

Epoch CEP Carbide End Mills

Micro Grain Carbide End Mills • Century Coated

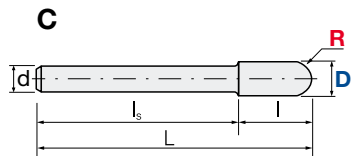
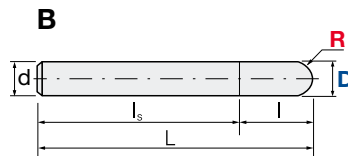
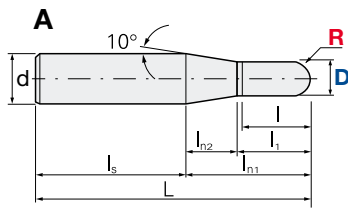
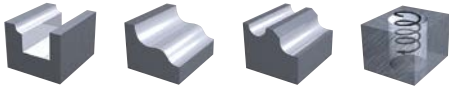


D1mm ~ D20mm

- ***Ball, Radius and Square Types***
- ***For Materials ≤ 65 HRC***

CEPB-2 | Epoch Ball

V max High Speed	▽ Roughing	▽▽ Semi-Finishing	▽▽▽ Finishing	HRC 55	No. of Teeth 2
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Carbide Micro Grain	C Century Coating	Rake Angle Negative
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Helix Angle	R Tol. [mm]	d Tol.
30°	+/-0.010	h6

ID Code	Item Code	Z	R	D	I	I ₁	I _{n1}	I _{n2}	I _s	L	d	Type		
EP064	CEPB-2010	2	0.5	1	1.5	2.5	11	8.5	39	50	4	A		
EP065	CEPB-2015		0.75	1.5	2.5	3.5	10.6	7.1	39.4					
EP066	CEPB-2020		1	2	3	4	15.3	11.3	34.7					
EP067	CEPB-2025		1.25	2.5	4	5	14.9	9.9	35.1					
EP068	CEPB-2030		1.5	3	4.5	5.5	14	8.5	56	70	6			
EP069	CEPB-2040		2	4	6	7	12.7	5.7	57.3					
EP070	CEPB-2050		2.5	5	7.5	8.5	11.3	2.8	68.7	80				
EP071	CEPB-2060		3	6	9	-	-	-	81	90				B
EP072	CEPB-2070		3.5	7	11				79			C		
EP073	CEPB-2080		4	8	12				88	100	8	B		
EP074	CEPB-2100		5	10	15				85		10			
EP075	CEPB-2120		6	12	18				92		110		12	
EP076	CEPB-2160		8	16	24				116		140		16	
EP077	CEPB-2200		10	20	30				130	160	20			

Cutting Conditions | Schnittwerte | Condizioni di taglio | Condiciones de Corte | Conditions de coupe | Valores de corte:

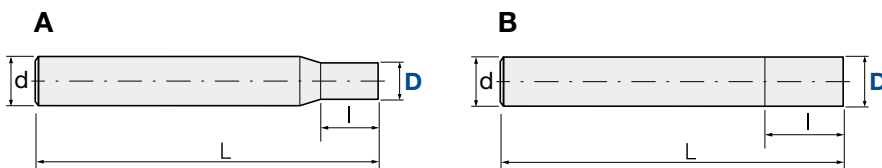
CEPB-2 | Epoch Ball

Roughing: Page 8

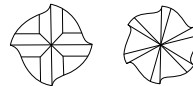
Finishing: Page 9

CEPR | Epoch Regular

V max High Speed	V Semi-Finishing	V Finishing	HRC 55	No. of Teeth 4	No. of Teeth 6
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Carbide Micro Grain	C Century Coating	Rake Angle Negative
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Helix Angle	D Tol. [mm]	d Tol.
46°	D 3~D 6: 0/-0.015 D 8~D 20: 0/-0.02	h6

ID Code	Item Code	Z	D	I	L	d	Type
EP099	CEPR-4030	4	3	10	60	6	A
EP101	CEPR-4040		4	12			
EP103	CEPR-4050		5	15			
EP105	CEPR-6060	6	6	20	75	8	B
EP110	CEPR-6080		8	25	80	10	
EP115	CEPR-6100		10	30	100	12	
EP120	CEPR-6120		12	35	105	16	
EP123	CEPR-6140		14	40	110	20	A
EP125	CEPR-6160		16	45	125	20	B
EP130	CEPR-6200		20				

Cutting Conditions | Schnittwerte | Condizioni di taglio | Condiciones de Corte | Conditions de coupe | Valores de corte:

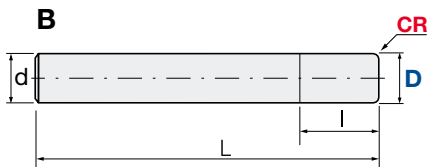
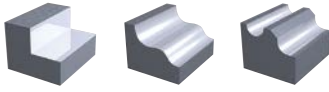
CEPR | Epoch Regular

Side Milling: Page 10

Slotting: Page 11

CEPR-00 | Epoch Regular Corner Radius

V max High Speed	▽▽ Semi-Finishing	▽▽▽ Finishing	HRC 65	No. of Teeth 6
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Carbide Micro Grain	C Century Coating	Rake Angle Negative
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Helix Angle	D Tol. [mm]	d Tol.
46°	D 6: 0/-0.015 D 8~D 20: 0/-0.02	h6

ID Code	Item Code	Z	CR	D	I	L	d	Type
EP010	CEPR-6060-03	6	0.3	6	15	60	6	B
EP011	CEPR-6060-05		0.5					
EP106	CEPR-6060-10		1					
EP012	CEPR-6080-03		0.3	8	20	75	8	
EP013	CEPR-6080-05		0.5					
EP111	CEPR-6080-10		1					
EP014	CEPR-6100-05		0.5	10	25	80	10	
EP015	CEPR-6100-10		1					
EP116	CEPR-6100-15		1.5					
EP016	CEPR-6100-20		2	12	30	100	12	
EP017	CEPR-6120-05		0.5					
EP018	CEPR-6120-10		1					
EP121	CEPR-6120-15		1.5	16	40	110	16	
EP019	CEPR-6120-20		2					
EP020	CEPR-6160-10		1	20	45	125	20	
EP126	CEPR-6160-20		2					
EP021	CEPR-6200-10		1					
EP131	CEPR-6200-20		2					

Cutting Conditions | Schnittwerte | Condizioni di taglio | Condiciones de Corte | Conditions de coupe | Valores de corte:

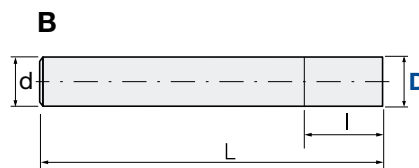
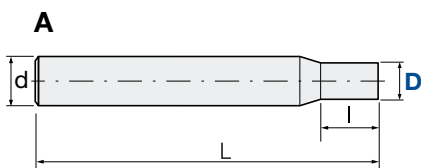
CEPR-00 | Epoch Regular Corner Radius

Side Milling: Page 10

Slotting: Page 11

CEPL | Epoch Long

V max High Speed	V Semi-Finishing	V Finishing	HRC 65	No. of Teeth 4	No. of Teeth 6
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Carbide Micro Grain	C Century Coating	Rake Angle Negative
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Helix Angle	D Tol. [mm]	d Tol.
46°	D3~D6: 0/-0.015 D8~D20: 0/-0.02	h6

ID Code	Item Code	Z	D	l	L	d	Type
EP087	CEPL-4030	4	3	15	60	6	A
EP088	CEPL-4040		4	20	65		
EP089	CEPL-4050		5	25	70		
EP090	CEPL-6060	6	6	35	90	8	B
EP091	CEPL-6080		8	45	100	10	
EP092	CEPL-6100		10	55	120	12	
EP093	CEPL-6120		12	65	135	16	
EP094	CEPL-6160		16	75	155	20	
EP095	CEPL-6200		20				

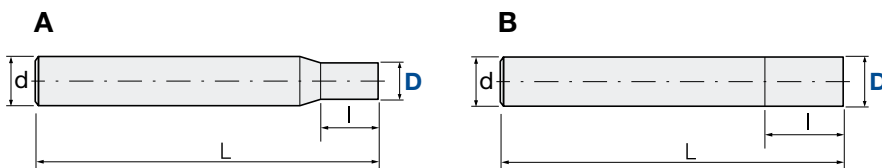
Cutting Conditions | Schnittwerte | Condizioni di taglio | Condiciones de Corte | Conditions de coupe | Valores de corte:

CEPL | Epoch Long

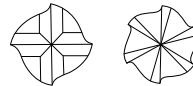
Side Milling: Page 12

CEPH | Epoch Hard

V max High Speed	V Semi-Finishing	V Finishing	HRC 55	No. of Teeth 4	No. of Teeth 6
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Carbide Micro Grain	C Century Coating	Rake Angle Negative
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Helix Angle	D Tol. [mm]	d Tol.
46°	D 3~D 6: 0/-0.015 D 8~D 20: 0/-0.02	h6

ID Code	Item Code	Z	D	I	L	d	Type
EP078	CEPH-4030	4	3	6	60	6	A
EP079	CEPH-4040		4	8			
EP080	CEPH-4050		5	10			
EP081	CEPH-6060	6	6	12	75	8	B
EP082	CEPH-6080		8	16			
EP083	CEPH-6100		10	20			
EP084	CEPH-6120		12	24			
EP086	CEPH-6200		20	40			

Cutting Conditions | Schnittwerte | Condizioni di taglio | Condiciones de Corte | Conditions de coupe | Valores de corte:

CEPH | Epoch Hard

Side Milling: Page 10

Slotting: Page 11

CEPU | Epoch Universal

Q max
High Efficient

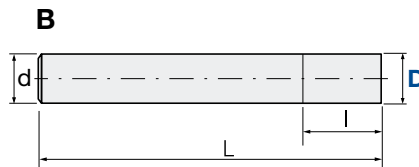
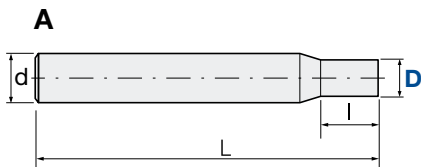
V max
High Speed

▽
Roughing

▽▽
Semi-Finishing

HRC
60

No. of Teeth
4



Carbide
Micro Grain

C
Century Coating

Rake Angle
Negative



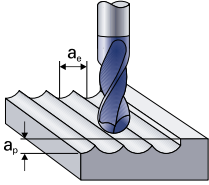
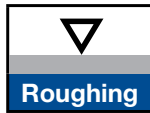
Helix Angle	D Tol. [mm]	d Tol.
52°	D 4~D 6: 0/-0.015 D 8~D 20: 0/-0.02	h6

















ID Code	Item Code	Z	D	l	L	d	Type
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EP140	CEPU-4060		6	15			B
EP141	CEPU-4080		8	20	75	8	
EP142	CEPU-4100		10	25	80	10	
EP143	CEPU-4120		12	30	100	12	
EP144	CEPU-4160		16	40	110	16	
EP145	CEPU-4200		20	45	125	20	

Cutting Conditions | Schnittwerte | Condizioni di taglio | Condiciones de Corte | Conditions de coupe | Valores de corte:

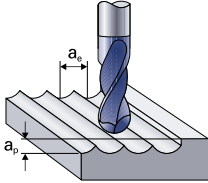
CEPU | Epoch Universal

Side Milling: Page 13

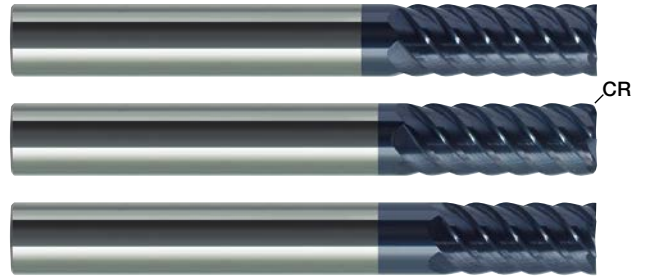
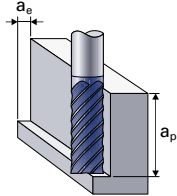
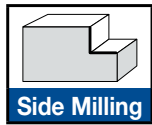
CEPB-2 | Epoch Ball | Recommended Cutting Conditions – Roughing






















Work piece material		Condition Range	a _p a _e	Cutting Condition	R0.5 D1	R1 D2	R1.5 D3	R2 D4	R2.5 D5	R3 D6	R4 D8	R5 D10	R6 D12
I	Carbon steel (180-220HB)		a _p =0.1D	n(min ⁻¹)	79,600	55,700	37,200	27,900	22,300	18,600	13,900	11,100	9,290
				V _c (m/min)	250	350	350	350	350	350	350	350	350
				V _f (mm/min)	6,370	6,680	5,950	5,580	5,350	5,210	4,450	4,000	3,720
	Alloy steel (200-250HB)		a _e =0.3D	f _z (mm)	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
				n(min ⁻¹)	19,100	19,100	19,100	15,900	12,700	10,600	8,000	6,400	5,310
				V _c (m/min)	60	120	180	200	200	200	200	200	200
II	Tool steel (25-35HRC)		a _p =0.1D	V _f (mm/min)	1,530	2,290	3,060	3,180	3,050	2,970	2,560	2,300	2,120
				f _z (mm)	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
				n(min ⁻¹)	19,100	19,100	19,100	15,900	12,700	10,600	8,000	6,400	5,310
	Alloy steel (35-45HRC)		a _e =0.3D	V _c (m/min)	60	120	180	200	200	200	200	200	200
				V _f (mm/min)	1,530	2,290	3,060	3,180	3,050	2,970	2,560	2,300	2,120
				f _z (mm)	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
III	Pre-hardened steel (180-220HB)		a _p =0.1D	n(min ⁻¹)	79,600	55,700	37,200	27,900	22,300	18,600	13,900	11,100	9,290
				V _c (m/min)	250	350	350	350	350	350	350	350	350
				V _f (mm/min)	6,370	6,680	5,950	5,580	5,350	5,210	4,450	4,000	3,720
	Alloy steel (35-45HRC)		a _e =0.3D	f _z (mm)	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
				n(min ⁻¹)	19,100	19,100	19,100	15,900	12,700	10,600	8,000	6,400	5,310
				V _c (m/min)	60	120	180	200	200	200	200	200	200
IV	Hardened steel (45-55HRC)		a _p =0.1D	V _f (mm/min)	1,530	2,290	3,060	3,180	3,050	2,970	2,560	2,300	2,120
				f _z (mm)	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
				n(min ⁻¹)	19,100	19,100	19,100	14,300	11,500	9,600	7,200	5,700	4,780
	Alloy steel (35-45HRC)		a _e =0.3D	V _c (m/min)	60	120	180	180	180	180	180	180	180
				V _f (mm/min)	1,530	2,290	3,060	2,860	2,760	2,690	2,300	2,050	1,910
				f _z (mm)	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
V	Hardened steel (55-65HRC)		a _p =0.1D	n(min ⁻¹)	79,600	39,800	26,500	19,900	15,900	13,300	10,000	8,000	6,630
				V _c (m/min)	250	250	250	250	250	250	250	250	250
				V _f (mm/min)	6,370	4,780	4,240	3,980	3,820	3,720	3,200	2,880	2,650
	Alloy steel (35-45HRC)		a _e =0.3D	f _z (mm)	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
				n(min ⁻¹)	19,100	19,100	15,900	11,900	9,600	8,000	6,000	4,800	3,980
				V _c (m/min)	60	120	150	150	150	150	150	150	150
VI	Hardened steel (55-65HRC)		a _p =0.1D	V _f (mm/min)	1,530	2,290	2,540	2,380	2,300	2,240	1,920	1,730	1,590
				f _z (mm)	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
				n(min ⁻¹)	19,100	19,100	15,900	11,900	9,600	8,000	6,000	4,800	3,980
	Alloy steel (35-45HRC)		a _e =0.3D	V _c (m/min)	60	120	150	150	150	150	150	150	150
				V _f (mm/min)	1,530	2,290	2,540	2,380	2,300	2,240	1,920	1,730	1,590
				f _z (mm)	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
VII	Hardened steel (55-65HRC)		a _p =0.1D	n(min ⁻¹)	79,600	71,700	47,800	35,800	28,700	23,900	17,900	14,300	11,940
				V _c (m/min)	250	450	450	450	450	450	450	450	450
				V _f (mm/min)	6,370	8,600	7,650	7,160	6,890	6,690	5,730	5,150	4,780
	Alloy steel (35-45HRC)		a _e =0.3D	f _z (mm)	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
				n(min ⁻¹)	19,100	19,100	19,100	19,900	15,900	13,300	10,000	8,000	6,630
				V _c (m/min)	60	120	180	250	250	250	250	250	250
VIII	Cast Iron (150-200HB)		a _p =0.1D	V _f (mm/min)	1,530	2,290	3,060	3,980	3,820	3,720	3,200	2,880	2,650
				f _z (mm)	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20
				n(min ⁻¹)	19,100	19,100	19,100	19,900	15,900	13,300	10,000	8,000	6,630
	Alloy steel (35-45HRC)		a _e =0.3D	V _c (m/min)	60	120	180	250	250	250	250	250	250
				V _f (mm/min)	1,530	2,290	3,060	3,980	3,820	3,720	3,200	2,880	2,650
				f _z (mm)	0.04	0.06	0.08	0.10	0.12	0.14	0.16	0.18	0.20

CEPB-2 | Epoch Ball | Recommended Cutting Conditions – Finishing

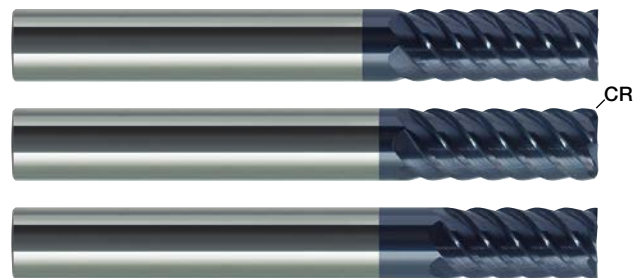
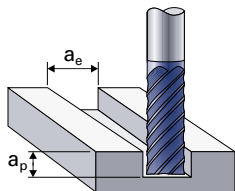
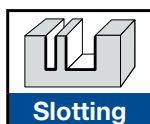






Work piece material		Condition Range	a _p a _e	Cutting Condition	R0.5 D1	R1 D2	R1.5 D3	R2 D4	R2.5 D5	R3 D6	R4 D8	R5 D10	R6 D12
I II	Carbon steel (180-220HB)	High Speed	a _p =0.05D	n(min ⁻¹)	79,600	47,800	31,800	23,900	19,100	15,900	11,900	9,600	7,960
				V _c (m/min)	250	300	300	300	300	300	300	300	300
		General	a _e =0.05D	V _f (mm/min)	4,780	3,820	3,820	3,350	3,060	2,860	2,620	2,500	2,390
				f _z (mm)	0.03	0.04	0.06	0.07	0.08	0.09	0.11	0.13	0.15
	Alloy steel (200-250HB) Tool steel (25-35HRC)	High Speed	a _p =0.05D	n(min ⁻¹)	57,300	28,700	19,100	14,300	11,500	9,600	7,200	5,700	4,780
				V _c (m/min)	180	180	180	180	180	180	180	180	180
		General	a _e =0.05D	V _f (mm/min)	3,440	2,300	2,290	2,000	1,840	1,730	1,580	1,480	1,430
				f _z (mm)	0.03	0.04	0.06	0.07	0.08	0.09	0.11	0.13	0.15
III	Pre-hardened steel Alloy steel (35-45HRC)	High Speed	a _p =0.05D	n(min ⁻¹)	79,600	47,800	31,800	23,900	19,100	15,900	11,900	9,600	7,960
				V _c (m/min)	250	300	300	300	300	300	300	300	300
			a _e =0.05D	V _f (mm/min)	4,780	3,820	3,820	3,350	3,060	2,860	2,620	2,500	2,390
				f _z (mm)	0.03	0.04	0.06	0.07	0.08	0.09	0.11	0.13	0.15
		General	a _p =0.05D	n(min ⁻¹)	57,300	28,700	19,100	14,300	11,500	9,600	7,200	5,700	4,780
				V _c (m/min)	180	180	180	180	180	180	180	180	180
			a _e =0.05D	V _f (mm/min)	3,440	2,300	2,290	2,000	1,840	1,730	1,580	1,480	1,430
				f _z (mm)	0.03	0.04	0.06	0.07	0.08	0.09	0.11	0.13	0.15
IV	Hardened steel (45-55HRC)	High Speed	a _p =0.05D	n(min ⁻¹)	79,600	39,800	26,500	19,900	15,900	13,300	10,000	8,000	6,630
				V _c (m/min)	250	250	250	250	250	250	250	250	250
			a _e =0.05D	V _f (mm/min)	4,780	3,180	3,180	2,790	2,540	2,390	2,200	2,080	1,990
				f _z (mm)	0.03	0.04	0.06	0.07	0.08	0.09	0.11	0.13	0.15
		General	a _p =0.05D	n(min ⁻¹)	47,800	23,900	15,900	11,900	9,600	8,000	6,000	4,800	3,980
				V _c (m/min)	150	150	150	150	150	150	150	150	150
			a _e =0.05D	V _f (mm/min)	2,870	1,910	1,910	1,670	1,540	1,440	1,320	1,250	1,190
				f _z (mm)	0.03	0.04	0.06	0.07	0.08	0.09	0.11	0.13	0.15
V	Hardened steel (55-65HRC)	High Speed	a _p =0.05D	n(min ⁻¹)	63,700	31,800	21,200	15,900	12,700	10,600	8,000	6,400	5,310
				V _c (m/min)	200	200	200	200	200	200	200	200	200
			a _e =0.05D	V _f (mm/min)	3,820	2,540	2,540	2,230	2,030	1,910	1,760	1,660	1,590
				f _z (mm)	0.03	0.04	0.06	0.07	0.08	0.09	0.11	0.13	0.15
		General	a _p =0.05D	n(min ⁻¹)	38,200	19,100	12,700	9,600	7,600	6,400	4,800	3,800	3,180
				V _c (m/min)	120	120	120	120	120	120	120	120	120
			a _e =0.05D	V _f (mm/min)	2,290	1,530	1,520	1,340	1,220	1,150	1,060	990	950
				f _z (mm)	0.03	0.04	0.06	0.07	0.08	0.09	0.11	0.13	0.15
VIII	Cast Iron (150-200HB)	High Speed	a _p =0.05D	n(min ⁻¹)	79,600	63,700	42,500	31,800	25,500	21,200	15,900	12,700	10,620
				V _c (m/min)	250	400	400	400	400	400	400	400	400
			a _e =0.05D	V _f (mm/min)	4,780	5,100	5,100	4,450	4,080	3,820	3,500	3,300	3,190
				f _z (mm)	0.03	0.04	0.06	0.07	0.08	0.09	0.11	0.13	0.15
		General	a _p =0.05D	n(min ⁻¹)	76,400	38,200	25,500	19,100	15,300	12,700	9,600	7,600	6,370
				V _c (m/min)	240	240	240	240	240	240	240	240	240
			a _e =0.05D	V _f (mm/min)	4,580	3,060	3,060	2,670	2,450	2,290	2,110	1,980	1,910
				f _z (mm)	0.03	0.04	0.06	0.07	0.08	0.09	0.11	0.13	0.15

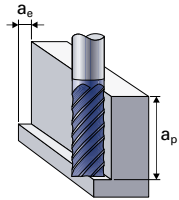
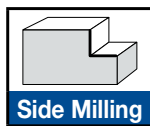
CEPR CEPR-00 CEPH | Epoch Series | Recommended Cutting Conditions – Side Milling







Work piece material		Condition Range	a _p a _e	Cutting Condition	Tool Diameter (mm)							
					D3	D4	D6	D8	D10	D12	D16	D20
I Carbon steel (180-220HB) Alloy steel (200-250HB) II Tool steel Stainless steel (25-35HRC)	High Speed		a _p =1.5D	n(min ⁻¹)	27,600	20,700	13,800	10,400	8,300	6,900	5,200	4,100
				V _c (m/min)	260	260	260	260	260	260	260	260
			a _e ≤0.05D	V _f (mm/min)	2,210	2,480	4,970	4,370	3,980	4,140	3,740	3,200
				f _z (mm)	0.02	0.03	0.06	0.07	0.08	0.10	0.12	0.13
	General		a _p =1.5D	n(min ⁻¹)	11,700	8,800	5,800	4,400	3,500	2,900	2,200	1,800
				V _c (m/min)	110	110	110	110	110	110	110	110
			a _e ≤0.05D	V _f (mm/min)	940	1,060	2,090	1,850	1,680	1,740	1,580	1,400
				f _z (mm)	0.02	0.03	0.06	0.07	0.08	0.10	0.12	0.13
III Pre-hardened steel (35-45HRC)	High Speed		a _p =1.5D	n(min ⁻¹)	26,500	19,900	13,300	10,000	8,000	6,600	5,000	4,000
				V _c (m/min)	250	250	250	250	250	250	250	250
			a _e ≤0.02D	V _f (mm/min)	2,120	2,390	4,790	4,200	3,840	3,960	3,600	3,120
				f _z (mm)	0.02	0.03	0.06	0.07	0.08	0.10	0.12	0.13
	General		a _p =1.5D	n(min ⁻¹)	10,600	8,000	5,300	4,000	3,200	2,700	2,000	1,600
				V _c (m/min)	100	100	100	100	100	100	100	100
			a _e ≤0.02D	V _f (mm/min)	850	960	1,910	1,680	1,540	1,620	1,440	1,250
				f _z (mm)	0.02	0.03	0.06	0.07	0.08	0.10	0.12	0.13
IV Hardened steel (45-55HRC)	High Speed		a _p =1.5D	n(min ⁻¹)	26,500	19,900	13,300	10,000	8,000	6,600	5,000	4,000
				V _c (m/min)	250	250	250	250	250	250	250	250
			a _e ≤0.01D	V _f (mm/min)	2,120	2,390	4,790	4,200	3,840	3,960	3,600	3,120
				f _z (mm)	0.02	0.03	0.06	0.07	0.08	0.10	0.12	0.13
	General		a _p =1.5D	n(min ⁻¹)	10,600	8,000	5,300	4,000	3,200	2,700	2,000	1,600
				V _c (m/min)	100	100	100	100	100	100	100	100
			a _e ≤0.01D	V _f (mm/min)	850	960	1,910	1,680	1,540	1,620	1,440	1,250
				f _z (mm)	0.02	0.03	0.06	0.07	0.08	0.10	0.12	0.13
V Hardened steel (55-65HRC)	High Speed		a _p =1.5D	n(min ⁻¹)	26,500	19,900	13,300	10,000	8,000	6,600	5,000	4,000
				V _c (m/min)	250	250	250	250	250	250	250	250
			a _e ≤0.01D	V _f (mm/min)	2,120	2,390	4,790	4,200	3,840	3,960	3,600	3,120
				f _z (mm)	0.02	0.03	0.06	0.07	0.08	0.10	0.12	0.13
	General		a _p =1.5D	n(min ⁻¹)	8,500	6,400	4,200	3,200	2,500	2,100	1,600	1,300
				V _c (m/min)	80	80	80	80	80	80	80	80
			a _e ≤0.01D	V _f (mm/min)	680	770	1,510	1,340	1,200	1,260	1,150	1,010
				f _z (mm)	0.02	0.03	0.06	0.07	0.08	0.10	0.12	0.13
VIII Cast Iron (150-200HB) GG GGG	High Speed		a _p =1.5D	n(min ⁻¹)	33,400	25,100	16,700	12,500	10,000	8,400	6,300	5,000
				V _c (m/min)	315	315	315	315	315	315	315	315
			a _e ≤0.1D	V _f (mm/min)	5,340	5,020	8,020	7,500	7,200	6,550	4,910	4,200
				f _z (mm)	0.04	0.05	0.08	0.10	0.12	0.13	0.13	0.14
	General		a _p =1.5D	n(min ⁻¹)	17,000	12,700	8,500	6,400	5,100	4,200	3,200	2,500
				V _c (m/min)	160	160	160	160	160	160	160	160
			a _e ≤0.1D	V _f (mm/min)	2,720	2,540	4,080	3,840	3,670	3,280	2,500	2,100
				f _z (mm)	0.04	0.05	0.08	0.10	0.12	0.13	0.13	0.14

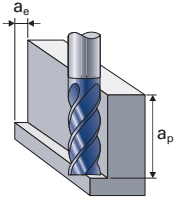
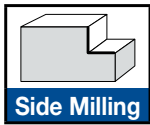
CEPR CEPR-00 CEPH | Epoch Series | Recommended Cutting Conditions – Slotting

















Work piece material	Condition Range	a _p a _e	Cutting Condition	Tool Diameter (mm)							
				D3	D4	D6	D8	D10	D12	D16	D20
I Alloy steel (200-250HB)		a _p =0.2D	n(min ⁻¹)	10,620	7,960	5,310	3,980	3,180	2,650	1,990	1,590
			V _c (m/min)	100	100	100	100	100	100	100	100
II Tool steel (25-35HRC)	General	a _e =1D	V _f (mm/min)	850	960	1,750	1,670	1,530	1,430	1,130	910
			f _z (mm)	0.020	0.030	0.055	0.070	0.080	0.090	0.095	0.095
III Pre-hardened steel (35-45HRC)		a _p =0.1D	n(min ⁻¹)	9,550	7,170	4,780	3,580	2,870	2,390	1,790	1,430
			V _c (m/min)	90	90	90	90	90	90	90	90
		a _e =1D	V _f (mm/min)	760	860	1,580	1,500	1,380	1,290	1,020	820
			f _z (mm)	0.020	0.030	0.055	0.070	0.080	0.090	0.095	0.095
IV Hardened steel (45-55HRC)		a _p =0.1D	n(min ⁻¹)	6,370	4,780	3,180	2,390	1,910	1,590	1,190	960
			V _c (m/min)	60	60	60	60	60	60	60	60
		a _e =1D	V _f (mm/min)	380	380	570	570	570	570	500	460
			f _z (mm)	0.015	0.020	0.030	0.040	0.050	0.060	0.070	0.080
V Hardened steel (55-65HRC)		a _p =0.1D	n(min ⁻¹)	3,180	2,390	1,590	1,190	960	800	600	480
			V _c (m/min)	30	30	30	30	30	30	30	30
		a _e =1D	V _f (mm/min)	130	140	240	250	260	260	250	200
			f _z (mm)	0.010	0.015	0.025	0.035	0.045	0.055	0.070	0.070

CEPL | Epoch Long | Recommended Cutting Conditions – Side Milling


Work piece material	Condition Range	ap ae	Cutting Condition	Tool Diameter (mm)							
				D3	D4	D6	D8	D10	D12	D16	D20
I Tool steel		ap=3D	n(min ⁻¹)	8,490	6,370	4,250	3,180	2,550	2,120	1,590	1,270
			Vc(m/min)	80	80	80	80	80	80	80	80
II Stainless steel (25-35HRC)	General	ae=0.01D	Vf(mm/min)	1,020	1,270	2,040	2,100	1,840	1,650	1,430	1,220
			fz(mm)	0.03	0.05	0.08	0.11	0.12	0.13	0.15	0.16
III Pre-hardened steel (35-45HRC)		ap=3D	n(min ⁻¹)	7,430	5,570	3,720	2,790	2,230	1,860	1,390	1,110
			Vc(m/min)	70	70	70	70	70	70	70	70
	General	ae=0.01D	Vf(mm/min)	590	670	890	840	800	780	670	600
			fz(mm)	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
IV Hardened steel (45-55HRC)		ap=3D	n(min ⁻¹)	6,370	4,780	3,180	2,390	1,910	1,590	1,190	960
			Vc(m/min)	60	60	60	60	60	60	60	60
	General	ae=0.01D	Vf(mm/min)	510	380	570	570	570	570	500	460
			fz(mm)	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08
V Hardened steel (55-65HRC)		ap=3D	n(min ⁻¹)	5,310	3,980	2,650	1,990	1,590	1,330	1,000	800
			Vc(m/min)	50	50	50	50	50	50	50	50
	General	ae=0.01D	Vf(mm/min)	210	320	480	480	480	480	420	380
			fz(mm)	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08
VIII Cast iron (150-200HB) GG GGG		ap=3D	n(min ⁻¹)	12,740	9,550	6,370	4,780	3,820	3,180	2,390	1,910
			Vc(m/min)	120	120	120	120	120	120	120	120
	General	ae=0.01D	Vf(mm/min)	1,530	1,910	3,060	3,150	2,750	2,480	2,150	1,830
			fz(mm)	0.03	0.05	0.08	0.11	0.12	0.13	0.15	0.16

CEPU | Epoch Universal | Recommended Cutting Conditions – Side Milling


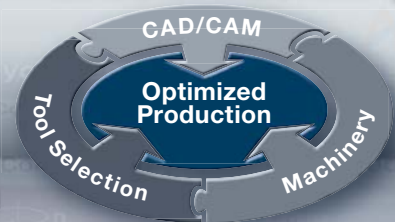
Work piece material		Condition Range	a_p a_e	Cutting Condition	Tool Diameter (mm)						
					D4	D6	D8	D10	D12	D16	D20
I	Carbon steel (180-220HB)		$a_p=1.5D$	$n(\text{min}^{-1})$	23,890	15,920	11,940	9,550	7,960	5,970	4,780
				$V_c(\text{m/min})$	300	300	300	300	300	300	300
				$f_z(\text{mm})$	0.05	0.08	0.11	0.12	0.13	0.15	0.16
			$a_p=1.5D$	$n(\text{min}^{-1})$	12,740	8,490	6,370	5,100	4,250	3,180	2,550
				$V_c(\text{m/min})$	160	160	160	160	160	160	160
				$f_z(\text{mm})$	0.05	0.08	0.11	0.12	0.13	0.15	0.16
II	Alloy steel (200-250HB)		$a_p=1.5D$	$n(\text{min}^{-1})$	22,290	14,860	11,150	8,920	7,430	5,570	4,460
				$V_c(\text{m/min})$	280	280	280	280	280	280	280
				$f_z(\text{mm})$	0.03	0.07	0.10	0.11	0.12	0.13	0.13
			$a_p=1.5D$	$n(\text{min}^{-1})$	9,550	6,370	4,780	3,820	3,180	2,390	1,910
				$V_c(\text{m/min})$	120	120	120	120	120	120	120
				$f_z(\text{mm})$	0.03	0.07	0.10	0.11	0.12	0.13	0.13
II	Tool steel Stainless steel (25-35HRC)		$a_p=1.5D$	$n(\text{min}^{-1})$	20,700	13,800	10,350	8,280	6,900	5,180	4,140
				$V_c(\text{m/min})$	260	260	260	260	260	260	260
				$f_z(\text{mm})$	0.03	0.06	0.07	0.08	0.10	0.12	0.12
			$a_p=1.5D$	$n(\text{min}^{-1})$	8,760	5,840	4,380	3,500	2,920	2,190	1,750
				$V_c(\text{m/min})$	110	110	110	110	110	110	110
				$f_z(\text{mm})$	0.03	0.06	0.07	0.08	0.10	0.12	0.12
III	Pre-hardened steel (35-45HRC)		$a_p=1.5D$	$n(\text{min}^{-1})$	19,900	13,270	9,950	7,960	6,630	4,980	3,980
				$V_c(\text{m/min})$	250	250	250	250	250	250	250
				$f_z(\text{mm})$	0.03	0.06	0.07	0.08	0.10	0.12	0.12
			$a_p=1.5D$	$n(\text{min}^{-1})$	7,960	5,310	3,980	3,180	2,650	1,990	1,590
				$V_c(\text{m/min})$	100	100	100	100	100	100	100
				$f_z(\text{mm})$	0.03	0.06	0.07	0.08	0.10	0.12	0.12
IV	Hardened steel (45-55HRC)		$a_p=1.5D$	$n(\text{min}^{-1})$	9,550	6,370	4,780	3,820	3,180	2,390	1,910
				$V_c(\text{m/min})$	120	120	120	120	120	120	120
				$f_z(\text{mm})$	0.03	0.06	0.07	0.08	0.10	0.12	0.12
			$a_p=1.5D$	$n(\text{min}^{-1})$	7,960	5,310	3,980	3,180	2,650	1,990	1,590
				$V_c(\text{m/min})$	100	100	100	100	100	100	100
				$f_z(\text{mm})$	0.03	0.06	0.07	0.08	0.10	0.12	0.12
V	Hardened steel (55-65HRC)		$a_p=1.5D$	$n(\text{min}^{-1})$	7,960	5,310	3,980	3,180	2,650	1,990	1,590
				$V_c(\text{m/min})$	100	100	100	100	100	100	100
				$f_z(\text{mm})$	0.03	0.06	0.07	0.08	0.10	0.12	0.12
			$a_p=1.5D$	$n(\text{min}^{-1})$	6,370	4,250	3,180	2,550	2,120	1,590	1,270
				$V_c(\text{m/min})$	80	80	80	80	80	80	80
				$f_z(\text{mm})$	0.03	0.06	0.07	0.08	0.10	0.12	0.12
VIII	Cast Iron (150-200HB) GG GGG		$a_p=1.5D$	$n(\text{min}^{-1})$	25,080	16,720	12,540	10,030	8,360	6,270	5,020
				$V_c(\text{m/min})$	315	315	315	315	315	315	315
				$f_z(\text{mm})$	0.05	0.08	0.11	0.12	0.13	0.13	0.14
			$a_p=1.5D$	$n(\text{min}^{-1})$	12,740	8,490	6,370	5,100	4,250	3,180	2,550
				$V_c(\text{m/min})$	160	160	160	160	160	160	160
				$f_z(\text{mm})$	0.05	0.08	0.11	0.12	0.13	0.13	0.14

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Function Buttons
Funktions-Schaltflächen

QuickFinder Help:
Details of tools etc.
QuickFinder Hilfe:
Werkzeugdetails usw.

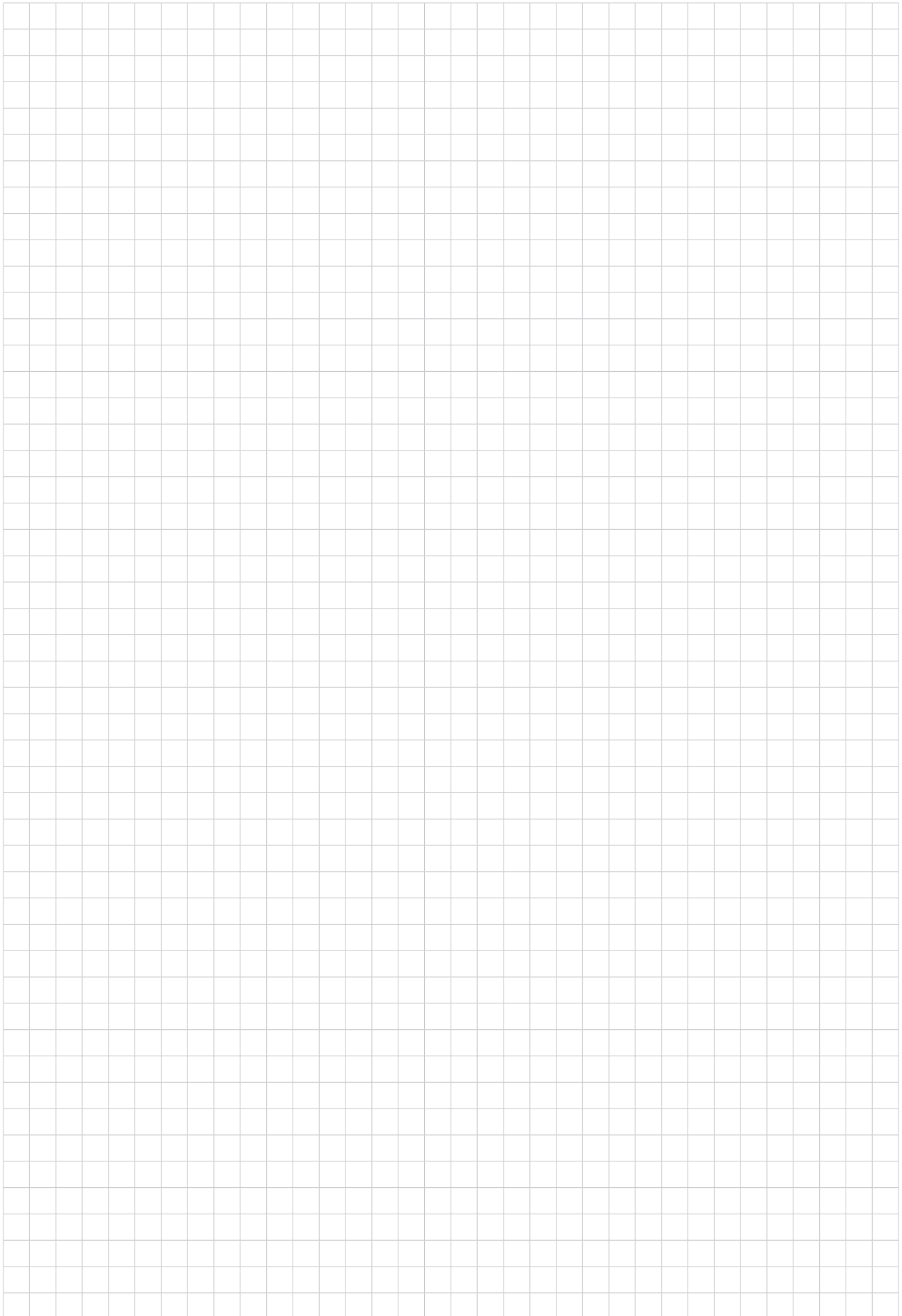
Filtering by contour shape
Gefiltert nach Bearbeitungs-Kontur

Additional search parameters
Zusätzliche Parameter-Suche

Selected product
Ausgewähltes Produkt

ID code	Item code	Z	ØD	ØH	CR	Ln	s	I	Ødn	L	Ød	Grade	Inserts1	Inserts2	Inserts3
EP697	ETMP-4040-40-10	4	4	1	40	1	6	10	90	8					
EP370	ETMP-4050-12	4	5	1.2	15	1	10	70	6						
EP598	ETMP-4050-30-12	4	5	1.2	30	1	7.5	90	6						
EP599	ETMP-4050-40-12	4	5	1.2	40	1	7.5	100	8						
EP600	ETMP-4050-50-12	4	5	1.2	50	1	7.5	110	8						
EP371	ETMP-4050-15	4	6	1.5			12	90	6						
EP379	ETMLN-4060-30-15	4	6	1.5	30	1	9	5.7	75	6					
EP380	ETMLN-4060-42-15	4	6	1.5	42	1	9	5.7	90	6					
EP381	ETMLN-4060-54-15	4	6	1.5	54	1	9	5.7	100	6					
EP601	ETMP-4060-40-15	4	6	1.5	40	1	9	100	8						
EP602	ETMP-4060-55-15	4	6	1.5	55	1	9	110	8						
EP603	ETMP-4060-67-15	4	6	1.5	67	1	9	125	8						
EP372	ETMP-4030-20	4	8	2			16	100	8						
EP382	ETMLN-4080-40-20	4	8	2	40	1	12	7.6	85	8					
EP383	ETMLN-4080-60-20	4	8	2	60	1	12	7.6	100	8					
EP384	ETMLN-4080-72-20	4	8	2	72	1	12	7.6	120	8					
EP373	ETMP-4100-20	4	10	2			20	110	10						

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Attentions on Safety

1. Cautions regarding handling

- (1) When removing the tool from its case (packaging), be careful that the tool does not pop out or is dropped. Be particularly careful regarding contact with the tool flutes.
- (2) When handling tools with sharp cutting flutes, be careful not to touch the cutting flutes directly with your bare hands.

2. Cautions regarding mounting

- (1) Before use, check the outside appearance of the tool for scratches, cracks, etc. and that it is firmly mounted in the collet chuck, etc.
- (2) When preparing for use, be sure that the inserts are firmly mounted in place and that they are firmly mounted on the arbor, etc.
- (3) If abnormal chattering, etc. occurs during use, stop the machine immediately and remove the cause of the chattering.

3. Cautions during use

- (1) Before use, confirm the dimensions and direction of rotation of the tool and milling work material.
- (2) The numerical values in the standard cutting conditions table should be used as criteria when starting new work. The cutting conditions should be adjusted as appropriate when the cutting depth is large, the rigidity of the machine being used is low, or according to the conditions of the work material.
- (3) Cutting tools are made of a hard material. During use, they may break and fly off. In addition, cutting chips may also fly off. Since there is a danger of injury to workers, fire, or eye damage from such flying pieces, a safety cover should be attached when work is performed and safety equipment such as safety goggles should be worn to create a safe environment for work.
- (4) There is a risk of fire or inflammation due to sparks, heat due to breakage, and cutting chips. Do not use where there is a risk of fire or explosion. Please caution of fire while using oil base coolant, fire prevention is necessary.
- (5) Do not use the tool for any purpose other than that for which it is intended.

4. Cautions regarding regrinding

- (1) If regrinding is not performed at the proper time, there is a risk of the tool breaking. Replace the tool with one in good condition, or perform regrinding.
- (2) Grinding dust will be created when regrinding a tool. When regrinding, be sure to attach a safety cover over the work area and wear safety clothes such as safety goggles, etc.
- (3) This product contains the specified chemical substance cobalt and its inorganic compounds. When performing regrinding or similar processing, be sure to handle the processing in accordance with the local laws and regulations regarding prevention of hazards due to specified chemical substances.

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Specifications for the products listed in this catalog are subject to change without notice due to replacement or modification.

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