Size φ0.2～φ12

C-CES2000S

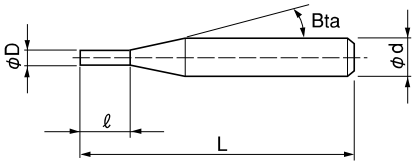
Super MG | UT COAT | 30° | Sharp Corner | Shank Dia 0/-0.005

Material Applications（★ Highly Recommended ● Recommended ○ Suggested）

Work Material																
Carbon Steels	Alloy Steels	Prehardened Steels	Hardened Steels					Cast Iron	Aluminum Alloys	Graphite	Copper	Plastics	Glass Filled Plastics	Titanium Alloys	Heat Resistant Alloys	Cemented Carbide	Hard Brittle (Non-Metallic) Materials
S45C S55C	SK / SCM SUS	NAK HPM	～50HRC	～55HRC	～60HRC	～65HRC	～70HRC										
●	●	●	●	○				○			●			○	○		

Features

2 flute C-CES with a sharp corner design.
Broad application range from Copper and Carbon Steels up to Hardened Steels (55HRC).
Excellent performance/quality to price ratio.
Refer to page 200 for 4 flute C-CES-S.



The shank taper angle shown is not an exact value and to avoid contact with the work piece, we recommend the user controls the precise value of this angle. Shank taper angle should not make contact with the work piece.

Total 35 models　　Unit（mm）

Model Number	Outside Diameter φD	Length of Cut ℓ	Shank Taper Angle Bta	Overall Length L	Shank Diameter φd	Suggested Retail Price ¥
C-CES 2002-0030S	0.2	0.3	16°	45	4	4,680
C-CES 2002-0060S		0.6		45	4	4,680
C-CES 2003-0045S	0.3	0.45	16°	45	4	4,080
C-CES 2003-0090S		0.9		45	4	4,080
C-CES 2004-0060S	0.4	0.6	16°	45	4	4,560
C-CES 2004-0120S		1.2		45	4	4,560
C-CES 2005-0075S	0.5	0.75	16°	45	4	2,280
C-CES 2005-0150S		1.5		45	4	2,280
C-CES 2006-0090S	0.6	0.9	16°	45	4	3,480
C-CES 2007-0105S	0.7	1.05	16°	45	4	3,840
C-CES 2008-0120S	0.8	1.2	16°	45	4	2,280
C-CES 2008-0240S		2.4		45	4	2,280
C-CES 2009-0135S	0.9	1.35	16°	45	4	3,840
C-CES 2010-0150S	1	1.5	16°	45	4	2,040
C-CES 2010-0300S		3		45	4	2,040
C-CES 2012-0180S	1.2	1.8	16°	45	4	2,280
C-CES 2012-0360S		3.6		45	4	2,280

Next Page ➡

Unit (mm)

Model Number	Outside Diameter φD	Length of Cut ℓ	Shank Taper Angle Bta	Overall Length L	Shank Diameter φd	Suggested Retail Price ¥
C-CES 2015-0225S	1.5	2.25	16°	45	4	2,040
C-CES 2015-0450S		4.5		45	4	2,040
C-CES 2018-0270S	1.8	2.7	16°	45	4	2,280
C-CES 2018-0540S		5.4		45	4	2,280
C-CES 2020-0300S	2	3	16°	45	4	2,040
C-CES 2020-0600S		6		45	4	2,040
C-CES 2025-0375S	2.5	3.75	16°	45	4	2,040
C-CES 2030-0450S	3	4.5	16°	45	6	2,640
C-CES 2030-0900S		9		45	6	2,640
C-CES 2040-0600S	4	6	16°	50	6	2,880
C-CES 2040-1200S		12		50	6	2,880
C-CES 2050-0750S	5	7.5	16°	50	6	3,120
C-CES 2050-1500S		15		50	6	3,120
C-CES 2060-0900S	6	9	—	50	6	3,360
C-CES 2060-1800S		18		50	6	3,360
C-CES 2080-2400S	8	24	—	80	8	6,320
C-CES 2100-3000S	10	30	—	80	10	7,580
C-CES 2120-3600S	12	36	—	90	12	11,170

Milling Conditions for C-CES-S（2 Flutes）

WORK MATERIAL			CARBON STEELS S45C / S50C (~225HB)					ALLOY STEELS SK / SCM / SUS (225~325HB)				
Model Number	Outside Diameter (mm)	Length of Cut (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Slotting	Side Milling		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Slotting	Side Milling	
					a_p (mm)	a_p (mm)	a_e (mm)			a_p (mm)	a_p (mm)	a_e (mm)
2002	0.2	0.3	27,000	60	0.02	0.3	0.02	27,000	60	0.02	0.3	0.02
		0.6	27,000	60	0.01	0.5	0.01	27,000	60	0.01	0.5	0.01
2003	0.3	0.45	27,000	77	0.03	0.45	0.03	27,000	77	0.03	0.45	0.03
		0.9	27,000	77	0.015	0.75	0.015	27,000	77	0.015	0.75	0.015
2004	0.4	0.6	27,000	84	0.04	0.6	0.04	27,000	84	0.04	0.6	0.04
		1.2	27,000	84	0.02	1	0.02	27,000	84	0.02	1	0.02
2005	0.5	0.75	27,000	84	0.05	0.75	0.05	26,100	84	0.05	0.75	0.05
		1.5	27,000	84	0.025	1.25	0.025	26,100	84	0.025	1.25	0.025
2006	0.6	0.9	27,000	84	0.06	0.9	0.06	21,600	84	0.06	0.9	0.06
2007	0.7	1.05	24,750	84	0.07	1.05	0.07	18,900	84	0.07	1.05	0.07
2008	0.8	1.2	21,600	84	0.08	1.2	0.08	17,100	84	0.08	1.2	0.08
		2.4	21,600	84	0.04	2	0.04	17,100	84	0.04	2	0.04
2009	0.9	1.35	19,350	88	0.09	1.35	0.09	14,850	84	0.09	1.35	0.09
2010	1	1.5	18,000	88	0.25	1.5	0.1	13,500	84	0.25	1.5	0.1
		3	18,000	88	0.125	2.5	0.05	13,500	84	0.125	2.5	0.05
2012	1.2	1.8	15,030	91	0.3	1.8	0.12	11,250	84	0.3	1.8	0.12
		3.6	15,030	91	0.15	3	0.06	11,250	84	0.15	3	0.06
2015	1.5	2.25	12,150	91	0.375	2.25	0.15	9,000	84	0.375	2.25	0.15
		4.5	12,150	91	0.1875	3.75	0.075	9,000	84	0.1875	3.75	0.075
2018	1.8	2.7	10,350	91	0.45	2.7	0.18	7,920	84	0.45	2.7	0.18
		5.4	10,350	91	0.225	4.5	0.09	7,920	84	0.225	4.5	0.09
2020	2	3	9,900	91	0.5	3	0.2	7,650	84	0.5	3	0.2
		6	9,900	91	0.25	5	0.1	7,650	84	0.25	5	0.1
2025	2.5	3.75	7,920	137	0.625	3.75	0.25	6,300	95	0.625	3.75	0.25
2030	3	4.5	6,660	137	1.5	4.5	0.3	5,760	102	1.5	4.5	0.3
		9	6,660	137	0.9	7.5	0.15	5,760	102	0.9	7.5	0.15
2040	4	6	5,310	161	2	6	0.4	4,500	133	2	6	0.4
		12	5,310	161	1.2	10	0.2	4,500	133	1.2	10	0.2
2050	5	7.5	4,770	217	2.5	7.5	0.5	3,780	161	2.5	7.5	0.5
		15	4,770	217	1.5	12.5	0.25	3,780	161	1.5	12.5	0.25
2060	6	9	3,960	214	3	9	0.6	3,150	161	3	9	0.6
		18	3,960	214	1.8	15	0.3	3,150	161	1.8	15	0.3
2080	8	24	2,970	203	2.4	20	0.4	2,340	161	2.4	20	0.4
2100	10	30	2,340	193	3	25	0.5	1,890	158	3	25	0.5
2120	12	36	1,980	193	3.6	30	0.6	1,575	158	3.6	30	0.6

Milling Conditions for C-CES-S（2 Flutes）

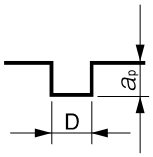
WORK MATERIAL			PREHARDENED STEELS HARDENED STEELS NAK / SKD (30~45HRC)					HARDENED STEELS SKD / SKT (45~55HRC)				
Model Number	Outside Diameter (mm)	Length of Cut (mm)	Spindle Speed (min^{-1})	Feed Rate (mm/min)	Slotting	Side Milling		Spindle Speed (min^{-1})	Feed Rate (mm/min)	Slotting	Side Milling	
					a_p (mm)	a_p (mm)	a_e (mm)			a_p (mm)	a_p (mm)	a_e (mm)
2002	0.2	0.3	24,000	21	0.02	0.3	0.02	24,000	18	0.004	0.2	0.01
		0.6	24,000	21	0.01	0.5	0.01	24,000	18	0.002	0.4	0.004
2003	0.3	0.45	24,000	39	0.03	0.45	0.03	17,600	18	0.006	0.3	0.015
		0.9	24,000	39	0.015	0.75	0.015	17,600	18	0.003	0.6	0.006
2004	0.4	0.6	21,600	42	0.04	0.6	0.04	13,600	18	0.008	0.4	0.02
		1.2	21,600	42	0.02	1	0.02	13,600	18	0.004	0.8	0.008
2005	0.5	0.75	17,200	42	0.05	0.75	0.05	10,400	18	0.01	0.5	0.025
		1.5	17,200	42	0.025	1.25	0.025	10,400	18	0.005	1	0.01
2006	0.6	0.9	14,400	42	0.06	0.9	0.06	8,800	18	0.012	0.6	0.03
2007	0.7	1.05	12,400	42	0.07	1.05	0.07	8,000	18	0.014	0.7	0.035
2008	0.8	1.2	11,040	42	0.08	1.2	0.08	7,040	21	0.016	0.8	0.04
		2.4	11,040	42	0.04	2	0.04	7,040	21	0.008	1.6	0.016
2009	0.9	1.35	9,600	46	0.09	1.35	0.09	6,240	21	0.018	0.9	0.045
2010	1	1.5	8,800	46	0.25	1.5	0.1	5,680	21	0.05	1	0.05
		3	8,800	46	0.125	2.5	0.05	5,680	21	0.02	2	0.02
2012	1.2	1.8	7,520	46	0.3	1.8	0.12	4,800	21	0.06	1.2	0.06
		3.6	7,520	46	0.15	3	0.06	4,800	21	0.024	2.4	0.024
2015	1.5	2.25	6,400	49	0.375	2.25	0.15	4,080	25	0.075	1.5	0.075
		4.5	6,400	49	0.1875	3.75	0.075	4,080	25	0.03	3	0.03
2018	1.8	2.7	5,600	49	0.45	2.7	0.18	3,520	25	0.09	1.8	0.09
		5.4	5,600	49	0.225	4.5	0.09	3,520	25	0.036	3.6	0.036
2020	2	3	5,120	49	0.5	3	0.2	3,200	28	0.1	2	0.1
		6	5,120	49	0.25	5	0.1	3,200	28	0.04	4	0.04
2025	2.5	3.75	4,000	49	0.625	3.75	0.25	2,560	28	0.125	2.5	0.125
2030	3	4.5	3,600	56	1.5	4.5	0.3	2,240	32	0.15	3	0.15
		9	3,600	56	0.9	7.5	0.15	2,240	32	0.06	6	0.06
2040	4	6	2,800	63	2	6	0.4	1,720	35	0.2	4	0.2
		12	2,800	63	1.2	10	0.2	1,720	35	0.08	8	0.08
2050	5	7.5	2,360	63	2.5	7.5	0.5	1,480	39	0.25	5	0.25
		15	2,360	63	1.5	12.5	0.25	1,480	39	0.1	10	0.1
2060	6	9	1,960	70	3	9	0.6	1,200	39	0.3	6	0.3
		18	1,960	70	1.8	15	0.3	1,200	39	0.12	12	0.12
2080	8	24	1,480	67	2.4	20	0.4	960	35	0.16	16	0.16
2100	10	30	1,160	67	3	25	0.5	760	35	0.2	20	0.2
2120	12	36	960	63	3.6	30	0.6	640	32	0.24	24	0.24

Milling Conditions for C-CES-S（2 Flutes）

Milling amount for slotting（mm）

D＜φ1

Work Material \ Length of Cut	2D or below	3D or below
45HRC or below	a_p=0.1D	a_p=0.05D
45HRC or above	a_p=0.02D	a_p=0.01D



φ1≦D＜φ3

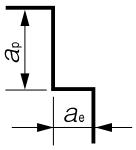
Work Material \ Length of Cut	2D or below	3D or below
45HRC or below	a_p=0.25D	a_p=0.125D
45HRC or above	a_p=0.05D	a_p=0.02D

φ3≦D

Work Material \ Length of Cut	2D or below	3D or below
45HRC or below	a_p=0.5D	a_p=0.3D
45HRC or above	a_p=0.05D	a_p=0.02D

Milling amount for side milling（mm）

Work Material \ Length of Cut	2D or below	3D or below
45HRC or below	a_p=1.5D a_e=0.1D	a_p=2.5D a_e=0.05D
45HRC or above	a_p=1D a_e=0.05D	a_p=2D a_e=0.02D



D：Outside Diameter（mm）

Ex.）2D or below : Flute Length = Diameter × 2 or below

Note:

・Recommend water soluble or oil coolant.

・Recommend oil coolant for Titanium Alloys and Heat Resistant Alloys.