschnitt, über D<=20mm : Ohne Zentrumschnitt.

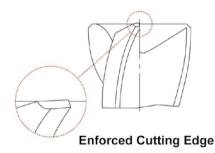




							Unit : mm
EDF	° No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute	Chamfer
UNCOATED	X-COATING	js12	h6	or out	Length		
E9A34060	GAA34060	6.0	6	24	68	3	0.25
E9A34070	GAA34070	7.0	10	30	80	3	0.25
E9A34080	GAA34080	8.0	10	38	88	3	0.25
E9A34090	GAA34090	9.0	10	38	88	3	0.36
E9A34100	GAA34100	10.0	10	45	95	4	0.36
E9A34120	GAA34120	12.0	12	53	110	4	0.5
E9A34140	GAA34140	14.0	12	53	110	4	0.55
E9A34160	GAA34160	16.0	16	63	123	4	0.55
E9A34180	GAA34180	18.0	16	63	123	4	0.55
E9A34200	GAA34200	20.0	20	75	141	4	0.55
E9A34220	GAA34220	22.0	20	75	141	5	0.55
E9A34250	GAA34250	25.0	25	90	166	5	0.55

#### Tolerances according to DIN 7160 & 7161

		-	Tolerance ran	ge in <i>µ</i> m											
	Nominal-Diameter in mm														
	from 1 to 3 over 3 to 6 over 6 to 10 over 10 to 18 over 18 to 30 over 30 to 50														
js12	± 50	± 60	± 75	± 90	± 105	± 125									
h6	0 -6	0 - 8	- <sup>0</sup> - 9	0 - 11	0 - 13	0 - 16									



																		©	Exce	ellent (	⊖∶Good
ISO						P								M					K		
Material Description							alloy ste	el		n alloyed		Sta	ain <b>l</b> ess s	teel	Grey ca	st iron		ar cast on		able cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	1	0	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38			35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	35	0 20	00 3	325	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	C	) (	)	0	0	0	O	0	0	$\odot$	O	0	0
ISO					N									S						н	
Material Description	Alumi wrough		Aluminu	m-cast, a	alloyed <sup>C</sup>	Copper ai (Broi	nd Coppe nze / Bra		Non M Mate		H	leat R	esistan	t Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32				36	37	38	39	40	41
HRc											15	30						55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 35	0 320	400 Rm	1050 Rm	550	630	400	550
Recommend						0	0	0													

652

TANK-POWER END MILLS



END	CBN MILLS	

4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS



654

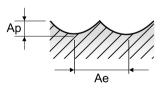


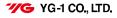
#### **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

#### GA940, GAA32 SERIES 2 FLUTE BALL NOSE

C	6 <b>A</b> 94	40 , GAA	<b>32</b> s	ERIES	2 FLU	JTE BA	LL NOS	E					fz RI	= m/min. = mm/tooth PM = rev./min. ED = mm/min.
ISO	VDI	Material	٨٥	٨٣	Davamatar				[	Diameter (Ø	))			
150	3323	Description	Ae	Ар	Parameter -	3.0	4.0	6.0	8.0	10.0	12.0	16.0	20.0	25.0
	1		0.5D	0.2D	Vc fz RPM FEED	70 0.023 7427 342	75 0.036 5968 430	85 0.055 4509 496	85 0.079 3382 534	85 0.109 2706 590	85 0.115 2255 519	85 0.141 1691 477	85 0.156 1353 422	75 0.163 955 311
	2		0.5D	0.2D	Vc fz RPM FEED	55 0.02 5836 233	60 0.031 4775 296	65 0.046 3448 317	65 0.067 2586 347	65 0.095 2069 393	70 0.097 1857 360	65 0.123 1293 318	65 0.14 1035 290	60 0.142 764 217
	3-4	Non-alloy steel	0.5D	0.2D	Vc fz RPM FEED	35 0.016 3714 119	40 0.027 3183 172	45 0.039 2387 186	45 0.056 1790 201	45 0.082 1432 235	45 0.083 1194 198	45 0.101 895 181	45 0.11 716 158	35 0.122 446 109
	5		0.5D	0.2D	Vc fz RPM FEED	20 0.014 2122 59	20 0.023 1592 73	25 0.035 1326 93	20 0.048 796 76	20 0.075 637 95	20 0.073 531 77	20 0.091 398 72	25 0.097 398 77	20 0.104 255 53
Ρ	6		0.5D	0.2D	Vc fz RPM FEED	55 0.02 5836 233	60 0.031 4775 296	65 0.046 3448 317	65 0.067 2586 347	65 0.095 2069 393	70 0.097 1857 360	65 0.123 1293 318	65 0.14 1035 290	60 0.142 764 217
	7	Low alloy steel	0.5D	0.2D	Vc fz RPM FEED	35 0.016 3714 119	40 0.027 3183 172	45 0.039 2387 186	45 0.056 1790 201	45 0.082 1432 235	45 0.083 1194 198	45 0.101 895 181	45 0.11 716 158	35 0.122 446 109
	8-9		0.5D	0.2D	Vc fz RPM FEED	20 0.014 2122 59	20 0.023 1592 73	25 0.035 1326 93	20 0.048 796 76	20 0.075 637 95	20 0.073 531 77	20 0.091 398 72	25 0.097 398 77	20 0.104 255 53
	10	High a <b>ll</b> oyed	0.5D	0.2D	Vc fz RPM FEED	55 0.02 5836 233	60 0.031 4775 296	65 0.046 3448 317	65 0.067 2586 347	65 0.095 2069 393	70 0.097 1857 360	65 0.123 1293 318	65 0.14 1035 290	60 0.142 764 217
	11.1	steel, and tool steel	0.5D	0.2D	Vc fz RPM FEED	20 0.014 2122 59	20 0.023 1592 73	25 0.035 1326 93	20 0.048 796 76	20 0.075 637 95	20 0.073 531 77	20 0.091 398 72	25 0.097 398 77	20 0.104 255 53
М	14.1	Stainless steel	0.5D	0.2D	Vc fz RPM FEED	20 0.014 2122 59	20 0.023 1592 73	25 0.036 1326 95	25 0.048 995 95	25 0.073 796 116	25 0.074 663 98	25 0.092 497 92	25 0.1 398 80	20 0.1 255 51
K	15-20	Grey cast iron Nodular cast iron Malleable cast iron	0.5D	0.2D	Vc fz RPM FEED	55 0.02 5836 233	60 0.031 4775 296	65 0.046 3448 317	65 0.067 2586 347	65 0.095 2069 393	70 0.097 1857 360	65 0.123 1293 318	65 0.14 1035 290	60 0.142 764 217

% The FEED, in long & extra long types, should be reduced by around 50%





4G MILL

X-POWER

TitaNox-POWER

CFRP END MILLS

K-2 END MILLS

TANK-POWER END MILLS

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TANK-POWER HSS-PM END MILLS

#### **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

#### GA936, GAA29 series

#### 2 FLUTE - SLOTTING

Vc = m/min. fz = mm/tooth RPM = rev./min. FEED = mm/min.

ISO	VDI	Material	Ae	Ар	Parameter								eter (Ø)						
150	3323	Description	110	, ip	Turumeter	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	2
					Vc	45	45	55	60	65	65	65	70	70	70	65	60	60	6
	1		1.0D	0.5D	fz	0.008	0.016	0.027	0.033	0.038	0.053	0.071	0.076	0.083	0.098	0.104	0.116	0.11	0.
			1100		RPM	7162	4775	4377	3820	3448	2586	2069	1857	1592	1393	1149	955	868	7
					FEED	115	153	236	252	262	274	294	282	264	273	239	222	191	1
					Vc	35	40	45	50	55	55	55	55	55	60	55	50	50	
	2		1.0D	0.5D	fz	0.008	0.016	0.024	0.031	0.036	0.055	0.074	0.083	0.084	0.085	0.103	0.106	0.106	
					RPM FEED	5570 89	4244 136	3581 172	3183 197	2918 210	2188 241	1751 259	1459 242	1251 210	1194 203	973 200	796 169	723 153	1
		Non-alloy steel			Vc	30	30	40	40	45	45	45	45	45	45	45	45	40	
		· ·			fz	0.008	0.017	0.025	0.036	43 0.041	45 0.056	0.079	0.091	0.098	0.101	0.101	0.107	40 0.104	0
	3-4		1.0D	0.5D	RPM	4775	3183	3183	2546	2387	1790	1432	1194	1023	895	796	716	579	
					FEED	76	108	159	183	196	201	226	217	201	181	161	153	120	1
					Vc	45	45	55	60	65	65	65	70	70	70	65	60	60	
					fz	0.008	0.016	0.027	0.033	0.038	0.053	0.071	0.076	0.083	0.098	0.104	0.116	0.11	c
	5		1.0D	0.5D	RPM	7162	4775	4377	3820	3448	2586	2069	1857	1592	1393	1149	955	868	
					FEED	115	153	236	252	262	274	294	282	264	273	239	222	191	
					Vc	35	40	45	50	55	55	55	55	55	60	55	50	50	
	6		1.0D	0.5D	fz	0.008	0.016	0.024	0.031	0.036	0.055	0.074	0.083	0.084	0.085	0.103	0.106	0.106	C
	0		1.00	0.50	RPM	5570	4244	3581	3183	2918	2188	1751	1459	1251	1194	973	796	723	
Ρ					FEED	89	136	172	197	210	241	259	242	210	203	200	169	153	
					Vc	30	30	40	40	45	45	45	45	45	45	45	45	40	
	7		1.0D	0.5D	fz	0.008	0.017	0.025	0.036	0.041	0.056	0.079	0.091	0.098	0.101	0.101	0.107	0.104	
			1.00	0.50	RPM	4775	3183	3183	2546	2387	1790	1432	1194	1023	895	796	716	579	
		Low alloy steel			FEED	76	108	159	183	196	201	226	217	201	181	161	153	120	
		Low anoy steel			Vc	45	45	55	60	65	65	65	70	70	70	65	60	60	
	8		1.0D	0.5D	fz	0.008	0.016	0.027	0.033	0.038	0.053	0.071	0.076	0.083	0.098	0.104	0.116	0.11	C
					RPM	7162	4775	4377	3820	3448	2586	2069	1857	1592	1393	1149	955	868	
					FEED	115	153	236	252	262	274	294	282	264	273	239	222	191	
					Vc fz	35	40	45	50 0.031	55 0.036	55	55 0.074	55	55 0.084	60 0.085	55	50	50	c
	9		1.0D	0.5D	IZ RPM	0.008 5570	0.016 4244	0.024 3581	3183	2918	0.055 2188	1751	0.083 1459	1251	1194	0.103 973	0.106 796	0.106 723	
					FEED	89	136	172	197	2918	2100	259	242	210	203	200	169	153	
					Vc	35	40	45	50	55	55	55	55	55	60	55	50	50	
					fz	0.008	0.016	0.024	0.031	0.036	0.055	0.074	0.083	0.084	0.085	0.103	0.106	0.106	c
	10		1.0D	0.5D	RPM	5570	4244	3581	3183	2918	2188	1751	1459	1251	1194	973	796	723	
		High alloyed			FEED	89	136	172	197	210	241	259	242	210	203	200	169	153	
		steel, and tool steel			Vc	45	45	55	60	65	65	65	70	70	70	65	60	60	
	111_		1.0D	0.5D	fz	0.008	0.016	0.027	0.033	0.038	0.053	0.071	0.076	0.083	0.098	0.104	0.116	0.11	C
	11.1		1.00	0.50	RPM	7162	4775	4377	3820	3448	2586	2069	1857	1592	1393	1149	955	868	1
					FEED	115	153	236	252	262	274	294	282	264	273	239	222	191	
		Grey cast iron			Vc	35	40	45	50	55	55	55	55	55	60	55	50	50	
Κ	15-20	Nodular cast iron	1.0D	0.5D	fz	0.008	0.016	0.024	0.031	0.036	0.055	0.074	0.083	0.084	0.085	0.103	0.106	0.106	
-IX		Malleable cast iron	1.00	0.50	RPM	5570	4244	3581	3183	2918	2188	1751	1459	1251	1194	973	796	723	
					FEED	89	136	172	197	210	241	259	242	210	203	200	169	153	

Ap



4G MILL

X-POWER

TitaNox-POWER

CFRP END MILLS

K-2 END MILLS

TANK-POWER END MILLS

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TANK-POWER HSS-PM END MILLS

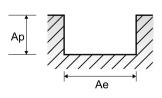
#### **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

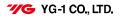
#### GA942, GAA30 SERIES

#### **3 FLUTE - SLOTTING**

Vc = m/min. fz = mm/tooth RPM = rev./min. FEED = mm/min.

so	VDI	Material	Ae	Ар	Parameter							Diame	eter (Ø)						
	3323	Description	Ae		Tarameter	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	2
					Vc	40	45	55	60	65	65	65	70	70	70	65	60	60	
	1		1.0D	0.5D	fz	0.004	0.007	0.011	0.014	0.023	0.031	0.033	0.051	0.052	0.059	0.07	0.081	0.091	C
	'		1.00	0.50	RPM	6366	4775	4377	3820	3448	2586	2069	1857	1592	1393	1149	955	868	
					FEED	76	100	144	160	238	241	205	284	248	246	241	232	237	
					Vc	35	35	45	50	55	55	55	55	60	60	50	50	50	
	2		1.0D	0.5D	fz	0.003	0.007	0.011	0.014	0.023	0.032	0.039	0.053	0.054	0.061	0.071	0.08	0.089	0
	2		1.00	0.52	RPM	5570	3714	3581	3183	2918	2188	1751	1459	1364	1194	884	796	723	
		Non-alloy steel			FEED	50	78	118	134	201	210	205	232	221	218	188	191	193	
					Vc	30	30	40	40	45	45	45	45	45	45	45	45	40	
	3-4		1.0D	0.5D	fz	0.003	0.005	0.009	0.012	0.02	0.028	0.038	0.047	0.053	0.056	0.063	0.067	0.083	1
					RPM	4775	3183	3183	2546	2387	1790	1432	1194	1023	895	796	716	579	
					FEED	43	48	86	92	143	150	163	168	163	150	150	144	144	
					Vc	20	20	25	25	25	30	30	30	30	30	30	30	30	
	5		1.0D	0.5D	fz	0.004	0.007	0.009	0.012	0.021	0.03	0.043	0.052	0.056	0.061	0.063	0.07	0.079	ľ
					RPM FEED	3183	2122	1989	1592	1326	1194	955	796	682	597	531	477	434	
						38 35	45 35	54	57 50	84	107 55	123 55	124	115 60	109	100	100	103	+
					Vc	0.003	35 0.007	45 0.011	0.014	55 0.023	0.032	0.039	55 0.053	0.054	60 0.061	50 0.071	50	50	
	6		1.0D	0.5D	fz RPM	5570	3714	3581		2918	2188		1459		1194	884	0.08 796	0.089 723	
					FEED	5570	78	118	3183 134	2918	2100	1751 205	232	1364 221	218	004 188	190	193	
P						30	30	40	40	45	45	45	45					40	╞
					Vc fz	0.003	0.005	40 0.009	40 0.012	45 0.02	45 0.028	45 0.038	45 0.047	45 0.053	45 0.056	45 0.063	45 0.067	40 0.083	
	7		1.0D	0.5D	RPM	4775	3183	3183	2546	2387	1790	1432	1194	1023	895	796	716	579	
					FEED	4775	48	86	92	143	150	163	168	163	150	150	144	144	
		Low alloy steel			Vc	20	20	25	25	25	30	30	30	30	30	30	30	30	t
					fz	0.004	0.007	0.009	0.012	0.021	0.03	0.043	0.052	0.056	0.061	0.063	0.07	0.079	
	8		1.0D	0.5D	RPM	3183	2122	1989	1592	1326	1194	955	796	682	597	531	477	434	
					FEED	38	45	54	57	84	107	123	124	115	109	100	100	103	
					Vc	10	15	20	20	20	20	20	20	20	20	25	25	20	t
					fz	0.005	0.008	0.012	0.014	0.023	0.032	0.045	0.053	0.057	0.064	0.067	0.074	0.09	
	9		1.0D	0.5D	RPM	1592	1592	1592	1273	1061	796	637	531	455	398	442	398	289	
					FEED	24	38	57	53	73	76	86	84	78	76	89	88	78	
					Vc	35	35	45	50	55	55	55	55	60	60	50	50	50	Ť
	10		1.0D	0.55	fz	0.003	0.007	0.011	0.014	0.023	0.032	0.039	0.053	0.054	0.061	0.071	0.08	0.089	
	10		1.00	0.5D	RPM	5570	3714	3581	3183	2918	2188	1751	1459	1364	1194	884	796	723	
		High alloyed			FEED	50	78	118	134	201	210	205	232	221	218	188	191	193	
		steel, and tool steel			Vc	20	20	25	25	25	30	30	30	30	30	30	30	30	Γ
	11.1		1.0D	0.5D	fz	0.004	0.007	0.009	0.012	0.021	0.03	0.043	0.052	0.056	0.061	0.063	0.07	0.079	
			1.00	0.50	RPM	3183	2122	1989	1592	1326	1194	955	796	682	597	531	477	434	
					FEED	38	45	54	57	84	107	123	124	115	109	100	100	103	
		Groucostiron			Vc	35	35	45	50	55	55	55	55	60	60	50	50	50	
K	15-20	Grey cast iron Nodular cast iron	1.0D	0.5D	fz	0.003	0.007	0.011	0.014	0.023	0.032	0.039	0.053	0.054	0.061	0.071	0.08	0.089	
	13-20	Malleable cast iron	1.00	0.50	RPM	5570	3714	3581	3183	2918	2188	1751	1459	1364	1194	884	796	723	
		aireasie casciron			FEED	50	78	118	134	201	210	205	232	221	218	188	191	193	





4G MILL

X-POWER

TitaNox-POWER

CFRP END MILLS

K-2 END MILLS Generated by Foxit PDF Creator © Foxit Software http://www.foxitsoftware.com For evaluation only.



**TANK-POWER** HSS-PM END MILLS

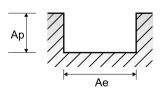
#### RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

#### E9942, E9A30 series

#### 3 FLUTE - SLOTTING

Vc = m/min. fz = mm/tooth RPM = rev./min.FFED = mm/min

so	VDI	Material	Ae	Ар	Parameter							Diame	eter (Ø)						
30	3323	Description	Ae	Ap	raiaiiietei	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	2
					Vc	30	30	35	40	45	45	45	45	45	45	45	40	40	1
	1		1.0D	0.5D	fz	0.003	0.007	0.01	0.013	0.021	0.028	0.037	0.047	0.048	0.054	0.064	0.076	0.085	0
	· ·		1.00	0.50	RPM	4775	3183	2785	2546	2387	1790	1432	1194	1023	895	796	637	579	1
					FEED	43	67	84	99	150	150	159	168	147	145	153	145	148	
					Vc	25	25	30	35	35	40	40	40	40	40	35	35	35	
	2		1.0D	0.5D	fz RPM	0.003 3979	0.007 2653	0.01 2387	0.012 2228	0.021 1857	0.029 1592	0.036 1273	0.048 1061	0.048 909	0.056 796	0.066 619	0.075 557	0.08 506	0
					FEED	3979	2055 56	72	80	1057	1392	1275	153	131	134	123	125	122	
		Non-alloy steel			Vc	20	30	25	30	30	30	30	30	30	30	30	30	30	
					fz	0.003	0.003	0.008	0.01	0.018	0.026	0.035	0.043	0.049	0.052	0.06	0.059	0.077	c
	3-4		1.0D	0.5D	RPM	3183	3183	1989	1910	1592	1194	955	796	682	597	531	477	434	1
					FEED	29	29	48	57	86	93	100	103	100	93	95	85	100	
					Vc	15	15	15	15	20	20	20	20	20	20	20	20	20	
	_		1.0D	0.5D	fz	0.003	0.007	0.009	0.012	0.018	0.028	0.038	0.047	0.048	0.057	0.057	0.061	0.074	
	5		1.00	0.50	RPM	2387	1592	1194	955	1061	796	637	531	455	398	354	318	289	
					FEED	21	33	32	34	57	67	73	75	65	68	60	58	64	
					Vc	25	25	30	35	35	40	40	40	40	40	35	35	35	
	6		1.0D	0.5D	fz	0.003	0.007	0.01	0.012	0.021	0.029	0.036	0.048	0.048	0.056	0.066	0.075	0.08	0
			1.00	0.50	RPM	3979	2653	2387	2228	1857	1592	1273	1061	909	796	619	557	506	
Ρ					FEED	36	56	72	80	117	138	138	153	131	134	123	125	122	
•					Vc	20	30	25	30	30	30	30	30	30	30	30	30	30	
	7		1.0D	0.5D	fz	0.003	0.003	0.008	0.01	0.018	0.026	0.035	0.043	0.049	0.052	0.06	0.059	0.077	0
					RPM FEED	3183 29	3183 29	1989	1910	1592	1194 93	955	796	682 100	597 93	531 95	477 85	434 100	
		Low alloy steel			Vc	15	15	48 15	57 15	86 20	20	100 20	103 20	100 20	20	20	20	20	
					fz	0.003	0.007	0.009	0.012	0.018	0.028	0.038	0.047	0.048	0.057	0.057	0.061	0.074	
	8		1.0D	0.5D	RPM	2387	1592	1194	955	1061	796	637	531	455	398	354	318	289	
					FEED	21	33	32	34	57	67	73	75	65	68	60	58	64	
					Vc	10	10	15	15	15	15	15	15	15	15	15	15	15	
					fz	0.005	0.008	0.012	0.013	0.02	0.03	0.042	0.049	0.053	0.061	0.062	0.068	0.085	0
	9		1.0D	0.5D	RPM	1592	1061	1194	955	796	597	477	398	341	298	265	239	217	
					FEED	24	25	43	37	48	54	60	58	54	55	49	49	55	
					Vc	25	25	30	35	35	40	40	40	40	40	35	35	35	
	10		1.0D	0.5D	fz	0.003	0.007	0.01	0.012	0.021	0.029	0.036	0.048	0.048	0.056	0.066	0.075	0.08	0
		High a <b>ll</b> oyed	1.00	0.55	RPM	3979	2653	2387	2228	1857	1592	1273	1061	909	796	619	557	506	
		steel,			FEED	36	56	72	80	117	138	138	153	131	134	123	125	122	
		and tool steel			Vc	15	15	15	15	20	20	20	20	20	20	20	20	20	
	11.1		1.0D	0.5D	fz	0.003	0.007	0.009	0.012	0.018	0.028	0.038	0.047	0.048	0.057	0.057	0.061	0.074	
					RPM FEED	2387	1592	1194	955	1061	796	637 72	531	455	398	354 60	318	289	
					Vc	21 25	33 25	32 30	34 35	57 35	67 40	73 40	75 40	65 40	68 40	35	58 35	64 35	+
		Grey cast iron			fz	0.003	0.007	0.01	0.012	35 0.021	40 0.029	40 0.036	40 0.048	40 0.048	40 0.056	0.066	35 0.075	0.08	0
K	15-20	Nodular cast iron	1.0D	0.5D	RPM	3979	2653	2387	2228	1857	1592	1273	1061	909	796	619	557	506	ľ
		Malleable cast iron			FEED	36	56	72	80	117	138	138	153	131	134	123	125	122	

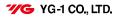




MILLING CUTTERS

ECHNICAL DATA





END	CBN MILLS

END MILLS i-SMART MODULAF FND MILLS

END MILLS

X-POWER PRO

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWE HP END MILL ALU

D-POWEI GRAPHITI

D-POWER CFRP END MILLS

ROUTERS

CRX S

K-2 END MILLS

ONLY ONE COATED PM60 END MILLS



MILLING CUTTERS

ECHNICAL DATA



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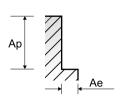
#### RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

#### GA938, GAA31 SERIES 4 FLUTE - SIDE CUTTING

Vc = m/min. fz = mm/tooth RPM = rev./min.FEED = mm/min.

ISO	VDI	Material	Ae	Ар	Parameter							Diame	eter (Ø)						
150	3323	Description	Ae	μAp	raiaiiietei	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	25.0
					Vc	60	60	65	70	75	80	70	75	80	80	85	80	75	80
			0.1D	1.5D	fz	0.008	0.016	0.023	0.029	0.035	0.046	0.068	0.071	0.076	0.08	0.077	0.088	0.098	0.093
					RPM FEED	9549 306	6366 407	5173 476	4456 517	3979 557	3183 586	2228 606	1989 565	1819 553	1592 509	1503 463	1273 448	1085 425	1019 379
					Vc	55	55	60	65	70	65	65	70	70	70	70	65	65	65
					fz	0.007	0.015	0.021	0.026	0.031	0.046	0.063	0.067	0.072	0.077	0.08	0.088	0.084	0.091
	2		0.1D	1.5D	RPM	8754	5836	4775	4138	3714	2586	2069	1857	1592	1393	1238	1035	940	828
		Non-alloy steel			FEED	245	350	401	430	460	476	521	498	458	429	396	364	316	301
		Non anoy steel			Vc	40	40	45	45	50	50	50	55	50	50	50	50	45	50
	3-4		0.1D	1.5D	fz	0.007	0.014	0.021	0.028	0.032	0.046	0.059	0.066	0.08	0.085	0.087	0.088	0.094	0.091
					RPM FEED	6366 178	4244 238	3581 301	2865 321	2653 340	1989 366	1592 376	1459 385	1137 364	995 338	884 308	796 280	651 245	637 232
					Vc	25	250	30	30	35	35	30	35	35	35	35	35	30	35
					fz	0.008	0.017	0.022	0.028	0.032	0.043	0.066	0.067	0.073	0.081	0.077	0.083	0.085	0.089
	5		0.1D	1.5D	RPM	3979	2653	2387	1910	1857	1393	955	928	796	696	619	557	434	446
					FEED	127	180	210	214	238	240	252	249	232	226	191	185	148	159
					Vc	55	55	60	65	70	65	65	70	70	70	70	65	65	65
	6		0.1D	1.5D	fz	0.007	0.015	0.021	0.026	0.031	0.046	0.063	0.067	0.072	0.077	0.08	0.088	0.084	0.091
					RPM FEED	8754 245	5836 350	4775 401	4138 430	3714 460	2586 476	2069 521	1857 498	1592 458	1393 429	1238 396	1035 364	940 316	828 301
Ρ					Vc	40	40	401	450	400 50	50	521	496 55	438 50	429 50	590	504	45	50
	_				fz	0.007	0.014	0.021	0.028	0.032	0.046	0.059	0.066	0.08	0.085	0.087	0.088	0.094	0.091
	7		0.1D	1.5D	RPM	6366	4244	3581	2865	2653	1989	1592	1459	1137	995	884	796	651	637
		Low alloy steel			FEED	178	238	301	321	340	366	376	385	364	338	308	280	245	232
		Low anoy steel			Vc	25	25	30	30	35	35	30	35	35	35	35	35	30	35
	8		0.1D	1.5D	fz	0.008	0.017	0.022	0.028	0.032	0.043	0.066	0.067	0.073	0.081	0.077	0.083	0.085	0.089
					RPM	3979	2653	2387	1910	1857	1393	955	928 240	796	696	619	557	434	446
					FEED Vc	127 20	180 25	210 25	214 25	238 25	240 30	252 30	249 25	232 30	226 30	191 30	185 30	148 30	159 30
					fz	0.006	0.013	0.019	0.024	0.031	0.04	0.056	0.064	0.067	0.075	0.075	0.08	0.081	0.087
	9		0.1D	1.5D	RPM	3183	2653	1989	1592	1326	1194	955	663	682	597	531	477	434	382
					FEED	76	138	151	153	164	191	214	170	183	179	159	153	141	133
					Vc	55	55	60	65	70	65	65	70	70	70	70	65	65	65
	10		0.1D	1.5D	fz	0.007	0.015	0.021	0.026	0.031	0.046	0.063	0.067	0.072	0.077	0.08	0.088	0.084	0.091
		High a <b>ll</b> oyed			RPM FEED	8754	5836	4775	4138	3714	2586	2069	1857	1592	1393	1238	1035	940	828
		steel,			Vc	245 25	350 25	401 30	430 30	460 35	476 35	521 30	498 35	458 35	429 35	396 35	364 35	316 30	301 35
		and tool steel			fz	0.008	25 0.017	0.022	0.028	0.032	0.043	0.066	0.067	0.073	0.081	0.077	0.083	0.085	0.089
	11.1		0.1D	1.5D	RPM	3979	2653	2387	1910	1857	1393	955	928	796	696	619	557	434	446
					FEED	127	180	210	214	238	240	252	249	232	226	191	185	148	159
		Groucoctiron			Vc	55	55	60	65	70	65	65	70	70	70	70	65	65	65
Κ	15-20	Grey cast iron Nodular cast iron	0.1D	1.5D	fz	0.007	0.015	0.021	0.026	0.031	0.046	0.063	0.067	0.072	0.077	0.08	0.088	0.084	0.091
		Malleable cast iron			RPM	8754	5836	4775	4138	3714	2586	2069	1857	1592	1393	1238	1035	940	828
		n long & extra long ti			FEED	245	350	401	430	460	476	521	498	458	429	396	364	316	301

% The FEED, in long & extra long types, should be reduced by around 50%



662

END MILLS	END	CBN MILLS
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4G MILL

X-POWER

TitaNox-POWER

CFRP END MILLS

K-2 END MILLS



664



#### GA941, GAA35, GAA33, GAA34 SERIES MULTI FLUTE ROUGHING - SIDE CUTTING

Vc = m/min. fz = mm/tooth RPM = rev./min.

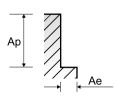
	Generated by Foxit PDF Creator © Foxit Software
<b>TANK-POWER</b>	
HSS-PM END MILLS	RECOMMENDED CUTTING CONDITI

**RECOMMENDED CUTTING CONDITIONS** 

**EMPFOHLENE SCHNEIDPARAMETER** 

							-							FEE	M = rev./min. D = mm/min.
	VDI	Material	۸ -	Δ	D					Diame	eter (Ø)				
ISO	3323	Description	Ae	Ар	Parameter	6.0	8.0	10.0	12.0	22.0	25.0	18.0	20.0	22.0	25.0
					Vc	55	60	60	60	60	60	60	60	60	60
	1		0.5D	1.5D	fz	0.027	0.04	0.055	0.065	0.074	0.086	0.099	0.111	0.096	0.105
			0.50	1.50	RPM	2918	2387	1910	1592	1364	1194	1061	955	868	764
					FEED	236	286	420	414	404	411	420	424	417	401
					Vc	40	50	45	45	45	50	50	50	45	45
	2		0.5D	1.5D	fz	0.027	0.04	0.053	0.069	0.079	0.087	0.093	0.109	0.102	0.105
					RPM FEED	2122 172	1989 239	1432 304	1194 329	1023 323	995 346	884 329	796 347	651 332	573 301
		Non-alloy steel			Vc	30	35	304	329	35	340	329	35	30	35
					fz	0.024	0.038	0.046	0.064	0.076	0.087	0.094	0.108	0.098	0.105
	3-4		0.5D	1.5D	RPM	1592	1393	1114	928	796	696	619	557	434	446
					FEED	115	159	205	238	242	242	233	241	213	234
					Vc	25	25	30	30	30	30	30	30	30	30
	_			4.50	fz	0.027	0.04	0.045	0.061	0.071	0.082	0.092	0.102	0.09	0.1
	5		0.5D	1.5D	RPM	1326	995	955	796	682	597	531	477	434	382
					FEED	107	119	172	194	194	196	195	195	195	191
					Vc	40	50	45	45	45	50	50	50	45	45
Р	6		0.5D	1.5D	fz	0.027	0.04	0.053	0.069	0.079	0.087	0.093	0.109	0.102	0.105
			0.50		RPM	2122	1989	1432	1194	1023	995	884	796	651	573
					FEED	172	239	304	329	323	346	329	347	332	301
					Vc	30	35	35	35	35	35	35	35	30	35
	7	Low alloy steel	0.5D	1.5D	fz RPM	0.024 1592	0.038 1393	0.046 1114	0.064 928	0.076 796	0.087 696	0.094 619	0.108 557	0.098 434	0.105 446
					FEED	115	1595	205	238	242	242	233	241	213	234
					Vc	25	25	30	30	30	30	30	30	30	30
					fz	0.027	0.04	0.045	0.061	0.071	0.082	0.092	0.102	0.09	0.1
	8-9		0.5D	1.5D	RPM	1326	995	955	796	682	597	531	477	434	382
					FEED	107	119	172	194	194	196	195	195	195	191
					Vc	40	50	45	45	45	50	50	50	45	45
	10		0.5D	1.5D	fz	0.027	0.04	0.053	0.069	0.079	0.087	0.093	0.109	0.102	0.105
		High alloyed	0.50	1.50	RPM	2122	1989	1432	1194	1023	995	884	796	651	573
		steel,			FEED	172	239	304	329	323	346	329	347	332	301
		and tool steel			Vc	25	25	30	30	30	30	30	30	30	30
	11.1		0.5D	1.5D	fz RPM	0.027 1326	0.04 995	0.045 955	0.061 796	0.071 682	0.082 597	0.092 531	0.102 477	0.09 434	0.1 382
					FEED	107	119	172	196	194	196	195	195	454 195	- 562 191
					Vc	25	30	30	30	30	30	30	30	30	30
					fz	0.025	0.039	0.045	0.064	0.074	0.085	0.093	0.107	0.095	0.103
Μ	14.1	Stainless steel	0.5D	1.5D	RPM	1326	1194	955	796	682	597	531	477	434	382
					FEED	99	140	172	204	202	203	197	204	206	197
		Constanting			Vc	40	50	45	45	45	50	50	50	45	45
Κ	15-20	Grey cast iron Nodular cast iron	0.5D	1.5D	fz	0.027	0.04	0.053	0.069	0.079	0.087	0.093	0.109	0.102	0.105
	15-20	Malleable cast iron	0.50	1.50	RPM	2122	1989	1432	1194	1023	995	884	796	651	573
					FEED	172	239	304	329	323	346	329	347	332	301

% The FEED, in long & extra long types, should be reduced by around 50%



END	CBN MILLS
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1

3-4

8-9

11.1

Μ 14.1

Κ 15-2

Ρ

4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS



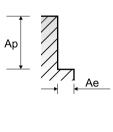


#### **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

#### **MULTI FLUTE ROUGHING - SIDE CUTTING**

 $\begin{array}{l} Vc = m/min. \\ fz = mm/tooth \\ RPM = rev./min. \\ FEED = mm/min. \end{array}$ 

	Material	Ae	Ap	Parameter					Diame	ter (Ø)				
23	Description	Ae	Ар	ratattieter	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	25.0
		0.5D	1.5D	Vc fz RPM FEED	55 0.021 2918 245	60 0.03 2387 286	60 0.055 1910 420	60 0.065 1592 414	60 0.059 1364 402	60 0.069 1194 412	60 0.066 1061 420	60 0.074 955 424	60 0.08 868 417	60 0.088 764 403
	N	0.5D	1.5D	Vc fz RPM FEED	40 0.02 2122 170	50 0.03 1989 239	45 0.053 1432 304	45 0.069 1194 329	45 0.063 1023 322	50 0.069 995 343	50 0.062 884 329	50 0.072 796 344	45 0.085 651 332	45 0.088 573 303
4	Non-alloy steel	0.5D	1.5D	Vc fz RPM FEED	30 0.018 1592 115	35 0.029 1393 162	35 0.046 1114 205	35 0.064 928 238	35 0.061 796 243	35 0.07 696 244	35 0.063 619 234	35 0.072 557 241	30 0.082 434 214	35 0.087 446 233
		0.5D	1.5D	Vc fz RPM FEED	25 0.02 1326 106	25 0.03 995 119	30 0.045 955 172	30 0.061 796 194	30 0.057 682 194	30 0.065 597 194	30 0.061 531 194	30 0.068 477 195	30 0.075 434 195	30 0.083 382 190
		0.5D	1.5D	Vc fz RPM FEED	40 0.02 2122 170	50 0.03 1989 239	45 0.053 1432 304	45 0.069 1194 329	45 0.063 1023 322	50 0.069 995 343	50 0.062 884 329	50 0.072 796 344	45 0.085 651 332	45 0.088 573 303
	Low alloy steel	0.5D	1.5D	Vc fz RPM FEED	30 0.018 1592 115	35 0.029 1393 162	35 0.046 1114 205	35 0.064 928 238	35 0.061 796 243	35 0.07 696 244	35 0.063 619 234	35 0.072 557 241	30 0.082 434 214	35 0.087 446 233
9		0.5D	1.5D	Vc fz RPM FEED	25 0.02 1326 106	25 0.03 995 119	30 0.045 955 172	30 0.061 796 194	30 0.057 682 194	30 0.065 597 194	30 0.061 531 194	30 0.068 477 195	30 0.075 434 195	30 0.083 382 190
)	High alloyed steel.	0.5D	1.5D	Vc fz RPM FEED	40 0.02 2122 170	50 0.03 1989 239	45 0.053 1432 304	45 0.069 1194 329	45 0.063 1023 322	50 0.069 995 343	50 0.062 884 329	50 0.072 796 344	45 0.085 651 332	45 0.088 573 303
.1	and tool steel	0.5D	1.5D	Vc fz RPM FEED	25 0.02 1326 106	25 0.03 995 119	30 0.045 955 172	30 0.061 796 194	30 0.057 682 194	30 0.065 597 194	30 0.061 531 194	30 0.068 477 195	30 0.075 434 195	30 0.083 382 190
.1	Stainless steel	0.5D	1.5D	Vc fz RPM FEED	25 0.019 1326 101	30 0.029 1194 138	30 0.045 955 172	30 0.064 796 204	30 0.059 682 201	30 0.068 597 203	30 0.062 531 197	30 0.071 477 203	30 0.079 434 206	30 0.085 382 195
20	Grey cast iron Nodular cast iron Malleable cast iron	0.5D	1.5D	Vc fz RPM FEED	40 0.02 2122 170	50 0.03 1989 239	45 0.053 1432 304	45 0.069 1194 329	45 0.063 1023 322	50 0.069 995 343	50 0.062 884 329	50 0.072 796 344	45 0.085 651 332	45 0.088 573 303



#### RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

E9E43 SERIES		<b>E9</b>	E43	SERIES
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#### MULTI FLUTE ROUGHING - SIDE CUTTING

**TANK-POWER** 

HSS-PM END MILLS

 $\begin{array}{l} Vc = m/min. \\ fz = mm/tooth \\ RPM = rev./min. \\ FEED = mm/min. \end{array}$ 

END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER PRO END MILLS
TitaNox-

TitaNox-POWER END MILLS

END MILLS

V7 PLUS END MILLS

END MILL ALL POWEI

D-POWE GRAPHIT END MILL

D-POWER CFRP END MILLS

ROUTER

CRX S END MILLS

K-2 END MILLS

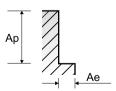
ONLY ONE COATED PM60 END MILLS



MILLING

ECHNICAL DATA

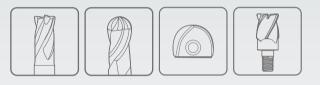
	VDI	Material	•	•						
ISO	3323	Description	Ae	Ар	Parameter	10.0	12.0	16.0	20.0	25.0
					Vc	41	41	41	41	41
	1		0.5D	1.5D	fz	0.042	0.05	0.067	0.085	0.081
	1		0.50	1.50	RPM	1305	1088	816	653	522
					FEED	219	218	219	222	211
					Vc	32	32	32	32	32
	2		0.5D	1.5D	fz	0.041	0.053	0.068	0.086	0.083
	2		0.50	1.50	RPM	1019	849	637	509	407
		Non-alloy steel			FEED	167	180	173	175	169
		Non-alloy steel			Vc	23	23	23	23	23
	3-4		0.5D	1.5D	fz	0.037	0.05	0.067	0.083	0.082
	5-4		0.50	1.50	RPM	732	610	458	366	293
					FEED	108	122	123	122	120
					Vc	19	19	19	19	19
	5		0.5D	1.5D	fz	0.035	0.048	0.064	0.079	0.079
	ر		0.50	1.50	RPM	605	504	378	302	242
					FEED	85	97	97	96	96
					Vc	32	32	32	32	32
	6		0.5D	1.5D	fz	0.041	0.053	0.068	0.086	0.083
	0		0.50	1.50	RPM	1019	849	637	509	407
Ρ					FEED	167	180	173	175	169
					Vc	23	23	23	23	23
	7		0.5D	1.5D	fz	0.037	0.05	0.067	0.083	0.082
	· /		0.50	1.50	RPM	732	610	458	366	293
		Low alloy steel			FEED	108	122	123	122	120
		LOW anoy steel			Vc	19	19	19	19	19
	8		0.5D	1.5D	fz	0.035	0.048	0.064	0.079	0.079
	0		0.50	1.50	RPM	605	504	378	302	242
					FEED	85	97	97	96	96
					Vc	19	19	19	19	19
	9		0.5D	1.5D	fz	0.035	0.048	0.064	0.079	0.079
			0.50	1.50	RPM	605	504	378	302	242
					FEED	64	97	97	119	96
					Vc	32	32	32	32	32
	10		0.5D	1.5D	fz	0.041	0.053	0.068	0.086	0.083
		High a <b>ll</b> oyed	0.50		RPM	1019	849	637	509	407
		steel,			FEED	167	180	173	175	169
		and tool steel			Vc	19	19	19	19	19
	11.1		0.5D	1.5D	fz	0.035	0.048	0.064	0.079	0.079
					RPM	605	504	378	302	242
					FEED	85	97	97	96	96
					Vc	21	21	21	21	21
Μ	14.1	Stainless steel	0.5D	1.5D	fz	0.038	0.058	0.074	0.095	0.089
					RPM	668	557	418	334	267
					FEED	102	129	124	127	119
		Grey cast iron			Vc	32	32	32	32	32
K	15-20	Nodular cast iron	0.5D	1.5D	fz	0.041	0.053	0.068	0.086	0.083
	13 20	Malleable cast iron	0.50	1.50	RPM	1019	849	637	509	407
					FEED	167	180	173	175	169



668



## Global Cutting Tool Leader YG-1



# MILLING

#### Leading Through Innovation

## GENERAL HSS END MILLS HSS SCHAFTFRÄSER

- General Purpose / Coating Available

HSS

- Allgemeine Anwendung / Beschichtung verfügbar

CARBIDE

HSS

Generated by Foxit PDF Creator © Foxit Software http://www.foxitsofty SELECTION GUIDE SERIES E9410 E9720 E3570 E3574 FLUTE **Muti Flute** 2 2 4 **HELIX ANGLE** ≈ 30° ≈ 30° 30° ≈ 30° **MILLING TOOLS CUTTING EDGE SHAPE** SQUARE SQUARE SQUARE SQUARE SIZE MIN D3.0 D6.0 D2.5 D2.0 SIZE MAX D25.0 D30.0 D18.0 D18.0 PAGE 678 679 680 681 SHORT LENGTH SHORT LENGTH SHORT LENGTH SHORT LENGTH HSS ROUGHING ated Uncoated TIAIN

630

400

550

60

42

55

<b>GENERAL HSS</b>
END MILLS
General Purpose, Non-coated, Any Coating Available

Hardened

Hardened

Cast

CuSn, lead-free copper and electrolytic copper

Duroplastic, Fiber Reinforced Plastic

7	RAL I		55	HSS-PM	HSS-PM	HSS-PM	HSS-PM
ose F	Contraction (Contraction)	Coating A	∴ Good ∴ P 738				
truc	ture / Heat Treatment	HB	HRc		Ī		
	Annealed	125		O	O	O	O
	Annealed	190	13	O	O	O	O
	Quenched & Tempered	250	25	Ô	O	O	O
	Annealed	270	28	O	O	O	O
	Quenched & Tempered	300	32	0	0	0	0
	Annealed	180	10	O	O	O	O
	Quenched & Tempered	275	29	O	O	O	O
	Quenched & Tempered	300	32	0	0	0	0
	Quenched & Tempered	350	38	0	0	0	0
	Annealed	200	15	O	O	O	O
	Quenched & Tempered	325	35	0	0	0	0
itic	Annealed	200	15				
	Quenched & Tempered	240	23				
		180	10				
		180	10				
sitic	)	260	26				
	, ,	160	3				
		250	25				
		130	20				
		230	21				
		60		0	0	0	0
	Hardened	100		0	0	0	0
rabl		75		0	0	0	0
2	Hardened	90		0	0	0	0
- rabl		130		0	0	0	0
3>1 <sup>0</sup>		110			5		0
rass		90					
	r and electrolytic copper	100					
	inforced Plastic	100					
tc.	inforced flustic						
	Annealed	200	15				
	Cured	280	30				
	Annealed	250	25				
	Cured	350	38				
	Cast	320	34				
	Cast	400 Rm	54				
N/C	Hardened	1050 Rm					
oys		550 km	55				
	Hardened	550	55				

END	X507 MILL
4 FND	G MII MII I

X-POWER

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Please visit

globalyg1.com/mat for material search

Non-alloy steel

Low alloy steel

High alloyed steel, and tool steel

Stainless steel

Grey cast iron

Nodular cast iron

Malleable cast iron

Aluminum-

wrought alloy

Aluminum-cast,

alloyed

Copper and Copper Alloys

(Bronze / Brass)

Non Metallic Materials

Heat Resistant

Super Alloys

Titanium Alloys

Hardened steel

Chilled Cast Iron

Hardened Cast Iron

About 0 15% C

About 0.45% C

About 0.45% C

About 0.75% C

About 0.75% C

Ferritic / Martensitic

Pearlitic (Martensitic)

≤ 12% Si, Not Curable

> 12% Si, Not Curable

Cutting Alloys, PB>1%

CuZn, CuSnZn (Brass)

Rubber, Wood, etc.

Fe Based

Ni or Co Based

**Pure Titanium** 

Alpha + Beta Alloys

≤ 12% Si, Curable

Martensitic

Pearlitic / ferritic

Austenitic

Ferritic

Pearlitic

Ferritic

Pearlitic

Curable

Not Curable

GENERAL END MILLS

CARBIDE						Genera	ated by Fo	oxit PDF C	reator © F	Foxit Softw	vare
	SELE	<b>CTION GU</b>	IIDE	SERIES	E2464	E2509	E2572	E2573	E2516	E2553	E2SET553
HSS		<b>G</b>		FLUTE	2	2	3	3	3	3	3
			HE	LIX ANGLE	42°	42°	≈ 30°	≈ 30°	30°	30°	30°
CBN	MILLIN	NG TOOLS			SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE	SQUARE
END MILLS				SIZE MIN	D1.0	D2.0	D1.5	D1.0	D2.0	D1.0	D2.0
				SIZE MAX	D32.0	D20.0	D32.0	D40.0	D40.0	D20.0	D10.0
i-Xmill END MILLS				PAGE	696	698	699	700	702	704	705
			ŀ	ISS	SHORT LENGTH	LONG LENGTH	STUB LENGTH	SHORT LENGTH	LONG LENGTH	SHORT LENGTH THROW AWAY	THROW AWAY Set
i-SMART MODULAR					Uncoated	Uncoated	Uncoated / TiAIN	Uncoated / TiAIN	Uncoated / TiAIN	Uncoated / TiA <b>I</b> N	Uncoated
END MILLS	G	ENERA	L HS	55	HSS Co8	HSS Co8	HSS Co8	HSS Co8	HSS Co8	HSS Co8	HSS Co8
X5070 END MILLS		END /		_		A			29		
4G MILL		General Purpo Any C	ose, Non-o Coating Av	coated, ailable	1			VAL	9.8		
END MILLS		-	: Excellent				10	12	$\sim$		2/2/2016-10
X-POWER	F	Recommended cutting of	conditions :	P 738		12	16	Y	VA	19	WITH AND
PRO END MILLS			Please visit			1					
TitaNox-		globalyg for mai	Please visit 1.com/mat terial search								
POWER END MILLS		DI Material 323 Description	HB	HRc			Π	Ĩ	•		
JET-POWER		1	125	10	0	0	0	0	0	0	0
END MILLS		2 3 Non-alloy steel	190 250	13 25	0	0	0	0	0	0	0
V7 PLUS		4	270	28			0	O	O	0	O
END MILLS		5 6	300 180	32 10	0	0	0	0	0	0	0
ALU-POWER		7 Low alloy steel	275	29	Ŭ	0	O	O	O	0	O
HPC END MILLS		89	300 350	32 38			0	© 0	© 0	0	0
		High alloyed steel,	200	15	0	0	0	0	0	0	0
POWER		and tool steel	325	35			0	0	0	0	0
END MILLS		12 13 Stainless steel	200 240	15 23							
D-POWER GRAPHITE	1	14	180	10							
END MILLS		Grey cast iron	180 260	10 26							
D-POWER CFRP	<b>K</b> 1	7 Nodular cast iron	160	3							
END MILLS		18 19	250 130	25							
DOUTEDO	2	20 Malleable cast from	230	21							
ROUTERS		21 Aluminum- 22 wrought alloy	60 100		0	0	0	0	0	0	0
CDV C		23	75		0	0	0	0	0	0	0
CRX S END MILLS	-	Aluminum-cast, alloyed	90 130		O	O	0	0	0	0	0
		25 Copper and	130 110		0	0	0	0	0	0	0
K-2 END MILLS	2	27 Copper Alloys	90								
		<ul><li>28 (Bronze / Brass)</li><li>29 Non Metallic</li></ul>	100								
ONLY ONE COATED PM60	3	30 Materials									
END MILLS		31 32	200 280	15 30							
TANK- POWER	3	33 Heat Resistant Super Alloys	250	25							
END MILLS	S E	34 Super Alloys	350	38							
GENERAL		35 Titopium Allour	320 400 Rm	34							
HSS END MILLS	3	37 Hitanium Alloys	1050 Rm								
		Hardened steel	550 630	55 60							
MILLING CUTTERS		40 Chilled Cast Iron	400	42							
		11 Hardened Cast Iron	550	55							

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TECHNICAL DATA



CARBIDE						Genera	ated by Fo	xit PDF C	reator © F	Foxit Softw	vare
		ECTION GU	IDE	SERIES	E2524	E2753	E2762	E2757	E2764	E2765	E2755
HSS				FLUTE	3&4	Multi Flute	Multi Flute	3&4	3	3	3
			HELI	X ANGLE	30°	30°	30°	30°	30°	30°	37°
CBN	MILLI	NG TOOLS			SQUARE ROUGHING	SQUARE ROUGHING	SQUARE ROUGHING	BALL NOSE ROUGHING	SQUARE ROUGHING	SQUARE ROUGHING	SQUARE ROUGHING
END MILLS			:	SIZE MIN	D6.0	D6.0	D6.0	R4.0	D10.0	D10.0	D6.0
:			S	SIZE MAX	D20.0	D40.0	D40.0	R12.5	D40.0	D40.0	D30.0
i-Xmill END MILLS				PAGE	719	720	721	722	723	724	725
i-SMART			н	SS	STUB LENGTH	SHORT LENGTH	LONG LENGTH	SHORT LENGTH	SHORT LENGTH	LONG LENGTH	SHORT LENGTH
MODULAR END MILLS	C	<b>ENERA</b>			Uncoated / TiAIN	Uncoated / TiA <b>I</b> N	Uncoated / TiA <b>I</b> N	Uncoated / TiAIN	Uncoated / TiA <b>I</b> N	Uncoated / TiA <b>I</b> N	Uncoated
X5070	G				HSS Co8	HSS Co8	HSS Co8	HSS Co8	HSS Co8	HSS Co8	HSS Co8
END MILLS	General Purpose, Non-co									1	
4G MILL END MILLS		Aný C	Coating Ava	ilable	()		1			1.	(E
X-POWER		Recommended cutting c				11	11		1	1	X
PRO		<b>·</b>	Please visit	180				1	1		1
END MILLS		globalyg	1.com/mat	<b>%</b> ₩							
TitaNox- POWER END MILLS		/DI Material 323 Description	HB	HRc	T	¢.	ļ.	ģ	¢	¢.	<b>İ</b>
JET-POWER		1	125		0	0	0	0	0	0	0
END MILLS		2 3 Non-alloy steel	190 250	13 25	0	0	0	0	0	0	0
		4	270	23	0	0	0	0	0	0	0
V7 PLUS END MILLS		5	300	32	0	0	0	0	0	0	0
ALU-POWER	P _	6 7	180 275	10 29	0	0	0	0	0	0	0
HPC		8 Low alloy steel	300	32	O	O	O	O	O	O	0
END MILLS		9 10 High alloyed steel,	350 200	38 15	0	0	0	0	0	0	0
ALU- POWER		11 and tool steel	325	35	0	0	0	0	0	0	
END MILLS		12 13 Stainless steel	200 240	15 23							
D-POWER GRAPHITE		14	180	10							
END MILLS		15 Grey cast iron	180	10							
D-POWER		17	260 160	26 3							
CFRP END MILLS		18 Nocular Cast Iron	250	25							
		Malleable cast iron	130 230	21							
ROUTERS		21 Aluminum-	60		0	0	0	0	0	0	0
0.511.6		22 wrought alloy 23	100 75		0	0	0	0	0	0	0
CRX S END MILLS		24 Aluminum-cast,	90		0	0	0	0	0	0	O
	N	25 26 Copper and	130 110		0	0	0	0	0	0	0
K-2 END MILLS		27 Copper Alloys	90								
		<ul><li>28 (Bronze / Brass)</li><li>29 Non Metallic</li></ul>	100								
ONLY ONE COATED PM60		29 Non Metallic 30 Materials									
END MILLS		31	200	15							
TANK-		32 Heat Resistant	280 250	30 25							
POWER END MILLS	S	34 Super Alloys	350	38							
GENERAL		35 36 Tito a line Allerer	320 400 Rm	34							
HSS END MILLS		37	1050 Rm								
		38 39 Hardened steel	550 630	55 60							
MILLING CUTTERS		40 Chilled Cast Iron	400	42							
		41 Hardened Cast Iron	550	55							

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HSS-PM. 2 SCHNEIDEN KURZ () Fraise HSS-PM, 2 dents, courte () HSS-PM, 2 TAGLIENTI, SERIE CORTA

E9410 SERIES FLAT SHANK

EP410 SERIES

FLAT SHANK

4G MILL X-POWER

TitaNox-

K-2 END MILLS

GENERAL HSS END MILLS



HSS PM	DIN 327	2	≈ 30°	DIN 1835B		P.738

		_			Unit : mn
ED	P No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAlN	e8	h6	or Cut	Length
▲ E9410030	▲ EP410030	3.0	6	5	49
-	▲ EP410040	4.0	6	7	51
-	▲ EP410050	5.0	6	8	52
-	▲ EP410060	6.0	6	8	52
-	▲ EP410080	8.0	10	11	61
<b>E9410100</b>	▲ EP410100	10.0	10	13	63
<b>E9410120</b>	-	12.0	12	16	73
-	▲ EP410140	14.0	12	16	73
<b>E9410160</b>	▲ EP410160	16.0	16	19	79
<b>E9410180</b>	-	18.0	16	19	79
<b>E9410250</b>	-	25.0	25	26	102

▲ : Only available till stock runs out

► Other shank design on your request.

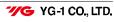
► TiN and TiCN Coatings are available on your request.

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in µm											
	Nominal-Diameter in mm											
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50						
e8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73	- 50 - 89						
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16						

																		©	Exc	ellent (	⊖:Good
ISO						P	P							M				К			
Material Description						Low alloy steel					gh alloyed steel, Stainless steel			eel	Grey ca	st iron	Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	1		11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1		35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	) 20	00 3	325	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	0	0		0									
ISO					N									S						н	
Material Description	al Aluminum- ion wrought alloy Aluminum-cast, alloyed (E		Copper a (Bro	opper and Copper Alloys (Bronze / Brass)		Non Me Mater		H	leat Re	sistant	Super A	lloys	Titaniu	m A <b>ll</b> oys		lened ee <b>l</b>	Chilled Cast Iron	Hardened Cast Iron			
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33		35	36	37	38	39	40	41
HRc											15	30	25	38				55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

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HSS-PM, 2 SCHNEIDEN KURZ
 Fraise HSS-PM, 2 dents, courte
 HSS-PM, 2 TAGLIENTI, SERIE CORTA

HSS-PM, 2 FLUTE SHORT LENGTH

FLAT SHANK **E3570** SERIES

ER570 SERIES

Unit · mm

FLAT SHANK

HSS



	X5070
END	MILLS

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWER HPC END MILLS

POWER END MILLS

GRAPHITI END MILLS

CRXS

K-2 END MILLS

ONLY ONE

TANK-POWER

END MILLS GENERAL HSS END MILLS

MILLING CUTTERS

TECHNICAL DATA



HSS PM	DIN 327	2	≈ 30°	DIN 1835B	P.740	

Unit											
EDF	P No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length						
UNCOATED	TiAlN	e8	h6	orout	g						
<b>E</b> 3570025	-	2.5	6	5	49						
-	<b>ER570030</b>	3.0	6	5	49						
<b>E</b> 3570040	-	4.0	<b>1.0</b> 6 7		51						
<b>E</b> 3570050	<b>ER570050</b>	5.0	6	8	52						
<b>E</b> 3570060	<b>ER570060</b>	6.0	6	8	52						
<b>E</b> 3570070	-	<b>7.0</b> 10		10	60						
🔺 E3570080	<b>ER570080</b>	8.0	10	11	61						
<b>E</b> 3570090	-	9.0	10		61						
<b>E</b> 3570100	-	10.0	10	13	63						
<b>E</b> 3570110	-	11.0	.0 12 13		70						
🔺 E3570120	<b>ER570120</b>	12.0	12	16	73						
<b>E</b> 3570130	-	13.0	12	16	73						
<b>E</b> 3570140	-	14.0	12	16	73						
<b>E</b> 3570150	-	15.0	12	16	73						
<b>E</b> 3570160	<b>ER570160</b>	16.0	16	19	79						
-	<b>ER570170</b>	17.0	16	19	79						
-	<b>ER570180</b>	18.0	16	19	79						

▲ : Only available till stock runs out

Other shank design on your request.
 TiN and TiCN Coatings are available on your request.

#### Tolerances according to DIN 7160 & 7161

Tolerance range in µm												
Nominal-Diameter in mm												
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50						
e8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73	- 50 - 89						
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16						

	©∶Excellent ○∶Goo															⊖:Good						
ISO	P												M			K						
Material Description	Non-alloy steel					Low alloy steel				n a <b>l</b> oyed nd tool s		el, Stainless steel				Grey cast iron Nodular cas			st Malleable cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9	1	0	11	12	13	14	L I	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1	5	35	15	23			10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	) 20	00	325	200	240	) 18	0	180	260	160	250	130	230
Recommend	0	O	0	0	0	O	0	0	0	(	)	0										
ISO					N										S						н	
Material Description	Aluminum- wrought alloy			Copper a (Bro	nd Copp nze / Bra	Copper Alloys Non Metalli (ce / Brass) Materials								Titaniur	Hard ste		Chilled Cast Iron	Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	2 3	3	34	35	36	37	38	39	40	41
HRc											15	30		5	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	28	0 2	50	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																	

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4G MILL

X-POWER

TitaNox-

K-2 END MILLS

GENERAL HSS <u>END M</u>ILLS



E3462 SERIES

## HSS-PM, 3 FLUTE 60° HELIX SHORT LENGTH

**HSS-PM**, 3 SCHNEIDEN 60° RECHTSSPIRALE KURZ

- () Fraise HSS-PM, 3 dents, hélice 60°, courte
- () HSS-PM, 3 TAGLIENTI, ELICA 60°, SERIE CORTA



HSS DIN 3 60° DIN 1835B
-------------------------

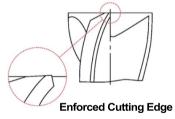
	1			Unit : mm
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED			orout	Length
▲ E3462070	7.0	10	16	66
<b>E3462080</b>	8.0	10	19	69
<b>E</b> 3462090	9.0	10	19	69
<b>E</b> 3462100	10.0	10	22	72
<b>E</b> 3462120	12.0	12	26	83
<b>E</b> 3462140	14.0	12	26	83
<b>E</b> 3462150	15.0	12	26	83
<b>E</b> 3462160	16.0	16	32	92
<b>E</b> 3462180	18.0	16	32	92
<b>E</b> 3462200	20.0	20	38	104

#### ▲ : Only available till stock runs out

Other shank design on your request.

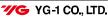
TiN and TiCN Coatings are available on your request.

	Dia. ce(mm)	Shank Dia. Tolerance
up to Ø6.5	+ 0.048 - 0	
Ø7.0 ~ Ø10.0	+ 0.058 - 0	1.0
Ø10.5 ~ Ø18.0	+ 0.070 - 0	h6
over Ø18.0	+ 0.084 - 0	



																		©	Exc	ellent	⊖∶Good
ISO						P							MK								
Material Description	Non-alloy steel Low alloy steel						el High alloyed steel, and tool steel				Stainless steel			Grey cas	st iron	Nodular cast iron			able cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	1		11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1:		35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	0 3	25	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	0	0		0									
ISO					N									S						н	
Material Description	Alumii wrough		Aluminu	ım-cast,	alloyed	Copper a (Bro	nd Coppe nze / Bras	erAlloys ss)		n Metallic Heat Reat Reat Reat				Resistant Super Alloys			m A <b>ll</b> oys	ys Hardened steel			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

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4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS

GENERAL HSS END MILLS



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FLAT SHANK E2492 SERIES

FLAT SHANK EQ492 SERIES

### HSSCo8, 2 FLUTE LONG LENGTH BALL NOSE

**HSSCo8, 2 SCHNEIDEN LANG STIRNRADIUS** 

- () Fraise HSSCo8, 2 dents, hémisphérique, longue
- () 2 TAGLIENTI, SEMISFERICA, SERIE LUNGA HSSCo8





EDI	P No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAlN	R(±0.02)	Diameter	h6	orCut	Length
E2492020	EQ492020	R1.0	2.0	6	7	54
E2492030	EQ492030	R1.5	3.0	6	8	56
E2492040	EQ492040	R2.0	4.0	6	11	63
E2492050	EQ492050	R2.5	5.0	6	13	68
E2492060	EQ492060	R3.0	6.0	6	13	68
E2492070	EQ492070	R3.5	7.0	10	16	80
E2492080	EQ492080	R4.0	8.0	10	19	88
E2492090	EQ492090	R4.5	9.0	10	19	88
E2492100	EQ492100	R5.0	10.0	10	22	95
E2492110	EQ492110	R5.5	11.0	12	22	102
E2492120	EQ492120	R6.0	12.0	12	26	110
E2492130	EQ492130	R6.5	13.0	12	26	110
E2492140	EQ492140	R7.0	14.0	12	26	110
E2492150	EQ492150	R7.5	15.0	12	26	110
E2492160	EQ492160	R8.0	16.0	16	32	123
E2492170	EQ492170	R8.5	17.0	16	32	123
E2492180	EQ492180	R9.0	18.0	16	32	123
E2492190	EQ492190	R9.5	19.0	16	32	123
E2492200	EQ492200	R10.0	20.0	20	38	141
E2492220	EQ492220	R11.0	22.0	20	38	141
E2492240	EQ492240	R12.0	24.0	25	45	166
E2492250	EQ492250	R12.5	25.0	25	45	166
E2492260	EQ492260	R13.0	26.0	25	45	166
E2492280	EQ492280	R14.0	28.0	25	45	166
E2492300	EQ492300	R15.0	30.0	25	45	166

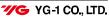
►Other shank design on your reguest.

► TiN and TiCN Coatings are available on your request.

Mill Dia.	Shank Dia.
Tolerance (mm)	Tolerance
0 ~ - 0.03	h6

																		C	Exc	ellent	⊖:Good
ISO						P							MK								
Material Description	Non-alloy steel Low alloy steel						el	High ar	alloyed nd tool st	steel, eel	, Stainless steel			Grey cast iron		Nodular cast iron			able cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	1	0 .	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1		35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	0 3	25	200	240	180	180	260	160	250	130	230
Recommend	0	O	0	0	0	0	0	0	0	0		С									
ISO					N									S						н	
Material Description	Alumii wrough		Aluminu	ım-cast,	alloyed	Copper a (Broi	nd Coppe nze / Bra:	erAlloys ss)	Non Metallic Materials Heat F				t Resistant Super Alloys			Titanium Alloy		ys Hardened steel		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33		35	36	37	38	39	40	41
HRc											15	30	25		34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	) 350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

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4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS

GENERAL HSS <u>END M</u>ILLS



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FLAT SHANK E2410 SERIES

FLAT SHANK

EQ410 SERIES

### HSSCo8, 4&6 FLUTE SHORT LENGTH BALL NOSE

- **HSSCo8, 4&6 SCHNEIDEN KURZ STIRNRADIUS**
- Fraise HSSCo8, 4&6 dents, hémisphérique, courte
- () 4&6 TAGLIENTI, SEMISFERICA, SERIE CORTA HSSCo8



HSS Co8	DIN 1889	48.6	30°	<b>R</b> ±0.02	DIN 1835B		P.744~745
						 	-

							Unit : mr
EDI	P No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN	R(±0.02)	Blamotor	h6	oreat	Longin	Tiute
<b>E</b> 2410060	<b>EQ410060</b>	R3.0	6.0	6	13	57	4
<b>E2410080</b>	▲ EQ410080	R4.0	8.0	10	19	69	4
<b>E</b> 2410100	<b>EQ410100</b>	R5.0	10.0	10	22	72	4
<b>E2410120</b>	-	R6.0	12.0	12	26	83	4
<b>E</b> 2410160	<b>EQ410160</b>	R8.0	16.0	16	32	92	4
<b>E2410200</b>	-	R10.0	20.0	20	38	104	4
<b>E2410250</b>	-	R12.5	25.0	25	45	121	6

▲ : Only available till stock runs out

Mill Dia <b>.</b>	Shank Dia.
Tolerance (mm)	Tolerance
0 ~ - 0.03	h6

																		C	Exc	ellent (	⊖∶Good
ISO						P							MK								
Material Description	Non-alloy steel Low alloy steel						el High alloyed steel, and tool steel				, Stainless steel			Grey cast iron		Nodular cast iron			able cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	1		1	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1:	5 3	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	) 350	20	0 3	25	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	0	0		C									
ISO					N									S						н	
Material Description	Alumi wrougł		Aluminu	um-cast,	alloyed	Copper a (Bro	and Copp nze / Bra	er A <b>l</b> oys ass)	Non Me Mater		н	eat Re	esistant	Super A	lloys	Titani	um Alloys		lened ee <b>l</b>		Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 34	4 35	36	37	38	39	40	41
HRc											15	30	25					55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	0 35	0 32	) 400 R	n 1050 Rn	n 550	630	400	550
Recommend	0	0	0	0	0																



4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS

GENERAL HSS END MILLS

# **HSS** END MILLS

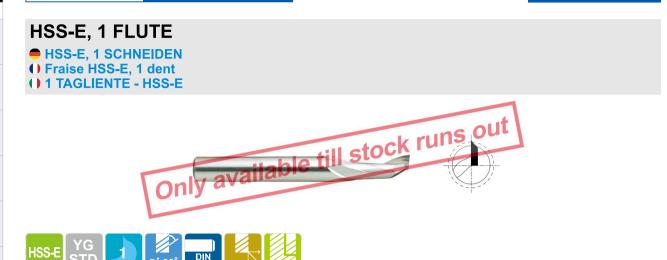
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14

PLAIN SHANK EL623 SERIES

Unit : mm

80



		P.745		
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	js14	h6	orCut	Lengin
▲ EL623030	3.0	8	12	60
EL623040	4.0	8	12	60
EL623050	5.0	8	12	60
EL623060	6.0	8	14	60
EL623070	7.0	8	14	60
EL623080	8.0	8	14	80
EL623090	9.0	8	14	80

8

▲ : Only available till stock runs out

EL623100

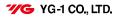
#### Tolerances according to DIN 7160 & 7161

	Tolerance range in µm										
	Nominal-Diameter in mm										
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50					
js14	±125	±150	±180	±215	±260	±310					
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16					

10.0

																		©	Exc	ellent (	⊖∶Good
ISO						P								M					К		
Material Description		No	on-alloy :	steel			Low	alloy ste	el	High an	alloyed d tool st	steel, eel	Stair	less stee	1	Grey cas	st iron		lar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	)	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	5 3	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	0 3	25	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0		C	)										
ISO					N									S						н	
Material Description	Alumi wrougł		Aluminu	um-cast,	alloyed	Copper a (Bro	nd Copp nze / Bra	er A <b>l</b> oys Iss)	Non Me Materi		F	leat Re	sistant S	Super Allo	ys	Titaniu	m A <b>ll</b> oys		ened eel		Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

688



4G MILL

X-POWER



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E2570 SERIES **FLAT SHANK** 

EQ570 SERIES **FLAT SHANK** 

### HSSCo8, 2 FLUTE SHORT LENGTH

HSSCo8. 2 SCHNEIDEN KURZ

Fraise HSSCo8, 2 dents, courte

1 2 TAGLIENTI, SERIE CORTA - HSSCo8





HSS DIN Co8 327 2 ≈ 30° DIN 1835B € € 6
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ED	P No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	
UNCOATED	TiAlN	e8	h6	orcut	Length	
E2570010	EQ570010	1.0	6	2.5	47	
E2570015	EQ570015	1.5	6	3	47	
E2570020	EQ570020	2.0	6	4	48	
E2570025	EQ570025	2.5	6	5	49	
E2570028	EQ570028	2.8	6	5	49	
E2570030	EQ570030	3.0	6	5	49	
E2570035	EQ570035	3.5	6	6	50	
E2570038	EQ570038	3.8	6	7	51	
E2570040	EQ570040	4.0	6	7	51	
E2570045	EQ570045	4.5	6	7	51	
E2570048	EQ570048	4.8	6	8	52	
E2570050	EQ570050	5.0	6	8	52	
E2570055	EQ570055	5.5	6	8	52	
E2570957	EQ570957	5.8	6	8	52	
E2570060	EQ570060	6.0	6	8	52	
E2570065	EQ570065	6.5	10	10	60	
E2570967	EQ570967	6.8	10	10	60	
E2570070	EQ570070	7.0	10	10	60	
E2570075	EQ570075	7.5	10	10	60	
E2570977	EQ570977	7.8	10	11	61	
E2570080	EQ570080	8.0	10	11	61	
E2570085	EQ570085	8.5	10	11	61	
E2570087	EQ570087	8.7	10	11	61	
E2570090	EQ570090	9.0	10	11	61	

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in µm										
	Nominal-Diameter in mm										
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50					
e8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73	- 50 - 89					
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16					

Other shank design on your request. ▶ TiN and TiCN Coatings are available on your request.

©∶Excellent ○∶Good ISO M Nodular cast Malleable cast iron Material Description VDI 3323 High alloyed steel and tool steel Non-alloy steel Low alloy steel Stainless steel Grey cast iron 19 20 12 15 200 15 10 180 18 2 5 32 6 10 8 10 15 11 13 16 17 1 3 25 4 7 9 14 10 HRc HB 13 28 29 32 38 35 26 25 21 270 300 240 260 130 230 125 190 250 180 275 300 350 200 325 180 160 250 Recommend 0 0 0 0  $\cap$ 0 0  $\bigcirc$  $\bigcirc$ 0  $\bigcirc$ ISO 
 Aluminum-cast, alloyet
 Copper and Copper / Aloys (Bronze / Brass)
 Non Metallic Materials

 23
 24
 25
 26
 27
 28
 29
 30
 Material Description VDI 3323 Aluminum-wrought alloy Chilled Hardened Titanium Alloys Hardened steel Heat Resistant Super Alloys 23 24 25 32 30 33 25 34 38 35 34 36 37 38 55 39 60 40 42 41 55 21 22 31 15 HRc 320 400 Rm 1050 Rm 550 630 90 130 110 90 100 550 HB 60 100 75 200 280 250 350 400 Recommend 0 Ο Ο Ο Ο

690

K-2

GENERAL

END MILLS

HSS



▶ NEXT PAGE

HSSCo8. 2 SCHNEIDEN KURZ Fraise HSSCo8, 2 dents, courte 1 2 TAGLIENTI, SERIE CORTA - HSSCo8

EDP No.

TiAIN

EQ570197

EQ570920

EQ570200

EQ570210

EQ570220

EQ570922

EQ570240

EQ570250

EQ570260

EQ570270

EQ570280

EQ570290

EQ570300

EQ570320

EQ570340

EQ570350

EQ570360

EQ570380

EQ570938

EQ570400

EQ570903

Tolerance range in µ Nominal-Diameter in m

- 25

- 47

0

- 9

5

E2570 SERIES **FLAT SHANK** 

Unit : mm

Overall

Length

88

82

88

88

88

98

102

102

102

102

102

102

102

112

112

112

112

118

130

118

130

EQ570 SERIES **FLAT SHANK** 

HSSCo8, 2 FLUTE SHORT LENGTH

HSS

ററ

DIR

UNCOATED

E2570197

E2570920

E2570200

E2570210

E2570220

E2570922

E2570240

E2570250

E2570260

E2570270

E2570280

E2570290

E2570300

E2570320

E2570340

E2570350

E2570360

E2570380

E2570938

E2570400

E2570903

from 1 to 3

e8

h6

ISO

Material Description VDI 3323

HRc

HB

Recommend

SO

Material Description VDI 3323

HRc

HB

Recommend

692

- 14

- 28

0

- 6

1

Other shank design on your request.

▶ TiN and TiCN Coatings are available on your request.

Tolerances according to DIN 7160 & 7161

over 3 to 6

- 20

- 38

0

- 8

Non-alloy steel

3 25

4

28

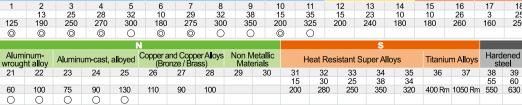
2

13

X-POWER

GENERAL HS

END MILLS



9

38

- 50

- 89

- 16

0

High alloyed steel and tool steel

11

35

10 15

phone:+82-32-526-0909, www.yg1.kr, E-mail:yg1@yg1.kr



40

42

400

©∶Excellent ○∶Good

19

130

Chilled Hardened Cast Iron Cast Iron

20

21

230

41 55

550

Nodular cast Malleable cast

iron

Hardened steel

39

60

18

17

160 250

38 55



Mill

e8

19.7

20.0

20.0

21.0

22.0

22.0

24.0

25.0

26.0

27.0

28.0

29.0

30.0

32.0

34.0

35.0

36.0

38.0

38.0

40.0

40.0

- 40

- 73

- 13

Low alloy steel

29

8

32

0

over 6 to 10 over 10 to 18 over 18 to 30 over 30 to 50

- 32

- 59

- 11

6 10

0

Diameter

P746~749

Shank

Diameter

h6

20

16

20

20

20

25

25

25

25

25

25

25

25

32

32

32

32

32

40

32 40

N

Stainless stee

13



Length

of Cut

22

22

22

22

22

22

26

26

26

26

26

26

26

32

32

32

32

38

38

38

38

Grey cast iron

16

26

15 10

4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS

GENERAL HSS END MILLS HSS END MILLS

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FLAT SHANK E2571 SERIES

EQ571 SERIES FLAT SHANK

### HSSCo8, 2 FLUTE LONG LENGTH

HSSCo8. 2 SCHNEIDEN LANG

- () Fraise HSSCo8, 2 dents, longue
- 1 2 TAGLIENTI, SERIE LUNGA HSSCo8





					Unit : mm
EDP	۹ No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAIN	e8	h6		Length
E2571180	EQ571180	18.0	16	32	92
E2571200	EQ571200	20.0	20	38	104
E2571220	EQ571220	22.0	20	38	104
E2571240	EQ571240	24.0	25	45	121
E2571250	EQ571250	25.0	25	45	121
E2571260	EQ571260	26.0	25	45	121
E2571270	EQ571270	27.0	25	45	121
E2571280	EQ571280	28.0	25	45	121
E2571300	EQ571300	30.0	25	45	121
E2571320	EQ571320	32.0	32	53	133
E2571400	EQ571400	40.0	40	63	155

► Other shank design on your request.

► TiN and TiCN Coatings are available on your request.

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in µm									
	Nominal-Diameter in mm									
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50				
e8	- 14	- 20	- 25	- 32	- 40	- 50				
	- 28	- 38	- 47	- 59	- 73	- 89				
h6	-6	0	0	0	12	10				
	- 0	- 8	- 9	- 11	- 13	- 16				

																		©	Exc	ellent	⊖:Good
ISO						P								M					К		
Material Description		No	on-alloy s	steel			Low a	alloy stee	el		n a <b>l</b> oyed nd tool s		Sta	ain <b>l</b> ess st	eel	Grey ca	st iron		lar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1		11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1	5	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	00 3	325	200	240	180	180	260	160	250	130	230
Recommend	0	O	0	0	0	0	0	0	0	(	)	0									
ISO					N									S						Н	
Material Description	Alumi wrougł		Aluminu	ım-cast, a	alloyed	Copper a (Bro	nd Coppe nze / Bras	erAlloys ss)	Non Me Mater		H	Heat R	esistan	t Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 34	35	36	37	38	39	40	41
HRc											15	30			34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

**694** 



4G MILL

X-POWER

TitaNox-

K-2 END MILLS

GENERAL HSS END MILLS



FLAT SHANK

E2464 SERIES

### HSSCo8, 2 FLUTE 42° HELIX SHORT LENGTH for ALUMINUM

HSSCo8, 2 SCHNEIDEN 42° RECHTSSPIRALE KURZ für ALUMINIUM

- () Fraise HSSCo8, 2 dents, hélice 42°, pour aluminium, courte
- () 2 TAGLIENTI, ELICA 42°, SERIE CORTA HSSCo8







				Unit : mm		
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length		
UNCOATED	e8	h6		Longtin		
E2464010	1.0	6	3	49		
E2464015	1.5	6	5	49		
E2464020	2.0	6	7	51		
E2464025	2.5	6	8	52		
E2464030	3.0	6	8	52		
E2464035	3.5	6	10	54		
E2464040	4.0	6	11	55		
E2464045	4.5	6	11	55		
E2464050	5.0	6	13	57		
E2464055	5.5	6	13	57		
E2464060	6.0	6	13	57		
E2464065	6.5	10	16	66		
E2464070	7.0	10	16	66		
E2464075	7.5	10	16	66		
E2464080	8.0	10	19	69		
E2464085	8.5	10	19	69		
E2464090	9.0	10	19	69		
E2464100	10.0	10	22	72		
E2464110	11.0	12	22	79		
E2464120	12.0	12	26	83		
E2464130	13.0	12	26	83		
E2464140	14.0	12	26	83		
E2464150	15.0	12	26	83		
E2464160	16.0	16	32	92		

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in µm										
	Nominal-Diameter in mm										
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50					
e8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73	- 50 - 89					
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16					

Other shank design on your request.
 TiN and TiCN Coatings are available on your request.

NEXT PAGE

																		©	Exc	ellent	⊖:Good
ISO						P								M					κ		
Material Description		No	on-alloy s	steel			Low a	alloy ste	el	High ar	aloyed nd tool st	steel, eel	Sta	in <b>l</b> ess st	eel	Grey cas	st iron		ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1	0	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1	5 :	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	00 3	25	200	240	180	180	260	160	250	130	230
Recommend	0	0				0															
ISO					N									S						н	
Material Description	Alumi wrougł		Aluminu	ım-cast,	alloyed	Copper a (Bro	and Coppe onze / Bras	erAlloys ss)	Non Me Mater		H	leat Re	sistant	Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25					55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	) 350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

696



4G MILL

X-POWER

TitaNox-



FLAT SHANK

E2509 SERIES

### HSSCo8, 2 FLUTE 42° HELIX LONG LENGTH for ALUMINUM

HSSCo8, 2 SCHNEIDEN 42° RECHTSSPIRALE KURZ für ALUMINIUM

- () Fraise HSSCo8, 2 dents, hélice 42°, pour aluminium, longue () 2 TAGLIENTI, ELICA 42°, SERIE LUNGA HSSCo8







HSS DIN CO8 844	42° DIN 1835B	P.748~749
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				Unit : mm
EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	e8	h6		Longin
E2509020	2.0	6	10	54
E2509030	3.0	6	12	56
E2509040	4.0	6	19	63
E2509050	5.0	6	24	68
E2509060	6.0	6	24	68
E2509070	7.0	10	30	80
E2509080	8.0	10	38	88
E2509090	9.0	10	38	88
E2509100	10.0	10	45	95
E2509110	11.0	12	45	102
E2509120	12.0	12	53	110
E2509130	13.0	12	53	110
E2509140	14.0	12	53	110
E2509150	15.0	12	53	110
E2509160	16.0	16	63	123
E2509180	18.0	16	63	123
E2509200	20.0	20	75	141

Other shank design on your request.

▶ TiN and TiCN Coatings are available on your request.

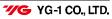
#### Tolerances according to DIN 7160 & 7161

			Tolerance rar	nge in μm		
		N	Iominal-Diam	eter in mm		
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
e8	- 14	- 20	- 25	- 32	- 40	- 50
60	- 28	- 38	- 47	- 59	- 73	- 89
h6	0	0	0	0	0	0
110	- 6	- 8	- 9	- 11	- 13	- 16

7																						
S																			©	Exc	ellent (	Good
	ISO						P								M					K		
S	Material Description		No	on-alloy s	teel			Low a	lloy stee	el	Highan	a <b>l</b> oyed d tool st	steel, eel	Sta	ainless s	teel	Grey cas	st iron		ar cast on		able cast ron
\$	VDI 3323	1	2	3	4	5	6	7	8	9	10	)	11	12	13	14	15	16	17	18	19	20
<u> </u>	HRc		13	25	28	32	10	29	32	38	15		35	15	23	10	10	26	3	25		21
	HB	125	190	250	270	300	180	275	300	350	20	0 3	325	200	240	180	180	260	160	250	130	230
2	Recommend	0	0				0				C	)										
ŝ	ISO					N									S						Н	
	Material Description	Alumi wrough		Aluminu	ım-cast, a	alloyed <sup>(</sup>	Copper a (Bro	nd Coppe nze / Bras	er Alloys ss)	Non Me Mater		H	leat R	esistant	Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron
	VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 34	35	36	37	38	39	40	41
	HRc											15	30	25	5 38	3 34			55	60	42	55
Δ	HB	60	100	75	90	130	110	90	100			200	280	) 25	0 35	0 320	400 Rm	1050 Rm	550	630	400	550
1	Recommend	O	0	0	$\odot$	0																

698

GENERAL HSS END MILLS



4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS

GENERAL HSS END MILLS



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E2573 SERIES

FLAT SHANK

FLAT SHANK EQ573 SERIES

ΕN	D	MI

### HSSCo8, 3 FLUTE SHORT LENGTH

HSSCo8. 3 SCHNEIDEN KURZ

Fraise HSSCo8, 3 dents, courte

() 3 TAGLIENTI, SERIE CORTA - HSSCo8





Under Ø3mm

Ø3mm or above



EDF	P No.	Mill Diameter	Shank Diameter	Length	U Overall
UNCOATED	TiAIN	e8	h6	of Cut	Length
E2573010	EQ573010	1.0	6	3	47
E2573015	EQ573015	1.5	6	7	51
E2573020	EQ573020	2.0	6	7	51
E2573025	EQ573025	2.5	6	8	52
E2573030	EQ573030	3.0	6	8	52
E2573035	EQ573035	3.5	6	10	54
E2573040	EQ573040	4.0	6	11	55
E2573045	EQ573045	4.5	6	11	55
E2573050	EQ573050	5.0	6	13	57
E2573055	EQ573055	5.5	6	13	57
E2573060	EQ573060	6.0	6	13	57
E2573065	EQ573065	6.5	10	16	66
E2573070	EQ573070	7.0	10	16	66
E2573075	EQ573075	7.5	10	16	66
E2573080	EQ573080	8.0	10	19	69
E2573085	EQ573085	8.5	10	19	69
E2573090	EQ573090	9.0	10	19	69
E2573095	EQ573095	9.5	10	19	69
E2573100	EQ573100	10.0	10	22	72
E2573120	EQ573120	12.0	12	26	83
E2573140	EQ573140	14.0	12	26	83
E2573150	EQ573150	15.0	12	26	83
E2573160	EQ573160	16.0	16	32	92
E2573180	EQ573180	18.0	16	32	92

#### Tolerances according to DIN 7160 & 7161

			Tolerance rar	nge in µm		
		N	Iominal-Diam	eter in mm		
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
e8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73	- 50 - 89
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16

Other shank design on your request. ▶ TiN and TiCN Coatings are available on your request. ► NEXT PAGE

																		©	Exce	ellent (	⊖:Good
ISO						P								M					K		
Material Description		No	on-alloy s	teel			Low a	alloy ste	el	High ar	alloyed : nd tool ste	steel, eel	Sta	in <b>l</b> ess st	eel	Grey cas	st iron		ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1		11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1	5 3	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	0 3	25	200	240	180	180	260	160	250	130	230
Recommend	0	O	0	0	0	0	0	0	0	(		С									
ISO					N									S						н	
Material Description	Alumi wrough		Aluminu	m-cast,	alloyed	Copper a (Bro	nd Coppe nze / Bras	er A <b>l</b> oys ss)	Non Me Mater		н	leat Re	esistant	Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	) 350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

700



4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS

GENERAL HSS END MILLS **HSS** END MILLS

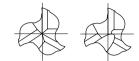
### HSSCo8, 3 FLUTE LONG LENGTH

HSSCo8, 3 SCHNEIDEN LANG

• Fraise HSSCo8, 3 dents, longue

• 3 TAGLIENTI, SERIE LUNGA - HSSCo8





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FLAT SHANK

FLAT SHANK

E2516 SERIES

EQ516 SERIES

http://www.foxitsoftware.com For

Up to Ø2.5mm Over Ø2.5mm

HSS DIN 3	DIN 1835B
-----------	--------------

					Unit : mr
ED	P No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAlN	e8	h6	orcut	Length
E2516020	EQ516020	2.0	6	10	54
E2516025	EQ516025	2.5	6	12	56
E2516030	EQ516030	3.0	6	12	56
E2516035	EQ516035	3.5	6	15	59
E2516040	EQ516040	4.0	6	19	63
E2516045	EQ516045	4.5	6	19	63
E2516050	EQ516050	5.0	6	24	68
E2516055	EQ516055	5.5	6	24	68
E2516060	EQ516060	6.0	6	24	68
E2516070	EQ516070	7.0	10	30	80
E2516075	EQ516075	7.5	10	30	80
E2516080	EQ516080	8.0	10	38	88
E2516090	EQ516090	9.0	10	38	88
E2516100	EQ516100	10.0	10	45	95
E2516110	EQ516110	11.0	12	45	102
E2516120	EQ516120	12.0	12	53	110
E2516130	EQ516130	13.0	12	53	110
E2516140	EQ516140	14.0	12	53	110
E2516150	EQ516150	15.0	12	53	110
E2516160	EQ516160	16.0	16	63	123
E2516170	EQ516170	17.0	16	63	123
E2516180	EQ516180	18.0	16	63	123
E2516190	EQ516190	19.0	16	63	123
E2516901	EQ516901	20.0	16	75	135

#### Tolerances according to DIN 7160 & 7161

			Tolerance rar	nge in <i>µ</i> m		
		Ν	Iominal-Diam	eter in mm		
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50
e8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73	- 50 - 89
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16

Other shank design on your request.
 TiN and TiCN Coatings are available on your request.

► NEXT PAGE

																		Q	Exc	ellent	⊖∶Good
ISO						P								М					Κ		
Material Description		N	on-alloy s	steel			Low	alloy ste	el	High ar	n alloyed nd tool st	steel, eel	Stair	less ste	el	Grey ca	st iron		lar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1		11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29		38			35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	5 300	) 350	) 20	00 3	25	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	0	0		Э									
ISO					l l									S						н	
Material Description	Alumi wrougł		Aluminu	um-cast,	a <b>ll</b> oyed	Copper a (Bro	and Copp nze / Bra	oer A <b>l</b> oys ass)	Non M Mate		F	leat Re	sistant S	Super All	oys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

702



4G MILL

X-POWER



FLAT SHANK E2553 SERIES

FLAT SHANK



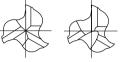
# HSSCo8, 3 FLUTE SHORT LENGTH THROW AWAY

HSSCo8. 3 SCHNEIDEN KURZ EINWEGFRÄSER

Fraise HSSCo8, 3 dents à jeter, courte

() 3 TAGLIENTI, SERIE CORTA NON RIAFFILABILE - HSSCo8





Up to Ø10mm Over Ø10mm



EDF	۷No.	Mill Diameter	Shank Diameter	Length	ں Overall Length
UNCOATED	TiAlN	e8	h6	of Cut	Length
E2553010	EQ553010	1.0	6	2	34
E2553013	EQ553013	1.3	6	3	34
E2553015	EQ553015	1.5	6	3	34
E2553018	EQ553018	1.8	6	3	34
E2553020	EQ553020	2.0	6	4	35
E2553023	EQ553023	2.3	6	4	35
E2553025	EQ553025	2.5	6	5	36
E2553028	EQ553028	2.8	6	5	36
E2553030	EQ553030	3.0	6	5	36
E2553033	EQ553033	3.3	6	6	37
E2553035	EQ553035	3.5	6	6	37
E2553038	EQ553038	3.8	6	7	38
E2553040	EQ553040	4.0	6	7	38
E2553043	EQ553043	4.3	6	7	38
E2553045	EQ553045	4.5	6	7	38
E2553048	EQ553048	4.8	6	8	39
E2553050	EQ553050	5.0	6	8	39
E2553053	EQ553053	5.3	6	8	39
E2553055	EQ553055	5.5	6	8	39
E2553957	EQ553957	5.8	6	8	39
E2553060	EQ553060	6.0	6	8	39
E2553065	EQ553065	6.5	8	10	42
E2553070	EQ553070	7.0	8	10	42
E2553075	EQ553075	7.5	8	10	42

► TiN and TiCN Coatings are available on your request.

Tolerances according to DIN 7160 & 7161

	Tolerance range in µm													
	Nominal-Diameter in mm													
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50								
e8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73	- 50 - 89								
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16								

©∶Excellent ○∶Good ISO M Nodular cast Malleable cast iron Material Description VDI 3323 High alloyed steel and tool steel Non-alloy steel Low alloy steel Stainless steel Grey cast iron 12 15 200 15 10 180 18 2 5 32 6 10 8 10 15 13 16 17 19 20 1 3 25 4 7 9 11 14 10 HRc HB 13 28 29 32 38 35 26 21 270 300 240 180 260 130 230 125 190 250 180 275 300 350 200 325 160 250 Recommend 0 0 0 0 0 0 0 0  $\bigcirc$ 0  $\bigcirc$ ISO 
 Aluminum-cast, alloyet
 Copper and Copper / Aloys (Bronze / Brass)
 Non Metallic Materials

 23
 24
 25
 26
 27
 28
 29
 30
 Material Description VDI 3323 Aluminum-wrought alloy Chilled Hardened Titanium Alloys Hardened steel Heat Resistant Super Alloys 21 22 23 24 25 32 30 33 25 34 38 35 34 36 37 38 55 39 60 40 42 41 55 31 15 HRc 320 400 Rm 1050 Rm 550 630 90 130 110 90 100 550 HB 60 100 75 200 280 250 350 400 Recommend 0 Ο Ο Ο Ο

704

K-2

GENERAL

END MILLS

HSS



► NEXT PAGE



() Fraise HSSCo8, 3 dents à jeter, longue

HSSCo8. 3 SCHNEIDEN LANG EINWEGFRÄSER

1 3 TAGLIENTI, SERIE LUNGA, NON RIAFFILABILE - HSSCo8

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E2554 SERIES **FLAT SHANK** 

**FLAT SHANK** 

Length

of Cut

4

7

8

8

10

EQ554 SERIES

Unit : mm

Overall Length

35

38

39

39

41

# HSSCo8, 3 FLUTE LONG LENGTH THROW AWAY

4G MILL X-POWER

HSS

ററ

'G

UNCOATED

E2554015

E2554020

E2554025

E2554030

EDP No.

TiAlN

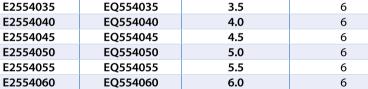
EQ554015

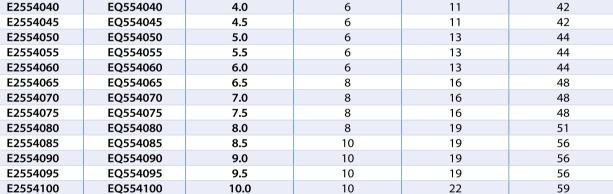
EQ554020

EQ554025

EQ554030

GENERAL HSS END MILLS





P.750~757

Shank

Diameter

h6

6

6

6

6

Mill

e8

1.5

2.0

2.5

3.0

Diameter

▶ TiN and TiCN Coatings are available on your request.

#### Tolerances according to DIN 7160 & 7161

			Tolerance rar	nge in µm										
	Nominal-Diameter in mm													
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50								
e8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73	- 50 - 89								
	- 20	- 30	- 47	- 59	- / 3	- 69								
h6	- 6	- 8	- 9	- 11	- 13	- 16								

																		©	Exc	ellent (	⊖:Good
ISO						P								M					K		
Material Description	scription Non-alloy steel					Low alloy steel				High alloyed steel, and tool steel			, Stainless steel			Grey ca	st iron	Nodular cast iron		st Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10		11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15		35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	0 3	25	200	240	180	180	260	160	250	130	230
Recommend	O	O	0	0	O	0	0	0	0	Ô	) (	С									
ISO					N									S						н	
Material Description	Alumi wrough		Aluminu	um-cast,	alloyed (	Copper ar (Bror	nd Coppei nze / Bras	rA <b>l</b> oys s)	Non Meta Materia		H	leat Re	esistant	t Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 34	4 35	36	37	38	39	40	41
HRc											15	30	25	5 38	3 34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	25	0 35	0 320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

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4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS

GENERAL HSS END MILLS



FLAT SHANK

E2552 SERIES **FLAT SHANK** 

EQ552 SERIES

### HSSCo8, 3 FLUTE LONG LENGTH THROW AWAY

- HSSCo8. 3 SCHNEIDEN LANG EINWEGFRÄSER
- Fraise HSSCo8, 3 dents à jeter, longue
- () 3 TAGLIENTI, SERIE CORTA NON RIAFFILABILE HSSCo8



#### ΥĠ HSS 3 STD Co8 P.750~757

					Un
EDI	P No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAlN	e8	Diameter		Length
E2552015	▲ EQ552015	1.5	6	4	28
<b>E2552020</b>	-	2.0	6	4.5	29
▲ E2552025	-	2.5	6	6.5	32
<b>E2552030</b>	-	3.0	6	7.5	34
▲ E2552035	▲ EQ552035	3.5	6	8.5	36.5
<b>E2552040</b>	▲ EQ552040	4.0	6	9.5	39
🔺 E2552045	▲ EQ552045	4.5	6	11	42
<b>E2552050</b>	▲ EQ552050	5.0	6	12.5	44.5
▲ E2552055	▲ EQ552055	5.5	6	14.5	46
<b>E2552060</b>	▲ EQ552060	6.0	6	16	44.5
▲ E2552080	▲ EQ552080	8.0	10	19	55.5
<b>E2552090</b>	▲ EQ552090	9.0	10	22.5	61
E2552100	▲ EQ552100	10.0	10	22.5	61

#### ▲ : Only available till stock runs out

▶ TiN and TiCN Coatings are available on your request.

#### Tolerances according to DIN 7160 & 7161

			Tolerance rar Iominal-Diam					ık Dia. rance
	from 1 to 3	over 3 to 6	over 6 to 10		over 18 to 30	over 30 to 50	up to Ø6	- 0.018 - 0.025
e8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73	- 50 - 89	over Ø6	h6
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16		

<																						
5																			©	Exce	ellent (	⊖:Good
	ISO						P								M					Κ		
5	Material Description		No	on-alloy s	steel			Low a	alloy stee	el		alloyed		St	ainless	steel	Grey ca	ist iron		lar cast on		able cast ron
3	VDI 3323	1	2	3	4	5	6	7	8	9	10	0	11	12	13	14	15	16	17	18	19	20
_	HRc		13	25	28	32	10	29	32	38			35	15	23	10	10	26	3	25		21
	HB	125	190	250	270	300	180	275	300	350	) 20	00 3	325	200	240	180	180	260	160	250	130	230
2	Recommend	0	0	0	0	0	0	0	0	0	C		0									
ŝ	ISO					N										S					н	
	Material Description	Alumi wrougi	inum- ht a <b>ll</b> oy	Aluminu	um-cast,	alloyed C	Copper a (Bro	nd Coppe nze / Bra:	er A <b>l</b> oys ss)	Non M Mate		1	Heat F	Resistan	t Super	Alloys	Titaniu	ım A <b>ll</b> oys	Hard ste			Hardened Cast Iron
	VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	2 3	3 :	34 3	5 36	37	38	39	40	41
_	HRc											15	30			38 3			55	60	42	55
1	HB	60	100	75	90	130	110	90	100			200	28	0 25	50 3	50 32	0 400 Rr	1050 Rm	550	630	400	550
`	Recommend	0	0	0	0	0																

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4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS

GENERAL HSS END MILLS



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FLAT SHANK E2595 SERIES

FLAT SHANK

NK EQ595 SERIES

### HSSCo8, 4 FLUTE SHORT LENGTH - CENTER CUTTING

HSSCo8, 4&6 SCHNEIDEN KURZ

() Fraise HSSCo8, 4&6 dents, coupe au centre, courte

() 4 - 6 TAGLIENTI, SERIE CORTA, TAGLIENTE AL CENTRO - HSSCo8





HSS DIN 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
---

EDF	P No.	Mill Diameter	Shank Diameter	Length of Cut	Overall	
UNCOATED	TiAIN	Diameter	Diameter	orCut	Length	
E2595020	EQ595020	2.0	6	7	51	
E2595030	EQ595030	3.0	6	8	52	
E2595040	EQ595040	4.0	6	11	55	
E2595050	EQ595050	5.0	6	13	57	
E2595060	EQ595060	6.0	6	13	57	
E2595070	EQ595070	7.0	10	16	66	
E2595080	EQ595080	8.0	10	19	69	
E2595090	EQ595090	9.0	10	19	69	
E2595100	EQ595100	10.0	10	22	72	
E2595110	EQ595110	11.0	12	22	79	
E2595120	EQ595120	12.0	12	26	83	
E2595130	EQ595130	13.0	12	26	83	
E2595140	EQ595140	14.0	12	26	83	
E2595150	EQ595150	15.0	12	26	83	
E2595160	EQ595160	16.0	16	32	92	
E2595170	EQ595170	17.0	16	32	92	
E2595180	EQ595180	18.0	16	32	92	
E2595190	EQ595190	19.0	16	32	92	
E2595920	EQ595920	20.0	16	38	98	
E2595200	EQ595200	20.0	20	38	104	
E2595220	EQ595220	22.0	20	38	104	
E2595250	EQ595250	25.0	25	45	121	

► Other shank design on your reguest.

▶ TiN and TiCN Coatings are available on your request.

Mill Dia.	Shank Dia.
Tolerance (mm)	Tolerance
0 ~ + 0.04	h6

																		©	Exc	ellent	⊖:Good
ISO						P								M					K		
Material Description	iption Non-alloy steel					Low alloy steel					n alloyed steel, Stainless steel			Grey ca	Nodular cast iron			able cast iron			
VDI 3323	1	2	3	4	5	6	7	8	9		0	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	3 1	5	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	35	0 20	00 00	325	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	O	0	0	0	С	) (	)	0									
ISO					N									5	;					н	
Material Description	Alumi wrougł		Aluminu	um-cast,	alloyed	Copper a (Bro	nd Coppe nze / Bra	erAlloys ss)	Non M Mate		H	leat R	esistan	t Super /	Alloys	Titaniu	ım A <b>ll</b> oys	Hard ste		Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 3	4 35	36	37	38	39	40	41
HRc											15	30	2	5 3	3 34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 35	0 320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

710



4G MILL

X-POWER

K-2 END MILLS

GENERAL HSS END MILLS



FLAT SHANK E2576, EQ576 SERIES

FLAT SHANK E2577, EQ577 SERIES

# HSSCo8, 4&6 FLUTE LONG LENGTH HSSCo8, 4&6 SCHNEIDEN LANG Fraise HSSCo8, 4&6 dents, longue HSSCo8, 4&6 TAGLIENTI, SERIE LUNGA Market State St

HSS DIN 486 30° DIN 1835B	P.758~761
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						Unit : r
ED	P No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN			orout	Longtin	Thato
-	▲ EQ576020	2.0	6	10	54	4
<b>E2576030</b>	-	3.0	6	12	56	4
<b>E2576040</b>	-	4.0	6	19	63	4
<b>E2576045</b>	-	4.5	6	19	63	4
<b>E2576050</b>	▲ EQ576050	5.0	6	24	68	4
<b>E2576060</b>	-	6.0	6	24	68	4
<b>E2576070</b>	-	7.0	10	30	80	4
<b>E2576080</b>	-	8.0	10	38	88	4
<b>E2576090</b>	-	9.0	10	38	88	4
<b>E2576100</b>	▲ EQ576100	10.0	10	45	95	4
<b>E</b> 2576110	-	11.0	12	45	102	4
<b>E2576120</b>	-	12.0	12	53	110	4
<b>E2576130</b>	-	13.0	12	53	110	4
<b>E</b> 2576140	-	14.0	12	53	110	4
<b>E</b> 2576160	-	16.0	16	63	123	4
<b>E2576180</b>	▲ EQ576180	18.0	16	63	123	4
<b>E2576902</b>	-	20.0	16	75	135	4
<b>E2576200</b>	-	20.0	20	75	141	4
<b>E2577220</b>	-	22.0	20	75	141	6
<b>E2577240</b>	-	24.0	25	90	166	6
<b>E2577250</b>	▲ EQ577250	25.0	25	90	166	6
<b>E</b> 2577320	-	32.0	32	106	186	6
<b>E2577400</b>	▲ EQ577400	40.0	40	125	217	6

#### ▲ : Only available till stock runs out

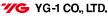
Other shank design on your reguest.

▶ TiN and TiCN Coatings are available on your request.

	Mill Dia. Tolerance(mm)							
up to Ø6	0~+0.04	<b>F</b> C						
over Ø6	0 ~ + 0.05	h6						

																		©	Exc	ellent (	⊖:Good
ISO						P								M					K		
Material Description		No	on-alloy s	steel			Low a	alloy ste	el		n alloye nd tool :		St	ain <b>l</b> ess s	steel	Grey ca	st iron		ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1	0	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32			5	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	) 350	2	00	325	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	0	(	0	0									
ISO					N									5	5					н	
Material Description	Alumi wrough		Aluminu	ım-cast,	alloyed	Copper a (Bro	nd Coppe nze / Bra	er A <b>l</b> oys ss)	Non Me Mater			Heat R	Resistan	t Super.	Alloys	Titaniu	ım A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	2 3	3 3	4 35	36	37	38	39	40	41
HRc											15	30	) 2	5 3	8 34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	28	0 25	50 35	50 320	) 400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

712



4G MILL

X-POWER

TitaNox-POWER



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FLAT SHANK E2598 SERIES

FLAT SHANK

EQ598 SERIES

### HSSCo8, 6 FLUTE LONG LENGTH - CENTER CUTTING

#### HSSCo8, 4&6 SCHNEIDEN LANG

- () Fraise HSSCo8, 4&6 dents, coupe au centre, longue
- () 4&6 TAGLIENTI, SERIE LUNGA, TAGLIENTE AL CENTRO HSSCo8





HSS DIN 6 2 00 DIN 1835B	8~761
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					Unit :
EDF	P No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAlN	Diamotor	Bramotor	oreat	Length
E2598220	EQ598220	22.0	20	75	141
E2598240	EQ598240	24.0	25	90	166
E2598250	EQ598250	25.0	25	90	166
E2598260	EQ598260	26.0	25	90	166
E2598280	EQ598280	28.0	25	90	166
E2598300	EQ598300	30.0	25	90	166
E2598320	EQ598320	32.0	32	106	186
E2598360	EQ598360	36.0	32	106	186
E2598400	EQ598400	40.0	40	125	217

► Other shank design on your reguest.

► TiN and TiCN Coatings are available on your request.

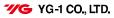
Mill Dia.	Shank Dia.
Tolerance(mm)	Tolerance
0~+0.05	h6

I

K-2 END MILLS

GENERAL HSS END MILLS

																		©	Exc	ellent	⊖∶Good
ISO						P								M					K		
Material Description		No	on-alloy s	steel			Low a	alloy ste	el		alloyed st d tool stee		Sta	ainless st	eel	Grey ca	st iron		ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10			12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	5 35	5	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	0 32	25	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	0	Ô	) C										
ISO					N									S						н	
Material Description	Aluminum- wrought alloy Aluminum-cast, alloyed Copper and Copper Alloys (Bronze / Brass)				r Alloys Non Metallic s) Materials Heat Resista					Resistant Super Alloys Titanium Allo			m Alloys	Hard ste			Hardened Cast Iron				
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 34	35	36	37	38	39	40	41
HRc											15	30	25					55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 350	) 320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																



4G MILL

X-POWER

TitaNox-

K-2 END MILLS

GENERAL HSS END MILLS



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SERIES

### HSSCo8, MULTI FLUTE 50° HELIX SHORT LENGTH

HSSCo8, MULTI SCHNEIDEN 50° RECHTSSPIRALE KURZ

- Fraise HSSCo8, multi-dents, hélice 50°, courte
- () MULTI TAGLIENTE, ELICA 50°, SERIE CORTA HSSCo8



HSS DI Co8 84	IN 44 <b>2-4</b>	0	P.762~763

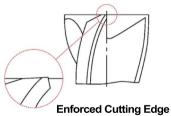
						Unit :
	P No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN				Longui	
<b>E2461020</b>	-	2.0	6	7	51	2
<b>E2461030</b>	<b>EQ461030</b>	3.0	6	8	52	2
<b>E2461040</b>	-	4.0	6	11	55	2
<b>E2461050</b>	-	5.0	6	13	57	2
<b>E2462060</b>	-	6.0	6	13	57	3
<b>E2462070</b>	-	7.0	10	16	66	3
<b>E2462080</b>	▲ EQ462080	8.0	10	19	69	3
<b>E2462090</b>	-	9.0	10	19	69	3
<b>E2462100</b>	-	10.0	10	22	72	3
<b>E2462110</b>	▲ EQ462110	11.0	12	22	79	3
<b>E2462120</b>	<b>EQ462120</b>	12.0	12	26	83	3
<b>E2462130</b>	-	13.0	12	26	83	3
<b>E2462140</b>	▲ EQ462140	14.0	12	26	83	3
<b>E2462150</b>	▲ EQ462150	15.0	12	26	83	3
<b>E2462160</b>	-	16.0	16	32	92	3
<b>E2462180</b>	-	18.0	16	32	92	3
<b>E2462200</b>	-	20.0	20	38	104	3
▲ E2462230	-	23.0	20	38	104	3
<b>E2463220</b>	-	22.0	25	45	121	4
<b>E2463250</b>	-	25.0	25	45	121	4
<b>E2463300</b>	-	30.0	25	45	121	4

▲ : Only available till stock runs out

Other shank design on your reguest.

▶ TiN and TiCN Coatings are available on your request.

Shank Dia Tolerance		Mill Toleran
	0~+0.04	up to Ø3.0
	0~+0.048	Ø4.0 ~ Ø6.0
h6	0~+0.058	Ø7.0 ~ Ø10.0
	0~+0.07	Ø10.5 ~ Ø18.0
	0 ~ + 0.084	over Ø18.0



																			©	Exc	ellent (	∋:Good
ISO						P								M						K		
Material Description		No	on <b>-all</b> oy :	steel			Low	alloy ste	el	High ai	n a <b>l</b> oyed nd tool st	steel, teel	Sta	inless	s steel		Grey cas	st iron		lar cas on		able cast ron
VDI 3323	1	2	3	4	5	6	7	8	ç			11	12	13			15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	3	8 1	5	35	15	23	1	)	10	26	3	25		21
HB	125	190	250	270	300	180	275	5 300	35	50 20	00 3	325	200	240	) 18	0	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0			0	0										
ISO					N										S						Н	
Material Description	Alumi wrougi		Alumin	um-cast,	alloyed <sup>C</sup>	Copper a (Bro	and Copp onze / Bra	er A <b>l</b> oys ass)	Non Mate	/letallic erials	H	leat R	esistant	Supe	er Alloys		Titaniur	n A <b>ll</b> oys		ened ee <b>l</b>	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	}	34	35	36	37	38	39	40	41
HRc											15	30	25	5	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend																						

716



4G MILL

X-POWER

TitaNox-

K-2 END MILLS

GENERAL HSS END MILLS



FLAT SHANK E2606 SERIES

FLAT SHANK

EQ606 SERIES

### HSSCo8, 3&4 FLUTE SHORT LENGTH ROUGHING BALL NOSE - FINE

- 🛑 HSSC08, 3&4 SCHNEIDEN KURZ SCHRUPPFRÄSER STIRNRADIUS FEIN
- Fraise HSSCo8, 3&4 dents, ébauche, hémisphérique, pas fin, courte
- () 3&4 TAGLIENTI, SEMISFERICA, PER SGROSSATURA, SERIE CORTA, B. F. HSSCo8



HSS DIN Co8 1889	HR	3&4	30°	<b>R</b> ±0.02	DIN 1835B	P.768~769
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							Unit : m
ED	P No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN	R(±0.02)	js12	h6	oreat	Longin	Tiute
<b>E</b> 2606060	▲ EQ606060	R3.0	6.0	6	13	57	3
<b>E2606080</b>	▲ EQ606080	R4.0	8.0	10	19	69	3
<b>E</b> 2606100	-	R5.0	10.0	10	22	72	3
<b>E</b> 2606120	-	R6.0	12.0	12	26	83	4
<b>E</b> 2606160	<b>EQ606160</b>	R8.0	16.0	16	32	92	4
<b>E</b> 2606200	-	R10.0	20.0	20	38	104	4
<b>E2606250</b>	▲ EQ606250	R12.5	25.0	25	45	121	4
<b>E2606320</b>	▲ EQ606320	R16.0	32.0	32	53	133	4

Image: Only available till stock runs out

Other shank design on your reguest.

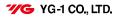
► TiN and TiCN Coatings are available on your request.

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in µm														
	Nominal-Diameter in mm														
	from 1 to 3 over 3 to 6 over 6 to 10 over 10 to 18 over 18 to 30 over 30 to 50														
js12	±50	±60	±75	±90	±105	±125									
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16									

																			©	Exc	ellent (	⊖:Good
ISO						P									M					K		
Material Description		No	on-alloy :	steel			Low	alloy ste	el		h a <b>l</b> oyed nd tool s		S	Stainle	ss stee	I I	Grey cas	t iron		lar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	)   1	10	11	12		3	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32				35	15		23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	5 300	) 35	0 2	00 3	325	200	2	40	180	180	260	160	250	130	230
Recommend	O	0	0	0	0	0	0	0			0	0										
ISO					N										S						н	
Material Description	Aluminum- wrought alloy Aluminum-cast, alloyed			alloyed	Copper and Copper Alloys Non Me (Bronze / Brass) Mater								Heat Resistant Super Alloys			Titaniu	n A <b>ll</b> oys		ened eel	Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	: :	33	34	35	36	37	38	39	40	41
HRc											15	30		25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 2	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																	

718



4G MILL

X-POWER

TitaNox-



**FLAT SHANK** 

FLAT SHANK

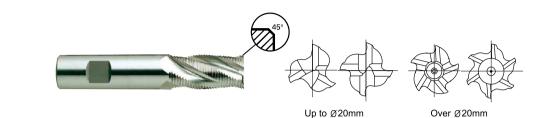
E2753 SERIES

IANK EQ753 SERIES

### HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - FINE

- HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER FEIN
- () Fraise HSSCo8, multi-dents ébauche, pas fin, courte

() MULTI TAGLIENTE, PER SGROSSATURA, SERIE CORTA, BOMBATO FINE - HSSCo8



HSS DIN Co8 844 HR 3-6 30° DIN 1835B 200 025- Cx45	64~767
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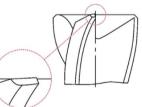
							Unit : mn
EDF	P No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute	Chamfer
UNCOATED	TiAlN	js12	h6	orout	Longin	Thate	
E2753060	EQ753060	6.0	6	13	57	3	0.18
E2753070	EQ753070	7.0	10	16	66	3	0.18
E2753080	EQ753080	8.0	10	19	69	3	0.18
E2753090	EQ753090	9.0	10	19	69	3	0.18
E2753100	EQ753100	10.0	10	22	72	4	0.18
E2753110	EQ753110	11.0	12	22	79	4	0.18
E2753120	EQ753120	12.0	12	26	83	4	0.18
E2753130	EQ753130	13.0	12	26	83	4	0.18
E2753140	EQ753140	14.0	12	26	83	4	0.25
E2753150	EQ753150	15.0	12	26	83	4	0.25
E2753160	EQ753160	16.0	16	32	92	4	0.25
E2753180	EQ753180	18.0	16	32	92	4	0.25
E2753200	EQ753200	20.0	20	38	104	4	0.25
E2753250	EQ753250	25.0	25	45	121	5	0.36
E2753280	EQ753280	28.0	25	45	121	6	0.36
E2753300	EQ753300	30.0	25	45	121	6	0.36
E2753320	EQ753320	32.0	32	53	133	6	0.51
E2753350	EQ753350	35.0	32	53	133	6	0.51
E2753400	EQ753400	40.0	32	63	155	6	0.56

Other shank design on your request.

► TiN and TiCN Coatings are available on your request.

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in µm														
	Nominal-Diameter in mm														
	from 1 to 3 over 3 to 6 over 6 to 10 over 10 to 18 over 18 to 30 over 30 to 5														
js12	±50	±60	±75	±90	±105	±125									
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16									



Enforced Cutting Edge

																			©	Exc	ellent (	∋∶Good
ISO						Р								Π	Λ					K		
Material Description		N	on-alloy s	steel			Low	alloy ste	el		n alloyed nd tool s		S	tainle	ss steel	1	Grey cas	st iron		ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1		11	12	1	3	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32				35	15		3	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	) 35	0 20	00 3	325	200	24	10	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	C	) (	)	0										
ISO					N										S						н	
Material Description	Aluminum-			alloyed	Copper and Copper Alloys No				letallic rials			lesistar	nt Sup	oer Allo	ys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	2 3	33	34	35	36	37	38	39	40	41
HRc											15	30		25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 2	50	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																	

720

GENERAL HSS END MILLS



4G MILL

X-POWER

TitaNox-

K-2 END MILLS

GENERAL HSS END MILLS



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FLAT SHANK E2757 SERIES

EQ757 SERIES **FLAT SHANK** 

### HSSCo8, 3&4 FLUTE SHORT LENGTH ROUGHING BALL NOSE - COARSE

HSSCo8, 3&4 SCHNEIDEN KURZ SCHRUPPFRÄSER STIRNRADIUS - GROB

- Fraise HSSCo8, 3&4 dents, ébauche, hémisphérique, pas grossier, courte
- () 3&4 TAGLIENTI, SEMISFERICA, PER SGROSSATURA, SERIE CORTA, B. F. HSSCo8





EDI	P No.	Radius of Ball Nose	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Unit : r No.of Flute
UNCOATED	TiAlN	R(±0.02)	js12	h6	oreat	Longin	Tiute
<b>E</b> 2757080	▲ EQ757080	R4.0	8.0	10	19	69	3
<b>E2757100</b>	-	R5.0	10.0	10	22	72	3
<b>E2757120</b>	-	R6.0	12.0	12	26	83	4
<b>E</b> 2757160	🔺 EQ757160	R8.0	16.0	16	32	92	4
<b>E</b> 2757200	-	R10.0	20.0	20	38	104	4
	▲ EQ757250	R12.5	25.0	25	45	121	4

▲ : Only available till stock runs out

Other shank design on your reguest.

► TiN and TiCN Coatings are available on your request.

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in µm														
	Nominal-Diameter in mm														
	from 1 to 3 over 3 to 6 over 6 to 10 over 10 to 18 over 18 to 30 over 30 to 50														
js12	±50	±60	±75	±90	±105	±125									
h6	0	0	0	0 - 11	0	0									
	- 6	- 8	- 9	- TI	- 13	- 16									

																			Ø	Exc	ellent (	⊃:Good
ISO						P								M						К		
Material Description		N	on-alloy :	steel			Low	alloy ste	el		n alloyed nd tool st		Sta	ainless	steel		Grey cas	st iron		lar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	g			11	12	13	1.		15	16	17	18	19	20
HRc		13	25	28	32	10	29					35	15	23	1		10	26	3	25		21
HB	125	190	250	270	300	180	275	5 300	) 35	50 2	00 3	325	200	240	18	0	180	260	160	250	130	230
Recommend	O	0	0	0	0	0	0	0	0		0	0										
ISO					N										S						н	
Material Description	Aluminum- wrought alloy Aluminum-cast, alloyed			alloyed					Non Metallic Materials Heat F			Heat Resistant Super Alloys				Titaniur	m A <b>ll</b> oys	Hard ste		Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	3	3 :	34	35	36	37	38	39	40	41
HRc											15	30	2		38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	25	0 3	350	320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																	



4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS

GENERAL HSS END MILLS



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FLAT SHANK E2765 SERIES

FLAT SHANK

EQ765 SERIES

### HSSCo8, 3 FLUTE LONG LENGTH ROUGHING - COARSE

- HSSCo8, 3 SCHNEIDEN LANG SCHRUPPFRÄSER GROB
- () Fraise HSSCo8, 3 dents, ébauche, pas grossier, longue
- () 3 TAGLIENTI, PER SGROSSATURA, SERIE LUNGA, BOMBATO GROSSO HSSCo8





ED	P No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer
UNCOATED	TiAIN	js12	h6	orcut	Length	
<b>E2765100</b>	▲ EQ765100	10.0	10	45	95	0.34
<b>E2765120</b>	<b>EQ765120</b>	12.0	12	53	110	0.50
<b>E2765140</b>	-	14.0	12	53	110	0.55
<b>E2765160</b>	▲ EQ765160	16.0	16	63	123	0.55
<b>E2765180</b>	<b>EQ765180</b>	18.0	16	63	123	0.55
<b>E2765200</b>	<b>EQ765200</b>	20.0	20	75	141	0.55
-	▲ EQ765250	25.0	25	90	166	0.55
<b>E2765280</b>	-	28.0	25	90	166	0.70
<b>E2765300</b>	▲ EQ765300	30.0	25	90	166	0.70
-	▲ EQ765360	36.0	32	106	186	0.70
<b>E2765400</b>	-	40.0	32	125	217	0.88

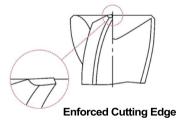
#### ▲ : Only available till stock runs out

Other shank design on your reguest.

TiN and TiCN Coatings are available on your request.

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in µm														
Nominal-Diameter in mm															
	from 1 to 3 over 3 to 6 over 6 to 10 over 10 to 18 over 18 to 30 over 30 to 50														
js12	±50	±60	±75	±90	±105	±125									
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16									



																©	Exc	ellent	⊖:Good		
ISO						P								M					K		
Material Description		No	on-alloy s	steel			Low	alloy ste	el		alloyed		Sta	inless s	eel	Grey ca	st iron		ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1		11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1		35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	5 300	) 350	20	00 3	325	200	240	180	180	260	160	250	130	230
Recommend	O				0	0	0	0	0	)	0										
ISO						1								S						H	
Material Description		Aluminum- rought alloy Aluminum-cast, alloyed Copp			Copper a	and Copp onze / Bra	er A <b>l</b> oys ass)	Non Me Mater		H	leat Re	esistant	Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 34	35	36	37	38	39	40	41
HRc											15	30	25	5 38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	25	0 35	) 320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																





4G MILL

X-POWER



FLAT SHANK

E2756 SERIES

### HSSCo8, 3 FLUTE 37° HELIX LONG LENGTH ROUGHING for ALUMINUM

HSSCo8, 3 SCHNEIDEN 37° RECHTSSPIRALE LANG SCHRUPPFRÄSER für ALUMINIUM

- O Fraise HSSCo8, 3 dents, ébauche pour aluminium, hélice 37°, longue
- () 3 TAGLIENTI, ELICA 37°, PER SGROSSATURA, SERIE LUNGA, B.G. HSSCo8



HSS DIN Co8 844 WR 3	37° DIN 1835B	P.776~7	777
-------------------------	------------------	---------	-----

EDP No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	Chamfer
UNCOATED	js12	h6	oreut	Length	
▲ E2756100	10.0	10	45	95	0.60
<b>E2756120</b>	12.0	12	53	110	0.74
<b>E2756140</b>	14.0	12	53	110	0.76
<b>E2756160</b>	16.0	16	63	123	0.94
<b>E2756180</b>	18.0	16	63	123	0.76
<b>E2756200</b>	20.0	20	75	141	0.94
▲ E2756220	22.0	20	75	141	0.94
<b>E2756250</b>	25.0	25	90	166	0.94
▲ E2756300	30.0	25	90	166	1.23

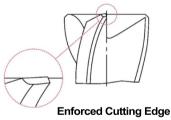
▲ : Only available till stock runs out

Other shank design on your reguest.

TiN and TiCN Coatings are available on your request.

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in $\mu$ m													
	Nominal-Diameter in mm													
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50								
js12	±50	±60	±75	±90	±105	±125								
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16								



																		©	Exc	ellent (	⊖:Good
ISO						P								M					K		
Material Description		, , , , , , , , , , , , , , , , , , , ,							and tool steel				Grey cast iron Nodular cast M				able cast iron				
VDI 3323	1	2	3	4	5	6	7	8	9	1		1	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1	5 3	5	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	0 32	25	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0		0	)										
ISO					N									S						н	
Material Description	Alumi wrough		Aluminu	ım-cast,	alloyed	Copper a (Bro	nd Coppe nze / Bras	erAlloys ss)	Non Met Materia		н	eat Re	esistant	Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41
HRc											15	30	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	250	) 350	) 320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

726

GENERAL HSS END MILLS



4G MILL

X-POWER

TitaNox-



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E2751 SERIES **FLAT SHANK** 

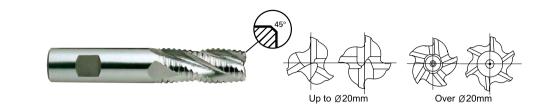
EQ751 SERIES **FLAT SHANK** 

### HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - COARSE

🛑 HSSC08, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER - GROB

Fraise HSSCo8, multi-dents ébauche, pas grossier, courte

() MULTI TAGLIENTE, PER SGROSSATURA, SERIE CORTA, BOMBATO GROSSO - HSSCo8





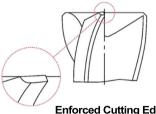
EDF	۹No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute	Unit : mm Chamfer
UNCOATED	TiAIN	js12	h6	orout	Longin	, nato	
E2751240	EQ751240	24.0	25	45	121	5	0.55
E2751250	EQ751250	25.0	25	45	121	5	0.55
E2751260	EQ751260	26.0	25	45	121	6	0.55
E2751280	EQ751280	28.0	25	45	121	6	0.70
E2751300	EQ751300	30.0	25	45	121	6	0.70
E2751320	EQ751320	32.0	32	53	133	6	0.70
E2751340	EQ751340	34.0	32	53	133	6	0.70
E2751350	EQ751350	35.0	32	53	133	6	0.70
E2751360	EQ751360	36.0	32	53	133	6	0.70
E2751380	EQ751380	38.0	32	63	155	6	0.70
E2751938	EQ751938	38.0	40	63	155	6	0.70
E2751400	EQ751400	40.0	32	63	155	6	0.88
E2751940	EQ751940	40.0	40	63	155	6	0.88
E2751450	EQ751450	45.0	32	63	143	6	0.88
E2751500	EQ751500	50.0	50	75	177	6	0.88

Other shank design on your request.

▶ TiN and TiCN Coatings are available on your request.

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in $\mu$ m												
	Nominal-Diameter in mm												
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50							
js12	±50	±60	±75	±90	±105	±125							
h6	0 - 6	0	0	0	0	0							
	- 0	- 8	-9	- 11	- 13	- 16							



**Enforced Cutting Edge** 

																		©	Exce	ellent (	∋∶Good
ISO						P								M					<b>{</b>		
Material Description		No	on-alloy s	teel			Low	alloy ste	el		n a <b>l</b> oyed nd tool s		Sta	ainless :	steel	Grey ca	st iron		ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1	0	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38		5	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	) 20	00	325	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	0	(	0	0									
ISO					P	l									3					н	
Material Description	Alumi wrough		Aluminu	m-cast,	alloyed		nd Copp nze / Bra		Non M Mate			Heat R	esistan	t Super	Alloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 3	4 35	36	37	38	39	40	41
HRc											15	30						55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 3	50 32	) 400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

728

GENERAL HSS END MILLS



4G MILL

X-POWER

TitaNox-POWER

K-2

GENERAL

HSS END MILLS



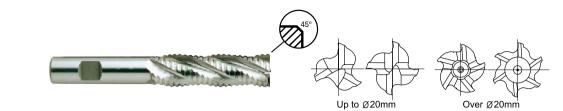
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E2752 SERIES **FLAT SHANK** 

EQ752 SERIES FLAT SHANK

### HSSCo8, MULTI FLUTE LONG LENGTH ROUGHING - COARSE

- HSSCo8, MULTI SCHNEIDEN LANG SCHRUPPFRÄSER GROB
- () Fraise HSSCo8, multi-dents ébauche, pas grossier, longue
- () MULTI TAGLIENTE, PER SGROSSATURA, SERIE LUNGA, BOMBATO GROSSO HSSCo8





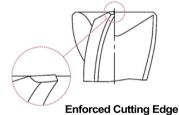
							Unit : mn
EDF	° No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No. of Flute	Chamfer
UNCOATED	TiAIN	js12	h6	orout	Length	Thate	
E2752240	EQ752240	24.0	25	90	166	5	0.55
E2752250	EQ752250	25.0	25	90	166	5	0.55
E2752260	EQ752260	26.0	25	90	166	6	0.55
E2752280	EQ752280	28.0	25	90	166	6	0.70
E2752300	EQ752300	30.0	25	90	166	6	0.70
E2752320	EQ752320	32.0	32	106	186	6	0.70
E2752350	EQ752350	35.0	32	106	186	6	0.70
E2752360	EQ752360	36.0	32	106	186	6	0.70
E2752380	EQ752380	38.0	32	125	217	6	0.70
E2752938	EQ752938	38.0	40	125	217	6	0.70
E2752400	EQ752400	40.0	32	125	217	6	0.88
E2752940	EQ752940	40.0	40	125	217	6	0.88

► Other shank design on your request.

▶ TiN and TiCN Coatings are available on your request.

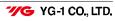
#### Tolerances according to DIN 7160 & 7161

			Tolerance rar	nge in μm									
	Nominal-Diameter in mm												
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50							
js12	±50	±60	±75	±90	±105	±125							
h6	0 - 6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16							



																		©	Exc	ellent (	⊖:Good
ISO						Р								M					K		
Material Description		No	on-alloy s	steel			Low a	lloy stee	el		alloyed d tool st		Sta	ainless st	eel	Grey ca	st iron		lar cas on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	)	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15		35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	0 3	325	200	240	180	180	260	160	250	130	230
Recommend	$\odot$	O	0	0	O	0	0	0	0	0		0									
ISO					N									S						Н	
Material Description		inum- ht a <b>ll</b> oy	Aluminu	um-cast,	alloyed <sup>(</sup>	Copper ai (Broi	nd Coppe nze / Bras	rAlloys s)	Non Met Materia		H	leat R	esistant	Super A	lloys	Titaniu	m A <b>ll</b> oys		ened ee <b>l</b>		Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32				36	37	38	39	40	41
HRc											15	30						55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 350	) 320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																

730



4G MILL

X-POWER



**MORSE TAPER SHANK** 

MORSE TAPER SHANK

E2777 SERIES

EQ777 SERIES

### HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING - COARSE

- **HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPFRÄSER GROB**
- () Fraise HSSCo8, multi-dents ébauche, pas grossier, courte
- () MULTI TAGLIENTE, SERIE CORTA, PER SGROSSATURA, B.G. HSSCo8



HSS DIN Co8 845	NR	4-6	30°	DIN 228A	P.764~767

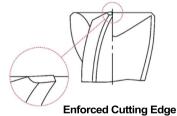
							Unit : mi
ED	P No.	Mill Diameter	Length of Cut	Overall Length	Morse Taper No.	No. of Flute	Chamfer
UNCOATED	TiAlN	Biameter	oreat	Length	Taper No.	Flute	
-	▲ EQ777140	14.0	26	111	2	4	0.56
<b>E</b> 2777160	-	16.0	32	117	2	4	0.56
<b>E</b> 2777180	▲ EQ777180	18.0	32	117	2	4	0.56
<b>E2777200</b>	-	20.0	38	123	2	4	0.56
<b>E2777220</b>	-	22.0	38	123	2	5	0.56
<b>E2777240</b>	-	24.0	45	147	3	5	0.56
<b>E2777250</b>	-	25.0	45	147	3	5	0.56
<b>E2777280</b>	-	28.0	45	147	3	6	0.70
<b>E2777300</b>	-	30.0	45	147	3	6	0.70
<b>E</b> 2777320	▲ EQ777320	32.0	53	178	4	6	0.70
<b>E</b> 2777350	-	35.0	53	178	4	6	0.70
🔺 E2777360	-	36.0	53	178	4	6	0.70
<b>E2777400</b>	-	40.0	63	188	4	6	0.88
<b>E2777450</b>	-	45.0	63	188	4	6	0.88

▲ : Only available till stock runs out

Other shank design on your reguest.

► TiN and TiCN Coatings are available on your request.





5																			©	Exc	ellent	⊖:Good
	ISO						P								M					K		
5	Material Description		No	on-alloy s	teel			Low a	loy stee	el		a loyed d tool s		Sta	ainless st	eel	Grey cas	st iron	Nodul	ar cast on		able cast ron
2	VDI 3323	1	2	3	4	5	6	7	8	9	10	C	11	12	13	14	15	16	17	18	19	20
<u> </u>	HRc		13	25	28	32	10	29	32	38	15	5	35	15	23	10	10	26	3	25		21
	HB	125	190	250	270	300	180	275	300	350	20	0 3	325	200	240	180	180	260	160	250	130	230
2	Recommended	O	0	0	0	O	O	0	0	0	C		0									
5	ISO					N									S						н	
_	Material Description				Copper an (Bron	d Copper ze / Brass	Alloys	Non Me Materia		H	Heat R	lesistan	t Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron		
	VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	2 33	3 34	. 35	36	37	38	39	40	41
_	HRc											15	30						55	60	42	55
	HB	60	100	75	90	130	110	90	100			200	28	0 25	0 35	) 320	400 Rm	1050 Rm	550	630	400	550
1	Recommended	0	0	0	0	0																

732

GENERAL HSS END MILLS



4G MILL

X-POWER

TitaNox-

K-2 END MILLS

GENERAL HSS END MILLS



FLAT SHANK E2766 SERIES

FLAT SHANK EQ766 SERIES

### HSSCo8, 3 FLUTE SHORT LENGTH ROUGHING & FINISHING

- HSSCo8, 3 SCHNEIDEN KURZ SCHRUPPSCHLICHTFRÄSER
- () Fraise HSSCo8, 3 dents ébauche et finition, courte
- () HSSCo8, 3 TAGLIENTI, SERIE CORTA, PER SGROSSATURA & FINITURA



HSS DIN Co8 844 NF 3 30° DIN 1835B R P.780~783
--

					Unit : mm
EDI	<sup>o</sup> No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length
UNCOATED	TiAlN	k10	h6	orout	Length
▲ E2766060	▲ EQ766060	6.0	6	13	57
<b>E2766080</b>	<b>EQ766080</b>	8.0	10	19	69
<b>E2766100</b>	<b>EQ766100</b>	10.0	10	22	72
<b>E2766120</b>	<b>EQ766120</b>	12.0	12	26	83
<b>E2766130</b>	<b>EQ766130</b>	13.0	12	26	83
<b>E2766140</b>	<b>EQ766140</b>	14.0	12	26	83
<b>E2766160</b>	<b>EQ766160</b>	16.0	16	32	92
<b>E2766180</b>	<b>EQ766180</b>	18.0	16	32	92
▲ E2766200	▲ EQ766200	20.0	20	38	104
▲ E2766220	▲ EQ766220	22.0	20	38	104
<b>E2766250</b>	▲ EQ766250	25.0	25	45	121
<b>E2766280</b>	▲ EQ766280	28.0	25	45	121
▲ E2766300	-	30.0	25	45	121
▲ E2766320	-	32.0	32	53	133
▲ E2766360	▲ EQ766360	36.0	32	53	133
<b>E2766400</b>	🔺 EQ766400	40.0	32	63	155

#### ▲ : Only available till stock runs out

Other shank design on your reguest.

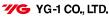
► TiN and TiCN Coatings are available on your request.

#### Tolerances according to DIN 7160 & 7161

	Tolerance range in µm														
		N	Iominal-Diam	eter in mm											
	from 1 to 3	over 3 to 6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50									
k10	+40	+48	+58	+70	+84	+100									
KIU	0	0	0	0	0	0									
<b>h</b> C	0	0	0	0	0	0									
h6	- 6	- 8	- 9	- 11	- 13	- 16									

K																						
2																			Ô	: Exce	ellent (	):Good
1	ISO						P								M					<		
S	Material Description		No	on-alloy :	steel			Low	alloy stee	əl		alloyed		Sta	ainless s	teel	Grey cas	st iron	Nodul	ar cast on		able cast ron
S	VDI 3323	1	2	3	4	5	6	7	8	9	1		11	12	13	14	15	16	17	18	19	20
<u> </u>	HRc		13	25	28	32	10	29	32	38			35	15	23	10	10	26	3	25		21
	HB	125	190	250	270	300	180	275		350			325	200	240	180	180	260	160	250	130	230
G	Recommend	0	0	0	0	0	0	0	0	0	0		0									
š	ISO				N									S						н		
S	Material Description	Alumi wrougł		Aluminu	um-cast,	alloyed <sup>(</sup>	Copper a (Bro	nd Copp nze / Bra	er A <b>l</b> oys ss)	Non M Mate		I	Heat R	esistan	t Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard			Hardened Cast Iron
	VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	: 33			36	37	38	39	40	41
L	HRc											15	30						55	60	42	55
'A	HB	60	100	75	90	130	110	90	100			200	28	) 25	0 35	0 320	400 Rm	1050 Rm	550	630	400	550
11	Recommend	0	0	0	0	0																

734



4G MILL

X-POWER

TitaNox-

K-2 END MILLS

GENERAL HSS END MILLS



**FLAT SHANK** 

E2754 SERIES

EQ754 SERIES

### HSSCo8, MULTI FLUTE SHORT LENGTH ROUGHING & FINISHING

HSSCo8, MULTI SCHNEIDEN KURZ SCHRUPPSCHLICHTFRÄSER

- () Fraise HSSCo8, multi-dents, ébauche et finition, courte
- () MULTI TAGLIENTE, SERIE CORTA PER SEMIFINITURA HSSCo8



HSS DIN Co8 844 NF 3-6 30° DIN 1835B -020 02- 020- 020- 020- 020- 020- 020-	HSS DIN Co8 844	NF	3-6	30°	DIN 1835B	~Ø20	Ø22~	P.784~787
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						Unit : mr
ED	P No.	Mill Diameter	Shank Diameter	Length of Cut	Overall Length	No.of Flute
UNCOATED	TiAlN	k10	h6	or out	Lengin	
▲ E2754060	▲ EQ754060	6.0	6	13	57	3
<b>E2754070</b>	▲ EQ754070	7.0	10	16	66	3
<b>E2754080</b>	▲ EQ754080	8.0	10	19	69	4
<b>E2754090</b>	▲ EQ754090	9.0	10	19	69	4
<b>E2754100</b>	▲ EQ754100	10.0	10	22	72	4
<b>E</b> 2754110	▲ EQ754110	11.0	12	22	79	4
<b>E2754120</b>	🔺 EQ754120	12.0	12	26	83	4
<b>E2754130</b>	🔺 EQ754130	13.0	12	26	83	4
<b>E2754140</b>	-	14.0	12	26	83	4
🔺 E2754150	🔺 EQ754150	15.0	12	26	83	4
🔺 E2754160	🔺 EQ754160	16.0	16	32	92	4
<b>E2754180</b>	▲ EQ754180	18.0	16	32	92	4
<b>E2754200</b>	▲ EQ754200	20.0	20	38	104	4
<b>E</b> 2754220	▲ EQ754220	22.0	20	38	104	5
<b>E</b> 2754250	▲ EQ754250	25.0	25	45	121	5
<b>E2754280</b>	▲ EQ754280	28.0	25	45	121	5
-	▲ EQ754300	30.0	25	45	121	5
<b>E</b> 2754320		32.0	32	53	133	5
<b>E</b> 2754360	-	36.0	32	53	133	6
<b>E2754400</b>	-	40.0	32	63	155	6

#### ▲ : Only available till stock runs out

Other shank design on your reguest.

▶ TiN and TiCN Coatings are available on your request.

#### Tolerances according to DIN 7160 & 7161

Tolerance range in μm Nominal-Diameter in mm													
k10	+40	+48	+58	+70	+84	+100							
K IU	0	0	0	0	0	0							
h6	0	0	0	0	0	0							
no	- 6	- 8	- 9	- 11	- 13	- 16							

																		©	: Exc	ellent (	⊖:Good
ISO						P								M					<		
Material Description		No	on-alloy s	steel			Low	alloy ste	el	High ar	n alloyed nd tool st	steel, eel	Sta	ain <b>l</b> ess s	teel	Grey ca	st iron		ar cast on		able cast ron
VDI 3323	1	2	3	4	5	6	7	8	9	1	0	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1	5	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	5 300	) 350	) 20	00 3	325	200	240	180	180	260	160	250	130	230
Recommend	0	0	0	0	0	0	0	0	0	(	)	0									
ISO					N	J								5	;					н	
Material Description	Alumi wrough		Aluminu	um-cast,	alloyed	Copper a (Bro	and Copp onze / Bra	oer A <b>l</b> oys ass)	Non M Mate		H	leat R	esistan	Super	Alloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 3	4 35	36	37	38	39	40	41
HRc											15	30	25	5 3	3 34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 35	0 320	400 Rm	1050 Rm	550	630	400	550
Recommend	0	0	0	0	0																



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#### **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

END	CBN MILLS	

4G MILL X-POWER

TitaNox-POWER

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CFRP END MILLS

K-2 END MILLS

GENERAL HSS

END MILLS

	E94	<b>10</b> series	2 FL	UTE -	SLOT	TING													
	VDI	Material										Diame	eter (Ø)						
50	3323	Description	Ae	Ар	Parameter	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	25.0
	1-2		1.0D	0.5D	Vc fz RPM FEED	35 0.003 5570 33	40 0.007 4244 59	35 0.013 2785 72	35 0.019 2228 85	40 0.025 2122 106	35 0.039 1393 109	35 0.05 1114 111	40 0.063 1061 134	40 0.061 909 111	35 0.079 696 110	35 0.092 619 114	35 0.098 557 109	40 0.098 579 113	40 0.1 509 102
	3-4	Non-alloy steel	1.0D	0.5D	Vc fz RPM FEED	30 0.004 4775 38	30 0.008 3183 51	30 0.013 2387 62	30 0.019 1910 73	30 0.025 1592 80	30 0.039 1194 93	30 0.05 955 95	30 0.063 796 100	30 0.071 682 97	30 0.076 597 91	30 0.085 531 90	30 0.085 477 81	30 0.094 434 82	30 0.094 382 72
	5		1.0D	0.5D	Vc fz RPM FEED	20 0.004 3183 25	20 0.006 2122 25	20 0.013 1592 41	15 0.02 955 38	20 0.025 1061 53	20 0.039 796 62	20 0.049 637 62	20 0.06 531 64	20 0.067 455 61	20 0.079 398 63	15 0.092 265 49	20 0.098 318 62	20 0.098 289 57	20 0.098 255 50
P	6		1.0D	0.5D	Vc fz RPM FEED	35 0.003 5570 33	40 0.007 4244 59	35 0.013 2785 72	35 0.019 2228 85	40 0.025 2122 106	35 0.039 1393 109	35 0.05 1114 111	40 0.063 1061 134	40 0.061 909 111	35 0.079 696 110	35 0.092 619 114	35 0.098 557 109	40 0.098 579 113	40 0.1 509 102
	7	Low alloy steel	1.0D	0.5D	Vc fz RPM FEED	30 0.004 4775 38	30 0.008 3183 51	30 0.013 2387 62	30 0.019 1910 73	30 0.025 1592 80	30 0.039 1194 93	30 0.05 955 95	30 0.063 796 100	30 0.071 682 97	30 0.076 597 91	30 0.085 531 90	30 0.085 477 81	30 0.094 434 82	30 0.094 382 72
	8-9		1.0D	0.5D	Vc fz RPM FEED	20 0.004 3183 25	20 0.006 2122 25	20 0.013 1592 41	15 0.02 955 38	20 0.025 1061 53	20 0.039 796 62	20 0.049 637 62	20 0.06 531 64	20 0.067 455 61	20 0.079 398 63	15 0.092 265 49	20 0.098 318 62	20 0.098 289 57	20 0.098 255 50
	10	High alloyed	1.0D	0.5D	Vc fz RPM FEED	35 0.003 5570 33	40 0.007 4244 59	35 0.013 2785 72	35 0.019 2228 85	40 0.025 2122 106	35 0.039 1393 109	35 0.05 1114 111	40 0.063 1061 134	40 0.061 909 111	35 0.079 696 110	35 0.092 619 114	35 0.098 557 109	40 0.098 579 113	40 0.1 509 102
	11.1	steel, and tool steel	1.0D	0.5D	Vc fz RPM FEED	20 0.004 3183 25	20 0.006 2122 25	20 0.013 1592 41	15 0.02 955 38	20 0.025 1061 53	20 0.039 796 62	20 0.049 637 62	20 0.06 531 64	20 0.067 455 61	20 0.079 398 63	15 0.092 265 49	20 0.098 318 62	20 0.098 289 57	20 0.098 255 50

#### EP410 SERIES 2 FLUTE TIAIN COATED - SLOTTING

**HSS** 

**END MILLS** 

ISO	VDI	Material	Ae	۸n	Davamator							Diame	eter (Ø)						
ЪU	3323	Description	Ae	Ар	Parameter	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	25.0
	1-2		1.0D	0.5D	Vc fz RPM FEED	50 0.003 7958 48	55 0.007 5836 82	50 0.013 3979 103	50 0.019 3183 121	55 0.025 2918 146	50 0.04 1989 159	50 0.05 1592 159	55 0.063 1459 184	55 0.062 1251 155	50 0.078 995 155	50 0.092 884 163	50 0.099 796 158	55 0.099 796 158	55 0.1 700 140
	3	Non-alloy steel	1.0D	0.5D	Vc fz RPM FEED	45 0.004 7162 57	40 0.008 4244 68	40 0.012 3183 76	45 0.019 2865 109	40 0.025 2122 106	40 0.039 1592 124	45 0.054 1432 155	40 0.068 1061 144	45 0.075 1023 153	40 0.075 796 119	40 0.086 707 122	45 0.086 716 123	40 0.1 579 116	45 0.095 573 109
	4	Non-alloy steel	1.0D	0.5D	Vc fz RPM FEED	45 0.004 7162 57	40 0.008 4244 68	40 0.012 3183 76	45 0.019 2865 109	40 0.025 2122 106	40 0.039 1592 124	45 0.054 1432 155	40 0.068 1061 144	45 0.075 1023 153	40 0.075 796 119	40 0.086 707 122	45 0.086 716 123	40 0.086 579 100	45 0.095 573 109
	5		1.0D	0.5D	Vc fz RPM FEED	25 0.004 3979 32	25 0.006 2653 32	25 0.013 1989 52	25 0.019 1592 60	25 0.025 1326 66	25 0.038 995 76	25 0.047 796 75	25 0.061 663 81	25 0.071 568 81	25 0.075 497 75	20 0.096 354 68	25 0.096 398 76	25 0.096 362 69	25 0.102 318 65
Р	б		1.0D	0.5D	Vc fz RPM FEED	50 0.003 7958 48	55 0.007 5836 82	50 0.013 3979 103	50 0.019 3183 121	55 0.025 2918 146	50 0.04 1989 159	50 0.05 1592 159	55 0.063 1459 184	55 0.062 1251 155	50 0.078 995 155	50 0.092 884 163	50 0.099 796 158	55 0.099 796 158	55 0.1 700 140
	7	Low alloy steel	1.0D	0.5D	Vc fz RPM FEED	45 0.004 7162 57	40 0.008 4244 68	40 0.012 3183 76	45 0.019 2865 109	40 0.025 2122 106	40 0.039 1592 124	45 0.054 1432 155	40 0.068 1061 144	45 0.075 1023 153	40 0.075 796 119	40 0.086 707 122	45 0.086 716 123	40 0.1 579 116	45 0.095 573 109
	8-9		1.0D	0.5D	Vc fz RPM FEED	25 0.004 3979 32	25 0.006 2653 32	25 0.013 1989 52	25 0.019 1592 60	25 0.025 1326 66	25 0.038 995 76	25 0.047 796 75	25 0.061 663 81	25 0.071 568 81	25 0.075 497 75	20 0.096 354 68	25 0.096 398 76	25 0.096 362 69	25 0.102 318 65
	10	High a <b>ll</b> oyed stee <b>l</b> ,	1.0D	0.5D	Vc fz RPM FEED	50 0.003 7958 48	55 0.007 5836 82	50 0.013 3979 103	50 0.019 3183 121	55 0.025 2918 146	50 0.04 1989 159	50 0.05 1592 159	55 0.063 1459 184	55 0.062 1251 155	50 0.078 995 155	50 0.092 884 163	50 0.099 796 158	55 0.099 796 158	55 0.1 700 140
	11.1	and tool steel	1.0D	0.5D	Vc fz RPM FEED	25 0.004 3979 32	25 0.006 2653 32	25 0.013 1989 52	25 0.019 1592 60	25 0.025 1326 66	25 0.038 995 76	25 0.047 796 75	25 0.061 663 81	25 0.071 568 81	25 0.075 497 75	20 0.096 354 68	25 0.096 398 76	25 0.096 362 69	25 0.102 318 65
																1	$\overline{\lambda}$		

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### **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

4G MILL

X-POWER

Ρ

TitaNox-POWER

K-2 END MILLS

GENERAL HSS END MILLS

	E35	70 series	2 FL	UTE -	SLOT	TING													n/tooth = rev./min.
50	VDI	Material	10	Am	Davamatar							Diame	eter (Ø)					FEED =	= mm/min.
50	3323	Description	Ae	Ар	Parameter	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	25.0
	1-2		1.0D	0.5D	Vc fz RPM FEED	30 0.004 4775 38	35 0.007 3714 52	30 0.012 2387 57	30 0.019 1910 73	35 0.025 1857 93	30 0.042 1194 100	30 0.05 955 95	35 0.061 928 113	35 0.063 796 100	30 0.083 597 99	30 0.091 531 97	30 0.1 477 95	35 0.1 506 101	35 0.1 446 89
	3-4	Non-alloy steel	1.0D	0.5D	Vc fz RPM FEED	30 0.004 4775 38	25 0.008 2653 42	25 0.013 1989 52	30 0.018 1910 69	25 0.025 1326 66	25 0.038 995 76	30 0.05 955 95	25 0.064 663 85	25 0.075 568 85	25 0.075 497 75	25 0.083 442 73	30 0.083 477 79	30 0.094 434 82	25 0.093 318 59
	5		1.0D	0.5D	Vc fz RPM FEED	15 0.003 2387 14	15 0.006 1592 19	15 0.015 1194 36	15 0.02 955 38	15 0.025 796 40	15 0.042 597 50	15 0.05 477 48	15 0.061 398 49	20 0.069 455 63	15 0.083 298 50	15 0.089 265 47	15 0.1 239 48	15 0.1 217 43	15 0.1 191 38
P	6		1.0D	0.5D	Vc fz RPM FEED	30 0.004 4775 38	35 0.007 3714 52	30 0.012 2387 57	30 0.019 1910 73	35 0.025 1857 93	30 0.042 1194 100	30 0.05 955 95	35 0.061 928 113	35 0.063 796 100	30 0.083 597 99	30 0.091 531 97	30 0.1 477 95	35 0.1 506 101	35 0.1 446 89
P	7	Low alloy steel	1.0D	0.5D	Vc fz RPM FEED	30 0.004 4775 38	25 0.008 2653 42	25 0.013 1989 52	30 0.018 1910 69	25 0.025 1326 66	25 0.038 995 76	30 0.05 955 95	25 0.064 663 85	25 0.075 568 85	25 0.075 497 75	25 0.083 442 73	30 0.083 477 79	30 0.094 434 82	25 0.093 318 59
	8-9		1.0D	0.5D	Vc fz RPM FEED	15 0.003 2387 14	15 0.006 1592 19	15 0.015 1194 36	15 0.02 955 38	15 0.025 796 40	15 0.042 597 50	15 0.05 477 48	15 0.061 398 49	20 0.069 455 63	15 0.083 298 50	15 0.089 265 47	15 0.1 239 48	15 0.1 217 43	15 0.1 191 38
	10	High alloyed	1.0D	0.5D	Vc fz RPM FEED	30 0.004 4775 38	35 0.007 3714 52	30 0.012 2387 57	30 0.019 1910 73	35 0.025 1857 93	30 0.042 1194 100	30 0.05 955 95	35 0.061 928 113	35 0.063 796 100	30 0.083 597 99	30 0.091 531 97	30 0.1 477 95	35 0.1 506 101	35 0.1 446 89
	11.1	and tool steel	1.0D	0.5D	Vc fz RPM FEED	15 0.003 2387 14	15 0.006 1592 19	15 0.015 1194 36	15 0.02 955 38	15 0.025 796 40	15 0.042 597 50	15 0.05 477 48	15 0.061 398 49	20 0.069 455 63	15 0.083 298 50	15 0.089 265 47	15 0.1 239 48	15 0.1 217 43	15 0.1 191 38

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#### ER570 SERIES 2 FLUTE TIAIN COATED - SLOTTING

**HSS** 

**END MILLS** 

	VDI	Material	A -	A	D							Diame	eter (Ø)						
ISO	3323	Description	Ae	Ар	Parameter	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0	22.0	25.0
	1-2		1.0D	0.5D	Vc fz RPM FEED	45 0.004 7162 57	45 0.007 4775 67	45 0.012 3581 86	45 0.019 2865 109	45 0.025 2387 119	45 0.041 1790 147	45 0.05 1432 143	45 0.062 1194 148	50 0.064 1137 146	45 0.082 895 147	40 0.093 707 132	45 0.1 716 143	50 0.1 723 145	50 0.099 637 126
	3-4	Non-alloy steel	1.0D	0.5D	Vc fz RPM FEED	40 0.004 6366 51	35 0.008 3714 59	35 0.013 2785 72	40 0.018 2546 92	35 0.025 1857 93	35 0.038 1393 106	40 0.05 1273 127	35 0.064 928 119	35 0.074 796 118	35 0.075 696 104	35 0.083 619 103	40 0.083 637 106	40 0.094 579 109	40 0.092 509 94
	5		1.0D	0.5D	Vc fz RPM FEED	20 0.003 3183 19	25 0.006 2653 32	20 0.015 1592 48	20 0.02 1273 51	25 0.024 1326 64	20 0.041 796 65	20 0.05 637 64	25 0.063 663 84	25 0.068 568 77	20 0.088 398 70	20 0.09 354 64	20 0.1 318 64	25 0.1 362 72	20 0.098 255 50
	6		1.0D	0.5D	Vc fz RPM FEED	45 0.004 7162 57	45 0.007 4775 67	45 0.012 3581 86	45 0.019 2865 109	45 0.025 2387 119	45 0.041 1790 147	45 0.05 1432 143	45 0.062 1194 148	50 0.064 1137 146	45 0.082 895 147	40 0.093 707 132	45 0.1 716 143	50 0.1 723 145	50 0.099 637 126
P	7	Low alloy steel	1.0D	0.5D	Vc fz RPM FEED	40 0.004 6366 51	35 0.008 3714 59	35 0.013 2785 72	40 0.018 2546 92	35 0.025 1857 93	35 0.038 1393 106	40 0.05 1273 127	35 0.064 928 119	35 0.074 796 118	35 0.075 696 104	35 0.083 619 103	40 0.083 637 106	40 0.094 579 109	40 0.092 509 94
	8-9		1.0D	0.5D	Vc fz RPM FEED	20 0.003 3183 19	25 0.006 2653 32	20 0.015 1592 48	20 0.02 1273 51	25 0.024 1326 64	20 0.041 796 65	20 0.05 637 64	25 0.063 663 84	25 0.068 568 77	20 0.088 398 70	20 0.09 354 64	20 0.1 318 64	25 0.1 362 72	20 0.098 255 50
	10	High a <b>ll</b> oyed steel,	1.0D	0.5D	Vc fz RPM FEED	45 0.004 7162 57	45 0.007 4775 67	45 0.012 3581 86	45 0.019 2865 109	45 0.025 2387 119	45 0.041 1790 147	45 0.05 1432 143	45 0.062 1194 148	50 0.064 1137 146	45 0.082 895 147	40 0.093 707 132	45 0.1 716 143	50 0.1 723 145	50 0.099 637 126
	11.1	and tool steel	1.0D	0.5D	Vc fz RPM FEED	20 0.003 3183 19	25 0.006 2653 32	20 0.015 1592 48	20 0.02 1273 51	25 0.024 1326 64	20 0.041 796 65	20 0.05 637 64	25 0.063 663 84	25 0.068 568 77	20 0.088 398 70	20 0.09 354 64	20 0.1 318 64	25 0.1 362 72	20 0.098 255 50

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4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS

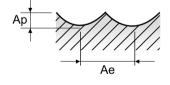
GENERAL HSS END MILLS



### RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

	25	35, E249	2 seri	ES	2 FLUT	'E BALI	L NOSE						fz Ri	= m/min. = mm/tooth PM = rev./min. ED = mm/min.
ISO	VDI 3323	Material Description	Ae	Ар	Parameter	2.0	10	6.0		Diameter (Ø		16.0	20.0	25.0
	1	Description	0.7D	0.3D	Vc fz RPM FEED	3.0 40 0.011 4244 93	4.0 40 0.018 3183 115	6.0 40 0.031 2122 132	8.0 40 0.05 1592 159	10.0 40 0.069 1273 176	12.0 40 0.085 1061 180	40 0.094 796 150	20.0 40 0.117 637 149	25.0 40 0.13 509 132
	2	Non-alloy steel	0.7D	0.3D	Vc fz RPM FEED	30 0.01 3183 64	30 0.017 2387 81	30 0.026 1592 83	30 0.044 1194 105	30 0.06 955 115	30 0.066 796 105	30 0.083 597 99	30 0.085 477 81	30 0.088 382 67
	3-4	Non anoy steel	0.7D	0.3D	Vc fz RPM FEED	20 0.008 2122 34	20 0.013 1592 41	20 0.023 1061 49	20 0.036 796 57	20 0.054 637 69	15 0.061 398 49	20 0.079 398 63	20 0.083 318 53	15 0.091 191 35
	5		0.7D	0.3D	Vc fz RPM FEED	15 0.007 1592 22	15 0.013 1194 31	15 0.018 796 29	15 0.03 597 36	15 0.044 477 42	10 0.055 265 29	15 0.07 298 42	15 0.088 239 42	15 0.094 191 36
Ρ	6		0.7D	0.3D	Vc fz RPM FEED	30 0.01 3183 64	30 0.017 2387 81	30 0.026 1592 83	30 0.044 1194 105	30 0.06 955 115	30 0.066 796 105	30 0.083 597 99	30 0.085 477 81	30 0.088 382 67
	7	Low alloy steel	0.7D	0.3D	Vc fz RPM FEED	20 0.008 2122 34	20 0.013 1592 41	20 0.023 1061 49	20 0.036 796 57	20 0.054 637 69	15 0.061 398 49	20 0.079 398 63	20 0.083 318 53	15 0.091 191 35
	8-9		0.7D	0.3D	Vc fz RPM FEED	15 0.007 1592 22	15 0.013 1194 31	15 0.018 796 29	15 0.03 597 36	15 0.044 477 42	10 0.055 265 29	15 0.07 298 42	15 0.088 239 42	15 0.094 191 36
	10	High alloyed steel.	0.7D	0.3D	Vc fz RPM FEED	30 0.01 3183 64	30 0.017 2387 81	30 0.026 1592 83	30 0.044 1194 105	30 0.06 955 115	30 0.066 796 105	30 0.083 597 99	30 0.085 477 81	30 0.088 382 67
	11.1	and tool steel	0.7D	0.3D	Vc fz RPM FEED	15 0.007 1592 22	15 0.013 1194 31	15 0.018 796 29	15 0.03 597 36	15 0.044 477 42	10 0.055 265 29	15 0.07 298 42	15 0.088 239 42	15 0.094 191 36
N	21-22	Aluminum- wrought alloy	0.7D	0.3D	Vc fz RPM FEED	105 0.01 11141 223	100 0.016 7958 255	105 0.025 5570 279	100 0.044 3979 350	100 0.056 3183 357	95 0.068 2520 343	100 0.075 1989 298	100 0.088 1592 280	100 0.096 1273 244
IN	23-24	Aluminum-cast, alloyed	0.7D	0.3D	Vc fz RPM FEED	68 0.01 7215 144	65 0.016 5173 166	68 0.025 3608 180	65 0.044 2586 228	65 0.056 2069 232	62 0.068 1645 224	65 0.075 1293 194	65 0.088 1035 182	65 0.096 828 159

%The FEED, in long & extra long types, should be reduced by around 50%



4G MILL

X-POWER

TitaNox-POWER



### RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

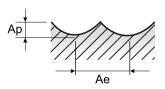
### E2410, E2429, E2512 series

### MULTI FLUTE BALL NOSE

Vc = m/min. fz = mm/tooth RPM = rev./min.EEED = mm/min

	VDI	Material			D				Diameter (Ø)			
50	3323	Description	Ae	Ар	Parameter	6.0	8.0	10.0	12.0	16.0	20.0	25
					Vc	40	40	40	40	40	40	40
	-		0 7D		fz	0.03	0.05	0.069	0.087	0.096	0.117	0.1
			0.7D	0.3D	RPM	2122	1592	1273	1061	796	637	50
					FEED	255	318	351	369	306	298	40
					Vc	30	30	30	30	30	30	3
	2		0.7D	0.3D	fz	0.026	0.044	0.06	0.067	0.083	0.087	0.0
	2		0.70	0.50	RPM	1592	1194	955	796	597	477	38
		Non-alloy steel			FEED	166	210	229	213	198	166	20
		Non anoy steel			Vc	20	20	20	15	20	20	1
	3-4		0.7D	0.3D	fz	0.023	0.036	0.054	0.059	0.076	0.083	0.0
			02	0.02	RPM	1061	796	637	398	398	318	19
					FEED	98	115	138	94	121	106	1(
					Vc	15	15	15	15	15	15	1
	5		0.7D	0.3D	fz	0.019	0.03	0.042	0.052	0.067	0.083	0.0
					RPM	796	597	477	398	298	239	19
					FEED Vc	60 30	72 30	80 30	83 30	80 30	79 30	10
					fz	0.026	0.044	0.06	0.067	0.083	0.087	0.0
Ρ	6		0.7D	0.3D	RPM	1592	1194	955	796	597	477	3
					FEED	166	210	229	213	198	166	2
					Vc	20	210	229	15	20	20	1
					fz	0.023	0.036	0.054	0.059	0.076	0.083	0.0
	7	Low alloy steel	0.7D	0.3D	RPM	1061	796	637	398	398	318	1
					FEED	98	115	138	94	121	106	10
					Vc	15	15	15	15	15	15	1
	8-9		0.70	0.20	fz	0.019	0.03	0.042	0.052	0.067	0.083	0.0
	8-9		0.7D	0.3D	RPM	796	597	477	398	298	239	19
					FEED	60	72	80	83	80	79	10
					Vc	30	30	30	30	30	30	3
	10		0.7D	0.3D	fz	0.026	0.044	0.06	0.067	0.083	0.087	0.0
		High a <b>ll</b> oyed	0.70	0.50	RPM	1592	1194	955	796	597	477	3
		steel,			FEED	166	210	229	213	198	166	20
		and tool steel			Vc	15	15	15	15	15	15	1
	11.1		0.7D	0.3D	fz	0.019	0.03	0.042	0.052	0.067	0.083	0.0
					RPM	796	597	477	398	298	239	19
					FEED	60	72 100	80	83	80	79	10
		Aluminum-			Vc fz	105 0.025	0.044	100 0.056	95 0.068	100 0.075	100 0.088	0.0
	21-22	wrought alloy	0.7D	0.3D	RPM	5570	3979	3183	2520	1989	1592	12
		wroughtalloy			FEED	5570	700	713	685	597	560	74
N					Vc	68	65	65	62	65	65	6
		Aluminum-cast,			fz	0.025	0.044	0.056	0.068	0.075	0.088	0.0
	23-24	alloyed	0.7D	0.3D	RPM	3608	2586	2069	1645	1293	1035	82
					111 111	3000	2300	2007	10-15	1275	1055	1 04

%The FEED, in long & extra long types, should be reduced by around 50%



GENERAL HSS END<u>MILLS</u>

K-2 END MILLS





### **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

### E2570, E2571, E2510 series

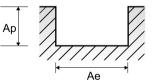
### 2 FLUTE - SLOTTING

Vc = m/min.fz = mm/toothRPM = rev./min.

														RPM = rev./min. FEED = mm/min.
i-Xmill	ISC	VDI	Material	۸	A	D				Diameter (Ø)				
END MILLS	ISC	3323	Description	Ae	Ар	Parameter	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0
						Vc	35	35	35	35	35	35	35	35
i-SMART		1		1.0D	0.5D	fz	0.004	0.008	0.013	0.02	0.025	0.036	0.045	0.061
MODULAR				1.00	0.50	RPM	5570	3714	2785	2228	1857	1393	1114	928
END MILLS						FEED	45	59	72	89	93	100	100	113
						Vc	30	30	30	30	30	30	30	30
V5070		2		1.0D	0.5D	fz	0.003	0.007	0.013	0.019	0.025	0.041	0.05	0.063
X5070		2		1.00	0.50	RPM	4775	3183	2387	1910	1592	1194	955	796
END MILLS			Non-alloy steel			FEED	29	45	62	73	80	98	95	100
			Non anoy steel			Vc	25	25	25	25	25	25	25	25
4G MILL		3-4		1.0D	0.5D	fz	0.004	0.008	0.013	0.019	0.025	0.039	0.05	0.063
END MILLS						RPM	3979	2653	1989	1592	1326	995	796	663
END WILLS						FEED	32	42	52	60	66	78	80	84
						Vc	15	15	15	15	15	15	15	15
X-POWER		5		1.0D	0.5D	fz	0.003	0.006	0.014	0.019	0.025	0.04	0.05	0.063
PRO						RPM FEED	2387 14	1592 19	1194 33	955 36	796 40	597 48	477 48	398 50
END MILLS						Vc	30	30	33	30	30	30	30	30
						fz	0.003	0.007	0.013	0.019	0.025	0.041	0.05	0.063
TitaNox-	P	6		1.0D	0.5D	RPM	4775	3183	2387	1910	1592	1194	955	796
POWER						FEED	29	45	62	73	80	98	95	100
END MILLS						Vc	25	25	25	25	25	25	25	25
						fz	0.004	0.008	0.013	0.019	0.025	0.039	0.05	0.063
JET-POWER		7	Low alloy steel	1.0D	0.5D	RPM	3979	2653	1989	1592	1326	995	796	663
END MILLS						FEED	32	42	52	60	66	78	80	84
						Vc	15	15	15	15	15	15	15	15
				4.00		fz	0.003	0.006	0.014	0.019	0.025	0.04	0.05	0.063
V7 PLUS		8-9		1.0D	0.5D	RPM	2387	1592	1194	955	796	597	477	398
END MILLS						FEED	14	19	33	36	40	48	48	50
						Vc	30	30	30	30	30	30	30	30
ALU-POWER		10		1.0D	0.5D	fz	0.003	0.007	0.013	0.019	0.025	0.041	0.05	0.063
HPC			High alloyed	1.00	0.50	RPM	4775	3183	2387	1910	1592	1194	955	796
END MILLS			steel.			FEED	29	45	62	73	80	98	95	100
			and tool steel			Vc	15	15	15	15	15	15	15	15
ALU-		11.1		1.0D	0.5D	fz	0.003	0.006	0.014	0.019	0.025	0.04	0.05	0.063
POWER				1.00	0.50	RPM	2387	1592	1194	955	796	597	477	398
END MILLS						FEED	14	19	33	36	40	48	48	50
						Vc	75	105	100	100	105	100	95	95
D-POWER		21-22	Aluminum-	1.0D	0.5D	fz	0.007	0.011	0.018	0.025	0.028	0.049	0.065	0.076
GRAPHITE			wrought alloy			RPM	11937	11141	7958	6366	5570	3979	3024	2520
END MILLS	N					FEED	167	245	286	318	312	390	393	383
			Aluminum est			Vc fr	49	68	65	65	68	65	62	62
D-POWER		23-24	Aluminum-cast, alloyed	1.0D	0.5D	fz RPM	0.007 7799	0.011 7215	0.018 5173	0.025 4138	0.028 3608	0.049 2586	0.065 1974	0.076 1645
CFRP			alloyeu			FEED	109	159	186	207	202	2586	257	250
END MILLS						FEED	109	109	100	207	202	200	257	250
													•	

%The FEED, in long & extra long types, should be reduced by around 50%

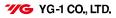




K-2 END MILLS

GENERAL HSS

END MILLS



4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS

GENERAL

HSS END MILLS



#### RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

### EQ570, EQ571, EQ510 series

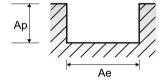
### 2 FLUTE TIALN COATED - SLOTTING

Vc = m/min. fz = mm/tooth RPM = rev./min.FEED = mm/min.

ISO	VDI	Material	Ae	Ар	Parameter				Diameter (Ø				
150	3323	Description	Ae	АР	ralailletei	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0
	1		1.0D	0.5D	Vc fz RPM FEED	50 0.004 7958 64	45 0.008 4775 76	50 0.013 3979 103	50 0.02 3183 127	45 0.025 2387 119	50 0.036 1989 143	50 0.045 1592 143	45 0.06 119 148
	2	N	1.0D	0.5D	Vc fz RPM FEED	40 0.003 6366 38	40 0.007 4244 59	40 0.012 3183 76	40 0.02 2546 102	40 0.024 2122 102	40 0.04 1592 127	40 0.05 1273 127	40 0.06 106 130
	3-4	Non-alloy steel	1.0D	0.5D	Vc fz RPM FEED	35 0.004 5570 45	35 0.008 3714 59	30 0.013 2387 62	35 0.019 2228 85	30 0.025 1592 80	30 0.04 1194 95	35 0.05 1114 111	35 0.06 92 11
	5		1.0D	0.5D	Vc fz RPM FEED	20 0.003 3183 19	20 0.007 2122 30	20 0.013 1592 41	20 0.02 1273 51	20 0.025 1061 53	20 0.041 796 65	20 0.05 637 64	20 0.06 53 68
Ρ	6		1.0D	0.5D	Vc fz RPM FEED	40 0.003 6366 38	40 0.007 4244 59	40 0.012 3183 76	40 0.02 2546 102	40 0.024 2122 102	40 0.04 1592 127	40 0.05 1273 127	40 0.00 106 13
	7	Low alloy steel	1.0D	0.5D	Vc fz RPM FEED	35 0.004 5570 45	35 0.008 3714 59	30 0.013 2387 62	35 0.019 2228 85	30 0.025 1592 80	30 0.04 1194 95	35 0.05 1114 111	35 0.00 92 11
	8-9		1.0D	0.5D	Vc fz RPM FEED	20 0.003 3183 19	20 0.007 2122 30	20 0.013 1592 41	20 0.02 1273 51	20 0.025 1061 53	20 0.041 796 65	20 0.05 637 64	20 0.00 53 68
	10	High alloyed	1.0D	0.5D	Vc fz RPM FEED	40 0.003 6366 38	40 0.007 4244 59	40 0.012 3183 76	40 0.02 2546 102	40 0.024 2122 102	40 0.04 1592 127	40 0.05 1273 127	40 0.06 106 13
	11.1	and tool steel	1.0D	0.5D	Vc fz RPM FEED	20 0.003 3183 19	20 0.007 2122 30	20 0.013 1592 41	20 0.02 1273 51	20 0.025 1061 53	20 0.041 796 65	20 0.05 637 64	20 0.00 53 68
N	21-22	Aluminum- wrought a <b>ll</b> oy	1.0D	0.5D	Vc fz RPM FEED	105 0.007 16711 234	145 0.011 15385 338	140 0.018 11141 401	140 0.025 8913 446	150 0.028 7958 446	140 0.049 5570 546	135 0.064 4297 550	13 0.0 344 52
	23-24	Aluminum-cast, alloyed	1.0D	0.5D	Vc fz RPM FEED	68 0.007 10823 152	94 0.011 9974 219	91 0.018 7242 261	91 0.025 5793 290	98 0.028 5199 291	91 0.049 3621 355	88 0.064 2801 359	85 0.0 225 34

%The FEED, in long & extra long types, should be reduced by around 50%



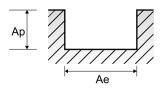


## E2464, E2509 SERIES

#### 2 FLUTE - SLOTTING

10	50	VDI	Material	٨٥	Ap	Darameter				[	Diameter (Ø	٥)			
L.		3323	Description	Ae	Ар	Parameter	3.0	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
		21-22	Aluminum- wrought a <b>ll</b> oy	1.0D	0.5D	Vc fz RPM FEED	75 0.035 7958 557	130 0.05 6897 690	150 0.071 5968 848	155 0.12 4934 1184	190 0.12 5040 1210	155 0.177 3524 1248	175 0.177 3482 1232	130 0.283 2299 1301	145 0.283 2308 1306
	N -	23-24	Aluminum-cast, alloyed	1.0D	0.5D	Vc fz RPM FEED	49 0.035 5199 364	85 0.05 4509 451	98 0.071 3899 554	101 0.12 3215 772	124 0.12 3289 789	101 0.177 2296 813	114 0.177 2268 803	85 0.283 1503 851	94 0.283 1496 847

NEXT PAGE



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\*/G YG-1 CO., LTD.



#### **RECOMMENDED CUTTING CONDITIONS** EMPFOHLENE SCHNEIDPARAMETER

35

0.021

1393

88

30

0.021

1194

75

25

0.019

995

57

15

0.018

597

32

30

0.021

1194

75

25

0.019

995

57

15

0.018

597

32

30

0.021

1194

75

15

0.018

597

32

100

0.022

3979

263

65

0.022

2586

171

15

0.01

796

24

105

0.013

5570

217

68

0.013

3608

141

15

0.006

1194

21

100

0.008

7958

15

0.007

955

20

100

0.011

6366

210

65

0.011

4138

137

### E2572, E2573, E2516, E2553, E2554, E2551, E2552 series

Vc = m/minVC = m/min.fz = mm/tooth RPM = rev./min. FEED = mm/min.

35

0.037

928

103

30

0.033

796

79

25

0.029

663

58

15

0.029

398

35

30

0.033

796

79

25

0.029

663

58

15

0.029

398

35

30

0.033

796

79

15

0.029

398

35

95

0.035

2520

265

62

0.035

1645

35

0.027

1114

90

30

0.026

955

74

25

0.023

796

55

15

0.022

477

32

30

0.026

955

74

25

0.023

796

55

15

0.022

477

32

30

0.026

955

74

15

0.022

477

32

95

0.029

3024

263

62

0.029

1974

172

#### **3 FLUTE - SLOTTING** Diameter (Ø) ISO Parameter Description 35 35 35 35 Vc 35 0.012 0.002 0.005 0.007 0.015 fz 1.0D 0.5D 1 RPM 5570 3714 2785 2228 1857 56 80 FFFD 33 58 84 30 30 Vc 30 30 30 0.002 0.004 0.007 0.01 0.014 fz 1.0D 0.5D RPM 4775 3183 2387 1910 1592 FFFD 29 38 50 57 67 Non-alloy steel 25 Vc 25 25 25 25 fz 0.002 0.003 0.006 0.008 0.011 3-4 1.0D 0.5D RPM 3979 2653 1989 1592 1326 FFFD 24 24 36 38 44 Vc 15 15 15 15 15 X-POWER fz 0.002 0.003 0.006 0.007 0.01 1.0D 0.5D RPM 2387 1592 1194 955 796 FEED 14 14 21 20 24 Vc 30 30 30 30 30 fz 0.002 0.004 0.007 0.01 0.014 Ρ 1.0D 0.5D RPM 4775 3183 2387 1910 1592 FEED 29 38 50 57 67 25 25 25 25 25 Vc fz 0.002 0.003 0.006 0.008 0.011 Low alloy steel 1.0D 0.5D RPM 3979 2653 1989 1592 1326 FEED 24 24 36 38 44 Vc 15 15 15 15 15 fz 0.002 0.003 0.006 0.007 0.01 8-9 1.0D 0.5D RPM 2387 1592 1194 955 796 FEED 14 14 21 20 24 30 30 30 30 30 Vc 0.002 0.004 0.007 0.01 0.014 fz 1.0D 0.5D RPM 4775 3183 2387 1910 1592 High alloyed FEED 29 50 67 38 57 steel

wrought alloy FEED 107 167 191 Ν Vc 49 68 65 0.008 Aluminum-cast, f7 0.003 0.005 1.0D 0.5D RPM alloyed 7799 7215 5173 FFFD 70 108 124

0.5D

0.5D

Vc

fz

RPM

FEED

Vc

fz

RPM

15

0.002

2387

14

75

0.003

11937

15

0.003

1592

14

105

0.005

11141

%The FEED, in long & extra long types, should be reduced by around 50%

1.0D

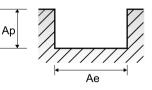
1.0D

and tool steel

Aluminum

21-22

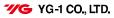






GENERAL





4G MILL

X-POWER

TitaNox-POWER



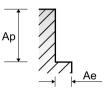
#### **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

### E2572, E2573, E2516, E2553, E2554, E2551, E2552 series

	257	2, E2573,	<b>E2</b> 5	516,	E255	53, E2	.554,	E2551	, E25	52 SERIES			Vc = m/mii fz = mm/to
Fl	UTE	- SIDE CUTTIN	IG										$RPM = re^{-1}$ FEED = mi
	VDI	Material							Diam	eter (Ø)			
SO	3323	Description	Ae	Ар	Parameter -	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.
					Vc	35	35	35	35	35	35	35	35
	1		0.1D	1.50	fz	0.004	0.008	0.013	0.02	0.025	0.036	0.045	0.06
			0.10	1.5D	RPM	5570	3714	2785	2228	1857	1393	1114	92
					FEED	67	89	109	134	139	150	150	17
					Vc	30	30	30	30	30	30	30	30
	2		0.1D	1.5D	fz	0.003	0.006	0.011	0.018	0.023	0.036	0.044	0.0
	<u> </u>		0.10	1.50	RPM	4775	3183	2387	1910	1592	1194	955	79
		Non-alloy steel			FEED	43	57	79	103	110	129	126	13
					Vc	25	25	25	25	25	25	25	25
	3-4		0.1D	1.5D	fz	0.003	0.006	0.009	0.014	0.018	0.03	0.038	0.0
					RPM	3979	2653	1989	1592	1326	995	796	66
					FEED	36	48	54	67	72	90	91	95
					Vc	15	15	15	15	15	15	15	1
	5		0.1D	1.5D	fz RPM	0.002	0.004	0.009	0.013 955	0.019 796	0.03 597	0.037 477	0.0
					FEED	2387 14	1592 19	1194 32	37	45	597	53	55
					Vc	30	30	30	30	30	30	30	30
					fz	0.003	0.006	0.011	0.018	0.023	0.036	0.044	0.0
2	6		0.1D	1.5D	RPM	4775	3183	2387	1910	1592	1194	955	79
					FEED	43	57	79	103	110	129	126	13
		-			Vc	25	25	25	25	25	25	25	2
					fz	0.003	0.006	0.009	0.014	0.018	0.03	0.038	0.0
	7	Low alloy steel	0.1D	1.5D	RPM	3979	2653	1989	1592	1326	995	796	66
					FEED	36	48	54	67	72	90	91	9
					Vc	15	15	15	15	15	15	15	1
					fz	0.002	0.004	0.009	0.013	0.019	0.03	0.037	0.0
	8-9		0.1D	1.5D	RPM	2387	1592	1194	955	796	597	477	39
					FEED	14	19	32	37	45	54	53	5
					Vc	30	30	30	30	30	30	30	30
	10		0.1D	1.5D	fz	0.003	0.006	0.011	0.018	0.023	0.036	0.044	0.0
			0.10	1.50	RPM	4775	3183	2387	1910	1592	1194	955	79
		High alloyed steel.			FEED	43	57	79	103	110	129	126	13
		and tool steel			Vc	15	15	15	15	15	15	15	1:
	11.1		0.1D	1.5D	fz	0.002	0.004	0.009	0.013	0.019	0.03	0.037	0.0
			0.10	1.50	RPM	2387	1592	1194	955	796	597	477	39
					FEED	14	19	32	37	45	54	53	55
					Vc	75	105	100	100	105	100	95	95
	21-22	Aluminum-	0.1D	1.5D	fz	0.005	0.008	0.014	0.019	0.021	0.037	0.048	0.0
		wrought alloy			RPM	11937	11141	7958	6366	5570	3979	3024	252
N					FEED	179	267	334	363	351	442	435	43
					Vc	49	68	65	65	68	65	62	62
	23-24	Aluminum-cast,	0.1D	1.5D	fz	0.005	0.008	0.014	0.019	0.021	0.037	0.048	0.0
		alloyed			RPM	7799	7215	5173	4138	3608	2586	1974	164
					FEED	117	173	217	236	227	287	284	28

 $\% \mbox{The FEED},$  in long & extra long types, should be reduced by around 50%

▶ NEXT PAGE



END MILLS

GENERAL HSS

K-2 END MILLS





## **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

## EQ572, EQ573, EQ516, EQ553, EQ554, EQ551, EQ552 series

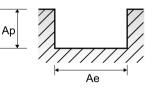
## **3 FLUTE TIAIN COATED - SLOTTING**

Vc = m/min.fz = mm/toothRPM = rev./min.FEED = mm/min.

i-Xmill														
ND MILLS	ISC	VDI	Material	Ae         Ap         Parameter         2.0         3.0         4.0         5.0         6.0         8.0         10.0         12.0           Vc         50         45         50         50         45         50										
		3323	Description			rarameter	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0
i-SMART														
VODULAR		1		1.0D	0.5D	fz	0.002	0.005	0.007	0.012	0.015	0.021	0.028	0.036
ND MILLS				1.00	0.50	RPM	7958	4775	3979	3183	2387	1989	1432	1326
						FEED	48	72	84	115	107	125	120	143
X5070						Vc fz	40 0.002	40 0.004	40 0.006	40 0.01	40 0.014	40 0.022	40 0.028	40 0.033
ND MILLS		2		1.0D	0.5D	RPM	6366	4244	3183	2546	2122	1592	1273	1061
ND MILLO						FEED	38	51	57	76	89	105	1273	1001
			Non-alloy steel			Vc	35	35	30	35	30	35	35	35
4G MILL		24		1.00	0.50	fz	0.002	0.003	0.005	0.008	0.011	0.018	0.023	0.028
ND MILLS		3-4		1.0D	0.5D	RPM	5570	3714	2387	2228	1592	1393	1114	928
						FEED	33	33	36	53	53	75	77	78
X-POWER						Vc	20	20	20	20	20	20	20	20
PRO		5		1.0D	0.5D	fz	0.002	0.003	0.007	0.008	0.011	0.017	0.021	0.03
ND MILLS						RPM	3183	2122	1592	1273	1061	796	637	531
1001 ( b. 1						FEED Vc	19 40	19 40	33 40	31 40	35 40	41 40	40 40	48 40
TitaNox-						fz	40 0.002	0.004	40 0.006	0.01	0.014	0.022	0.028	0.033
POWER	P	6		1.0D	0.5D	RPM	6366	4244	3183	2546	2122	1592	1273	1061
ND MILLS						FEED	38	51	57	76	89	105	107	105
						Vc	35	35	30	35	30	35	35	35
T-POWER		7	Low alloy steel	1.0D	0.5D	fz	0.002	0.003	0.005	0.008	0.011	0.018	0.023	0.028
ND MILLS			Low alloy steel	1.00	0.50	RPM	5570	3714	2387	2228	1592	1393	1114	928
						FEED	33	33	36	53	53	75	77	78
						Vc	20	20	20	20	20	20	20	20
V7 PLUS		8-9		1.0D	0.5D	fz	0.002	0.003	0.007	0.008	0.011	0.017	0.021	0.03
ND MILLS						RPM	3183	2122	1592	1273	1061	796	637	531
						FEED Vc	19 40	19 40	33	31	35 40	41 40	40	48 40
LU-POWER						vc fz	40 0.002	40 0.004	40 0.006	40 0.01	40 0.014	40 0.022	40 0.028	40 0.033
HPC		10		1.0D	0.5D	RPM	6366	4244	3183	2546	2122	1592	1273	1061
ND MILLS			High alloyed			FEED	38	51	57	76	89	105	107	1001
ALU-			steel,			Vc	20	20	20	20	20	20	20	20
POWER		11.1	and tool steel	1.0D	0.5D	fz	0.002	0.003	0.007	0.008	0.011	0.017	0.021	0.03
ND MILLS		11.1		1.00	0.50	RPM	3183	2122	1592	1273	1061	796	637	531
						FEED	19	19	33	31	35	41	40	48
D-POWER						Vc	105	145	140	140	145	140	135	130
GRAPHITE		21-22	Aluminum-	1.0D	0.5D	fz	0.003	0.005	0.008	0.011	0.012	0.021	0.029	0.034
ND MILLS			wrought a <b>ll</b> oy			RPM	16711	15385	11141	8913	7692	5570	4297	3448
D DOWED	N					FEED Vc	150 68	231 94	267 91	294 91	277 94	351 91	374 88	352 85
D-POWER			Aluminum-cast			fz	0.003	94 0.005	0.008	0.011	0.012	0.021	0.029	0.034
CFRP		23-24	Aluminum-cast, alloved	1.0D	0.5D	RPM	10823	9974	7242	5793	4987	3621	2801	2255
ND MILLS			anoyeu			FEED	97	150	174	191	180	228	244	230
							21	150	174	121	100	220	T	230

%The FEED, in long & extra long types, should be reduced by around 50%

► NEXT PAGE





GENERAL HSS





## **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

## EQ572, EQ573, EQ516, EQ553, EQ554, EQ551, EQ552 series

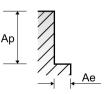
## **3 FLUTE TIAIN COATED - SIDE CUTTING**

Vc = m/min.fz = mm/toothRPM = rev./min.FEED = mm/min.

i-Xmill														
END MILLS	ISO	VDI	Material	Ae	Ар	Parameter				Diame	eter (Ø)			
		3323	Description	- AC		rarameter	2.0	3.0	4.0	5.0	6.0	8.0	10.0	12.0
i-SMART						Vc	50	45	50	50	45	50	45	50
MODULAR		1		0.1D	1.5D	fz	0.004	0.007	0.012	0.02	0.025	0.035	0.047	0.059
END MILLS				0.10	1.50	RPM	7958	4775	3979	3183	2387	1989	1432	1326
						FEED	95	100	143	191	179	209	202	235
VE070						Vc	40	40	40	40	40	40	40	40
X5070		2		0.1D	1.5D	fz	0.003	0.006	0.011	0.017	0.023	0.038	0.044	0.058
END MILLS				0.1.0	1.50	RPM	6366	4244	3183	2546	2122	1592	1273	1061
			Non-alloy steel			FEED	57	76	105	130	146	181	168	185
4G MILL						Vc	35	35	30	35	30	35	35	35
END MILLS		3-4		0.1D	1.5D	fz	0.003	0.006	0.009	0.014	0.018	0.028	0.038	0.047
END WILLS						RPM	5570	3714	2387	2228	1592	1393	1114	928
V DOWED						FEED Vc	50 20	67 20	64	94 20	86	117 20	127	131 20
X-POWER							0.002	20 0.005	20 0.009	0.013	20 0.018	0.03	20 0.037	0.045
PRO		5		0.1D	1.5D	fz RPM	0.002 3183	2122	1592	1273	0.018	796	637	0.045 531
END MILLS						FEED	19	32	43	50	57	796	637 71	72
TICAL						Vc	40	40	43	40	40	40	40	40
TitaNox-						fz	0.003	0.006	0.011	0.017	0.023	0.038	0.044	0.058
POWER	Ρ	6		0.1D	1.5D	RPM	6366	4244	3183	2546	2122	1592	1273	1061
END MILLS						FEED	57	76	105	130	146	181	168	185
						Vc	35	35	30	35	30	35	35	35
T-POWER					_	fz	0.003	0.006	0.009	0.014	0.018	0.028	0.038	0.047
END MILLS		7	Low alloy steel	0.1D	1.5D	RPM	5570	3714	2387	2228	1592	1393	1114	928
						FEED	50	67	64	94	86	117	127	131
						Vc	20	20	20	20	20	20	20	20
V7 PLUS						fz	0.002	0.005	0.009	0.013	0.018	0.03	0.037	0.045
END MILLS		8-9		0.1D	1.5D	RPM	3183	2122	1592	1273	1061	796	637	531
						FEED	19	32	43	50	57	72	71	72
LU-POWER						Vc	40	40	40	40	40	40	40	40
HPC		10		0.10	1.50	fz	0.003	0.006	0.011	0.017	0.023	0.038	0.044	0.058
END MILLS		10	Liberta all'avec d	0.1D	1.5D	RPM	6366	4244	3183	2546	2122	1592	1273	1061
IND WILLS			High alloyed			FEED	57	76	105	130	146	181	168	185
ALU-			steel, and tool steel			Vc	20	20	20	20	20	20	20	20
POWER		11.1		0.1D	1.5D	fz	0.002	0.005	0.009	0.013	0.018	0.03	0.037	0.045
END MILLS		11.1		0.10	1.50	RPM	3183	2122	1592	1273	1061	796	637	531
						FEED	19	32	43	50	57	72	71	72
D-POWER						Vc	105	145	140	140	145	140	135	130
GRAPHITE		21-22	Aluminum	0.1D	1.5D	fz	0.005	0.008	0.014	0.019	0.021	0.037	0.049	0.057
END MILLS			wrought a <b>ll</b> oy	0.10	1.50	RPM	16711	15385	11141	8913	7692	5570	4297	3448
	N					FEED	251	369	468	508	485	618	632	590
D-POWER						Vc	68	94	91	91	94	91	88	85
CFRP		23-24	Aluminum-cast,	0.1D	1.5D	fz	0.005	0.008	0.014	0.019	0.021	0.037	0.049	0.057
END MILLS			alloyed			RPM	10823	9974	7242	5793	4987	3621	2801	2255
						FEED	162	239	304	330	314	402	412	386

%The FEED, in long & extra long types, should be reduced by around 50%

► NEXT PAGE



GENERAL HSS END MILLS



X-POWI



## **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

## E2574, E2575, E2576, E2577, E2597, E2598, E2776 series

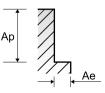
## **MULTI FLUTE - SIDE CUTTING**

Vc = m/min. fz = mm/tooth RPM = rev./min. FEED = mm/min.

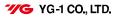
i-Xmill END MILLS	ISO	VDI	Material	Ae	Ар	Parameter				Diameter (Ø)			
	150	3323	Description	////	, ip		2.0	3.0	4.0	5.0	6.0	8.0	10.0
i-SMART						Vc	35	35	35	35	35	35	35
MODULAR				0.1D	1.5D	fz	0.004	0.008	0.013	0.02	0.025	0.036	0.045
END MILLS						RPM FEED	5570 89	3714 119	2785 145	2228 178	1857 186	1393 201	1114 201
						Vc	30	30	30	30	30	30	30
X5070						fz	0.003	0.006	0.011	0.017	0.023	0.036	0.044
END MILLS		2		0.1D	1.5D	RPM	4775	3183	2387	1910	1592	1194	955
			Non-alloy steel			FEED	57	76	105	130	146	172	168
			Non-alloy steel			Vc	25	25	25	25	25	25	25
4G MILL		3-4		0.1D	1.5D	fz	0.003	0.006	0.009	0.014	0.019	0.029	0.038
END MILLS				0.10	1150	RPM	3979	2653	1989	1592	1326	995	796
						FEED	48	64	72	89	101	115	121
X-POWER						Vc fz	15 0.002	15 0.005	15 0.01	15 0.014	15 0.019	15 0.029	15 0.036
PRO		5		0.1D	1.5D	RPM	2387	1592	1194	955	796	597	477
END MILLS						FEED	19	32	48	53	60	69	69
TitaNox-						Vc	30	30	30	30	30	30	30
POWER				0.45	1.50	fz	0.003	0.006	0.011	0.017	0.023	0.036	0.044
IND MILLS	Ρ	6		0.1D	1.5D	RPM	4775	3183	2387	1910	1592	1194	955
						FEED	57	76	105	130	146	172	168
						Vc	25	25	25	25	25	25	25
T-POWER		7	Low alloy steel	0.1D	1.5D	fz	0.003	0.006	0.009	0.014	0.019	0.029	0.038
ND MILLS			2011 4110) 51001			RPM	3979	2653	1989	1592	1326	995	796
						FEED Vc	48 15	64 15	72 15	89 15	101 15	115 15	121 15
V7 PLUS						fz	0.002	0.005	0.01	0.014	0.019	0.029	0.036
ND MILLS		8-9		0.1D	1.5D	RPM	2387	1592	1194	955	796	597	477
						FEED	19	32	48	53	60	69	69
LU-POWER						Vc	30	30	30	30	30	30	30
HPC		10		0.1D	1.5D	fz	0.003	0.006	0.011	0.017	0.023	0.036	0.044
ND MILLS			High a <b>ll</b> oyed	0.10	1.50	RPM	4775	3183	2387	1910	1592	1194	955
			steel,			FEED	57	76	105	130	146	172	168
ALU-			and tool steel			Vc	15	15	15	15	15	15	15
POWER		11.1		0.1D	1.5D	fz RPM	0.002 2387	0.005 1592	0.01 1194	0.014 955	0.019 796	0.029 597	0.036 477
END MILLS						FEED	19	32	48	53	60	69	69
						Vc	75	105	100	100	105	100	95
		21.22	Aluminum-		4 50	fz	0.005	0.009	0.014	0.019	0.021	0.036	0.048
ND MILLS		21-22	wrought alloy	0.1D	1.5D	RPM	11937	11141	7958	6366	5570	3979	3024
IND WILLS	Ν					FEED	239	401	446	484	468	573	581
D-POWER						Vc	49	68	65	65	68	65	62
CFRP		23-24	Aluminum cast,	0.1D	1.5D	fz	0.005	0.009	0.014	0.019	0.021	0.036	0.048
IND MILLS		23 24	alloyed	0.10	1.50	RPM	7799	7215	5173	4138	3608	2586	1974
						FEED	156	260	290	314	303	372	379

%The FEED, in long & extra long types, should be reduced by around 50%

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X-POWER

ISO

Ρ

Ν



## **RECOMMENDED CUTTING CONDITIONS** EMPFOHLENE SCHNEIDPARAMETER

Vc = m/min

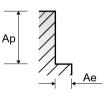
## EQ574, EQ575, EQ576, EQ577, EQ597, EQ598, EQ776 serves

## MULTI FLUTE TIAIN COATED - SIDE CUTTING

fz = mm/toothRPM = rev./min FEED = mm/min Diameter (Ø) Parameter Description 50 45 50 50 50 Vc 50 45 45 0.013 0.045 0.004 0.008 0.02 0.025 0.036 0.062 fz 0.1D 1.5D 1 RPM 1592 7958 4775 3979 3183 2387 1989 1194 127 207 255 286 286 296 FFFD 153 239 Vc 40 40 40 40 40 40 40 40 0.003 0.006 0.011 0.018 0.023 0.036 0.045 0.057 fz 0.1D 1.5D RPM 4744 1592 1273 6366 3183 2546 2122 1061 FFFD 76 102 140 183 195 229 229 242 Non-alloy steel Vc 35 35 30 35 30 30 35 35 0.014 fz 0.003 0.006 0.009 0.018 0.029 0.039 0.047 0.1D 3-4 1.5D RPM 5570 3714 2387 2228 1592 1194 1114 928 FFFD 67 89 86 125 115 138 174 175 Vc 20 20 20 20 20 20 20 20 fz 0.002 0.004 0.01 0.014 0.019 0.028 0.035 0.048 0.1D 1.5D RPM 3183 2122 1592 1273 1061 796 637 531 FEED 25 34 64 71 81 89 89 102 Vc 40 40 40 40 40 40 40 40 fz 0.003 0.006 0.011 0.018 0.023 0.036 0.045 0.057 0.1D 1.5D RPM 6366 4244 3183 2546 2122 1592 1273 1061 FEED 76 102 140 183 195 229 229 242 35 Vc 35 30 35 30 30 35 35 fz 0.003 0.006 0.009 0.014 0.018 0.029 0.039 0.047 0.1D Low alloy steel 1.5D RPM 5570 3714 2387 2228 1592 1194 1114 928 FEED 67 89 86 125 115 138 174 175 Vc 20 20 20 20 20 20 20 20 fz 0.002 0.004 0.01 0.014 0.019 0.028 0.035 0.048 8-9 0.1D 1.5D RPM 3183 2122 1592 1273 1061 796 637 531 FEED 25 34 64 71 89 89 102 81 40 40 40 40 40 40 40 Vc 40 0.003 0.006 0.011 0.018 0.023 0.036 0.045 0.057 fz 0.1D 1.5D RPM 6366 4244 3183 2546 2122 1592 1273 1061 High alloyed FEED 102 183 76 140 195 229 229 242 steel 20 20 20 20 20 Vc 20 20 20 and tool steel 0.014 0.035 0.002 0.004 0.01 0.019 0.028 0.048 fz 0.1D 1.5D RPM 1592 3183 2122 1273 1061 796 637 531 FEED 89 102 25 34 64 71 81 89 105 145 140 140 135 Vc 140 150 130 0.014 0.019 0.005 0.009 0.021 0.036 0.048 0.057 Aluminum fz 21-22 0.1D 1.5D RPM 16711 4297 15385 11141 5570 wrought alloy 8913 7958 3448 802 FEED 334 554 624 677 668 825 786 Vc 68 94 91 91 98 91 88 85 0.036 Aluminum-cast, f7 0.005 0.009 0.014 0.019 0.021 0.048 0.057 0.1D 1.5D RPM alloyed 10823 9974 7242 5793 5199 3621 2801 2255 FFFD 216 359 406 440 437 521 538 514

% The FEED, in long & extra long types, should be reduced by around 50%

▶ NEXT PAGE



MILLING	

GENERAL END MILLS



4G MILL

X-POWER

TitaNox-POWER



## RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

	24	61, E246	<b>2,</b> E	246	53 SER	es MULT	I FLUTE - <mark>S</mark>	<b>IDE CUTTIN</b>	G Ap	Ae	Vc = m/min. fz = mm/tooth RPM = rev./m FEED = mm/m
ISO	VDI	Material	Ae	Ap	Parameter			Diame	ter (Ø)		
	3323	Description	, (C		, and the coordinates of the coo	2.0	3.0	4.0	5.0	6.0	8.0
	1-2		0.3D	1.5D	Vc fz RPM FEED	30 0.004 4775 38	35 0.007 3714 52	30 0.012 2387 57	30 0.019 1910 73	35 0.016 1857 89	30 0.026 1194 93
	3-4	Non-alloy steel	0.3D	1.5D	Vc fz RPM FEED	30 0.003 4775 29	30 0.006 3183 38	25 0.01 1989 40	30 0.015 1910 57	25 0.014 1326 56	25 0.022 995 66
	5		0.3D	1.5D	Vc fz RPM FEED	15 0.002 2387 10	15 0.006 1592 19	15 0.01 1194 24	15 0.015 955 29	15 0.013 796 31	15 0.022 597 39
	б		0.3D	1.5D	Vc fz RPM FEED	30 0.004 4775 38	35 0.007 3714 52	30 0.012 2387 57	30 0.019 1910 73	35 0.016 1857 89	30 0.026 1194 93
Ρ	7	Low alloy steel	0.3D	1.5D	Vc fz RPM FEED	30 0.003 4775 29	30 0.006 3183 38	25 0.01 1989 40	30 0.015 1910 57	25 0.014 1326 56	25 0.022 995 66
	8-9		0.3D	1.5D	Vc fz RPM FEED	15 0.002 2387 10	15 0.006 1592 19	15 0.01 1194 24	15 0.015 955 29	15 0.013 796 31	15 0.022 597 39
	10	High alloyed	0.3D	1.5D	Vc fz RPM FEED	30 0.004 4775 38	35 0.007 3714 52	30 0.012 2387 57	30 0.019 1910 73	35 0.016 1857 89	30 0.026 1194 93
	11.1	and tool steel	0.3D	1.5D	Vc fz RPM FEED	15 0.002 2387 10	15 0.006 1592 19	15 0.01 1194 24	15 0.015 955 29	15 0.013 796 31	15 0.022 597 39

► NEXT PAGE

## EQ461, EQ462, EQ463 serves

## MULTI FLUTE TIAIN COATED - SIDE CUTTING



ISO	VDI	Material	Ae	Ар	Darameter	ameter 20 30 40 50 60 80								
150	3323	Description	Ae	Ар	rafameter	2.0	3.0	4.0	5.0	6.0	8.0			
	1-2		0.3D	1.5D	Vc fz RPM FEED	45 0.004 7162 57	45 0.007 4775 67	45 0.012 3581 86	45 0.019 2865 109	50 0.016 2653 127	40 0.027 1592 129			
	3-4	Non-alloy steel	0.3D	1.5D	Vc fz RPM FEED	40 0.003 6366 38	35 0.006 3714 45	35 0.01 2785 56	40 0.015 2546 76	35 0.014 1857 78	35 0.021 1393 88			
	5		0.3D	1.5D	Vc fz RPM FEED	20 0.002 3183 13	25 0.006 2653 32	20 0.01 1592 32	20 0.014 1273 36	25 0.013 1326 52	20 0.022 796 53			
Р	6		0.3D	1.5D	Vc fz RPM FEED	45 0.004 7162 57	45 0.007 4775 67	45 0.012 3581 86	45 0.019 2865 109	50 0.016 2653 127	40 0.027 1592 129			
	7	Low alloy steel	0.3D	1.5D	Vc fz RPM FEED	40 0.003 6366 38	35 0.006 3714 45	35 0.01 2785 56	40 0.015 2546 76	35 0.014 1857 78	35 0.021 1393 88			
	8-9		0.3D	1.5D	Vc fz RPM FEED	20 0.002 3183 13	25 0.006 2653 32	20 0.01 1592 32	20 0.014 1273 36	25 0.013 1326 52	20 0.022 796 53			
	10	High alloyed	0.3D	1.5D	Vc fz RPM FEED	45 0.004 7162 57	45 0.007 4775 67	45 0.012 3581 86	45 0.019 2865 109	50 0.016 2653 127	40 0.027 1592 129			
	11.1	and tool steel	0.3D	1.5D	Vc fz RPM FEED	20 0.002 3183 13	25 0.006 2653 32	20 0.01 1592 32	20 0.014 1273 36	25 0.013 1326 52	20 0.022 796 53			

NEXT PAGE

CHNICAL DATA

762

K-2 END MILLS

GENERAL HSS END MILLS

4G MILL

X-POWER

TitaNox-POWER



## RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

## E2761, E2753, E2762, E2751, E2764, E2752, E2765, E2778, E2777 series

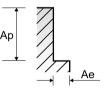
Vc = m/min.fz = mm/tooth RPM = rev./min. FEED = mm/min.

## MULTI FLUTE ROUGHING - SIDE CUTTING

	ISO	VDI	Material	Ae	۸n	Ap Parameter (Ø)									
_		3323	Description	AC	η Λ	rarameter	6.0	8.0	10.0	12.0	14.0	16.0			
		1		0.5D	1.5D	Vc fz RPM FEED	35 0.015 1857 84	35 0.025 1393 104	35 0.034 1114 152	35 0.05 928 186	35 0.056 796 178	35 0.064 696 178			
		2		0.5D	1.5D	Vc fz RPM FEED	30 0.013 1592 62	30 0.023 1194 82	30 0.033 955 126	30 0.044 796 140	30 0.05 682 136	30 0.063 597 150			
		3-4	Non-alloy steel	0.5D	1.5D	Vc fz RPM FEED	25 0.015 1326 60	25 0.024 995 72	25 0.034 796 108	25 0.044 663 117	25 0.049 568 111	25 0.061 497 121			
		5		0.5D	1.5D	Vc fz RPM FEED	15 0.013 796 31	15 0.021 597 38	15 0.033 477 63	15 0.044 398 70	15 0.05 341 68	15 0.063 298 75			
	Р	6		0.5D	1.5D	Vc fz RPM FEED	30 0.013 1592 62	30 0.023 1194 82	30 0.033 955 126	30 0.044 796 140	30 0.05 682 136	30 0.063 597 150			
		7	Low alloy steel	0.5D	1.5D	Vc fz RPM FEED	25 0.015 1326 60	25 0.024 995 72	25 0.034 796 108	25 0.044 663 117	25 0.049 568 111	25 0.061 497 121			
		8-9		0.5D	1.5D	Vc fz RPM FEED	15 0.013 796 31	15 0.021 597 38	15 0.033 477 63	15 0.044 398 70	15 0.05 341 68	15 0.063 298 75			
		10	High alloyed	0.5D	1.5D	Vc fz RPM FEED	30 0.013 1592 62	30 0.023 1194 82	30 0.033 955 126	30 0.044 796 140	30 0.05 682 136	30 0.063 597 150			
		11.1	steel, and tool steel	0.5D	1.5D	Vc fz RPM FEED	15 0.013 796 31	15 0.021 597 38	15 0.033 477 63	15 0.044 398 70	15 0.05 341 68	15 0.063 298 75			
	N	21-22	Aluminum- wrought alloy	0.5D	1.5D	Vc fz RPM FEED	85 0.015 4509 203	80 0.025 3183 239	80 0.035 2546 357	75 0.05 1989 398	80 0.058 1819 422	80 0.07 1592 446			
		23-24	Aluminum-cast, alloyed	0.5D	1.5D	Vc fz RPM FEED	55 0.015 2918 131	52 0.025 2069 155	52 0.035 1655 232	49 0.05 1300 260	52 0.058 1182 274	52 0.07 1035 290			

% The FEED, in long & extra long types, should be reduced by around 50%







GENERAL <u>HSS</u>

K-2 END MILLS

> ECHNICAL DATA





## **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

## EQ761, EQ753, EQ762, EQ751 EQ764, EQ752 EQ765, EQ778, EQ777 serves

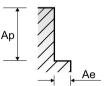
## MULTI FLUTE ROUGHING TIAIN COATED - SIDE CUTTING

 $\begin{array}{l} Vc = m/min. \\ fz = mm/tooth \\ RPM = rev./min. \\ FEED = mm/min. \end{array}$ 

I-Xmill END MILLS	ISO	VDI	Material	Ae	Ар	Parameter			Diame	ter (Ø)	-	
	150	3323	Description	Ae		Talalletel	6.0	8.0	10.0	12.0	14.0	16.0
i-SMART MODULAR IND MILLS				0.5D	1.5D	Vc fz RPM FEED	45 0.015 2387 107	50 0.025 1989 149	50 0.034 1592 216	45 0.05 1194 239	50 0.057 1137 259	50 0.063 995 251
X5070 ND MILLS		2		0.5D	1.5D	Vc fz RPM FEED	40 0.013 2122 83	40 0.023 1592 110	40 0.034 1273 173	40 0.044 1061 187	45 0.049 1023 201	40 0.061 796 194
4G MILL END MILLS		3-4	Non-alloy steel	0.5D	1.5D	Vc fz RPM FEED	30 0.015 1592 72	30 0.024 1194 86	35 0.035 1114 156	35 0.043 928 160	35 0.048 796 153	35 0.06 696 167
X-POWER PRO END MILLS		5		0.5D	1.5D	Vc fz RPM FEED	20 0.012 1061 38	20 0.021 796 50	20 0.033 637 84	20 0.045 531 95	20 0.05 455 91	20 0.063 398 100
TitaNox- POWER ND MILLS	Р	6		0.5D	1.5D	Vc fz RPM FEED	40 0.013 2122 83	40 0.023 1592 110	40 0.034 1273 173	40 0.044 1061 187	45 0.049 1023 201	40 0.061 796 194
T-POWER ND MILLS		7	Low alloy steel	0.5D	1.5D	Vc fz RPM FEED	30 0.015 1592 72	30 0.024 1194 86	35 0.035 1114 156	35 0.043 928 160	35 0.048 796 153	35 0.06 696 167
V7 PLUS ND MILLS		8-9		0.5D	1.5D	Vc fz RPM FEED	20 0.012 1061 38	20 0.021 796 50	20 0.033 637 84	20 0.045 531 95	20 0.05 455 91	20 0.063 398 100
LU-POWER HPC ND MILLS		10	High a <b>ll</b> oyed	0.5D	1.5D	Vc fz RPM FEED	40 0.013 2122 83	40 0.023 1592 110	40 0.034 1273 173	40 0.044 1061 187	45 0.049 1023 201	40 0.061 796 194
ALU- POWER ND MILLS		11.1	steel, and tool steel	0.5D	1.5D	Vc fz RPM FEED	20 0.012 1061 38	20 0.021 796 50	20 0.033 637 84	20 0.045 531 95	20 0.05 455 91	20 0.063 398 100
D-POWER GRAPHITE IND MILLS		21-22	Aluminum- wrought alloy	0.5D	1.5D	Vc fz RPM FEED	120 0.015 6366 286	110 0.025 4377 328	110 0.035 3501 490	105 0.05 2785 557	110 0.059 2501 590	115 0.07 2288 641
D-POWER CFRP END MILLS	N	23-24	Aluminum-cast, alloyed	0.5D	1.5D	Vc fz RPM FEED	78 0.015 4138 186	72 0.025 2865 215	72 0.035 2292 321	68 0.05 1804 361	72 0.059 1637 386	75 0.07 1492 418

% The FEED, in long & extra long types, should be reduced by around 50%







GENERAL HSS

4G MILL

X-POWER

TitaNox-POWER

CFRP END MILLS

K-2 END MILLS **RECOMMENDED CUTTING CONDITIONS** 

**EMPFOHLENE SCHNEIDPARAMETER** 

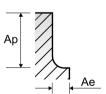


## E2606, E2757 SERIES

## MULTI FLUTE BALL NOSE ROUGHING - SIDE CUTTING

	VDI	Material							Diame	eter (Ø)			
ISO	3323	Description	Ae	Ар	Parameter -	8.0	10.0	12.0	16.0	20.0	25.0	32.0	40.0
	1		0.5D	1.5D	Vc fz RPM FEED	35 0.025 1393 104	35 0.045 1114 150	35 0.05 928 186	35 0.064 696 178	35 0.08 557 178	35 0.122 446 217	35 0.15 348 209	35 0.179 279 199
	2	Non-alloy steel	0.5D	1.5D	Vc fz RPM FEED	30 0.023 1194 82	30 0.044 955 126	30 0.044 796 140	30 0.063 597 150	30 0.078 477 149	30 0.106 382 162	30 0.143 298 171	30 0.17 239 162
	3-4	Non-alloy steel	0.5D	1.5D	Vc fz RPM FEED	25 0.024 995 72	25 0.046 796 110	25 0.044 663 117	25 0.061 497 121	25 0.069 398 110	25 0.113 318 144	20 0.148 199 118	25 0.167 199 133
	5		0.5D	1.5D	Vc fz RPM FEED	15 0.021 597 38	15 0.044 477 63	15 0.044 398 70	15 0.063 298 75	15 0.08 239 76	15 0.118 191 90	15 0.152 149 91	15 0.182 119 87
Ρ	6		0.5D	1.5D	Vc fz RPM FEED	30 0.023 1194 82	30 0.044 955 126	30 0.044 796 140	30 0.063 597 150	30 0.078 477 149	30 0.106 382 162	30 0.143 298 171	30 0.17 239 162
	7	Low alloy steel	0.5D	1.5D	Vc fz RPM FEED	25 0.024 995 72	25 0.046 796 110	25 0.044 663 117	25 0.061 497 121	25 0.069 398 110	25 0.113 318 144	20 0.148 199 118	25 0.167 199 133
	8-9		0.5D	1.5D	Vc fz RPM FEED	15 0.021 597 38	15 0.044 477 63	15 0.044 398 70	15 0.063 298 75	15 0.08 239 76	15 0.118 191 90	15 0.152 149 91	15 0.182 119 87
	10	High alloyed steel.	0.5D	1.5D	Vc fz RPM FEED	30 0.023 1194 82	30 0.044 955 126	30 0.044 796 140	30 0.063 597 150	30 0.078 477 149	30 0.106 382 162	30 0.143 298 171	30 0.17 239 162
	11.1	and tool steel	0.5D	1.5D	Vc fz RPM FEED	15 0.021 597 38	15 0.044 477 63	15 0.044 398 70	15 0.063 298 75	15 0.08 239 76	15 0.118 191 90	15 0.152 149 91	15 0.182 119 87
Ν	21-22	Aluminum- wrought alloy	0.5D	1.5D	Vc fz RPM FEED	80 0.025 3183 239	80 0.033 2546 252	75 0.05 1989 398	80 0.07 1592 446	75 0.104 1194 497	80 0.113 1019 460	80 0.156 796 497	80 0.179 637 456
	23-24	Aluminum-cast, alloyed	0.5D	1.5D	Vc fz RPM FEED	52 0.025 2069 155	52 0.033 1655 164	49 0.05 1300 260	52 0.07 1035 290	49 0.104 780 324	52 0.113 662 299	52 0.156 517 323	52 0.179 414 296

% The FEED, in long & extra long types, should be reduced by around 50%



MILLING CUTTERS

GENERAL HSS END MILLS

ECHNICAL DATA





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## **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

## E2524

## **MULTI FLUTE ROUGHING - SIDE CUTTING**

4G MILL

X-POWER

TitaNox-POWER

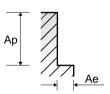
K-2 END MILLS

GENERAL HSS

END MILLS

		JE T SERIES							-				
	VDI	Material	A -	A	D				Diame	eter (Ø)			
ISO	3323	Description	Ae	Ар	Parameter	6.0	8.0	10.0	12.0	14.0	16.0	18.0	20.0
	1		0.5D	1.5D	Vc fz RPM FEED	35 0.015 1857 84	35 0.019 1393 106	35 0.034 1114 152	35 0.05 928 186	35 0.056 796 178	35 0.064 696 178	35 0.071 619 176	35 0.08 557 178
	2	Non-alloy steel	0.5D	1.5D	Vc fz RPM FEED	30 0.013 1592 62	30 0.017 1194 81	30 0.033 955 126	30 0.044 796 140	30 0.05 682 136	30 0.063 597 150	30 0.07 531 149	30 0.078 477 149
	3-4	Non-alloy steel	0.5D	1.5D	Vc fz RPM FEED	25 0.015 1326 60	25 0.018 995 72	25 0.034 796 108	25 0.044 663 117	25 0.049 568 111	25 0.061 497 121	25 0.069 442 122	25 0.069 398 110
	5		0.5D	1.5D	Vc fz RPM FEED	15 0.013 796 31	15 0.016 597 38	15 0.033 477 63	15 0.044 398 70	15 0.05 341 68	15 0.063 298 75	15 0.07 265 74	15 0.08 239 76
Ρ	6		0.5D	1.5D	Vc fz RPM FEED	30 0.013 1592 62	30 0.017 1194 81	30 0.033 955 126	30 0.044 796 140	30 0.05 682 136	30 0.063 597 150	30 0.07 531 149	30 0.078 477 149
	7	Low alloy steel	0.5D	1.5D	Vc fz RPM FEED	25 0.015 1326 60	25 0.018 995 72	25 0.034 796 108	25 0.044 663 117	25 0.049 568 111	25 0.061 497 121	25 0.069 442 122	25 0.069 398 110
	8-9		0.5D	1.5D	Vc fz RPM FEED	15 0.013 796 31	15 0.016 597 38	15 0.033 477 63	15 0.044 398 70	15 0.05 341 68	15 0.063 298 75	15 0.07 265 74	15 0.08 239 76
	10	High a <b>ll</b> oyed steel.	0.5D	1.5D	Vc fz RPM FEED	30 0.013 1592 62	30 0.017 1194 81	30 0.033 955 126	30 0.044 796 140	30 0.05 682 136	30 0.063 597 150	30 0.07 531 149	30 0.078 477 149
	11.1	and tool steel	0.5D	1.5D	Vc fz RPM FEED	15 0.013 796 31	15 0.016 597 38	15 0.033 477 63	15 0.044 398 70	15 0.05 341 68	15 0.063 298 75	15 0.07 265 74	15 0.08 239 76
N	21-22	Aluminum- wrought alloy	0.5D	1.5D	Vc fz RPM FEED	85 0.015 4509 62	80 0.019 3183 81	80 0.035 2546 126	75 0.05 1989 140	80 0.058 1819 136	80 0.07 1592 150	80 0.084 1415 149	75 0.104 1194 149
	23-24	Aluminum-cast, alloyed	0.5D	1.5D	Vc fz RPM FEED	55 0.015 2918 62	52 0.019 2069 81	52 0.035 1655 126	49 0.05 1300 140	52 0.058 1182 136	52 0.07 1035 150	52 0.084 920 149	49 0.104 780 149

% The FEED, in long & extra long types, should be reduced by around 50%



X-POWEF



## **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

## E2595, E2596 series

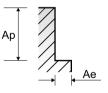
## **MULTI FLUTE - SIDE CUTTING**

Vc = m/min. fz = mm/tooth RPM = rev./min.

													FEED = mm/min.
i-Xmill	so	VDI	Material	٨٩									
END MILLS		3323	Description	Ae	μΑμ	raiaiiietei	2.0	3.0	4.0	5.0	6.0	8.0	10.0
i-SMART MODULAR		1		0.1D	1.5D	Vc fz RPM FEED	35 0.004 5570 89	35 0.008 3714 119	35 0.013 2785 145	35 0.02 2228 178	35 0.025 1857 186	35 0.036 1393 201	35 0.045 1114 201
END MILLS X5070 END MILLS		2		0.1D	1.5D	Vc fz RPM FEED	30 0.003 4775 57	30 0.006 3183 76	30 0.011 2387 105	30 0.017 1910 130	30 0.023 1592 146	30 0.036 1194 172	30 0.044 955 168
4G MILL END MILLS		3-4	Non-alloy steel	0.1D	1.5D	Vc fz RPM FEED	25 0.003 3979 48	25 0.006 2653 64	25 0.009 1989 72	25 0.014 1592 89	25 0.019 1326 101	25 0.029 995 115	25 0.038 796 121
X-POWER PRO END MILLS		5		0.1D	1.5D	Vc fz RPM FEED	15 0.002 2387 19	15 0.005 1592 32	15 0.01 1194 48	15 0.014 955 53	15 0.019 796 60	15 0.029 597 69	15 0.036 477 69
TitaNox- POWER END MILLS	P	б		0.1D	1.5D	Vc fz RPM FEED	30 0.003 4775 57	30 0.006 3183 76	30 0.011 2387 105	30 0.017 1910 130	30 0.023 1592 146	30 0.036 1194 172	30 0.044 955 168
T-POWER		7	Low alloy steel	0.1D	1.5D	Vc fz RPM FEED	25 0.003 3979 48	25 0.006 2653 64	25 0.009 1989 72	25 0.014 1592 89	25 0.019 1326 101	25 0.029 995 115	25 0.038 796 121
V7 PLUS END MILLS		8-9		0.1D	1.5D	Vc fz RPM FEED	15 0.002 2387 19	15 0.005 1592 32	15 0.01 1194 48	15 0.014 955 53	15 0.019 796 60	15 0.029 597 69	15 0.036 477 69
LU-POWER HPC END MILLS		10	High a <b>ll</b> oyed	0.1D	1.5D	Vc fz RPM FEED	30 0.003 4775 57	30 0.006 3183 76	30 0.011 2387 105	30 0.017 1910 130	30 0.023 1592 146	30 0.036 1194 172	30 0.044 955 168
ALU- POWER		11.1	and tool steel	0.1D	1.5D	Vc fz RPM FEED	15 0.002 2387 19	15 0.005 1592 32	15 0.01 1194 48	15 0.014 955 53	15 0.019 796 60	15 0.029 597 69	15 0.036 477 69
D-POWER GRAPHITE END MILLS	N	21-22	Aluminum- wrought alloy	0.1D	1.5D	Vc fz RPM FEED	75 0.005 11937 239	105 0.009 11141 401	100 0.014 7958 446	100 0.019 6366 484	105 0.021 5570 468	100 0.036 3979 573	95 0.048 3024 581
D-POWER CFRP END MILLS	TV	23-24	Aluminum-cast, alloyed	0.1D	1.5D	Vc fz RPM FEED	49 0.005 7799 156	68 0.009 7215 260	65 0.014 5173 290	65 0.019 4138 314	68 0.021 3608 303	65 0.036 2586 372	62 0.048 1974 379

% The FEED, in long & extra long types, should be reduced by around 50%

► NEXT PAGE

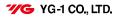


CUTTERS

MILLING

GENERAL HSS END MILLS





Diameter (Ø)

50

0.02

3183

255 40

0.018

2546

183

35

0.014

2228

125

20

0.014

1273

71

40

0.018

2546

183

35

0.014

2228

125

20

0.014

1273

71

40

0.018

2546

183

20

0.014

1273

71

140

0.019

8913

677

91

0.019

5793

440



0.1D

% The FEED, in long & extra long types, should be reduced by around 50%

## RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

45

0.025

2387

239

40

0.023

2122

195

30

0.018

1592

115

20

0.019

1061

81

40

0.023

2122

195

30

0.018

1592

115

20

0.019

1061

81

40

0.023

2122

195

20

0.019

1061

81

150

0.021

7958

668

98

0.021

5199

437

50

0.036

1989

286

40

0.036

1592

229

30

0.029

1194

138

20

0.028

796

89

40

0.036

1592

229

30

0.029

1194

138

20

0.028

796

89

40

0.036

1592

229

20

0.028

796

89

140

0.036

5570

802

91

0.036

3621

521

## EQ595, EQ596 series

Non-alloy steel

Low alloy steel

High alloyed

stee

and tool steel

Aluminum-

wrought alloy

Aluminum-cast,

alloyed

1

2

3-4

8-9

11.1

21-22

Ν

Ρ

## MULTI FLUTE TIAIN COATED - SIDE CUTTING

45

0.008

4775

153

40

0.006

4744

102

35

0.006

3714

89

20

0.004

2122

34

40

0.006

4244

102

35

0.006

3714

89

20

0.004

2122

34

40

0.006

4244

102

20

0.004

2122

34

145

0.009

15385

554

94

0.009

9974

359

50

0.013

3979

207

40

0.011

3183

140

30

0.009

2387

86

20

0.01

1592

64

40

0.011

3183

140

30

0.009

2387

86

20

0.01

1592

64

40

0.011

3183

140

20

0.01

1592

64

140

0.014

11141

624

91

0.014

7242

406

Parameter

Vc

fz

RPM

FEED

Vc

fz

RPM

FFFD

Vc

fz

RPM

FFFD

Vc

fz

RPM

FEED

RPM

FEED

Vc

RPM

FEED

Vc

fz

RPM

FEED

RPM

FEED

RPM

FEED

Vc

fz

RPM

FFFD

Vc

fz

RPM

FFFD

Vc

fz

Vc fz

fz

Vc

fz

1.5D

50

0.004

7958

127

40

0.003

6366

76

35

0.003

5570

67

20

0.002

3183

25

40

0.003

6366

76

35

0.003

5570

67

20

0.002

3183

25

40

0.003

6366

76

20

0.002

3183

25

105

0.005

16711

334

68

0.005

10823

216

 $\begin{array}{l} Vc = m/\text{min.} \\ fz = mm/\text{tooth} \\ RPM = rev./\text{min.} \\ FEED = mm/\text{min.} \end{array}$ 

50

0.045

1592

286

40

0.045

1273

229

35

0.039

1114

174

20

0.035

637

89

40

0.045

1273

229

35

0.039

1114

174

20

0.035

637

89

40

0.045

1273

229

20

0.035

637

89

135

0.048

4297

825

88

0.048

2801

END MILLS	
X5070 END MILLS	
4G MILL END MILLS	
X-POWER PRO END MILLS	

TitaNox POWEF END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWEI HP( END MILLS

POWEF END MILLS

END MILLS

END MILLS

NOUTLING

END MILLS

K-

COATED PM60 END MILLS

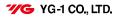
POWER END MILLS GENERAL

END MILLS

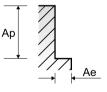
CUTTERS

ECHNICAL DATA





538 NEXT PAGE



4G N

X-POV

**RECOMMENDED CUTTING CONDITIONS** 

**EMPFOHLENE SCHNEIDPARAMETER** 



## E2755, E2756 series

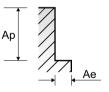
## **3 FLUTE ROUGHING - SIDE CUTTING**

 $\begin{array}{l} Vc = m/min. \\ fz = mm/tooth \\ RPM = rev./min. \\ FEED = mm/min. \end{array}$ 

-Xmill	ISO	VDI	Material	Ae	Ар	Parameter		Diame	ter (Ø)	
/ILLS	150	3323	Description	Ae		Talameter	6.0	8.0	10.0	12.0
						Vc	35	35	35	35
MART		1		0.5D	1.5D	fz	0.015	0.025	0.045	0.067
JLAR						RPM	1857	1393	1114	928
/ILLS						FEED	84 30	104 30	150 30	187 30
	_					Vc fz	0.013	0.023	30 0.044	0.058
(5070		2		0.5D	1.5D	RPM	1592	1194	955	796
AILLS						FEED	62	82	126	138
			Non-alloy steel			Vc	25	25	25	25
						fz	0.015	0.024	0.046	0.058
MILL		3-4		0.5D	1.5D	RPM	1326	995	796	663
/ILLS						FEED	60	72	110	115
						Vc	15	15	15	15
WER				0 FD	4	fz	0.013	0.021	0.044	0.058
PRO		5		0.5D	1.5D	RPM	796	597	477	398
/ILLS						FEED	31	38	63	69
/IILLO					1.5D	Vc	30	30	30	30
aNox-	Р	6		0.5D		fz	0.013	0.023	0.044	0.058
WER		0		0.50	1.50	RPM	1592	1194	955	796
<b>AILLS</b>						FEED	62	82	126	138
MILLO				0.5D	1.5D	Vc	25	25	25	25
		7	Low alloy steel			fz	0.015	0.024	0.046	0.058
WER			Low anoy steel			RPM	1326	995	796	663
/ILLS						FEED	60	72	110	115
				0.5D	1.5D	Vc	15	15	15	15
PLUS		8-9				fz	0.013	0.021	0.044	0.058
/ILLS						RPM	796	597	477	398
/IILLO						FEED Vc	31 30	38 30	63 30	69 30
						vc fz	0.013	0.023	0.044	0.058
OWER		10		0.5D	1.5D	RPM	1592	1194	955	796
HPC			High alloyed			FEED	62	82	126	138
/ILLS			steel,			Vc	15	15	15	150
ALU-			and tool steel			fz	0.013	0.021	0.044	0.058
		11.1		0.5D	1.5D	RPM	796	597	477	398
WER						FEED	31	38	63	69
ЛILLS						Vc	85	80	80	75
WER		21 22	Aluminum-	0.5D	1.5D	fz	0.015	0.025	0.047	0.067
HITE		21-22	wrought alloy	0.50	1.50	RPM	4509	3183	2546	1989
/ILLS	Ν					FEED	203	239	359	400
/ILLO						Vc	55	52	52	49
WER		23-24	Aluminum-cast,	0.5D	1.5D	fz	0.015	0.025	0.047	0.067
CFRP		23-24	alloyed	0.50	1.50	RPM	2918	2069	1655	1300
<b>AILLS</b>						FEED	131	155	233	261

% The FEED, in long & extra long types, should be reduced by around 50%





CHNICAL

K-2 END MILLS

TANK-

GENERAL HSS END MILLS





IES

## **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

<b>EZ//9</b> SE
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## **MULTI FLUTE ROUGHING & FINISHING - SIDE CUTTING**

Vc = m/min. fz = mm/toothRPM = rev./min. FEED = mm/min.

X507 END MILL	
4G MIL END MILL	S
X-POWE PR END MILL	0

TitaNox-

K-2 END MILLS

GENERAL HSS END MILLS

ISO	VDI	Material	Ae	<u>۸</u> р —	Parameter						Diame	ter (Ø)						
50	3323	Description	Ae	Ар	rarameter	16.0	18.0	20.0	22.0	25.0	28.0	30.0	32.0	36.0	40.0	45.0	50.0	
	1		0.5D	1.5D	Vc fz	35 0.052	35 0.058	35 0.065	35 0.07	35 0.078	35 0.071	35 0.081	35 0.081	35 0.091	35 0.095	35 0.099	35 0.11	
			0.50	1.50	RPM FEED	696 145	619 144	557 145	506 177	446 174	398 170	371 180	348 169	309 169	279 159	248 147	223 147	
	2		0.5D	1.5D	Vc fz	30 0.049	30 0.055	30 0.061	30 0.06	30 0.068	30 0.062	30 0.07	30 0.077	30 0.087	30 0.091	30 0.099	30 0.106	
		Non-alloy steel			RPM FEED	597 117	531 117	477 117	434 130	382 130	341 127	318 134	298 138	265 138	239 130	212 126	191 121	
3-	3-4	,	0.5D	1.5D	Vc fz	25 0.05	25 0.056	25 0.056	25 0.063	25 0.071	25 0.063	25 0.07	25 0.08	25 0.088	25 0.088	25 0.088	25 0.094	
					RPM FEED Vc	497 99 15	442 99 15	398 89 15	362 114 15	318 113	284 107	265 111 15	249 119 15	221 117	199 105	177 93	159 90 15	
	5		0.5D	1.5D	fz	0.049	0.055	0.063	0.064	15 0.078	15 0.073	0.073	0.083	15 0.097	15 0.098	15 0.099	0.1 95	
					RPM FEED	298 58	265 58	239 60	217 69	191 74	171 75	159 70	149 74	133 77	119 70	106 63	57	
Ρ	6		0.5D	1.5D	Vc fz	30 0.049	30 0.055	30 0.061	30 0.06	30 0.068	30 0.062	30 0.07	30 0.077	30 0.087	30 0.091	30 0.099	30 0.106	
					RPM FEED	597 117	531 117	477 117	434 130	382 130	341 127	318 134	298 138	265 138	239 130	212 126	191 121	
	_	Low alloy steel	0.5D	1.50	Vc fz	25 0.05	25 0.056	25 0.056	25 0.063	25 0.071	25 0.063	25 0.07	25 0.08	25 0.088	25 0.088	25 0.088	25 0.094	
	7			1.5D	RPM FEED	497 99	442 99	398 89	362 114	318 113	284 107	265 111	249 119	221 117	199 105	177 93	159 90	
		8-9	0.5D	4.50	Vc fz	15 0.049	15 0.055	15 0.063	15 0.064	15 0.078	15 0.073	15 0.073	15 0.083	15 0.097	15 0.098	15 0.099	15 0.1	
	8-9			0.50	1.5D	RPM FEED	298 58	265 58	239 60	217 69	191 74	171 75	159 70	149 74	133 77	119 70	106 63	95 57
					Vc fz	30 0.049	30 0.055	30 0.061	30 0.06	30 0.068	30 0.062	30 0.07	30 0.077	30 0.087	30 0.091	30 0.099	30 0.106	
	10	High a <b>ll</b> oyed	0.5D ligh a <b>ll</b> oyed	0.5D 1.	1.5D	RPM FEED	597 117	531 117	477	434 130	382 130	341 127	318 134	298 138	265 138	239 130	212 126	191 121
		steel, and tool steel			Vc	15	15	15	15	15	15	15	15	15	15	15	15	
	11.1		0.5D	1.5D	fz RPM	0.049 298	0.055 265	0.063 239	0.064 217	0.078 191	0.073 171	0.073 159	0.083 149	0.097 133	0.098 119	0.099 106	0.1 95	
					FEED Vc	58 80	58 80	60 80	69 80	74 80	75 80	70 85	74 80	77 80	70 80	63 80	57 80	
	21-22	Aluminum- wrought alloy	0.5D 1	1.5D	fz RPM	0.056 1592	0.068 1415	0.083 1273	0.069 1157	0.072 1019	0.076 909	0.078 902	0.083 796	0.09 707	0.095 637	0.1 566	0.11 509	
Ν					FEED	357	385	423	399	367	415	422	396	382	363	340	336	
	22.24	Aluminum-cast,	0 FD	1.50	Vc fz	52 0.056	52 0.068	52 0.083	52 0.069	52 0.072	52 0.076	55 0.078	52 0.083	52 0.09	52 0.095	52 0.1	52 0.11	
	23-24	alloyed	0.5D	1.5D	RPM	1035	920 250	828	752	662	591 270	584 273	517	460	414	368	331	

% The FEED, in long & extra long types, should be reduced by around 50%

FEED

232

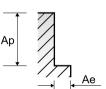
250

275

260

238

270



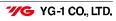
221

331 218

258

248

236



Diameter (Ø)

35

0.054

928

150

30 0.046

796

110

25

35

0.036

1114

120

30

0.035

955

100

25



0.5D

0.5D

## RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

35

0.06

796

143

30

0.052

682

106

25

0.054

568

92

15

0.052

341

53

30

0.052

682

106

25

0.054

568

92

15

0.052

341

53

30

0.052

682

106

15

0.052

341

53

80 0.063

1819

344

52

0.063

1182

223

## E2766, E2767 SERIES

Non-alloy steel

VDI 3323

1

## 3 FLUTE ROUGHING & FINISHING - SIDE CUTTING

35

0.02

1393

84

30

0.018

1194

64

25

35

0.069

696

144

30

0.065

597

116

25

0.067

497

100

15

0.065

298

58

30

0.065

597

116

25

0.067

497

100

15

0.065

298

58

30

0.065

597

116

15

0.065

298

58 80

0.075

1592

358

52

0.075

1035

END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWER HPC END MILLS

POWER END MILLS

END MILLS

END MILLS

ROUTERS

K-2 END MILLS

ONLY ONE COATED PM60 END MILLS

POWER END MILLS

HSS END MILLS

CUTTERS

ECHNICAL DATA

	3-4		0.5D	1.5D	fz RPM FEED	0.013 1326 52	0.019 995 57	0.038 796 91	0.048 663 95
Ρ	5		0.5D	1.5D	Vc fz RPM FEED	15 0.01 796 24	15 0.018 597 32	15 0.037 477 53	15 0.046 398 55
	6		0.5D	1.5D	Vc fz RPM FEED	30 0.01 1592 48	30 0.018 1194 64	30 0.035 955 100	30 0.046 796 110
	7	Low alloy steel	0.5D	1.5D	Vc fz RPM FEED	25 0.013 1326 52	25 0.019 995 57	25 0.038 796 91	25 0.048 663 95
	8-9		0.5D	1.5D	Vc fz RPM FEED	15 0.01 796 24	15 0.018 597 32	15 0.037 477 53	15 0.046 398 55
	10	High alloyed	0.5D	1.5D	Vc fz RPM FEED	30 0.01 1592 48	30 0.018 1194 64	30 0.035 955 100	30 0.046 796 110
	11.1	and tool steel	0.5D	1.5D	Vc fz RPM FEED	15 0.01 796 24	15 0.018 597 32	15 0.037 477 53	15 0.046 398 55
N	21-22	Aluminum- wrought alloy	0.5D	1.5D	Vc fz RPM FEED	85 0.012 4509 162	80 0.02 3183 191	80 0.037 2546 283	80 0.053 2122 337
Ν	23-24	Aluminum-cast, alloyed	0.5D	1.5D	Vc fz RPM FEED	55 0.012 2918 105	52 0.02 2069 124	52 0.037 1655 184	52 0.053 1379 219

arametei

Vc

fz

RPM

FEED

Vc

fz

RPM

FFFD

Vc

1.5D

1.5D

35

0.012

1857

67

30

0.01

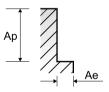
1592

48

25

% The FEED, in long & extra long types, should be reduced by around 50%

233 NEXT PAGE



**\*//G** YG-1 CO., LTD.

Diameter (Ø)

50

0.055

1326

219

40

0.047

1061

150

35

0.046

928

128

20

0.045

531

72

40

0.047

1061

150

35

0.046

928

128

20

0.045

531

72

40

0.047

1061

150

20

0.045

531

72

105

0.054

2785

451

68

0.054

1804

292

50

0.037

1592

177

40

0.036

1273

138

35

0.038

1114

127

20

0.036

637

69

40

0.036

1273

138

35

0.038

1114

127

20

0.036

637

69

40

0.036

1273

138

20

0.036

637

69

110

0.037

3501

389

72

0.037

2292

254



0.5D

% The FEED, in long & extra long types, should be reduced by around 50%

## RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

50

0.062

1137

211

45

0.052

1023

160

35

0.052

796

124

20

0.05

455

68

45

0.052

1023

160

35

0.052

796

124

20

0.05

455

68

45

0.052

1023

160

20

0.05

455

68

110

0.063

2501

473

72

0.063

1637

309

## EQ766, EQ767 series

Non-alloy steel

Low alloy steel

High alloyed

stee

and tool steel

Aluminum-

wrought alloy

Aluminum-cast,

alloyed

VDI 3323

3-4

8-9

11.1

21-22

Ν

Ρ

## 3 FLUTE ROUGHING & FINISHING TIAIN COATED - SIDE CUTTING

50

0.021

1989

125

40

0.018

1592

86

30

0.019

1194

68

20

0.017

796

41

40

0.018

1592

86

30

0.019

1194

68

20

0.017

796

41

40

0.018

1592

86

20

0.017

796

41

110

0.02

4377

263

72

0.02

2865

172

 $\begin{array}{l} Vc = m/min. \\ fz = mm/tooth \\ RPM = rev./min. \\ FEED = mm/min. \end{array}$ 

50

0.068

995 203

40

0.065

796

155

35

0.064

696

134

20

0.063

398

75

40

0.065

796

155

35

0.064

696

134

20

0.063

398

75

40

0.065

796

155

20

0.063

398

75

115

0.075

2288

515

75

0.075

1492

END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER PRO

TitaNox POWER

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWER HPC END MILLS

POWER END MILLS

END MILLS

END MILLS

\_\_\_\_\_

K-

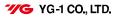
ONLY ONE COATED PM60 END MILLS

POWER END MILLS GENERAL

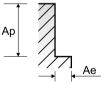
HSS END MILLS

CUTTERS

DATA	
DAIA	



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1.5D

arameter

Vc

fz

RPM

FFFD

Vc

fz

RPM

FFFD

Vc

fz

RPM

FEED

Vc

fz

RPM

FEED

RPM

FEED

Vc

RPM

FEED

Vc

fz

RPM

FEED

RPM

FEED

RPM

FEED

Vc

fz

RPM

FFFD

Vc

fz

RPM

FEED

Vc

fz

Vc fz

fz

Vc

fz

50

0.012

2653

95

40

0.01

2122

64

30

0.013

1592

62

20

0.011

1061

35

40

0.01

2122

64

30

0.013

1592

62

20

0.011

1061

35

40

0.01

2122

64

20

0.011

1061

35

120

0.012

6366

229

78

0.012

4138

Diameter (Ø)

35

0.04

928

149

30

0.034

796

108

25

0.036

663

95

15

0.034

398

54

30

0.034

796

108

25

0.036

663

95

15

0.034

398

54

30

0.034

796

108

15

0.034

398

54

80

0.04

2122

340

52

0.04

1379

221

35

0.027

1114

120

30

0.026

955

99

25

0.028

796

89

15

0.028

477

53

30

0.026

955

99

25

0.028

796

89

15

0.028

477

53

30

0.026

955

99

15

0.028

477

53

80

0.028

2546

285

52

0.028

1655

185



0.5D

% The FEED, in long & extra long types, should be reduced by around 50%

Parameter

Vc

fz

RPM

FEED

Vc

fz

RPM

FFFD

Vc

fz

RPM

FEED

Vc

RPM

FEED

RPM

FEED

Vc

RPM

FEED

Vc

fz

RPM

FEED

Vc

fz

RPM

FEED

RPM

FEED

RPM

FFFD

Vc

fz

RPM

FFFD

Vc

fz

Vc

fz

fz

Vc

fz

fz

1.5D

35

0.012

1857

67

30

0.01

1592

48

25

0.013

1326

52

15

0.01

796

24

30

0.01

1592

48

25

0.013

1326

52

15

0.01

796

24

30

0.01

1592

48

15

0.01

796

24

85

0.012

4509

162

55

0.012

2918

105

## RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

35

0.045

796

143

30

0.039

682

106

25

0.04

568

91

15

0.039

341

53

30

0.039

682

106

25

0.04

568

91

15

0.039

341

53

30

0.039

682

106

15

0.039

341

53

80

0.047

1819

342

52

0.047

1182

222

## E2754, E2768 series

Non-alloy steel

Low alloy steel

High alloyed

stee

and tool steel

Aluminum-

wrought alloy

Aluminum-cast,

alloyed

VDI 3323

3-4

8-9

11.1

21-22

Ν

Ρ

## MULTI FLUTE ROUGHING & FINISHING - SIDE CUTTING

35

0.015

1393

84

30

0.014

1194

67

25

0.014

995

56

15

0.013

597

31

30

0.014

1194

67

25

0.014

995

56

15

0.013

597

31

30

0.014

1194

67

15

0.013

597

31

80

0.015

3183

191

52

0.015

2069

124

 $\begin{array}{l} Vc = m/min. \\ fz = mm/tooth \\ RPM = rev./min. \\ FEED = mm/min. \end{array}$ 

35

0.052

696

145

30

0.049

597

117

25

0.05

497

99

15

0.049

298

58

30

0.049

597

117

25

0.05

497

99

15

0.049

298

58

30

0.049

597

117

15

0.049

298

58

80

0.056

1592

357

52

0.056

1035

END MILLS
X5070 END MILLS
4G MILL END MILLS
X-POWER PRO END MILLS

TitaNox POWEF

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWER HPC END MILLS

POWEF END MILLS

END MILLS

END MILLS

ROUTERS

CRX S

K-END MILL

ONLY ONE COATED PM60 END MILLS

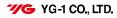
POWER END MILLS GENERAL

HSS END MILLS

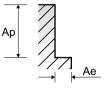
MILLING

ECHNICAL DATA





232 NEXT PAGE





## RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

## EQ754, EQ768 series

## MULTI FLUTE ROUGHING & FINISHING TIAIN COATED - SIDE CUTTING

 $\begin{array}{l} Vc = m/min. \\ fz = mm/tooth \\ RPM = rev./min. \\ FEED = mm/min. \end{array}$ 

MODULAF END MILLS	
X5070 END MILLS	
4G MILI END MILLS	
X-POWE	2

END MILLS TitaNox-POWER

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWER HPC END MILLS

POWEF END MILLS

END MILLS

END MILLS

NOUTLING

END MILLS

K-2 END MILLS

COATED PM60 END MILLS

POWER END MILLS GENERAL

HSS END MILLS

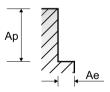
CUTTERS

ECHNICAL DATA

ISO	VDI	Material	Ae	An	Daramatar			Diame	ter (Ø)		
150	3323	Description	Ae	Ар	Parameter	6.0	8.0	10.0	12.0	14.0	16.0
	1		0.5D	1.5D	Vc fz RPM FEED	50 0.012 2653 95	50 0.015 1989 119	50 0.027 1592 172	50 0.041 1326 218	50 0.047 1137 214	50 0.051 995 203
	2	New ellewaterel	0.5D	1.5D	Vc fz RPM FEED	40 0.01 2122 64	40 0.014 1592 89	40 0.027 1273 138	40 0.035 1061 149	45 0.039 1023 160	40 0.048 796 153
	3-4	- Non-alloy steel	0.5D	1.5D	Vc fz RPM FEED	30 0.013 1592 62	30 0.014 1194 67	35 0.028 1114 125	35 0.035 928 130	35 0.039 796 124	35 0.048 696 134
	5		0.5D	1.5D	Vc fz RPM FEED	20 0.011 1061 35	20 0.013 796 41	20 0.027 637 69	20 0.034 531 72	20 0.038 455 69	20 0.047 398 75
Ρ	6		0.5D	1.5D	Vc fz RPM FEED	40 0.01 2122 64	40 0.014 1592 89	40 0.027 1273 138	40 0.035 1061 149	45 0.039 1023 160	40 0.048 796 153
	7	Low alloy steel	0.5D	1.5D	Vc fz RPM FEED	30 0.013 1592 62	30 0.014 1194 67	35 0.028 1114 125	35 0.035 928 130	35 0.039 796 124	35 0.048 696 134
	8-9		0.5D	1.5D	Vc fz RPM FEED	20 0.011 1061 35	20 0.013 796 41	20 0.027 637 69	20 0.034 531 72	20 0.038 455 69	20 0.047 398 75
	10	High alloyed	0.5D	1.5D	Vc fz RPM FEED	40 0.01 2122 64	40 0.014 1592 89	40 0.027 1273 138	40 0.035 1061 149	45 0.039 1023 160	40 0.048 796 153
	11.1	and tool steel	0.5D	1.5D	Vc fz RPM FEED	20 0.011 1061 35	20 0.013 796 41	20 0.027 637 69	20 0.034 531 72	20 0.038 455 69	20 0.047 398 75
N	21-22	Aluminum- wrought alloy	0.5D	1.5D	Vc fz RPM FEED	120 0.012 6366 229	110 0.015 4377 263	110 0.028 3501 392	105 0.04 2785 446	110 0.048 2501 480	115 0.056 2288 512
Ν	23-24	Aluminum-cast, alloyed	0.5D	1.5D	Vc fz RPM FEED	78 0.012 4138 149	72 0.015 2865 172	72 0.028 2292 257	68 0.04 1804 289	72 0.048 1637 314	75 0.056 1492 334

% The FEED, in long & extra long types, should be reduced by around 50%

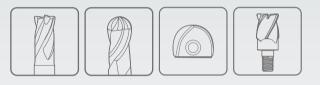
► NEXT PAGE



**\*//G** YG-1 CO., LTD.



## Global Cutting Tool Leader YG-1



# MILLING





## MILLING CUTTERS HSS Fräser

- General Works. Available Dovetail, Woodruff Keyseat, T-slot, Side Milling Cutters and HSS (8% cobalt) Corner Rounding, Shell End Mills

- Allgemeine Arbeiten. Verfügbare Schwalbenschwanz, Passfedernut, T-Nut, Scheibenfräser, Scheibenfräser und HSS (8% Kobalt) Eckenverrundung, Walzenstirnfräser

CARBIDE

HSS

	CBN
	MILLS
LND	IVIILLO

4G MILL

X-POWER

TitaNox-

790

K-2 END MILLS

MILLING CUTTERS



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							ware com	or evaluatio	
SE	E	CTION G	UIDE	intp	.// •• •• •• •	0/113011	ML012, ML022	ML032, ML042	ML062
						SERIES	ML112, ML122		ML162
	7 6						ML212, ML222		ML262
							<b>DOVETAIL CUTTERS</b>	<b>DOVETAIL CUTTERS</b>	WOODRUFF KEYSEAT CUTTERS
84111									KETSEAT CUTTERS
IVIILL	.INC	TOOLS				FLUTE	-	-	-
					HE	LIX ANGLE	0°	0°	10°-20°
							Dico	DICO	
						SIZE MIN	D16.0	D16.0	D10.5
						SIZE MAX	D50.0	D38.0	D45.5
						PAGE	792	793	794
					L		Type A, C, E	Type B, D, F	Type B, D, F
						ISS	Uncoated	Uncoated	Uncoated
			<b></b>	ILL			HSS-E	HSS-E	HSS-E
						_			
				ITTE					
	<u>.</u>			e Dovetail, Woodruf					
	Side	Milling Cutters a	nd HSS (8% coba	lt) Corner Rounding	g, She <b>ll</b> E	nd Mills			
回从裙间	]	· ·.							
	e Pieds	se visit		C	∋:Excellent	$\bigcirc$ :Good		11	- 11
	form	alyg1.com/mat naterial search	Ē	Recommended cutting	conditions	: P 811 )			
	1			-					
ISO	VDI	Material	Composition / Strue	cture / Heat Treatment	HB	HRc			
	3323	Description							
			About 0.15% C	Annealed	125		0	O	Ô
	2		About 0.45% C	Annealed	190	13	O	O	O
	3	Non-alloy steel	About 0.45% C	Quenched & Tempered	250	25	O	O	O
	4		About 0.75% C	Annealed	270	28	O	O	O
	5		About 0.75% C	Quenched & Tempered	300	32	0	0	O
Р	6			Annealed	180	10	0	0	O
	7			Quenched & Tempered	275	29	0	0	0
	8	Low alloy steel		Quenched & Tempered	300	32	0	0	0
	9			Quenched & Tempered	350	38	0	0	0
	10	High alloyed steel,		Annealed	200	15	0	0	0
	11	and tool steel		Quenched & Tempered	325	35	0	0	0
	12		Ferritic / Martensitic		200	15	0	0	0
м		Stainless steel	Martensitic	Quenched & Tempered		23			
141	13	Stanness steel		Quenched & lempered	240				
	14		Austenitic		180	10			
	15	Grey cast iron	Pearlitic / ferritic	<b>`</b>	180	10			
	16		Pearlitic (Martensitic	)	260	26			
K	17	Nodular cast iron	Ferritic		160	3			
	18		Pearlitic		250	25			
	19	Malleable cast iron	Ferritic		130				
	20		Pearlitic		230	21	-	-	-
	21	Aluminum-	Not Curable		60		0	0	0
	22	wrought alloy	Curable	Hardened	100		0	0	0
	23	Aluminum-cast,	≤ 12% Si, Not Curab	e	75		0	0	0
	24	alloyed	≤ 12% Si, Curable	Hardened	90		0	0	0
Ν	25	anoyea	> 12% Si, Not Curab	e	130		0	0	0
	26	Copper and	Cutting Alloys, PB>1	%	110				
	27	Copper Alloys	CuZn, CuSnZn (Brass	;)	90				
	28	(Bronze / Brass)	CuSn, lead-free coppe	r and electrolytic copper	100				
	29	Non Metallic	Duroplastic, Fiber Re	inforced Plastic					
	30	Materials	Rubber, Wood, etc.						
	31		Fe Deer d	Annealed	200	15			
	32		Fe Based	Cured	280	30			
	33	Heat Resistant		Annealed	250	25			
S	34	Super Alloys	Ni or Co Based	Cured	350	38			
	35			Cast	320	34			
	36		Pure Titanium		400 Rm				
	37	Titanium Alloys	Alpha + Beta Alloys	Hardened	1050 Rm				
	38		Alpha Pocta Alloys	Hardened	550	55			
	30 39	Hardened steel		Hardened	630	60			
Н	<u> </u>	Chilled Cast Irer							
		Chilled Cast Iron		Cast	400	42			
	41	Hardened Cast Iron		Hardened	550	55			

**\*/**G YG-1 CO., LTD.

4G MILL

X-POWER

TitaNox-

K-2 END MILLS

MILLING CUTTERS



Generated by Foxit PDF Creator © Foxit Software http://www.foxitsoftware.com ML012, ML022 SERIES PLAIN SHANK

FLAT SHANK ML112, ML122 SERIES

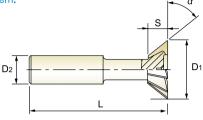
THREAD SHANK ML212, ML222 SERIES

## HSS-E, DOVETAIL CUTTERS TYPE "A", "C", "E"

- HSS-E, WINKELFRÄSER FORM "A", "C", "E"
  Fraise HSS-E pour queue d'aronde Type "A", "C", "E"
  FRESE AD ANGOLO DIVERGENTE TIPO "A", "C", "E"
- ▶ Recommanded for use in place of arbor and threaded hole type cutters to reduce set time and facilitate handling.
- Empfohlen zur Nutzung anstelle von Arbor und threaded hole type Cutters um Montierzeit zu verkürzen und Handhabung zu erleichtern. α







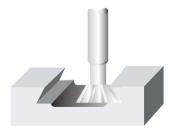


								Unit : mn
	EDP No.		Cutter Diameter	Width of Face	Divergent Taper Angle	Shank Diameter	Overall Length	No. of Teeth
PLAIN	FLAT	THREAD	D1(js16)	S(js14)	α(±15΄)	D2(h6)	L(js18)	Z
ML01201601	ML11201601	-	16.0	4	45 <sup>°</sup>	12	60	6
ML01202001	ML11202001	▲ ML21202001	20.0	5	45 <sup>°</sup>	12	63	6
ML01202201	ML11202201	-	22.0	6	45 <sup>°</sup>	12	67	6
ML01202501	ML11202501	▲ ML21202501	25.0	6.3	45 <sup>°</sup>	16	67	8
ML01202801	ML11202801	-	28.0	7.5	45 <sup>°</sup>	16	67	8
ML01203201	ML11203201	-	32.0	8	45 <sup>°</sup>	16	71	10
ML01203801	ML11203801	-	38.0	10	45 <sup>°</sup>	16	80	12
ML02201601	ML12201601	▲ ML22201601	16.0	6.3	60 <sup>°</sup>	12	60	6
ML02202001	ML12202001	-	20.0	8	60 <sup>°</sup>	12	63	6
ML02202201	ML12202201	-	22.0	9	60 <sup>°</sup>	12	67	6
ML02202501	ML12202501	-	25.0	10	60 <sup>°</sup>	16	67	8
ML02202801	ML12202801	-	28.0	11	60 <sup>°</sup>	16	67	8
ML02203201	ML12203201	-	32.0	12.5	60 <sup>°</sup>	16	71	10
ML02203801	ML12203801	-	38.0	16	60 <sup>°</sup>	16	80	12
ML02204001	ML12204001	▲ ML22204001	40.0	13	60 <sup>°</sup>	25	85	12
ML02205001	ML12205001	-	50.0	16	60 <sup>°</sup>	25	100	16

### ▲ : Only available till stock runs out

### Tolerances according to DIN 7160 & 7161

	Nominal-Diameter in mm														
	over 3 to 6	over6 to 10	over 10 to 18	over 18 to 30	over 30 to 50	over 50 to 80	over 80 to 120								
			Toleran	ce range in	mm										
js16	± 0.375	± 0.45	± 0.55	± 0.65	± 0.80	± 0.95	± 1.10								
js14	± 0.15	± 0.18	± 0.215	± 0.26	± 0.31	± 0.37	± 0.435								
js18	± 0.90	± 1.10	± 1.35	± 1.65	± 1.95	± 2.30	± 2.70								
			Toleran	ce range in	μm										
h6	- <sup>0</sup> - 8	- <sup>0</sup> - 9	0 - 11	0 - 13	0 - 16	0 - 19	- 22								



																			©	Exce	ellent (	⊖∶Good
ISO						P								M						K		
Material Description		No	on-alloy s	steel			Low	alloy ste	el	High ar	alloyed	l steel, teel	S	tainles	s steel		Grey cas	st iron		ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1		11	12	13		14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38			35	15	23		10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	) 20	00	325	200	24	0 1	80	180	260	160	250	130	230
Recommended	O	0	0	0	0	0	0	0	0	0		0										
ISO					N	l									S						н	
Material Description	Alum wroug	inum- ht a <b>ll</b> oy	Aluminu	um-cast,	alloyed	Copper a (Bro	nd Copp nze / Bra		Non M Mate			Heat R	lesista	nt Sup	er Alloy	'S	Titaniu	m A <b>ll</b> oys	Hard ste		Chi <b>l</b> ed Cast <b>I</b> ron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	2 :	33	34	35	36	37	38	39	40	41
HRc											15	30		25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	28	0 2	250	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	0	0	0	0	0																	

792

phone:+82-32-526-0909, www.yg1.kr, E-mail:yg1@yg1.kr



4G MILL

X-POWER



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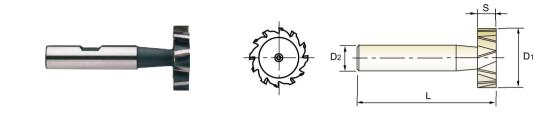
PLAIN SHANK	WILU62 SERIES
FLAT SHANK	ML162 SERIES
THREAD SHANK	ML262 SERIES

## HSS-E, WOODRUFF KEYSEAT CUTTERS TYPE "B", "D", "F"

HSS-E. SCHLITZFRÄSER FORM "B". "D". "F"

Fraise HSS-E WOODRUFF Type "B", "D", "F"

() FRESE PER CHIAVETTE WOODRUFF TIPO "B", "D", "F"





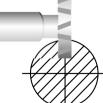
							Unit : mn
	EDP No.		Cutter Diameter	Width of Face	Shank Diameter	Overall Length	No. of Teeth
PLAIN	FLAT	THREAD	D1(h11)	S(e8)	D2(h6)	L(js18)	Z
ML06210E01	ML16210E01	-	10.5	2	6	50	8
ML06210E02	ML16210E02	-	10.5	2.5	6	50	8
ML06210E03	ML16210E03	-	10.5	3	6	50	8
ML06213E01	ML16213E01	-	13.5	2	10	56	8
ML06213E02	ML16213E02	-	13.5	2.5	10	56	8
ML06213E03	ML16213E03	-	13.5	3	10	56	8
ML06213E04	ML16213E04	-	13.5	4	10	56	8
ML06216E01	ML16216E01	-	16.5	2.5	10	56	8
ML06216E02	ML16216E02	-	16.5	3	10	56	8
ML06216E03	ML16216E03	-	16.5	4	10	56	8
ML06216E04	ML16216E04	-	16.5	5	10	56	8
ML06219E01	ML16219E01	-	19.5	3	10	56	8
ML06219E02	ML16219E02	-	19.5	4	10	63	8
ML06219E03	ML16219E03	-	19.5	5	10	63	8
ML06219E04	ML16219E04	-	19.5	6	10	63	8
ML06222E01	ML16222E01	-	22.5	4	10	63	10
ML06222E02	ML16222E02	▲ ML26222E02	22.5	5	10	63	10
ML06222E03	ML16222E03	-	22.5	6	10	63	10
ML06222E04	ML16222E04	-	22.5	8	10	63	10
ML06225E01	ML16225E01	-	25.5	5	10	63	10

Tolerances according to DIN 7160 & 7161

			Nominal	Diameter ir	ו mm		
	from 1 to 3	over3to6	over 6 to 10	over 10 to 18	over 18 to 30	over 30 to 50	over 50 to 80
			Toleran	ce range in	mm		
js18	± 0.90	± 1.10	± 1.35	± 1.65	± 1.95	± 2.30	± 2.70
			Toleran	ce range in	μm		
h11	0 - 60	0 - 75	0 - 90	0 - 110	0 - 130	0 - 160	0 - 190
e8	- 14 - 28	- 20 - 38	- 25 - 47	- 32 - 59	- 40 - 73	- 50 - 89	- 60 - 106
h6	0 -6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16	0 - 19
ISO	1			P			



▶ NEXT PAGE



	-6		-8	-	9	- 11	- 1	31	- 16		- 19										
		· .			0			•	10		10							©	Exc	ellent (	∋∶Good
ISO						P								M					K		
Material Description		N	on-alloy :	steel			Low a	lloy stee	el		alloyed nd tool st		Sta	inless s	teel	Grey ca	st iron		lar cas on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1	0	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1	5	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	0 3	325	200	240	180	180	260	160	250	130	230
Recommended	0	0	O	0	O	O	0	0	0	0		0									
ISO					N									S	;					Н	
Material Description		iinum- ht alloy	Aluminu	um-cast,	alloyed C	Copper ar (Bror	nd Coppe nze / Bras		Non Me Mater		H	leat R	esistant	Super /	Alloys	Titaniu	m A <b>ll</b> oys		lened ee <b>l</b>	Chilled Cast Iron	Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	34	4 35	36	37	38	39	40	41
HRc											15	30	25	- 38	3 34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 250	) 35	0 320	400 Rm	1050 Rm	550	630	400	550
Decomposited	0	$\cap$	0	$\sim$	$\sim$																

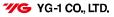
MILLING CUTTERS

HB Recommended

794

0

0 0 0



4G MILL

X-POWER

TitaNox-

K-2 END MILLS

> TANK-POWER

MILLING CUTTERS



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PLAIN SHANKML072 seriesFLAT SHANKML172 seriesTHREAD SHANKML272 series

## HSS-E, T-SLOT CUTTERS TYPE "AA", "AB", "AD"

HSS-E, SCHAFTERFRÄSER FÜR T-NUTEN FORM "AA", "AB", "AD"

() Fraise HSS-E pour rainure en "T" Type "AA", "AB", "AD"

() FRESE PER SCANALATURE A T - DENTI ALTERNATI



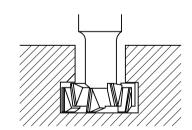


								Unit : mm
	EDP No.		Cutter Diameter	Width of Face	Shank Diameter	Neck Diameter	Overall Length	No. of Teeth
PLAIN	FLAT	THREAD	D1(d11)	S(d11)	D2(h6)	D3(h12)	L(js18)	Z
ML07212E01	ML17212E01	-	12.5	6	10	5	57	6
ML07201601	ML17201601	-	16.0	8	10	6.5	62	6
ML07201801	ML17201801	-	18.0	8	12	8	70	6
ML07201901	ML17201901	-	19.0	9	12	8	71	6
ML07202101	ML17202101	-	21.0	9	12	10	74	6
ML07202201	ML17202201	-	22.0	10	12	10	75	6
ML07202501	ML17202501	-	25.0	11	16	12	82	6
ML07202801	ML17202801	AML27202801	28.0	12	16	13	83	6
ML07203201	ML17203201	-	32.0	14	16	15	90	8
ML07203601	ML17203601	A ML27203601	36.0	16	25	17	103	8
ML07204001	ML17204001	<b>ML27204001</b>	40.0	18	25	19	108	8

▲ : Only available till stock runs out

## Tolerances according to DIN 7160 & 7161

Nominal-Diameter in mm														
	over3to6	over6 to 10	over 10 to 18	over 18 to 30	over 30 to 50	over 50 to 80	over 80 to 120							
Tolerance range in mm														
h12	0 - 0.12	0 - 0.15	0 - 0.18	0 - 0.21	0 - 0.25	0 - 0.30	0 - 0.35							
js18	± 0.90	± 1.10	± 1.35	± 1.65	± 1.95	± 2.30	± 2.70							
			Tolerand	ce range in	μm									
d11	- 30 - 105	- 40 - 130	- 50 - 160	-65 -195	- 80 - 240	- 100 - 290	- 120 - 340							
h6	0 - 8	0 - 9	0 - 11	0 - 13	0 - 16	0 - 19	0 - 22							



																		6	·Evo	ollont (	⊖:Good
ISO						Р								м					K EXU		J • 9000
Material Description		N	on-alloy s	steel			Low	alloy ste	el		alloyed		Sta	ainless	steel	Grey ca	st iron	Nodu	ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	1		11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32				35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	) 350	) 20	00 3	325	200	240	180	180	260	160	250	130	230
Recommended	0	0	0	0	0	0	0	0		0	)										
ISO					N										5					н	
Material Description	Alumi wrougł		Aluminu	ım-cast,	a <b>ll</b> oyed	Copper a (Bro	and Copp nze / Bra	er A <b>l</b> oys ass)	Non M Mate		ŀ	leat R	esistan	Super	Alloys	Titaniu	ım A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 3	4 35	5 36	37	38	39	40	41
HRc											15	30	25	5 3	8 34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 3	50 32	0 400 Rm	1050 Rm	550	630	400	550
Recommended	0	0	0	0	0																

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4G MILL

X-POWER

TitaNox-

K-2 END MILLS

MILLING CUTTERS



STRAIGHT TEETH

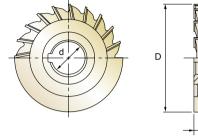
ML092 SERIES

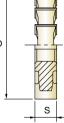
## HSS-E, SIDE AND FACE MILLING CUTTERS with STRAIGHT TEETH

## HSS-E, SCHEIBENFRÄSER mit GERADEVERZAHNT

- () Fraise HSS-E 3 Tailles, denture droite
- () FRESE A DISCO A TRE TAGLI DENTI DRITTI
  - ► The tools are used for general purpose side and straddle milling where deep cut is not required.







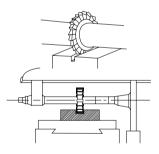
► Diese Werkzeuge werden bei allgemeinen Seiten-und Breitfräsen

eingesetzt, wo Tiefschnitte nicht vorkommen.

				Unit : mm
EDP No.	Cutter Diameter	Width of Face	Internal Diameter	No. of Teeth
	D1(js14)	S(k11)	d(H7)	Z
ML09210003	100.0	10	27	22
ML09210004	100.0	6	32	26
ML09210005	100.0	8	32	26
ML09210006	100.0	10	32	22
ML09210007	100.0	12	32	22
ML09212501	125.0	8	32	30
ML09212502	125.0	10	32	30
ML09212503	125.0	12	32	24

## Tolerances according to DIN 7160 & 7161

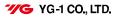
	Nominal-Diameter in m													
	over 3 to 6	over6 to 10	over 10 to 18	over 18 to 30	over 30 to 50	over 50 to 80	over 80 to 120	over 120 to 180						
	Tolerance range in mm													
js14	±0.15         ±0.18         ±0.215         ±0.26         ±0.31         ±0.37         ±0.435         ±0.50													
			Tc	lerance rar	ige in <i>µ</i> m									
k11	+ 75 0	+ 90 0	+ 110 0	+ 130 0	+ 160 0	+ 190 0	+ 220	+ 250						
H7	+ 12	+ 15 0	+ 18 0	+ 21 0	+ 25 0	+ 30 0	+ 35 0	+ 40 0						



																		©	Exc	ellent (	)∶Good	
ISO						P								M					K			
Material Description		No	on-alloy s	steel			Low a	loy stee	el	High and	alloyed : d tool ste	steel, eel	Sta	inless st	eel	Grey cas	st iron	Nodular cast M iron			Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	) 1	1	12	13	14	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15	; 3	35	15	23	10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	200	0 3	25	200	240	180	180	260	160	250	130	230	
Recommended	0	O	0	0	0	0	0	0	0	0	) (	C										
ISO					N									S						н		
Material Description	Alumi wrough		Aluminu	um-cast,	alloyed	Copper ar (Bror	nd Coppe nze / Bras	rA <b>l</b> oys s)	Non Met Materia		н	eat R	esistant	Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 34	35	36	37	38	39	40	41	
HRc											15	30	25	5 38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 350	) 320	400 Rm	1050 Rm	550	630	400	550	
Recommended	0	0	0	0	0																	

798

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4G MILL

X-POWER

K-2

MILLING CUTTERS

ISO

Material Description VDI 3323

HRc

HB

Recommended

SO

800

1

125

0

STAGGERED TEETH

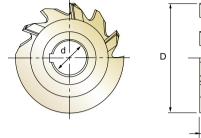
ML102 SERIES

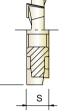
## HSS-E, SIDE AND FACE MILLING CUTTERS with STAGGERED TEETH

## HSS-E. SCHEIBENFRÄSER mit KREUZVERZAHNT

- Fraise HSS-E 3 Tailles, denture alternée
- () FRESE A DISCO A TRE TAGLI DENTI ALTERNATI
- ► The type of cutter is recommended for slotting operations. The alternate spiral effectively counteracts all tendency to chatter.
- ▶ Dieser Typ ist zum Schlitzfräsen geeignet. Das alternierende Spiral wirkt allen Schnatterbewegungen entgegen.



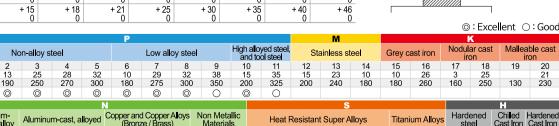




				Unit : mm
EDP No.	Cutter Diameter	Width of Face	Internal Diameter	No. of Teeth
	D(js14)	S(k11)	d(H7)	Z
ML10208001	80.0	3	22	18
ML10208002	80.0	4	22	18
ML10208003	80.0	5	22	18
ML10208004	80.0	6	22	18
ML10208005	80.0	7	22	18
ML10208006	80.0	8	22	18
ML10208007	80.0	9	22	18
ML10208008	80.0	10	22	18
ML10208009	80.0	12	22	18
ML10208010	80.0	14	22	18
ML10208011	80.0	16	22	18
ML10208012	80.0	18	22	18
ML10208013	80.0	20	22	18
ML10208014	80.0	4	27	18
ML10208015	80.0	5	27	18
ML10208016	80.0	6	27	18
ML10208017	80.0	7	27	18
ML10208018	80.0	8	27	18
ML10208019	80.0	9	27	18
ML10208020	80.0	10	27	18

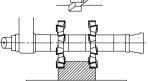
## Tolerances according to DIN 7160 & 7161

	Nominal-Diameter in mm													
	over 3 to 6	over6 to 10	over 10 to 18	over 18 to 30	over 30 to 50	over 50 to 80	over 80 to 120	over 120 to 180	over 180 to 250					
	Tolerance range in mm													
js14	t ±0.15 ±0.18 ±0.215 ±0.26 ±0.31 ±0.37 ±0.435 ±0.50 ±0.575													
				Toleran	ce range in	μm								
k11	+ 75 0	+ 90 0	+ 110 0	+ 130 0	+ 160 0	+ 190 0	+ 220	+ 250 0	+ 290					
H7	+ 12	+ 15 0	+ 18 0	+ 21	+ 25 0	+ 30 0	+ 35 0	+ 40 0	+ 46 0					



	Description	wroug	nt alloy	Alumin	um-cast,	alloyed	(Bro	onze/Br	ass)		erials	н	eat Res	istant Su	ipe
	VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	
ECHNICALI	HRc											15	30	25	
ΠΛΤΛ	HB	60	100	75	90	130	110	90	100			200	280	250	
DAIA	Recommended	0	0	0	0	0									





34 38

350

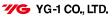
35 34

36 37

320 400 Rm 1050 Rm 550

38 55 39 60

630



40 42

400

41 55

4G MILL

X-POWER

TitaNox-

K-2

MILLING CUTTERS STAGGERED TEETH

EETH ML102 SERIES

## HSS-E, SIDE AND FACE MILLING CUTTERS with STAGGERED TEETH

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## **HSS-E, SCHEIBENFRÄSER mit KREUZVERZAHNT**

- Fraise HSS-E 3 Tailles, denture alternée
- () FRESE A DISCO A TRE TAGLI DENTI ALTERNATI
- ► The type of cutter is recommended for slotting operations. The alternate spiral effectively counteracts all tendency to chatter.
- Dieser Typ ist zum Schlitzfräsen geeignet. Das alternierende Spiral wirkt allen Schnatterbewegungen entgegen.

D

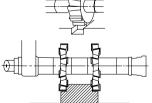
s



				Unit : mm
EDP No.	Cutter Diameter	Width of Face	Internal Diameter	No. of Teeth
	D(js14)	S(k11)	d(H7)	Z
ML10210016	100.0	5	32	20
ML10210017	100.0	6	32	20
ML10210018	100.0	7	32	20
ML10210019	100.0	8	32	20
ML10210020	100.0	9	32	20
ML10210021	100.0	10	32	20
ML10210022	100.0	12	32	20
ML10210023	100.0	14	32	20
ML10210024	100.0	15	32	20
ML10210025	100.0	16	32	20
ML10210026	100.0	18	32	20
ML10210027	100.0	20	32	20
ML10212501	125.0	5	32	22
ML10212502	125.0	6	32	22
ML10212503	125.0	8	32	22
ML10212504	125.0	10	32	22
ML10212505	125.0	12	32	22
ML10212506	125.0	14	32	22
ML10212507	125.0	16	32	22
ML10212508	125.0	18	32	22

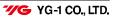
## Tolerances according to DIN 7160 & 7161

Nominal-Diameter in mm														
	over3to6	over6 to 10	over 10 to 18	over 18 to 30	over 30 to 50	over 50 to 80	over 80 to 120	over 120 to 180	over 180 to 250					
Tolerance range in mm														
js14	t ±0.15 ±0.18 ±0.215 ±0.26 ±0.31 ±0.37 ±0.435 ±0.50 ±0.57													
				Tolerand	ce range in	μm								
k11	+ 75 0	+ 90 0	+ 110 0	+ 130 0	+ 160 0	+ 190 0	+ 220	+ 250 0	+ 290 0					
H7	+ 12 0	+ 15 0	+ 18 0	+ 21 0	+ 25 0	+ 30 0	+ 35 0	+ 40	+ 46 0					



	0		0		•	0		0	0		0		•	0							
																		Ô	Exc	ellent 🤇	∋∶Good
ISO						P								М					Κ		
Material Description		No	on-alloy s	steel			Low a	alloy stee	el		alloyed st d tool stee		Stain	less stee	el	Grey cas	st iron	Nodular cast iron			able cast ron
VDI 3323	1	2	3	4	5	6	7	8	9	10	) 11		12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15			15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	200	0 32	5 2	200	240	180	180	260	160	250	130	230
Recommended	O	0	0	0	O	0	0	0	0	0	) (C	)									
10.0																					
ISO					N									S						н	
ISO Material Description	A <b>l</b> umi wrougi		Aluminu	um-cast, a		Copper ar	nd Coppe nze / Bras	erAlloys ss)	Non Met Materia		He	at Res	istant S	s uper Allo	oys	Titaniu	m A <b>ll</b> oys	Hard ste	ened eel	Chilled	Hardened Cast Iron
Materia			Aluminu 23	um-cast, a 24		Copper ar	nd Coppe nze / Bras 27	er A <b>l</b> oys ss) 28	Materia		Не 31	at Res 32	33	uper Allo 34	35	Titaniu 36	m Alloys 37			Chilled Cast Iron 40	Cast Iron 41
Material Description	wrougł 21	nt alloy 22	23	24	alloyed 25	Copper ar (Bror 26	nze / Bras 27	ss) 28	Materia	als	31 15	32 30	33 25	uper Allo 34 38	35 34	36	37	38 55	eel 39 60	Chilled Cast Iron 40 42	Cast Iron 41 55
Material Description VDI 3323		ht alloy			alloyed	Copper ar (Bror	nze / Bras	ss)	Materia	als	31	32	33	uper Allo 34	35	36	1	38 55	el 39	Chilled Cast Iron 40	Cast Iron 41

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► NEXT PAGE

4G MILL

X-POWER

TitaNox-

K-2 END MILLS

MILLING CUTTERS STAGGERED TEETH

EETH ML102 SERIES

## HSS-E, SIDE AND FACE MILLING CUTTERS with STAGGERED TEETH

## HSS-E, SCHEIBENFRÄSER mit KREUZVERZAHNT

- () Fraise HSS-E 3 Tailles, denture alternée
- () FRESE A DISCO A TRE TAGLI DENTI ALTERNATI
- ► The type of cutter is recommended for slotting operations. The alternate spiral effectively counteracts all tendency to chatter.
- Dieser Typ ist zum Schlitzfräsen geeignet, Das alternierende Spiral wirkt allen Schnatterbewegungen entgegen.

D

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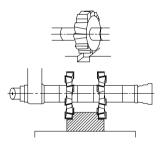


				Unit : mm
EDP No.	Cutter Diameter	Width of Face	Internal Diameter	No. of Teeth
	D(js14)	S(k11)	d(H7)	Z
ML10220004	200.0	16	40	30
ML10220005	200.0	18	40	30
ML10220006	200.0	20	40	30
ML10220007	200.0	22	40	30
ML10220008	200.0	25	40	30

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## Tolerances according to DIN 7160 & 7161

	Nominal-Diameter in mm													
	over 3 to 6	over6 to 10	over 10 to 18	over 18 to 30	over 30 to 50	over 50 to 80	over 80 to 120	over 120 to 180	over 180 to 250					
	Tolerance range in mm													
js14	<b>4</b> $\pm 0.15$ $\pm 0.18$ $\pm 0.215$ $\pm 0.26$ $\pm 0.31$ $\pm 0.37$ $\pm 0.435$ $\pm 0.50$ $\pm 0.57$													
				Toleran	ce range in	μm								
k11	+ 75	+ 90	+ 110 0	+ 130 0	+ 160 0	+ 190 0	+ 220	+ 250 0	+ 290					
H7	+ 12	+ 15 0	+ 18 0	+ 21	+ 25	+ 30	+ 35	+ 40	+ 46					



																		©	Exce	ellent (	⊖:Good
ISO						P								M					K		
Material Description		No	on-alloy s	teel			Low a	lloy ste	el		a <b>l</b> oyed d tool st		Sta	ainless s	teel	Grey ca	st iron	Nodular cast iron		t Malleable cast iron	
VDI 3323	1	2	3	4	5	6	7	8	9	10	)	11	12	13	14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	15	5 :	35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	20	0 3	325	200	240	180	180	260	160	250	130	230
Recommended	0	0	0	0	0	O	0	0	0	0	)	0									
ISO					N									S						н	
Material Description	Alumi wrougł		Aluminu	ım-cast,	alloyed <sup>(</sup>	Copper ai (Broi	nd Coppe nze / Bras	rA <b>l</b> oys s)	Non Met Materia		H	leat R	esistant	Super A	lloys	Titaniu	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	33	3 34	35	36	37	38	39	40	41
HRc											15	30	25	5 38	3 34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 35	0 320	400 Rm	1050 Rm	550	630	400	550
Recommended	0	0	0	0	0																



4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS

MILLING CUTTERS





## HSSCo8, MULTI FLUTE SHELL END MILL for ALUMINUM

HSSCo8, MULTI SCHNEIDEN WALZENSTIRNFRÄSER für ALUMINIUM

- Fraise HSSCo8, multi-dents trou lisse pour aluminium
- () FRESA CILINDRICA FRONTALE MULTI TAGLIENTE, PER ALLUMINIO





## HSS DIN W 486 2 Grad Constraints of the second seco

				Unit : mm
EDP No.	Mill Diameter	Width of Face	Internal Diameter	No. of Teeth
	D	S	d	Z
E2676300	30.0	30	• 13	4
E2676400	40.0	20	<b>•</b> 16	4
E2676402	40.0	40	🛑 16	4
E2676500	50.0	25	22	6
E2676502	50.0	50	22	6
E2676600	60.0	30	27	6
E2676601	60.0	60	27	6
E2676750	75.0	75	27	6

Tolerance of Internal Diameter = +0.018 ~ 0

TIN-COATING, TICN-COATING & TIAIN-COATING is available on your request.

				Unit : mm
EDP No.	Mill Diameter	Width of Face	Internal Diameter	No. of Teeth
	D	S	d	Z
E2676401	40.0	32	• 16	4
E2676501	50.0	36	22	6
E2676630	63.0	40	27	6
E2676800	80.0	45	27	6
E2676901	100.0	50	32	6

Tolerance of Internal Diameter = +0.018 ~ 0

► TIN-COATING, TICN-COATING & TIAIN-COATING is available on your request.

Mill Dia.	Width of Face	Internal Dia.
Tolerance(mm)	Tolerance(mm)	Tolerance(mm)
+ 0.25 - 0.15	+ 0.5	+ 0.02

																		©	Exc	ellent (	∋∶Good
ISO						P								M					Κ		
Material Description		N	on-alloy	steel			Low	alloy ste	el		alloyed nd tool st		St	ainless st	eel	Grey cas	t iron		ar cast on		able cast iron
VDI 332	3 1	2	3	4	5	6	7	8	9	10		11	12	13	14	15	16	17	18	19	20
HRc	_	13	25	28	32	10	29	32	38	1:		35	15	23	10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	350	) 20	0 3	325	200	240	180	180	260	160	250	130	230
Recommend	ed 🔿	0	0	0		0	0			C											
ISO					N									S						н	
Material Description		ninum- ght a <b>ll</b> oy	Alumin	um-cast,	alloyed <sup>(</sup>	Copper a (Bro	nd Copp nze / Bra	er A <b>l</b> oys ss)	Non M Mate		H	leat R	esistan	t Super A	lloys	Titaniu	n Alloys	Hard ste		Chilled Cast Iron	Hardened Cast Iron
VDI 332	3 21	22	23	24	25	26	27	28	29	30	31	32	3	3 34	. 35	36	37	38	39	40	41
HRc											15	30						55	60	42	55
HB	60	100	75	90	130	110	90	100			200	280	) 25	0 35	320	400 Rm	1050 Rm	550	630	400	550
Recommend	ed 🔘	0	0	O	0																



4G MILL

X-POWER

TitaNox-POWER

K-2 END MILLS

MILLING CUTTERS



D

## HSSCo8, MULTI FLUTE ROUGHING SHELL END MILL - FINE

- 🖶 HSSCo8, MULTI SCHNEIDEN WALZENSTIRN-SCHRUPPFRÄSER FEINES
- () Fraise HSSCo8, multi-dents trou lisse, ébauche, pas fin
- () FRESA CILINDRICA FRONTALE MULTI TAGLIENTE, PER SGROSSATURA





				Unit : mm
EDP No.	Mill Diameter	Width of Face	Internal Diameter	No. of Teeth
	D	S	d	Z
E2678401	40.0	40	• 16	6
E2678501	50.0	50	22	8
E2678600	60.0	30	27	8
E2678601	60.0	60	27	8
E2678750	75.0	35	27	10
E2678751	75.0	75	27	10
E2678900	90.0	35	27	10
E2678902	110.0	35	32	12

Tolerance of Internal Diameter = +0.018 ~ 0

TIN-COATING, TICN-COATING & TIAIN-COATING is available on your request.

HSS DIN Co8 1880	HR 6-12	30°	P.819
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EDP No.	Mill Diameter	Width of Face	Internal Diameter	No. of Teeth
	D	S	d	Z
E2678400	40.0	32	• 16	6
E2678500	50.0	36	22	8
E2678630	63.0	40	27	8
E2678800	80.0	45	27	10
E2678901	100.0	50	32	10
E2678903	125.0	56	40	12
E2678904	160.0	63	50	12

Tolerance of Internal Diameter = +0.018 ~ 0

► TIN-COATING, TICN-COATING & TIAIN-COATING is available on your request.

Mill Dia.	Width of Face	Internal Dia.
Tolerance(mm)	Tolerance(mm)	Tolerance(mm)
+ 0.25 - 0.15	+ 0.5	+ 0.02

																			©	Exc	ellent (	⊖:Good
ISO						P								IV	1					K		
Material Description		No	on-alloy s	steel			Low a	lloy ste	el	High an	alloyed nd tool s	l steel, teel	S	tainles	s stee	l –	Grey cas	st iron		ar cast on		able cast iron
VDI 3323	1	2	3	4	5	6	7	8	9	10	0	11	12	13		14	15	16	17	18	19	20
HRc		13	25	28	32	10	29	32	38	1:		35	15	23		10	10	26	3	25		21
HB	125	190	250	270	300	180	275	300	) 350	20	00	325	200	24	0	180	180	260	160	250	130	230
Recommended	0	0	0	0	0	O	0	0	0	C	)	0										
ISO					N										S						н	
Material Description	Aluminum- wrought alloy Aluminum-cast, alloyed Copper				and Copper Alloys Non Metalli ronze / Brass) Materials					Heat R	Resistar	nt Sup	er Allo	/s	Titaniur	m A <b>ll</b> oys	Hard ste			Hardened Cast Iron		
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	2 3	33	34	35	36	37	38	39	40	41
HRc											15	30	) 2	25	38	34			55	60	42	55
HB	60	100	75	90	130	110	90	100			200	28	0 2	50	350	320	400 Rm	1050 Rm	550	630	400	550
Recommended	0	0	0	0	0																	



4G MILL

X-POWER

TitaNox-

K-2

MILLING CUTTERS



as end formming tools to form a specific radius.

FLAT SHANK

E2498 SERIES

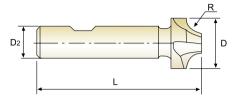
## HSSCo8, 4 FLUTE CORNER ROUNDING CUTTERS

## HSSCo8, 4 SCHNEIDEN VIERTELKREISFRÄSER

## Fraise HSSCo8, 1/4 de cercle, 4 dents

- () 4 TAGLIENTI PER RAGGIATURA DI SPIGOLI ▶ These tools can be adapted for many screw machine applications
- Dieses Werkzeug kann an vielen Scrow maschine als Finishingtool für spezielle Radien montiert werden.







EDP No.	Radius	Outside Diameter	Shank Diameter	Overall Length
	R(H11)	D	D2(h6)	L
E2498010	R1.0	8.0	10	60
E2498015	R1.5	9.0	10	60
E2498020	R2.0	10.0	10	60
E2498025	R2.5	11.0	10	60
E2498030	R3.0	12.0	12	60
E2498035	R3.5	13.0	12	60
E2498040	R4.0	14.0	12	60
E2498045	R4.5	15.0	12	60
E2498050	R5.0	16.0	12	60
E2498055	R5.5	19.0	16	67
E2498060	R6.0	20.0	16	67
E2498065	R6.5	21.0	16	71
E2498070	R7.0	22.0	16	71
E2498075	R7.5	23.0	16	71
E2498080	R8.0	24.0	16	71
E2498085	R8.5	25.0	25	85
E2498090	R9.0	26.0	25	85
E2498095	R9.5	27.0	25	85

OATING, TICN-COATING & TIAIN-COATING is available on your reque

## Tolerances according to DIN 7160 & 7161

	Nominal-Diameter in mm											
	from 1 to 3	over 3 to 6	over6 to 10	over 10 to 18	over 18 to 30	over 30 to 50						
	Tolerance range in μm											
H11	+ 60	+ 75	+ 90	+ 110	+ 130	+ 160						
	0	0	0	0	0	0						
h6	0	0	0	0	0	0						
110	- 6	- 8	- 9	- 11	- 13	- 16						

																			©	Exce	ellent (	⊖:Good	
ISO						P	P							N	1				K				
Material Description		No	on-alloy s	steel			Low alloy steel			High an	High alloyed steel, and tool steel			, Stainless steel			Grey cas	st iron	Nodular cast iron		Malleable cast iron		
VDI 3323	1	2	3	4	5	6	7	8	9	10		11	12	1:	3	14	15	16	17	18	19	20	
HRc		13	25	28	32	10	29	32	38	15		35	15	2		10	10	26	3	25		21	
HB	125	190	250	270	300	180	275	300	350	20	0 3	325	200	24	0 1	180	180	260	160	250	130	230	
Recommended	O	0	O	0	0	O	0	0	0	0		0											
ISO					l l	N									S						н		
Material Description	Alumi wrougł	inum- ht a <b>ll</b> oy	Aluminu	um-cast,	alloyed	Copper a (Bro	nd Coppe nze / Bras	rA <b>l</b> oys is)	Non Me Materi		H	leat R	lesistar	nt Sup	er Alloy	/s	Titaniu	m A <b>ll</b> oys	Hard ste		Chilled Cast Iron	Hardened Cast Iron	
VDI 3323	21	22	23	24	25	26	27	28	29	30	31	32	2 3	33	34	35	36	37	38	39	40	41	
HRc											15	30	) 2	25	38	34			55	60	42	55	
HB	60	100	75	90	130	110	90	100			200	280	) 2	50	350	320	400 Rm	1050 Rm	550	630	400	550	
Recommended	0	0	0	0	0																		

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## **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

CBN END MILLS	M	L012,	ML112, ML	.022,	ML122, I	ML212, M	L222 SERIES	Multi fli Type 'a', 'C	JTE DOVETA C', 'E'	IL CUTTERS	Vc = m/min. fz = mm/tooth R P M = rev./min. FEED = mm/min.
i-Xmill	10.0	VDI	Material					Diameter (Ø)			
END MILLS	ISO	3323	Description	Parameter	16.0	20.0	25.0	32.0	40.0	50.0	63.0
i-SMART MODULAR END MILLS		1		Vc fz RPM FEED	30 0.03 597 107	30 0.037 477 106	30 0.026 382 79	30 0.042 298 125	30 0.043 239 123	30 0.03 191 92	30 0.031 152 75
X5070 END MILLS		2	Non-alloy steel	Vc fz RPM FEED	15 0.031 298 56	15 0.036 239 52	15 0.031 191 47	15 0.041 149 61	15 0.043 119 62	15 0.026 95 40	15 0.031 76 38
4G MILL END MILLS		3-4		Vc fz RPM FEED	10 0.031 199 37	10 0.035 159 33	10 0.028 127 29	10 0.04 99 40	10 0.042 80 40	10 0.03 64 31	10 0.033 51 27
X-POWER PRO END MILLS		5		Vc fz RPM FEED	10 0.021 199 25	10 0.02 159 19	10 0.02 127 20	10 0.02 99 20	10 0.022 80 21	10 0.02 64 20	10 0.023 51 19
TitaNox- POWER END MILLS	Р	6		Vc fz RPM FEED	15 0.031 298 56	15 0.036 239 52	15 0.031 191 47	15 0.041 149 61	15 0.043 119 62	15 0.026 95 40	15 0.031 76 38
JET-POWER END MILLS		7	Low alloy steel	Vc fz RPM FEED	10 0.031 199 37	10 0.035 159 33	10 0.028 127 29	10 0.04 99 40	10 0.042 80 40	10 0.03 64 31	10 0.033 51 27
V7 PLUS END MILLS		8-9		Vc fz RPM FEED	10 0.021 199 25	10 0.02 159 19	10 0.02 127 20	10 0.02 99 20	10 0.022 80 21	10 0.02 64 20	10 0.023 51 19
ALU-POWER HPC END MILLS		10	High a <b>ll</b> oyed	Vc fz RPM FEED	15 0.031 298 56	15 0.036 239 52	15 0.031 191 47	15 0.041 149 61	15 0.043 119 62	15 0.026 95 40	15 0.031 76 38
ALU- POWER END MILLS		11.1	steel, and tool steel	Vc fz RPM	10 0.021 199	10 0.02 159	10 0.02 127	10 0.02 99	10 0.022 80	10 0.02 64	10 0.023 51
D-POWER GRAPHITE END MILLS	N	21~25	Aluminum- wrought alloy, Aluminum-cast,	FEED Vc fz RPM	25 95 0.03 1890	19 85 0.04 1353	20 90 0.029 1146	20 90 0.041 895	21 95 0.042 756	20 85 0.03 541	19 90 0.033 455
D-POWER CFRP			alloyed	FEED	340	325	266	367	381	260	240



K-2 END MILLS

TANK-POWER

MILLING CUTTERS

4G MILL

X-POWER

TitaNox-POWER

CFRP END MILLS

K-2 END MILLS

> TANK-POWER

MILLING CUTTERS



## RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

## ML062, ML162, ML262 series

## MULTI FLUTES WOODRUFF KEYSEAT CUTTERS TYPE 'B', 'D', 'F'

Vc = m/min. fz = mm/tooth RPM = rev./min.FEED = mm/min

	VDI	Material					_Diame	eter (Ø)			
50	3323	Description	Parameter –	10.5	13.5	16.5	19.5	22.5	28.5	32.5	45.5
	5525	Description									
			Vc	30	30	30	30	30	30	30	30
	1		fz	0.01	0.01	0.025	0.035	0.04	0.05	0.06	0.07
			RPM	909	707	579	490	424	335	294	210
			FEED	73	57	116	137	170	168	212	206
			Vc	20	20	20	20	20	20	20	20
	2		fz	0.01	0.01	0.025	0.035	0.04	0.05	0.06	0.07
			RPM	606	472	386	326	283	223	196	140
		Non-alloy steel	FEED	49	38	77	91	113	112	141	137
		,	Vc	15	15	15	15	15	15	15	15
	3-4		fz	0.01	0.01	0.025	0.035	0.04	0.05	0.06	0.07
	<u> </u>		RPM	455	354	289	245	212	168	147	105
			FEED	36	28	58	69	85	84	106	103
			Vc	10	10	10	10	10	10	10	10
	5		fz	0.01	0.01	0.025	0.035	0.04	0.05	0.06	0.07
			RPM	303	236	193	163	141	112	98	70
			FEED	24	19	39	46	57	56	71	69
			Vc	20	20	20	20	20	20	20	20
>	6		fz	0.01	0.01	0.025	0.035	0.04	0.05	0.06	0.07
			RPM	606	472	386	326	283	223	196	140
			FEED	49	38	77	91	113	112	141	137
			Vc	15	15	15	15	15	15	15	15
	7	Low alloy steel	fz	0.01	0.01	0.025	0.035	0.04	0.05	0.06	0.07
	· /	Low anoy steel	RPM	455	354	289	245	212	168	147	105
			FEED	36	28	58	69	85	84	106	103
			Vc	10	10	10	10	10	10	10	10
	8-9		fz	0.01	0.01	0.025	0.035	0.04	0.05	0.06	0.07
	0-9		RPM	303	236	193	163	141	112	98	70
			FEED	24	19	39	46	57	56	71	69
			Vc	20	20	20	20	20	20	20	20
	10		fz	0.01	0.01	0.025	0.035	0.04	0.05	0.06	0.07
	10	Link allowed	RPM	606	472	386	326	283	223	196	140
		High a <b>ll</b> oyed stee <b>l</b> ,	FEED	49	38	77	91	113	112	141	137
		and tool steel	Vc	10	10	10	10	10	10	10	10
	11.1		fz	0.01	0.01	0.025	0.035	0.04	0.05	0.06	0.07
	-11.1		RPM	303	236	193	163	141	112	98	70
			FEED	24	19	39	46	57	56	71	69
		Aluminum-	Vc	100	100	100	100	100	100	90	100
N	21~25	wrought alloy,	fz	0.01	0.01	0.025	0.035	0.04	0.05	0.06	0.07
V	21~25	Aluminum-cast,	RPM	3032	2358	1929	1632	1415	1117	881	700
		alloyed	FEED	243	189	386	457	566	558	635	686



4G MILL

X-POWER

TitaNox-POWER

CFRP END MILLS

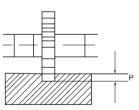
K-2 END MILLS

> TANK-POWER

## RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER



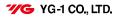
	MLC	92 SERIES	MUL	TI FLUTES SIDE /	AND FACE MILLI	NG CUTTERS WI	TH STRAIGHT TE	ETH $Vc = m/min.$ fz = mm/tooth RPM = rev./min. FEED = mm/min.
100	VDI	Material				Diameter (Ø)		
ISO	3323	Description	Parameter	50.0	63.0	80.0	100.0	125.0
			Vc	25	25	25	25	25
	1		fz	0.045	0.058	0.06	0.063	0.066
	'		RPM	159	126	99	80	64
			FEED	129	161	143	130	126
			Vc	20	20	20	20	20
	2		fz	0.04	0.036	0.041	0.038	0.05
			RPM FEED	127 92	101 80	80 78	64 63	51 76
		Non-alloy steel	Vc	15	15	15	15	15
			fz	0.034	0.031	0.033	0.034	0.042
	3-4		RPM	95	76	60	48	38
			FEED	58	52	47	42	48
			Vc	10	10	10	10	10
	_		fz	0.031	0.029	0.03	0.03	0.036
	5		RPM	64	51	40	32	25
			FEED	36	32	29	25	28
			Vc	20	20	20	20	20
Ρ	6		fz	0.04	0.036	0.041	0.038	0.05
	Ŭ		RPM	127	101	80	64	51
			FEED	92	80	78	63	76
			Vc	15	15	15	15	15
	7	Low alloy steel	fz RPM	0.034 95	0.031 76	0.033 60	0.034 48	0.042 38
		·	FEED	58	52	47	40	30 48
			Vc	10	10	10	10	10
			fz	0.031	0.029	0.03	0.03	0.036
	8-9		RPM	64	51	40	32	25
			FEED	36	32	29	25	28
			Vc	20	20	20	20	20
	10		fz	0.04	0.036	0.041	0.038	0.05
		High a <b>ll</b> oyed	RPM	127	101	80	64	51
		steel,	FEED	92	80	78	63	76
		and tool steel	Vc	10	10	10	10	10
	11.1		fz	0.031	0.029	0.03	0.03	0.036
			RPM	64	51	40 29	32 25	25 28
			FEED Vc	36 100	32 100	100	100	100
		Aluminum- wrought alloy,	vc fz	0.018	0.023	0.026	0.024	0.033
Ν	21~25	Aluminum-cast,	RPM	637	505	398	318	255
		alloyed	FEED	206	256	248	199	252
		unoyeu	FEED	206	256	248	199	252



MILLING DEPTH P = WIDTH OF FACES

CHNICAL DATA

MILLING CUTTERS



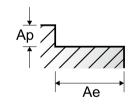
X-POWE

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## **RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER**

CBN ND MILLS		E26	575 SERIES	MUL	TI FLU	TE SHE	ELL END N	/ILL					Vc = m/min. fz = mm/tooth R P M = rev./min. FEED = mm/min.
i-Xmill	ISC	VDI	Material	٨٥	A 10	Davamatar				Diameter (Ø)			
ND MILLS	ISC	3323	Description	Ae	Ар	Parameter	40.0	50.0	63.0	80.0	100.0	125.0	160.0
						Vc	30	30	30	30	30	30	30
i-SMART		1-2		0.75D	0.25D	fz	0.07	0.078	0.092	0.1	0.115	0.12	0.131
IODULAR						RPM	239	191	152	119	95	76	60
ND MILLS						FEED	134	119	112	119	110	110	109
						Vc	25 0.075	25 0.077	25 0.091	25 0.1	25 0.119	25 0.113	30 0.119
X5070		3-4	Non-alloy steel	0.75D	0.25D	fz RPM	199	159	126	99	80	64	60
VD MILLS			·			FEED	199	98	92	99	80 95	86	99
						Vc	20	20	20	20	20	20	20
4G MILL						fz	0.071	0.078	0.09	0.094	0.117	0.108	0.116
VD MILLS		5		0.75D	0.25D	RPM	159	127	101	80	64	51	40
						FEED	90	79	73	75	74	66	65
(-POWER						Vc	30	30	30	30	30	30	30
PRO				0.75D	0.25D	fz	0.07	0.078	0.092	0.1	0.115	0.12	0.131
VD MILLS		6		0.750	0.250	RPM	239	191	152	119	95	76	60
VD WILLS						FEED	134	119	112	119	110	110	109
TitaNox-						Vc	25	25	25	25	25	25	30
POWER	Р	7		0.75D	0.25D 0.25D	fz	0.075	0.077	0.091	0.1	0.119	0.113	0.119
ND MILLS						RPM	199	159	126	99	80	64	60
			Low alloy stee			FEED	119	98	92	99	95	86	99
F-POWER						Vc	20	20	20	20	20	20	20
<b>ID MILLS</b>		8		0.75D		fz	0.071	0.078	0.09	0.094	0.117	0.108	0.116
						RPM	159	127 79	101	80 75	64 74	51	40
						FEED Vc	90 10	10	73 10	10	10	66 10	65 10
V7 PLUS						vc fz	0.078	0.08	0.1	0.1	0.117	10 0.146	0.125
ND MILLS		9		0.75D	0.25D	RPM	80	64	51	40	32	25	20
						FEED	50	41	40	40	37	45	35
U-POWER						Vc	30	30	30	30	30	30	30
HPC						fz	0.07	0.078	0.092	0.1	0.115	0.12	0.131
ND MILLS		10		0.75D	0.25D	RPM	239	191	152	119	95	76	60
ALU-			High alloyed			FEED	134	119	112	119	110	110	109
POWER			steel, and tool steel			Vc	20	20	20	20	20	20	20
VD MILLS		11.1		0.75D	0.25D	fz	0.071	0.078	0.09	0.094	0.117	0.108	0.116
		11.1		0.750	0.250	RPM	159	127	101	80	64	51	40
)-POWER						FEED	90	79	73	75	74	66	65

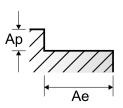
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## E2676 SERIES

## MULTI FLUTE SHELL END MILL for ALUMINUM

ISO	VDI	Material	Ae	Ар	Darameter	Diameter (Ø)											
150	3323	Description			Parameter -	30.0	40.0	50.0	60.0	63.0	75.0	80.0	100.0				
N	21~25	Aluminum- wrought alloy, Aluminum-cast, alloyed	0.75D	0.25D	Vc fz RPM FEED	100 0.05 1061 212	105 0.06 836 201	95 0.069 605 250	95 0.1 504 302	95 0.115 480 331	105 0.13 446 348	100 0.128 398 306	100 0.151 318 288				



MILLING CUTTERS

K-2 END MILLS

TANK-POWER

4G MILL

X-POWER

TitaNox-POWER



## RECOMMENDED CUTTING CONDITIONS EMPFOHLENE SCHNEIDPARAMETER

## E2498 SERIES

## 4 FLUTE CORNER ROUNDING CUTTERS

Vc = m/min. fz = mm/tooth RPM = rev./min.FEED = mm/min.

ISO	VDI	Material	Parameter						Diame	eter (Ø)					
150	3323	Description	Farameter	8.0	9.0	10.0	11.0	12.0	14.0	16.0	20.0	24.0	28.0	34.0	48.0
			Vc	20	20	20	20	20	20	20	20	20	20	20	20
	1		fz	0.017	0.022	0.02	0.021	0.021	0.025	0.029	0.032	0.038	0.042	0.049	0.05
	· · ·		RPM	796	707	637	579	531	455	398	318	265	227	187	133
			FEED	54	62	51	49	45	45	46	41	40	38	37	31
			Vc	15	15	15	15	15	15	15	15	15	15	15	15
	2	Non-alloy steel	fz	0.015	0.016	0.016	0.019	0.019	0.023	0.029	0.033	0.039	0.04	0.048	0.05
	-	Non anoy steel	RPM	597	531	477	434	398	341	298	239	199	171	140	99
			FEED	36	34	31	33	30	31	35	32	31	27	27	21
			Vc	10	10	10	10	10	10	10	10	10	10	10	10
	3-4		fz	0.018	0.023	0.02	0.024	0.024	0.023	0.03	0.034	0.04	0.05	0.048	0.05
	<u> </u>		RPM	398	354	318	289	265	227	199	159	133	114	94	66
			FEED	29	33	25	28	25	21	24	22	21	23	18	13
			Vc	15	15	15	15	15	15	15	15	15	15	15	15
Ρ	6		fz	0.015	0.016	0.016	0.019	0.019	0.023	0.029	0.033	0.039	0.04	0.048	0.05
	Ŭ		RPM	597	531	477	434	398	341	298	239	199	171	140	99
		Low alloy steel	FEED	36	34	31	33	30	31	35	32	31	27	27	21
			Vc	10	10	10	10	10	10	10	10	10	10	10	10
	7-8		fz	0.018	0.023	0.02	0.024	0.024	0.023	0.03	0.034	0.04	0.05	0.048	0.05
			RPM	398	354	318	289	265	227	199	159	133	114	94	66
			FEED	29	33	25	28	25	21	24	22	21	23	18	13
			Vc	15	15	15	15	15	15	15	15	15	15	15	15
	10		fz RPM	0.015	0.016	0.016 477	0.019 434	0.019	0.023	0.029	0.033	0.039 199	0.04 171	0.048	0.05
		High a <b>ll</b> oyed		597	531 34	31	434 33	398 30	341	298 35	239 32	31	27	140 27	99
		stee,	FEED Vc	36 10	34 10	10	10	10	31 10	10	32 10	10	10	10	21 10
		and tool steel	vc fz	0.018	0.023	0.02	0.024	0.024	0.023	0.03	0.034	0.04	0.05	0.048	0.05
	11.1		IZ RPM	398	354	318	289	265	227	199	159	133	114	0.048 94	66
			FEED	298 29	354	25	289	265	227	24	22	21	23	94 18	13
			Vc	29 90	80	25 90	85	25 90	90	80	90	90	85	85	90
		Aluminum- wrought alloy,	fz	90 0.018	0.021	0.02	0.023	0.022	0.025	0.031	90 0.034	0.038	0.045	0.05	0.05
N	21~25	Aluminum-cast,	RPM	3581	2829	2865	2460	2387	2046	1592	1432	1194	966	796	597
		alloyed	FEED	258	2829	2865	2460	2387	2046	1592	1452	1194	174	159	138

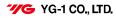
MILLING CUTTERS

TANK-POWER

CFRP END MILLS

K-2 END MILLS

> ECHNICAL DATA







# TECHNISCHE DATEN

HSS



Mill Dia

£

Radial Rake Angle

Flute

NAMES OF END MILL PARTS

ERLÄUTERUNG DER FRÄSERTEILE

Length of Cut

Radial Land

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Screwed Shank Only

Shank Dia.

End Cutting Edge Concavity Angle

Back Taper

End Gash

Helix Angle

Axial(Secondary) Clearance Angle

#### **SUPER CUTTING END MILLS HOCHLEISTUNGS FRÄSER**

Flatted Shank Only

Overall Length

4G MILL

X-POWER

TitaNox-

K-2 END MILLS

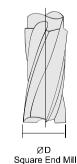
TECHNICAL DATA

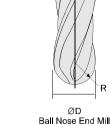


Radial(Primary) Relief Angle

Radial(Secondary) Clearance Angle

### **TYPES OF END MILL** FRÄSERTYPEN





R





R

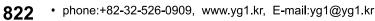




Taper End Mill

R

Taper Ball End Mill





HSS



**Use Higher Feeds For** 

Rigid set-ups / Robustes Werkstück

Rugged cutters / Robuster Fräser

Slab milling cuts / Scheibenfräsen

Coarse tooth cutters / Grobgewinde-Fräser

Abrasive materials / Abrasives Material

Höherer Vorschub für

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#### SUPER CUTTING END MILLS HOCHLEISTUNGS FRÄSER

Feed in milimeters per Minute / Vorschub in Milimeter pro Minute

 $FM = FR \times RPM$ 

Heavy, roughing cuts / Heavy cut, Schruppfräsen

Easy-to-machine work materials / Leicht fräsbares Material

Low tensile strength materials / Material von niedriger Zugfestigkeit

F.R. : Feed per Revolutions in milimeters / Vorschub pro Umdrehungen pro Minute R.P.M .: Revolutions per Minutes / Umdrehungen pro Minute

The following factors should be kept in mind when using the recommended stating feed per tooth. Die folgenden Faktoren sind beim Einsatz der Vorschübe pro Zahn zu berücksichtigen.

4G MILL END MILLS

X-POWER PRO END MILLS

TitaNox-POWER END MILLS

JET-POWER END MILLS

V7 PLUS END MILLS

ALU-POWER HPC END MILLS

POWER END MILLS

D-POWER

DOUTEDO

CRX S

K-2 END MILLS

COATED PM60 END MILLS

POWER END MILLS GENERAL HSS

> MILLING CUTTERS

TECHNICAL DATA



#### Use Lower Feeds For Niedrigerer Vorschub für

Light, and finishing cuts / Light cut, Finishing cut Frail set-ups / Zerbrechliches Material Hard to machine work materials / Schwer fräsbares Material Frail and small cutters / Dünne, kleine Fräser Deep slots / Tiefnuten High tensile strength materials / Material von hoher Zugfestigkeit Fine tooth cutters / Feingewinde-Fräser

### SPEED AND FEED CALCULATIONS FOR MILLING CUTTERS AND OTHER ROTATING TOOLS

TO FIND	HAVING		FORMULA
Surface(or Periphery) Speed in meter per Minute=S.P.M.	Diameter of Tool in milimeters Revolutions per Minute	=D =R.P.M.	$V = \frac{D \times 3.1416 \times R.P.M.}{1000}$
Revolutions per Minute=R.P.M.	Surface Speed in meter per Minute Diameter of Tool in milimeters	=S.P.M =D	R.P.M.= <u>V×1000</u> D×3.1416
Feed per Revolution in milimeters-F.R.	Feed in milimeters per Minute Revolution per Minute	=F.M. =R.P.M.	F.R.= F.M. R.P.M.
Feed in milimeters per Minute-F.M.	Feed per Revolution in milimeters Revolution per Minute	=F.R. =R.P.M.	F.M.= F.R.×R.P.M.
Number of Cutting Teeth per Minute=T.M.	Number of Teeth in Tool Revolution per Minute	=T =R.P.M.	T.M=T×R.P.M.
Feed per tooth=F.T.	Number of Teeth in Tool Feed per Revolution in milimeters	=T =R.P.M.	F.T.= <u>F.R.</u> T
Feed per Tooth=F.T.	Number of Teeth in Tool Feed in milimeters per Minute Speed in Revolution per Minute	=T =F.M. =R.P.M.	F.T.= <u>F.M.</u> T×R.P.M.

**\*/G** YG-1 CO., LTD.

HSS

4G MILL

X-POWER



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#### SUPER CUTTING END MILLS HOCHLEISTUNGS FRÄSER

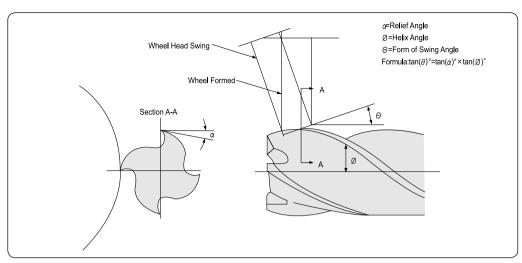


Fig. 4. Toothing of Eccentric Relief Angle

### 2 ANGLE OF WHEEL INCLINATION

Winkel der Radneigung.

Eccentric relief is produced with a plain wheel positioned with its axis parallel or at a slight angle with the cutter axis. The degree of relief is varied by changing the angle of wheel inclination.

Exzentrischer Hinterschliff wird mit einer, mit der eigenen Achse zur Fräsachse parallelen oder nur geringfügig geneigten Schleifscheibe produziert. Das Grad des Hinterschliffs variiert mit dem Einstellwinkel der Schleifscheiben Einstellung.

### Table 1. RECOMMENDED RELIEF ON END MILLS

Mill	Eccentr	ric relief		Whe	el Angles(De	eg.) <i>∂</i>	Radial	
Diameter (mm)	indicator		Checking Distance	15° Helix	30° Helix	60° Helix	Relief Angles(α1)	Clearance Angles(α2)
-	Min	Max.	-	*Angle	*Angle	*Angle	*Angle	*Angle
3.0	0.100	0.130	0.40	4° 24 ´	9° 25 ´	26° 28 ´	16° 02 ′	25°
6.0	0.090	0.125	0 <u>.</u> 50	3° 18′	7° 05 ′	20° 25 <i>′</i>	12° 08 ′	25°
12.0	0.100	0.135	0 <u>.</u> 65	2° 46 ´	5° 46 ′	17° 23 <i>´</i>	10° 15 <i>′</i>	25°
25.0	0.095	0.140	0.80	2° 15´	4° 15 <i>′</i>	14° 16 <i>′</i>	8° 21 ′	25°
40.0	0.085	0.125	0.80	2° 01 ′	4° 33 ′	12° 48 <i>′</i>	7° 29 ´	25°
50.0	0.085	0.125	0.80	2° 01 ′	4° 33´	12° 48 ′	7° 29 ′	25°

The actual at the radial relief angle is normally kept within the range shown but may be varied to suit the cutter material, the work material and the operating conditions.

Die Freiwinkel sind normalerweise in den angegebenen Maßen, sie schwanken je nach Werkzeug, Werkstück†und den Einsatzbedingungen

\* Angle is calculated from the basic mean at the radical angle.

Der Winkel wird von der Hauptschneide zum Radialwinkel gemessen.



#### TECHNICAL DATA SUPER CUTTING END MILLS HOCHLEISTUNGS FRÄSER

CBN END MILLS

χ

4G

X-PO\

Tita PO∖

#### TROUBLE SHOOTING IN MILLING PROBLEMLÖSUNG BEI FRÄSEN

Trouble	Occurrences of trouble	Countermeasures
Problem	Auftreten des Problems	Gegenmaßnahmen
	<ul> <li>At time of engaging with work material Beim Eintritt in das Werkstück</li> <li>When ending cut Beim Austritt aus dem Werkstück</li> </ul>	<ol> <li>Decrease feed rate. / Vermindern von Vorschub</li> <li>Decrease projection amount / Schnitttiefe verringern</li> <li>Shorten cutting edge length to required minimum limit Eingriffslänge reduzieren</li> </ol>
	During normal cutting Während des Fräsens	<ol> <li>Decrease feed rate / Vorschub mindern</li> <li>Control wear → replace tool early Abnutzung kontrollieren - Werkzeug frühzeitig ersetzen</li> <li>Replace chuck or collet / Chuck oder Collet ersetzen</li> </ol>
		<ol> <li>Decrease projection amount / Schnitttiefe verringer</li> <li>Carry out honing / Nachschleifen</li> <li>If 4 flute, reduce to 2 flute(clogging of chipping) Wenn 4 Schneiden, zu 2 Schneiden verkleinern</li> </ol>
Breaking of too Werkzeugbruch		<ol> <li>If dry cutting change to wet cutting utilize cutting fluid. In case of wet cutting flow oil supplied from the front, change to from rear angle of side top. Use ample with rate.</li> </ol>
		Wenn Trockenfräsen, zu Naßfräsen wechseln. Wenn Naßfräsen mit Kühlflüssigkeitsversorgung von Vorne, zu einer Ölversorgung aus hinterem oder seitlich-oberem Winkel ändern. Ölversorgung reichlich gestalten
	·When changing direction of feed Wenn Vorschubrichtung geändert wird	1. Utilize circular interpolation(in case of NC machine) or temporarily stop feed(Dowelling)
		<ul> <li>Circular interpolation benutzen(bei NC-Maschinen) oder Vorschub vorübergehend stoppen.</li> <li>Reduce feed rate before and after change of directions Vor und nach dem Richtungswechsel den Vorschub mindern</li> </ul>
	Fracture of corners	<ol> <li>Replace chuck or collect / Chuck oder Collet ersetzen,</li> <li>Carry out chamfering or nose with hand lapper.</li> </ol>
	Eckenbruch	Mit Handlapper eine Abschrägung durchführen. 2. Down cut → Up cut / Down cut → Up cut
	Fracture at boundary of depth of cut Beschädigung an der Schneidtiefengrenze	<ol> <li>Down cut → Up cut / Down cut → Up cut</li> <li>Reduce cutting speed / Schneidgeschwindigkeit mindern</li> </ol>
	Chipping at center part or overall Abbröckelung an der Hauptschneide oder überall	<ol> <li>Carry out honing. Or enlarge. / Nachschleifen oder erweitern</li> <li>Change number of rotation(in case machine vibrates) Drehzahl ändern(wenn Maschine vibriert).</li> </ol>
		<ol> <li>Increase cutting speed / Fräsgeschwindigkeit erhöhen.</li> <li>In ease of squeaking noise during cutting, increase feed. Wenn quitschendes Fräsgeräusch zu vernehmen, Vorschub erhöhen.</li> </ol>
Fracture of cutting edge		<ol> <li>It dry cutting use cutting fluid or blow air. Wenn Trockenfräsen, Kühlflüssigkeit oder Luft zuführen</li> <li>Replace chuck or collet / Chuck oder Collet auswechseln.</li> </ol>
Beschädigung de Schneidkante	·Large fracturing of cutting edge	<ol> <li>Reduce cutting speed / Fräsgeschwindigkeit reduzieren.</li> <li>Decrease feed rate / Vorschub mindern.</li> <li>KA flute radius to 2 flute.</li> </ol>
	Größere Beschädigung an Schneidkanten	<ol> <li>If 4 flute reduce to 2 flute Wenn 4 Schneiden, zu 2 Schneiden wechseln.</li> <li>Carry out honing. Or enlarge / Nachschleifen oder erweitern.</li> </ol>
		<ol> <li>Replace chuck or collet / Chuck oder Collet auswechseln.</li> <li>Reduce cutting speed / Fräsgeschwindigkeit mindern.</li> <li>If dry cutting, change to wet cutting. In case oil supply in wet</li> </ol>
		cutting is from the front, change to rear at an angle or from side top. Use ample supply.
		Wenn Trockenfräsen, zu Naßfräsen wechseln. Wenn Naßfräsen mit Kühlflüssigkeitsversorgung von Vorne, zu einer Ölversorgung aus hinterem oder seitlich-oberem Winkel ändern. Ölversorgung reihlich gestalten.

Shore Scleroscope

Hardness Number

(HS)

Approx. Tensile Strength N/mm<sup>2</sup>

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Rockwell Hardness C Scale 150kg Brale

(HRc)

(18)

(16)

(14)

(12)

(10)

(8)

(6)

[4]

(2)

(O)

Diamond Pyramid Hardness Number. Vickers

(HV)

COMPARISON CHART SCALE FOR HARDNESS VERGLEICHSTABELLE FÜR HÄRTESKALEN

**Brinell Hardness** 

Standard 10mm Ball 29.42kN

(HB)

\_

SUPER CUTTING END MILLS HOCHLEISTUNGS FRÄSER

Rockwell

Hardness

A Scale 60kg Brale (HRA)

85.6

85.5

83.9

83.4

82.8

82.3

81.8

81.2

80.7

80.1

79.6

79.0

78.5

78.0

77.4

76.8

76.3

75.9

75.2

74.7

74.1

73.6

73.1

72.5

72.0

71.5

70.9

70.4

69.9

69.4

68.9

68.4

67.9

66.8

66.3

65.8

65.3

64.7

64.3

63.8

63.3

62.8

62.4

62.0

61.5

61.0

60.5

CBN END MILLS

### i-SMART MODULAR END MILLS

END MILL

END MILLS

END MILLS TitaNox POWER

JET-POWE

V7 PLUS END MILLS

HF END MILL

END MILL

D-POWER CFRF

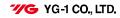
ROUTER

ONLY ON COATED PM6

GENERA HSS END MILLS

> MILLING CUTTERS

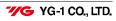
TECHNICAL DATA







		VDI 3323	Ma	aterial Descri	ption	Composi	ition / Stru	ucture / Heat	Treatment	t	HB	HRc
			No	on-alloyed s	stee	Ak	oout 0.15	5% C, Annea	aled		125	
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS	GOST	Brands
1.0037	STKM 12 C	St 37-2	-	4360 40 B	S235JR	E24-2	1311	Fe 360 B			16D	
1.0038	STKM 12 A	St 37-3	A570.36	4360 40 C	S275J2G3	E28-3	1312	Fe 360 D FF			ST14KP	
1.0045	SM 490 YA	S 355 JR	-	-	S 1207	E36-2	-	Fe 510 BFN				
1.0050	SS 50	St 50-2	A570 Gr. 50	4360 50 B	E 295	A50-2	2172	Fe 490			ST5PS	
1.0060	SM 58	St 60-2	A572 Gr. 65	4360 55 E	-	A60-2	1650	Fe 60-2			ST6PS	
1.0114		S 235 JO	-	En 40C	S 235 JO	E24-3		Fe 360 CFN				
1.0143		S 275 J0	-	-	S 275 J0	E28-3	1414	Fe 430 C				
1.0144	SM41C, SM400	St 44-3 N	A573 Gr. 81	4360 43C	S 275 J2 G3	E28-3	1412	Fe 430 D FF			ST14KP	
1.0149		Ro St 44-2	-	43C	S 275 J0 H	-	1412	Fe430C				
1.0301	\$10C	C10	1010	045M10	C10	34C10, XC10		C10	F.1511	G10100	10	
1.0330	SPCC	St 12	-	DC 01	Fe P01	DC 01/Fe P01	1142	Fe P01			15KP	
1.0335	SPHE	D D 13 (StW 24)	A622(1008)	HS3	DD 13	3C		FeP13			08KP	
1.0338	SPCE	St 4	A620(1008)	14491CR	Fe P04	Fe 14	1147	DC04/FeP04			08JU	
1.0345	SPV 50	P235 GH	A516 Gr. 65	P 235 GH	P 235 GH	A 37 CP	1330	Fe E 235		K02503		
1.0401	S15C	C15	1015	080M15	-	C18RR, XC18	1350	C15, C16	F.1110	G10170	15	
1.0402	S20C	C22	1020	050 A 20	1 C 22	C20	1450	C 20	F.1120	G10200	20	
1.0425	SPV315	P265GH/H				A42CP	1430	Fe4101KW		K02801	16K	
1.0443	SC 450	GS-45	A2765-35	A1		E23-45M	1305					
1.0539		S355NH				TSE355-4	2134	Fe510B				
1.0545		S355N		4360-50E		E355R	2334	FeE355KG				
1.0546		S355NL		4360-50EE		E355FP	2135	FeE355KT				
1.0547		S355J0H		4360-50C		TSE355-3	2172	Fe510C				
1.0549		S355NLH					2135	Fe510D				
1.0553	SM 520 M	St52-3U	A14880-40	4360-50C		320-560M	1606	Fe510C				
1.0562	SM490A	St E 355	A633 Gr. C	P 355 N		FeE355KGN	2132	Fe E 355 KG		K12000	15GF	
1.0565		W St E 355		P 355 NH		P 355 NH	2106	Fe E 355 KW		K01600		
1.0566	SLA 37	T St E 355		P 355 NL1		P 355 NL1	2107	Fe E 355 KT				
1.0570	SM 50 YA	St 52-3	1	4360-50 C	S355JR	E36-3	2172	Fe 510 B			17G1S	
1.0715	SUM22	9SMn28	1213	230M07		S250	1912	CFSMn28	F.2111	G12130		
1.0718	SUM22L	9SMnPb28	12L13			S250Pb	1914	CF9SMnPb28	F.2112	G12134		
1.0721		10520	1108	10S20		10520		CF10S20	F.2121	G11080		
1.0722		10SPb20	11L08			10PbF2		CF10SPb20		G11084		
1.0736	SUM25	9SMn36	1215			S300		CF9Mn36	F.2113	G12150		
1.0737		9SMnPb36	12L14			S300Pb	1926	CF9SMnPb36	F.2114	G12144		
1.0972		S315MC		1501-40F30		E315D						
1.0976		S355MC		1501-43F35		E355D	2642	FeE355TM				
1.0982		S460MC		1501-50F45								
1.0984		S500MC				E490D	2662	FeE490TM				
1.0986		S500MC		1501-60F55		E560D		FeE560TM				
1.1121	\$10C	Ck10	1010	040A10		XC10	1265	C10	F.1510	G10100	10	
1.1141	S15	Ck15	1015	040A15	32C	XC15	1370	C15	F.1110	G10150	15	
1.1151	S20C	C22E	1020	055M15		2C22	1450	C20	F.1120	G10230	20	
1.8900	S25C	StE380	A572-60	436055E			2145	FeE390KG				
		St44-2	A36	436043A		NFA35-501E28	1411					







	Ρ	VDI 3323 <b>4</b>		terial Descri on-alloyed			tion / Stru bout 0.75	t	HB 270	HRc 28		
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.0603	S 70 C -CSP	C67	107	080A67		XC65		C67		G10700		
1.0605		C75	1075	144980HS				C75		G10740	75	
1.1203	S55C	Ck55	1055	060A57		2C55	1655	C55	F.1150	G10550	55	
1.1209		C55R	1055	070M55		3C55		C55	F.1155	G10550		
1.1221	S58C	Ck60	1060	060A62	43D	2C60	1678	C60	F.1150	G10640	60	
1.1231	S 70 C-CSP	C67E	1070	060A67		XC68	1770	C70	F.5103	G10700	65GA	
1.1248	C 75	C75E	1074	060A78		XC75	1774	C75	F.5107	G10800	75(A)	
1.1269	SK 5 -CSP	C85E	1086			XC90		C90		G10900	85(A)	
1.1274	SUP4	Ck 101	1095	060 A 96	C 100S	XC100	1870	C100	F.5117	G10950		
1.1545	SK 3	C 105 W1	W1	BW 2	C 105U	Y1 105	1880	C 100 KU	F.5118		U10A	
1.1663	SK 2	C125W	W112			Y2120					U13	

	Ρ	VDI 3323 5		terial Descri on-alloyed				ucture / Heat uenched &			HB 300	HRc 32
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS	GOST	Brands
1.0070		St 70-2	1055	Fe690-2FN	-	A70-2	1655	Fe 690	F.1150		55	
1.0535	S55C	C55	1055	070M55		1C55	1655	C55		J05000	55	
1.0601	S58C	C60	1060	060A62	43D	1C60		C60		G10600	60(G)	
1.1203	S55C	Ck55	1055	060A57		2C55	1655	C55	F.1150	G10550	55	
1.1221	S58C	Ck60	1060	060A62	43D	2C60	1678	C60	F.1150	G10640	60	
1.1274	SUP4	Ck 101	1095	060 A 96	C 100S	XC100	1870	C100	F.5117	G10950		
1.1545	SK 3	C 105 W1	W1	BW 2	C 105U	Y1 105	1880	C 100 KU	F.5118		U10A	
1.1663	SK 2	C125W	W112			Y2120					U13	
1.5120		38MnSi4										
1.5710	SNC236	36NiCr6	3135	640A35	111A	35NC6						
1.7701		51CrMoV4						51CrMoV4				

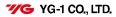




	Ρ	VDI 3323		nterial Descri		Composi		ucture / Heat nealed	Treatment		НВ 180	HRc 10
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS	GOST	Brands
1.7715		14MoV6-3		1503-660-440				13MoCrV6				
1.8159	SUP 10	50CrV4	6150	735A50	47	50CrV4	2230	50CrV4		G61500	50C GFA	
1.8161		58CrV4										
1.8509	SACM 645	41CrAIMo7	A355A	905M39	41B	40CAD6-12	2940	41CrAIMo7				
1.8523		39CrMoV13-9		897M39	40C			36CrMoV12				

	P	VDI 3323 <b>7</b>		nterial Descri				ucture / Heat <sup>-</sup> d & Tempere		t	HB 275	HRc 29
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS	GOST	Brands
1.5415	STFA 12	15Mo3	A204Gr.A	1503-243B		15D3	2912	16Mo3(KG)	F.2601	K11820		
1.5423	SB450M	16Mo5	4520	1503-245-420				16Mo5(KG)	F.2602	K11522		
1.5622		14Ni6	A350-LF5			16N6		14Ni6(KG)	F.2641			
1.5732	SNC415(H)	14NilCr10	3415			14NC11		16NiCr11				
1.5752	SNC815(H)	14NiCr14	3310	655M13	36A	12NC15					20X2H4A	
1.5755	SNC236	31NiCr14		653M31		18NC13	2534		F.1270			
1.6565	SNCM447	40NiCrMo6	4340	817M40	24	35NCD6	2541	35NiCrMo6(KB)			38C 2N2MA	
1.6587		17CrNiMo6		820A16		18NCD6		14NiCrMo13				
1.6657		10NiCrMo13-4						14NiCrMo131				
1.6957		26NiCrMoV14-5										
1.7015	SCr415(H)	10Cr3	5015	523M15		12C3				G50150	15C	
1.7262	SCM415(H)	15CrMo5				12CD4	2216	12CrMo4				
1.7335	SCM415(H)	13CrMo4-4	A182 <del>-</del> F11	1501-620		15CD4-5	2216	14CrMo45			12C M	
1.7380		10CrMo9-10	A182F22	1501-622		12CD9-10	2218	12CrMo9			12KH8	
1.7715		14MoV6-3		1503-660-440				13MoCrV6				
1.7733		24CrMoV55				20CDV6		21CrMoV511				
1.7755		GS-45CrMoV10-4										
1.8070		21CrMoV511						35NiCr9				

	D	VDI 3323		terial Descri		1 - C		icture / Heat <sup>-</sup>			HB	HRc
		8	Lov	w-alloyed	Steel	(	Quenche	d & tempere	ed		300	32
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS	GOST	Brands
1.1730		C45W3	C45W			XC48						
1.2332	SCM(440)	47CrMo4	4142	708M40	19A	42CD4	2244	42CrMo4				
1.5736	SNC 631 (H)	36NiCr10	3435			30NC11						
1.6523	SNCM220(H)	21NiCrMo2	8620	805M20	362	20NCD2	2506	20NiCrMo2			20C GNM	
1.7033	SCr430(H)	34Cr4	5132	530A32	18B	32C4		34Cr4(KB)		G51300	35C	
1.7218	SCM420	25CrMo4	4130	CDS110		25CD4	2225	25CrMo4(KB)			20C M	
1.8515		32CrMo12		722M24	40B	30CD12	2240	32CrMo12	F.124A			







	Ρ	VDI 3323 <b>10</b>	Hi	terial Descri gh-alloyed and tool ste	steel,	Composit		ucture / Heat T nnealed	[reatment	:	HB 200	HRc 15
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS	GOST	Brands
1.2510	SKS3	100MnCrW4	O1	BO1		90 MWCV 5	2140	95 MnWCr 5 KU	F.5220		9KHVG	
1.2581	SKD5	X30WCrV9-3	H21	BH21		Z30WCV9		X30WCrV93KU	F.526	T20821	3C 2W8F	
1.2601		X165CrMoV12					2310	X160CrMoV12			KH12MF	
1.2606	SKD 62	X37CrMoW51	H12	BH12		Z35CWDV5		X35CrMoW05KU	F.537	T20812	5C NM	
1.2764		X19NiCrMo4										
1.2767		X45NiCrMo4				45NCD16		40NiCrMoV8KU				
1.2842		90MnCrV8	O2	B02		90MV8		90MnVCr8KU		T31502	9G2F	
1.3243	SKH55	S6-5-2-5	T15			KCV06-05-05-04-02	2723	HS6-5-2-5			R6M5K5	
1.3249	SKH 3	S18-1-2-5	T4	BT4		Z80WKCV18-05-04					R18K5F2	
1.3343	SKH51, SKH9	S6-5-2	M2	BM2		Z85WDCV	2722	HS652	F.5604		R6M5	
1.3348	SKH 58	S2-9-2	M7			Z100DCWV09-04-02	2782	HS292	F.5607			
1.3355	SKH 2	S18-0-1	T1	BT1		Z80WCV18-4-01					R18	
1.4718	SUH1	X45CrSi9-3	HNV3	401545	52	Z45CS9		X45CrSi8	F.322		40C 9S2	
1.5662	SL9N60(53)	X8Ni9	ASMA353	502-650		9Ni		X10Ni9	F.2645			
1.5680		12Ni19	2515	12Ni19		Z18N5						

	P	VDI 3323	Hig	terial Descri gh-alloyed and tool ste	steel,			ructure / Heat 1 ed & Tempere		t	HB 325	HRc 35
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
1.2080	SKD1	X210Cr12	D3	BD3	X210Cr12	Z200C12		X205Cr12KU		T30403	KH12	
1.2344	SKD61	X40CrMoV5-1	H13	BH13		Z40CDV5	2242	X40CrMoV511KU	F.5318	T20813	4C 5MF1S	
1.2363	SKD12	X100CrMoV5-1	A2	BA2		Z100CDV5	2260	X100CrMoV51KU	F.5227		9KH5VF	
1.2436	SKD 2	X210CrW12	D4(D6)	BD6		Z200CD12	2312	X215CrW121KU	F.5213		KH12	
1.2581	SKD5	X30WCrV9-3	H21	BH21		Z30WCV9		X30WCrV93KU	F.526	T20821	3C 2W8F	
1.2601		X165CrMoV12					2310	X160CrMoV12			KH12MF	
1.2714	SKT4	55NiCrMoV7	6F3/L6			55NiCrMoV7			F.520S		5KHNV	
1.3202		S12-1-4-5		BT15				HS12-1-5-5				
1.3207		S10-4-3-10		BT42		Z130WKCDV						
1.3243	SKH55	S6-5-2-5	T15			KCV06-05-05-04-02	2723	HS6-5-2-5			R6M5K5	
1.3246		S7-4-2-5	M35			Z110WKCDV07-05-04		HS7-4-2-5				
1.3247	SKH 51	S2-10-1-8	M42	BM42		Z110DKCWV09-08-04		HS2 <del>-9-</del> 1-8			R2AM9K5	
1.3255	SKH 3	S18-1-2-5	T4	BT4		Z80WKCV18-05-04					R18K5F2	
1.3343	SKH51, SKH9	S6-5-2	M2	BM2		Z85WDCV	2722	HS652	F.5604		R6M5	
1.3348	SKH 58	S2-9-2	M7			Z100DCWV09-04-02	2782	HS292	F.5607			
1.3355	SKH 2	S18-0-1	T1	BT1		Z80WCV18-4-01					R18	
1.4718	SUH1	X45CrSi9-3	HNV3	401545	52	Z45CS9		X45CrSi8	F.322		40C 9S2	
1.4935	SUH 616	X20CrMoWV121	422							S42200		
1.5680		12Ni19	2515	12Ni19		Z18N5						





		VDI 3323	Ma	iterial Desc	ription	Composit	ion / Sti	ucture / Heat T	reatment		НВ	HRc
		14		Stain <b>l</b> ess st	eel		Au	ustenitic			180	10
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS	GOST	Brands
1.4301	SUS 304	X5CrNi18-10	304	304S15		Z5CN18-09	2332		F.3551	S30409	08C 18N10	
1.4305	SUS303	X10CrNiS18-10	303	303S21	58M	Z8CNF18-09	2346	X10CrNiS18.09	F.3508	S30300	30C 18N11	ATI 303
1.4306	SCS19	X2CrNi1911	304L	304C12	X3CrNi1810KD	Z2CN18-09	2352	GX2CrNi1910	F.3503	S30403	03KH18N11	ATI 304L
1.4308	SUS304L	GX6CrNi18-9	CF-8	304C15	58E	Z6CN18-10M	2333					CF-8
1.4310	SUS 301	X10CrNi18-8	301	301S21		Z12CN17-07	2331	X2CrNi1807	F.3517	S30100	07KH16N6	ATI 301
1.4311	SUS304LN	X2CrNiN18 10	304LN	304S62		Z2CN18-10	2371	X2CrNiN1810	F.3541	S30453	03KH18N11	
1.4312	SCS12	GX10CrNi188	305	302C25		Z10CN18-9M					10C 18N9L	ATI 305
1.4350	SUS304	X5CrNi18-9	304	304S15	58E	Z6CN18-09	2332	X5CrNi1810	F.3551	S30400		ATI 304
1.4362		X2CrNiN234	S32304			Z2CN23-04AZ	2327			S32304		ATI 2304TM
1.4371		X3CrMnNiN18887	202	284S16		Z8CMN18-08-05						
1.4401	SUS316	X5CrNiMo17-12-2	316	316513		Z3CND17-11-01	2347	X5CrNiMo17 12 2	F.3534	S31600	08KH17H13M2T	ATI 316
1.4404	SUS316L	X2CrNiMo17-13-2	316L	316S11		Z2CND17-12	2348	X2CrNiMo1712	F.3533	S31603		ATI 316L
1.4406	SUS316LN	X2CrNiMoN17122	316LN	316561		Z2CND17-12AZ		X2CrNiMoN1712	F.3542	S31653	07C 18N	ATI 316LN
1.4408	SCS14	GX6CrNiMo18-10	CF-8M	316C16			2343	X7CrNiMo2010	F.8414	J92900	10G2S2MSL	
1.4410	SCS 14 A	GX10CrNiMo18-9				Z5CND20-12M	2328			S32750		
1.4429	SUS316LN	X2CrNiMoN17-13-3	316Ln	316S62		Z2CND17-13AZ	2375	X2CrNiMoN17133	F.3543		03KH16N15M3	
1.4435	SUS316L	X2CrNiMo18143	316L	316511		Z3CND17-12-03	2375	X2CrNiMo17132	F.3533	S31603	O3C 17N14M3	
1.4436	SUS316	X3CrNiMo17-13-3	316	316519		Z6CND18-12-03	2343	X5CrNiMo17 12 2	F.3543	S31600	00001/111100	
1.4438	SUS317L	X2CrNiMo18164	317L	317512		Z2CND19-15-04	2367	X2CrNiMo18164	F.3539	S31703		ATI 317L
1.4439	505517E	X2CrNiMoN17135	(s31726)	517512		Z3CND18-14-06AZ	2507	Azerrano to to 4	1.5555	551705		AUDITE
1.4440		X2CrNiMo18-16	(331720)			LICIND TO THE OUT L						
1.4449	SUS317	X5CrNiMo17133	317	317516				X5CrNiMo1815		S31700		ATI 317
1.4460	SUS 329 J1	X8CrNiMo275	329	517510			2324	ASCHNIMOTOTS		S32900		10RE51
1.4462	SUS329J3L	X2CrNiMoN2253	329	318513		Z3CND22-05Az	2324			S31803		ATI 2205TM
1.4402	20222212L	X7NiCrMoCuNb2520		210212		23NCDU25-20M	2377			J95150		AII 22051M
1.4500	SUS444		443444			2510CD025-20101	2326		F2122	192120		
	505444	X2CrMoTi18-2	445444					X2CrMoTiNb182	F.3123	N00004		ATI 904L
1.4539	CUC221	X1NiCrMoCuN25205	221	221621		Z2NCDU25-20	2562	V(C-NIT:10.11	F2522	N08904	06C 10N10T	
1.4541	SUS321 SUS630	X14CrNiTi18-10	321	321531		Z6CNT18-10	2337	X6CrNiTi18 11	F.3523	S32100	06C 18N10T	ATI 321
1.4542	202030	X5CrNiCuNb174	630			Z7CNU15-05				C15500		UGIMA 4542
1.4545		Z7CNU15.05	15-5PH				2270			S15500		ATI 15-5
1.4547	CU (C) 47	X1CrNiMoN20187	S31254	247647	505	76000 40 40	2378		52552	S31254	000 1001100	Uranus B25 6Mo
1.4550	SUS347	X6CrNiNb18-10	347	347S17	58F	Z6CNNb18-10	2338	X6CrNiNb1811	F.3552	S34700	08C18N12B	ATI 347
1.4552	SCS 21	GX7CrNiNb18-9				Z4CNNb19-10M				J92710		
1.4568	SUS 631	X 7 CrNiAI 17 7		316S111		Z 9 CAN 17-7	2388	Z8CNA17-07		S17700	09C 17NJU1	17-7PH
1.4571	SUS 316Ti	X6CrNiMoTi17-12-2	316Ti	320S31	58J	Z6NDT17-12	2350	X6CrNiMoTi17 12	F.3535		10C 17N13M2T	ATI 316Ti
1.4581	SCS 22	GX5CrNiMoNb18		318C17		Z4CNDNb18-12M						
1.4583		X6CrNiMoNB18-12	318	303S21		Z15CNS20-12		X15CrNiSi2 12				
1.4585		GX7CrNiMoCuNb1818						X6CrNiMoTi17 12		J94651		
1.4821		X20CrNiSi254				Z20CNS25-04				S44635		
1.4823		GX40CrNiSi274								J92605		
1.4828	SCS17	X15CrNiSi20-12	309	309524	58C	Z15CNS20-12			F.8414	S30900	20C 20N14S2	ATI 309
1.4833	SUS 309 S	X6CrNi2213	309S	309513		Z15CN24-13				J93400		
1.4845	SUH310	X12CrNi25-21	310S	310S24		Z12CN25-20	2361	X6CrNi2520	F.331	S31008	20C 23N18	ATI 3105
1.4878	SUS321	X12CrNiTi18-9	321	321520	58B	Z6CNT18-12(B)	2337	X6CrNiTi1811	F.3553	S32100		ACX315
1.4891		X5CrNiNb18-10	Ss30415				2372					
1.4893		X8CrNiNb11	S30815				2368					
1.4948		X6CrNi1811	304H	304S51		Z5CN18-09	2333			S30480		
1.4980		X5NiCrTi2515	660				2570			S66286		Incoloy A 286
		X5NiCrN3525										
		X2CrNiMoN18134	S31753									

## TECHNICAL DATA Technical Information Material Groups



	K	VDI 3323 <b>19</b>		terial Descr alleable cas		Composi		ucture / Heat erritic	Treatment		НВ 130	HRc
Mat'l No.	SIC	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
0.8135	FCMW330	GTS-35	32510	B 340-12	GJMB350-10	MN 35-10	0815	GMN 35	GTS35		Kc 35 <b>-</b> 10	

	K	VDI 3323 <b>20</b>		terial Descr Illeable cas		Compos		cture / Heat arlitic	Treatment		НВ 230	HRc 21
		20	IVIC		thon		re	annic			230	21
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
	50111/232	CTC 15	1000 10010	D 440 T	C. 11 10 150 (	101450		<b>CI III 15</b>				
0.8145	FCMW370	GTS-45	A220-40010	P 440-7	GJMB450-6	MN 450	0852	GMN 45				
0.8155	FCMP490	GTS-55	50005	P 510-4	GJMB-550-4	MP 50-5	0854	GMN 55			Kc 60-3	
0.8165	FCMP590	GTS-65	70003	P 570-3	GJMB-650-2	MN 650-3	0856	GMN 65				
0.8170	FCMP690	GTS-70	90001	P 690-2	GJMB-700-2	MN 700-2	0862	GMN 70			Kc 70-2	

### TECHNICAL DATA Technical Information Material Groups



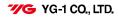
		VDI 3323 <b>24</b>	Material Description Aluminum-cast, alloyed			1		icture / Hea rable, Harc			HB 90	HRc
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
2.1871		G-AlCu4TiMg										
3.1754		G-AlCu5Ni1,5										
3.2371		G-AlSi7Mg	4218B								AK8	
3.2373	C4BS	G-AISI9MGWA	SC64D			A-S7G	4251				AK9	
3.2381		G-AlSi10Mg									AK12	
3.5106		G-MgAg3SE2Zr1	QE22	mag12								
		G-ALMG5	GD-AISI12	LM5		A-SU12	4252					

	N	VDI 3323 <b>26</b>		terial Descri er and Copp Bronze / Bra	· · · · · · · · · · · · · · · · · · ·			alloys, PB>1			НВ 110	HRc
Mat'l No.	JIS	DIN	AISI/ASTM/ SAE	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS	GOST	Brands
2.0375		CuZn36Pb3									LS60-2	
2.1090		G-CuSn75pb	C93200			U-E7Z5pb4						
2.1096		G-CuSn5ZnPb	c83600	LG2								
2.1098		G-CuSn2Znpb	C83600									
2.1182		G-CuPb15Sn	C23000	LB1		U-pb15E8						

		VDI 3323 <b>27</b>			erial Description Composition / Structure / Heat Treatment r and copper alloys bronze / Brass) CuZn, CuSnZn (Brass)						HB 90	HRc
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
2.0240	C2300	CuZn15									L90	
2.0321		CuZn37	C27200	cz108		CuZn36,CuZn37		C2700			L63	
2.0590		G-CuZn40Fe										
2.0592		G-CuZn35AI1	C86500	U-Z36N3		HTB1						
2.0596		G-CuZn34Al2	C86200	HTB1		U-Z36N3					LTs23AD	
2.1293		CuCrZr	C18200	CC102		U-Cr0-8Zr						

	V	VDI 3323 <b>28</b>	Copp	terial Descr er and copp Bronze / Bra	ber alloys	Composi CuSn, lead-fr		acture / Heat er and elect			HB 100	HRc
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS	GOST	Brands
2.0060		E-Cu57										
2.0966		CuAI10Ni5Fe4	C63000	Ca104		U-A10N					BrAD	
2.0975		G-CuAI10Ni	B-148-52									
2.1050		G-CuSn10	c90700	CT1								
2.1052		G-CuSn12	C90800	pb2		UE12P						
2.1292		G-CuCrF35	C81500	CC1-FF								

844



### TECHNICAL DATA Technical Information Material Groups

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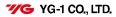
	5	VDI 3323 <b>35</b>		terial Descri esistant sup		Composi		ucture / Heat Based, Cast		:	НВ 320	HRc 34
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
2.4669		NiCr15Fe7TiA				NC15TNbA				N07750		Inconel X750
2.4685		G-NiMo28								N10665		Hastelloy B
2.4810		G-NiMo30										Hastelloy C
2.4973		NiCr19Co11MoTi	AMS 5399			NC19KDT					VT5-1	
3.7115		TiAl5Sn2								R54520	VT1-00	ATI Grade 6

	5	VDI 3323 <b>36</b>		iterial Descri Fitanium a <b>ll</b> e		Composit		ucture / Heat <sup>-</sup> Titanium		НВ 400 Rm	HRc	
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE / IHA	UNS	GOST	Brands
2.4674		NiCo15Cr10MoAlTi	AMS 5397							N13100		IN 100
3.7025		Ti1	R50250	2TA1						R50250		ATI 30 CP Gr. 1
3.7225		Ti1pd	R52250	TP1						R52250		

		VDI 3323		terial Descr				cture / Heat			HB	HRc
		37	T T	itanium a <b>l</b>	oys	Alph	a + Beta	Alloys, Haro	dened		1050 Rm	
Mat'l No.	JIS	DIN	AISI/ASTM/ Sae	BS	EN	AFNOR	SS	UNI	UNE/IHA	UNS	GOST	Brands
3.7124		TiCu2		2TA21-24								
3.7145		TiAl6Sn2Zr4Mo2Si	R54620							R54620		
3.7165		TiAl6V4	AMS R56400	TA10-13		T-A6V					VT6	
3.7185		TiAl4Mo4Sn2		TA45-51								
3.7195		TiAl3V2.5								R56320		ATI 3-2.5
		TiAl4Mo4Sn4Si0.5										
		TiAl5Sn2.5	AMS R54520	TA14/17		T-A5E						
		Ti6AI4VELI	AMS R56401	TA11								

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571	G9452	425	EH942	737	E2768
593	G9453	405	EHE54	715	E2776
552	G9454	405	EHE55	732	E2777
553	G9455	507	EI450	731	E2778
567	G9527	506	EI451	733	E2779
581	G9528	505	EI880	705	E2SET553
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