



Size $\phi 1 \sim \phi 20$

C-CES4000

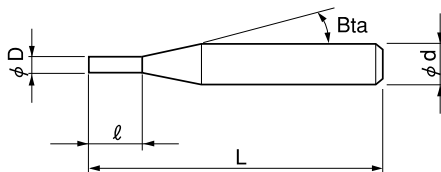


Applicable Work Material (◎Most Suitable ○Suitable)

Work Material												
CARBON STEELS S45C S55C	ALLOY STEELS SK·SCM SUS	PREHARDENED STEELS NAK HPM	HARDENED STEELS			CAST IRON	ALUMINIUM ALLOYS	GRAPHITE	COPPER	PLASTIC	TITANIUM	HEAT RESISTANT STEELS
			(~55HRC)	(~60HRC)	(~70HRC)							
◎	◎	◎	○			○			◎		○	○

Features

- Wide application range from carbon steel up to hardened steel milling, 55HRC.
- High quality and performance to price ratio.
- New flute length sizes available. Refer to P128 for 2 flutes C-CES.



The shank taper angle shown is not an exact value and to avoid contact with the workpiece, we recommend the user controls the precise value.

(Total 44 models)

Unit (mm)

Model Number	Outside Diameter ϕD	Length of Cut ℓ	Shank Taper Angle Bta	Overall Length L	Shank Diameter ϕd	Price
C-CES 4010	1	2.5	16°	45	4	\$46.90
C-CES 4010-0400		4		45	4	\$49.10
C-CES 4015	1.5	3.75	16°	45	4	\$46.90
C-CES 4015-0600		6		45	4	\$49.10
C-CES 4020	2	5	16°	45	4	\$30.00
C-CES 4020-0800		8		45	4	\$40.40
C-CES 4025	2.5	6.25	16°	45	4	\$30.00
C-CES 4025-1000		10		50	4	\$40.40
C-CES 4030-0750	3	7.5	16°	45	6	\$31.10
C-CES 4030		8		45	6	\$31.10
C-CES 4030-1200		12		50	6	\$39.30
C-CES 4035	3.5	10	16°	45	6	\$65.00

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Unit (mm)

Model Number	Outside Diameter ϕD	Length of Cut ℓ	Shank Taper Angle Bta	Overall Length L	Shank Diameter ϕd	Price
C-CES 4040	4	11	16°	45	6	\$35.10
C-CES 4040-1600		16		60		\$46.90
C-CES 4045	4.5	11	16°	45	6	\$76.40
C-CES 4050-1250	5	12.5	16°	50	6	\$36.10
C-CES 4050		13		50		\$36.10
C-CES 4050-2000		20		60		\$50.20
C-CES 4055	5.5	13	16°	50	6	\$78.30
C-CES 4060	6	13	—	50	6	\$37.90
C-CES 4060-1500		15		50		\$37.90
C-CES 4060-2400		24		60		\$54.50
C-CES 4065	6.5	16	16°	60	8	\$106.00
C-CES 4070	7	16	16°	60	8	\$94.20
C-CES 4075	7.5	16	16°	60	8	\$114.00
C-CES 4080	8	19	—	60	8	\$64.50
C-CES 4080-2000		20		60		\$64.50
C-CES 4080-3200		32		80		\$136.40
C-CES 4085	8.5	19	16°	70	10	\$138.00
C-CES 4090	9	19	16°	70	10	\$124.10
C-CES 4095	9.5	19	16°	70	10	\$156.00
C-CES 4100	10	22	—	70	10	\$86.00
C-CES 4100-2500		25		70		\$86.00
C-CES 4100-4000		40		90		\$150.50
C-CES 4105	10.5	22	16°	75	12	\$190.00
C-CES 4110	11	22	16°	75	12	\$190.00
C-CES 4115	11.5	22	16°	75	12	\$204.00
C-CES 4120	12	26	—	75	12	\$108.00
C-CES 4120-3000		30		75		\$108.00
C-CES 4120-4800		48		100		\$229.10
C-CES 4140	14	26	—	80	12	\$265.00
C-CES 4160	16	32	—	110	16	\$420.00
C-CES 4180	18	32	16°	110	20	\$565.00
C-CES 4200	20	38	—	110	20	\$620.00

Milling Conditions for C-CES (4Flutes)

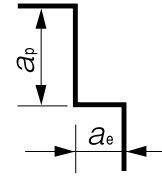
WORK MATERIAL		CARBON STEELS S45C · S50C (~225HB)			ALLOY STEELS SK · SCM · SUS (225~325HB)			PREHARDENED STEELS/ HARDENED STEELS NAK · SKD (30~45HRC)			HARDENED STEELS SKD11 · 61 · SKT (45~55HRC)		
Model Number	Outside Diameter (mm)	Speed (min ⁻¹)	Velocity (m/min)	Feed (mm/min)	Speed (min ⁻¹)	Velocity (m/min)	Feed (mm/min)	Speed (min ⁻¹)	Velocity (m/min)	Feed (mm/min)	Speed (min ⁻¹)	Velocity (m/min)	Feed (mm/min)
4010	1	20,000	(65)	240	15,000	(45)	215	11,000	(35)	85	7,100	(20)	40
4015	1.5	13,500		245	10,000		215	8,000		90	5,100		50
4020	2	11,000	(70~85)	245	8,500	(55~65)	215	6,400	(40~45)	90	4,000	(25~30)	55
4025	2.5	8,800		370	7,000		245	5,000		90	3,200		55
4030	3	7,400		370	6,400		260	4,500		105	2,800		65
4040	4	5,900		435	5,000		340	3,500		120	2,150		70
4050	5	5,300		590	4,200		415	2,950		120	1,850		75
4060	6	4,400		580	3,500		415	2,450		130	1,500		70
4080	8	3,300		550	2,600		415	1,850		125	1,200		70
4100	10	2,600		525	2,100		405	1,450		125	950		65
4120	12	2,200	525	1,750	405	1,200	120	800	60				

For High Speed Milling

WORK MATERIAL		CARBON STEELS S45C · S50C (~225HB)			ALLOY STEELS SK · SCM · SUS (225~325HB)			PREHARDENED STEELS/ HARDENED STEELS NAK · SKD (30~45HRC)			HARDENED STEELS SKD11 · 61 · SKT (45~55HRC)		
Model Number	Outside Diameter (mm)	Speed (min ⁻¹)	Velocity (m/min)	Feed (mm/min)	Speed (min ⁻¹)	Velocity (m/min)	Feed (mm/min)	Speed (min ⁻¹)	Velocity (m/min)	Feed (mm/min)	Speed (min ⁻¹)	Velocity (m/min)	Feed (mm/min)
4030	3	30,000	(300)	1,500	26,500	(250)	1,075	21,200	(200)	495	15,800	(150)	365
4040	4	23,800		1,755	19,800		1,345	15,800		540	11,900		385
4050	5	19,000		2,115	15,800		1,560	12,700		515	9,500		385
4060	6	15,900		2,095	13,200		1,565	10,600		560	7,900		370
4080	8	11,900		1,985	9,900		1,580	7,900		535	5,900		345
4100	10	9,500		1,920	7,900		1,525	6,300		545	4,700		320
4120	12	7,900		1,885	6,600		1,525	5,300		530	3,900		295

Milling Amount (mm)
Milling Amount for Side Milling (mm)

Material \ FL	Less than 2.5D	Below 3D	More than 3D
Less than 45HRC	$a_e=0.07D$ $a_p=2D$	$a_e=0.05D$ $a_p=2.5D$	$a_e=0.02D$ $a_p=3.5D$
More than 45HRC	$a_e=0.03D$ $a_p=1.5D$	$a_e=0.02D$ $a_p=2D$	$a_e=0.01D$ $a_p=3D$



D : Outside Diameter (mm)

Ex.) Less than 2D, Flute Length = Less than Diameter x 2

a_p : Axial Depth (mm)

a_e : Radial Depth (mm)

Note : Recommended Water soluble or Oil.

Most suitable to use Oil for Titanium alloy and Superalloy steel.

Do not use flammable cutting oils. Use a machine that has high rigidity and generates a Low level of vibration. Remove chips to prevent heat generation and ignition.