



Size $\phi 0.2 \sim \phi 6$

C-CER

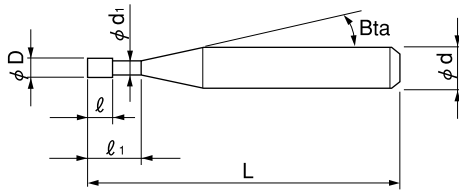


Material Applications (☆ Highly Recommended ○ Recommended ○ Suggested)

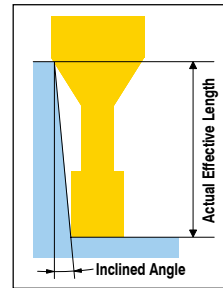
Work Material															
Carbon Steels S45C S55C	Alloy Steels SK / SCM SUS	Prehardened Steels NAK HPM	Hardened Steels			Cast Iron	Aluminum Alloys	Graphite	Copper	Plastics	Glass Filled Plastics	Titanium Alloys	Heat Resistant Alloys	Cemented Carbide	Hard Brittle (Non-Metallic) Materials
			~55HRC	~60HRC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

Features

Recommend deep rib milling using an under cut design.



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 138 models

Unit (mm)

Model Number	Outside Diameter ϕD	Effective Length l_1	Length of Cut l	Neck Diameter ϕd_1	Shank Taper Angle Bta	Overall Length L	Shank Diameter ϕd	Price (¥)	Effective Length by Inclined Angles									
									30'	1°	1° 30'	2°	3°					
C-CER 2002-0.5	0.2	0.5	0.3	0.18	16°	45	4	8,640	0.65	0.70	0.74	0.78	0.85					
C-CER 2002-1		1												1.18	1.25	1.31	1.36	1.45
C-CER 2002-1.5		1.5																
C-CER 2003-1	0.3	1	0.4	0.28	16°	45	4	7,560	1.22	1.30	1.37	1.43	1.55					
C-CER 2003-2		2												2.24	2.36	2.46	2.55	2.70
C-CER 2003-3		3																
C-CER 2004-2	0.4	2	0.6	0.38	16°	45	4	6,700	2.31	2.47	2.60	2.71	2.91					
C-CER 2004-3		3												3.38	3.57	3.72	3.85	4.07
C-CER 2004-4		4																
C-CER 2004-5		5				45	4	5,520	5.49	5.73	5.91	6.06	6.33					
C-CER 2005-2	0.5	2	0.7	0.48	16°	45	4	3,960	2.37	2.56	2.71	2.85	3.09					
C-CER 2005-4		4												4.52	4.77	4.97	5.14	5.44
C-CER 2005-6		6																
C-CER 2005-8		8												6.64	6.94	7.17	7.37	7.71

Unit (mm)

Model Number	Outside Diameter ϕD	Effective Length ℓ_1	Length of Cut ℓ	Neck Diameter ϕd_1	Shank Taper Angle Bta	Overall Length L	Shank Diameter ϕd	Price (¥)	Effective Length by Inclined Angles				
									30°	1°	1° 30'	2°	3°
C-CER 2006-2	0.6	2	0.9	0.58	16°	45	4	4,200	2.35	2.59	2.78	2.94	3.23
C-CER 2006-4		4				45	4	4,200	4.54	4.84	5.08	5.28	5.68
C-CER 2006-6		6				45	4	4,200	6.68	7.03	7.30	7.56	8.13
C-CER 2006-8		8				45	4	6,840	8.80	9.19	9.51	9.84	10.58
C-CER 2006-10		10				45	4	7,920	10.90	11.33	11.71	12.11	13.02
C-CER 2007-2	0.7	2	1	0.68	16°	45	4	4,800	2.35	2.59	2.78	2.94	3.23
C-CER 2007-3		3				45	4	4,800	3.46	3.73	3.94	4.13	4.46
C-CER 2007-4		4				45	4	4,800	4.54	4.84	5.08	5.28	5.68
C-CER 2007-6		6				45	4	4,800	6.68	7.03	7.30	7.56	8.13
C-CER 2007-8		8				45	4	7,000	8.80	9.19	9.51	9.84	10.58
C-CER 2007-10	10	50	4	8,000	10.90	11.33	11.71	12.11	13.02				
C-CER 2008-4	0.8	4	1.2	0.78	16°	45	4	4,680	4.54	4.84	5.08	5.28	5.68
C-CER 2008-6		6				45	4	4,680	6.68	7.03	7.30	7.56	8.13
C-CER 2008-8		8				45	4	4,680	8.80	9.19	9.51	9.84	10.58
C-CER 2008-10		10				50	4	6,840	10.90	11.33	11.71	12.11	13.02
C-CER 2008-12		12				50	4	7,800	12.99	13.45	13.91	14.39	15.47
C-CER 2009-4	0.9	4	1.3	0.88	16°	45	4	5,000	4.54	4.84	5.08	5.28	5.68
C-CER 2009-6		6				45	4	5,400	6.68	7.03	7.30	7.56	8.13
C-CER 2009-8		8				45	4	5,400	8.80	9.19	9.51	9.84	10.58
C-CER 2009-10		10				45	4	5,400	10.90	11.33	11.71	12.11	13.02
C-CER 2009-15		15				50	4	8,000	16.11	16.65	17.21	17.81	19.14
C-CER 2010-4	1	4	1.5	0.95	16°	45	4	4,200	4.66	4.93	5.15	5.34	5.74
C-CER 2010-6		6				45	4	4,200	6.78	7.10	7.36	7.62	8.19
C-CER 2010-8		8				45	4	4,200	8.88	9.25	9.56	9.90	10.64
C-CER 2010-10		10				45	4	4,200	10.97	11.38	11.76	12.17	13.09
C-CER 2010-12		12				45	4	4,200	13.06	13.51	13.97	14.45	15.53
C-CER 2010-16	16	50	4	6,840	17.20	17.77	18.37	19.01	20.43				
C-CER 2010-20	20	55	4	6,840	21.34	22.03	22.77	23.56	25.32				
C-CER 2012-6	1.2	6	1.8	1.14	11°	45	4	4,440	6.29	6.61	6.95	7.34	8.25
C-CER 2012-8		8				45	4	4,440	8.39	8.80	9.26	9.78	10.99
C-CER 2012-10		10				45	4	4,440	10.48	11.00	11.58	12.21	13.72
C-CER 2012-12		12				45	4	4,440	12.58	13.20	13.89	14.65	16.46
C-CER 2012-16		16				50	4	7,080	16.76	17.59	18.51	19.53	21.94
C-CER 2014-6	1.4	6	2.1	1.34	11°	45	4	4,560	6.29	6.61	6.95	7.34	8.25
C-CER 2014-8		8				45	4	4,560	8.39	8.80	9.26	9.78	10.99
C-CER 2014-10		10				45	4	4,560	10.48	11.00	11.58	12.21	13.72
C-CER 2014-12		12				45	4	4,560	12.58	13.20	13.89	14.65	16.46
C-CER 2014-14		14				45	4	4,560	14.67	15.40	16.20	17.09	19.20
C-CER 2014-16	16	50	4	5,280	16.76	17.59	18.51	19.53	21.94				
C-CER 2014-22	22	55	4	7,080	23.05	24.19	25.44	26.84	No Interference				
C-CER 2015-6	1.5	6	2.3	1.44	11°	45	4	4,440	6.29	6.61	6.95	7.34	8.25
C-CER 2015-8		8				45	4	4,440	8.39	8.80	9.26	9.78	10.99
C-CER 2015-10		10				45	4	4,440	10.48	11.00	11.58	12.21	13.72
C-CER 2015-12		12				45	4	4,440	12.58	13.20	13.89	14.65	16.46
C-CER 2015-14		14				50	4	4,560	14.67	15.40	16.20	17.09	19.20
C-CER 2015-16	16	50	4	4,560	16.76	17.59	18.51	19.53	21.94				
C-CER 2015-18	18	55	4	4,560	18.86	19.79	20.82	21.97	No Interference				
C-CER 2015-20	20	55	4	4,560	20.95	21.99	23.13	24.40	No Interference				

Square
Long Neck SquareRadius
Long Neck RadiusBall / Long Shank Ball
Long Neck Ball
Taper Neck Ball

Taper

Spiral V Cutter

Drill Thread Mill

EURO Series

Technical Data

Model Number	Outside Diameter ϕD	Effective Length ℓ_1	Length of Cut ℓ	Neck Diameter ϕd_1	Shank Taper Angle Bta	Overall Length L	Shank Diameter ϕd	Price (¥)	Effective Length by Inclined Angles				
									30'	1°	1° 30'	2°	3°
C-CER 2016-6	1.6	6	2.4	1.51	11°	45	4	4,560	6.35	6.66	7.01	7.40	8.32
C-CER 2016-8		8							8.44	8.86	9.32	9.84	11.06
C-CER 2016-10		10							10.54	11.06	11.64	12.28	13.79
C-CER 2016-12		12							12.63	13.26	13.95	14.71	16.53
C-CER 2016-14		14							14.72	15.45	16.26	17.15	19.27
C-CER 2016-16		16							16.82	17.65	18.57	19.59	22.01
C-CER 2016-18		18							18.91	19.85	20.88	22.03	No Interference
C-CER 2016-20		20							21.01	22.05	23.19	24.47	No Interference
C-CER 2016-26		26							27.29	28.64	30.13	31.78	No Interference
C-CER 2018-6	1.8	6	2.7	1.71	11°	45	4	4,560	6.35	6.66	7.01	7.40	8.32
C-CER 2018-8		8							8.44	8.86	9.32	9.84	11.06
C-CER 2018-10		10							10.54	11.06	11.64	12.28	13.79
C-CER 2018-12		12							12.63	13.26	13.95	14.71	16.53
C-CER 2018-14		14							14.72	15.45	16.26	17.15	19.27
C-CER 2018-16		16							16.82	17.65	18.57	19.59	No Interference
C-CER 2018-18		18							18.91	19.85	20.88	22.03	No Interference
C-CER 2018-20		20							21.01	22.05	23.19	24.47	No Interference
C-CER 2018-25		25							26.24	27.54	28.97	30.56	No Interference
C-CER 2020-6	2	6	3	1.91	11°	45	4	4,440	6.35	6.66	7.01	7.40	8.32
C-CER 2020-8		8							8.44	8.86	9.32	9.84	11.06
C-CER 2020-10		10							10.54	11.06	11.64	12.28	13.79
C-CER 2020-12		12							12.63	13.26	13.95	14.71	16.53
C-CER 2020-14		14							14.72	15.45	16.26	17.15	19.27
C-CER 2020-16		16							16.82	17.65	18.57	19.59	No Interference
C-CER 2020-18		18							18.91	19.85	20.88	22.03	No Interference
C-CER 2020-20		20							21.01	22.05	23.19	24.47	No Interference
C-CER 2020-25		25							26.24	27.54	28.97	No Interference	No Interference
C-CER 2020-30	30	31.48	33.03	34.75	No Interference	No Interference							
C-CER 2025-8	2.5	8	3.7	2.41	11°	45	4	4,680	8.44	8.86	9.32	9.84	11.06
C-CER 2025-10		10							10.54	11.06	11.64	12.28	13.79
C-CER 2025-12		12							12.63	13.26	13.95	14.71	No Interference
C-CER 2025-14		14							14.72	15.45	16.26	17.15	No Interference
C-CER 2025-16		16							16.82	17.65	18.57	19.59	No Interference
C-CER 2025-18		18							18.91	19.85	20.88	No Interference	No Interference
C-CER 2025-20		20							21.01	22.05	23.19	No Interference	No Interference
C-CER 2025-25		25							26.24	27.54	28.97	No Interference	No Interference
C-CER 2025-30		30							31.48	33.03	No Interference	No Interference	No Interference
C-CER 2030-8	3	8	4.5	2.92	11°	45	6	6,000	8.44	8.86	9.32	9.83	11.05
C-CER 2030-10		10							10.53	11.05	11.63	12.27	13.79
C-CER 2030-12		12							12.62	13.25	13.94	14.71	16.53
C-CER 2030-14		14							14.72	15.45	16.25	17.15	19.26
C-CER 2030-16		16							16.81	17.65	18.56	19.58	22.00
C-CER 2030-18		18							18.91	19.84	20.88	22.02	24.74
C-CER 2030-20		20							21.00	22.04	23.19	24.46	27.48
C-CER 2030-25		25							26.24	27.53	28.97	30.55	No Interference
C-CER 2030-30		30							31.47	33.03	34.74	36.65	No Interference
C-CER 2030-35		35							36.71	38.52	40.52	42.74	No Interference
C-CER 2030-40		40							41.94	44.01	46.30	No Interference	No Interference

Square
Long Neck Square

Radius
Long Neck Radius

Ball / Long Shank Ball
Long Neck Ball

Taper Neck Ball
Taper

Spiral V Cutter
Drill Thread Mill

EURO Series
Technical Data

Unit (mm)

Model Number	Outside Diameter ϕD	Effective Length ℓ_1	Length of Cut ℓ	Neck Diameter ϕd_1	Shank Taper Angle Bta	Overall Length L	Shank Diameter ϕd	Price (¥)	Effective Length by Inclined Angles											
									30'	1°	1° 30'	2°	3°							
C-CER 2035-12	3.5	12	5	3.37	11°	50	6	8,400	12.76	13.39	14.09	14.86	16.70							
C-CER 2035-15		15							15.90	16.69	17.56	18.52	20.81							
C-CER 2035-16		16							16.95	17.79	18.71	19.74	22.18							
C-CER 2035-20		20							21.14	22.18	23.34	24.62	No Interference							
C-CER 2035-25		25							26.37	27.67	29.11	30.71	No Interference							
C-CER 2035-30		30							31.61	33.17	34.89	No Interference	No Interference							
C-CER 2035-35		35							36.84	38.66	40.67	No Interference	No Interference							
C-CER 2040-12	4	12	6	3.82	11°	50	6	6,960	12.89	13.53	14.24	15.02	16.88							
C-CER 2040-16		16							17.08	17.93	18.86	19.90	No Interference							
C-CER 2040-20		20							21.27	22.32	23.48	24.77	No Interference							
C-CER 2040-25		25							26.51	27.82	29.26	No Interference	No Interference							
C-CER 2040-30		30							31.74	33.31	35.04	No Interference	No Interference							
C-CER 2040-35		35							36.98	38.80	No Interference	No Interference	No Interference							
C-CER 2040-40		40							42.21	44.30	No Interference	No Interference	No Interference							
C-CER 2040-45		45							47.45	49.79	No Interference	No Interference	No Interference							
C-CER 2040-50		50							52.68	55.28	No Interference	No Interference	No Interference							
C-CER 2050-16		5							16	7.5	4.82	11°	60	6	8,760	17.08	17.93	18.86	No Interference	No Interference
C-CER 2050-20									20							21.27	22.32	No Interference	No Interference	No Interference
C-CER 2050-25	25		26.51	27.82	No Interference	No Interference	No Interference													
C-CER 2050-30	30		31.74	No Interference	No Interference	No Interference	No Interference													
C-CER 2050-35	35		36.98	No Interference	No Interference	No Interference	No Interference													
C-CER 2050-40	40		42.21	No Interference	No Interference	No Interference	No Interference													
C-CER 2050-50	50		52.68	No Interference	No Interference	No Interference	No Interference													
C-CER 2060-20	6		20	9	5.82	—	80	6	9,000							No Interference	No Interference	No Interference	No Interference	No Interference
C-CER 2060-30		30	9,240							No Interference	No Interference	No Interference	No Interference							
C-CER 2060-40		40	10,920							No Interference	No Interference	No Interference	No Interference							
C-CER 2060-50		50	13,800							No Interference	No Interference	No Interference	No Interference							
C-CER 2060-60		60	16,440							No Interference	No Interference	No Interference	No Interference							

Square

Long Neck Square

Radius

Long Neck Radius

Ball / Long Shank Ball

Long Neck Ball

Taper Neck Ball

Taper

Spiral V Cutter

Drill Thread Mill

EURO Series

Technical Data

Milling Conditions for C-CER

WORK MATERIAL		COPPER OFC / TPC				CARBON STEELS S45C / S50C (~225HB)			ALLOY STEELS SK / SCM / SUS (225~325HB)			PREHARDENED STEELS HARDENED STEELS NAK / SKD (30~45HRC)			HARDENED STEELS SKD11 / 81 / SKT (45~50HRC)		
Velocity		Vc=50~65m/min				Vc=50~65m/min			Vc=40~55m/min			Vc=30~50m/min			Vc=30~40m/min		
Model Number	Outside Diameter (mm)	Effective Length (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)
2002	0.2	0.5	50,000	330	0.005~0.011	50,000	280	0.005~0.009	50,000	250	0.004~0.008	50,000	220	0.003~0.006	50,000	190	0.002~0.004
		1	50,000	320	0.005~0.010	50,000	270	0.005~0.008	50,000	240	0.004~0.007	50,000	210	0.003~0.006	50,000	180	0.002~0.004
		1.5	47,000	270	0.002~0.005	47,000	230	0.002~0.004	47,000	200	0.002~0.003	47,000	180	0.001~0.003	47,000	150	0.001~0.002
2003	0.3	1	49,000	520	0.007~0.016	49,000	440	0.007~0.013	49,000	390	0.007~0.011	49,000	350	0.005~0.009	38,000	230	0.003~0.006
		2	37,000	330	0.003~0.007	37,000	280	0.003~0.006	37,000	250	0.003~0.005	37,000	220	0.002~0.004	37,000	190	0.001~0.003
		3	31,000	280	0.002~0.004	31,000	240	0.002~0.003	31,000	210	0.001~0.003	31,000	190	0.001~0.002	31,000	160	0.001~0.002
2004	0.4	2	47,000	720	0.01~0.020	47,000	600	0.01~0.017	47,000	560	0.009~0.015	42,000	410	0.007~0.012	30,000	250	0.005~0.008
		3	47,000	630	0.005~0.010	47,000	530	0.005~0.008	47,000	470	0.004~0.007	40,000	350	0.003~0.006	30,000	220	0.002~0.004
		4	39,000	520	0.002~0.005	39,000	440	0.002~0.004	37,000	370	0.002~0.004	31,000	270	0.002~0.003	30,000	220	0.001~0.002
		5	38,000	440	0.002~0.005	38,000	370	0.002~0.004	32,000	280	0.002~0.003	29,000	220	0.001~0.003	28,000	180	0.001~0.002
2005	0.5	2	47,000	900	0.014~0.028	47,000	750	0.014~0.023	43,000	610	0.012~0.021	38,000	460	0.009~0.016	25,000	260	0.004~0.007
		4	43,000	750	0.008~0.017	43,000	630	0.008~0.014	40,000	520	0.007~0.013	28,000	320	0.006~0.011	24,000	230	0.002~0.004
		6	31,000	460	0.004~0.008	31,000	390	0.004~0.007	26,000	290	0.003~0.006	24,000	230	0.002~0.004	23,000	190	0.002~0.003
		8	25,000	360	0.002~0.004	25,000	300	0.002~0.003	21,000	220	0.001~0.003	19,000	180	0.001~0.002	18,000	140	0.001~0.002
2006	0.6	2	46,000	1,050	0.018~0.036	46,000	880	0.018~0.03	40,000	670	0.016~0.027	32,000	470	0.012~0.021	21,000	270	0.009~0.015
		4	41,000	790	0.01~0.020	41,000	660	0.01~0.017	34,000	520	0.009~0.016	27,000	360	0.007~0.012	20,000	230	0.005~0.008
		6	31,000	600	0.005~0.011	31,000	500	0.005~0.009	26,000	370	0.005~0.008	21,000	260	0.003~0.006	20,000	210	0.002~0.004
		8	23,000	360	0.002~0.005	23,000	300	0.002~0.004	19,000	220	0.002~0.003	18,000	180	0.001~0.002	16,000	140	0.001~0.002
		10	21,000	330	0.002~0.005	21,000	280	0.002~0.004	17,000	200	0.002~0.003	16,000	160	0.001~0.002	15,000	130	0.001~0.002
2007	0.7	2	40,000	1,050	0.026~0.053	40,000	880	0.026~0.044	34,000	670	0.023~0.039	27,000	480	0.018~0.03	18,000	270	0.013~0.022
		3	40,000	1,050	0.022~0.044	40,000	880	0.022~0.037	34,000	670	0.02~0.033	27,000	470	0.015~0.026	18,000	270	0.011~0.018
		4	35,000	810	0.012~0.024	35,000	680	0.012~0.02	29,000	510	0.01~0.018	23,000	350	0.008~0.014	17,000	230	0.006~0.01
		6	27,000	620	0.006~0.013	27,000	520	0.006~0.011	22,000	380	0.005~0.009	18,000	270	0.004~0.007	17,000	220	0.003~0.005
		8	22,000	460	0.005~0.011	22,000	390	0.005~0.009	18,000	290	0.005~0.008	17,000	240	0.003~0.006	16,000	190	0.002~0.004
		10	20,000	360	0.002~0.005	20,000	300	0.002~0.004	16,000	220	0.002~0.004	15,000	180	0.001~0.003	14,000	140	0.001~0.002
2008	0.8	4	35,000	1,050	0.027~0.054	35,000	880	0.027~0.045	30,000	670	0.024~0.04	24,000	470	0.019~0.031	16,000	270	0.013~0.022
		6	31,000	820	0.013~0.028	31,000	690	0.013~0.023	25,000	510	0.012~0.02	20,000	350	0.009~0.016	15,000	220	0.006~0.011
		8	23,000	630	0.007~0.014	23,000	530	0.007~0.012	19,000	390	0.006~0.011	15,000	270	0.005~0.008	15,000	220	0.003~0.006
		10	19,000	450	0.006~0.012	19,000	380	0.006~0.01	16,000	280	0.005~0.009	15,000	230	0.004~0.007	14,000	180	0.003~0.005
		12	17,000	360	0.003~0.006	17,000	300	0.003~0.005	14,000	220	0.002~0.004	13,000	180	0.002~0.003	12,000	140	0.001~0.002

Square
Long Neck Square

Radius
Long Neck Radius

Ball / Long Shank Ball

Ball
Long Neck Ball
Taper Neck Ball

Taper

Spiral V Cutter

Drill Thread Mill

EURO Series

Technical Data

Milling Conditions for C-CER

WORK MATERIAL		COPPER OFC / TPC				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 (45~50HRC)		
Velocity		Vc=50~65m/min				Vc=50~65m/min			Vc=40~55m/min			Vc=30~50m/min			Vc=30~40m/min		
Model Number	Outside Diameter (mm)	Effective Length (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)
2009	0.9	4	31,000	1,090	0.028~0.058	31,000	910	0.028~0.048	26,000	690	0.026~0.043	21,000	480	0.02~0.033	14,000	270	0.014~0.024
		6	27,000	840	0.014~0.029	27,000	700	0.014~0.024	22,000	510	0.013~0.022	18,000	360	0.01~0.017	13,000	230	0.007~0.012
		8	21,000	640	0.008~0.016	21,000	540	0.008~0.013	17,000	400	0.007~0.012	14,000	280	0.005~0.009	13,000	230	0.004~0.006
		10	17,000	460	0.006~0.013	17,000	390	0.006~0.011	14,000	290	0.006~0.01	13,000	230	0.004~0.007	12,000	190	0.003~0.005
		15	11,000	320	0.003~0.006	11,000	270	0.003~0.005	13,000	200	0.003~0.005	12,000	160	0.002~0.003	11,000	130	0.001~0.002
2010	1	4	28,000	1,120	0.03~0.060	28,000	940	0.03~0.05	23,000	710	0.027~0.045	19,000	490	0.021~0.035	12,700	280	0.015~0.025
		6	24,000	850	0.015~0.030	24,000	710	0.015~0.025	20,000	520	0.013~0.023	16,000	360	0.01~0.017	12,000	230	0.007~0.012
		8	24,000	850	0.015~0.030	24,000	710	0.015~0.025	20,000	520	0.013~0.023	16,000	360	0.01~0.017	12,000	230	0.007~0.012
		10	19,000	640	0.008~0.017	19,000	540	0.008~0.014	15,000	400	0.007~0.012	12,000	280	0.005~0.009	12,000	230	0.004~0.007
		12	15,000	460	0.007~0.014	15,000	390	0.007~0.012	13,000	290	0.006~0.01	12,000	230	0.005~0.008	11,400	190	0.003~0.006
		16	12,000	360	0.003~0.007	12,000	300	0.003~0.006	10,500	220	0.003~0.005	9,700	180	0.002~0.004	9,100	140	0.001~0.003
		20	10,000	320	0.003~0.007	10,000	270	0.003~0.006	8,400	200	0.003~0.005	7,700	160	0.002~0.004	7,300	130	0.001~0.003
2012	1.2	6	23,000	1,050	0.036~0.072	23,000	880	0.036~0.06	20,000	670	0.032~0.054	16,000	470	0.025~0.042	10,000	260	0.018~0.03
		8	20,000	820	0.018~0.036	20,000	690	0.018~0.03	16,000	500	0.016~0.027	13,000	350	0.012~0.021	10,000	220	0.009~0.015
		10	15,000	630	0.01~0.019	15,000	530	0.01~0.016	13,000	390	0.009~0.015	10,600	270	0.007~0.011	10,000	220	0.005~0.008
		12	15,000	630	0.01~0.019	15,000	530	0.01~0.016	13,000	390	0.009~0.015	10,600	270	0.007~0.011	10,000	220	0.005~0.008
		16	11,000	320	0.004~0.008	11,000	270	0.004~0.007	9,000	200	0.003~0.006	9,000	160	0.003~0.005	8,400	130	0.002~0.003
2014	1.4	6	20,000	1,000	0.042~0.084	20,000	840	0.042~0.07	17,000	640	0.038~0.063	13,000	440	0.029~0.049	9,000	250	0.021~0.035
		8	17,000	790	0.021~0.042	17,000	660	0.021~0.035	14,000	480	0.019~0.032	11,500	330	0.015~0.025	8,600	210	0.01~0.017
		10	17,700	790	0.021~0.042	17,700	660	0.021~0.035	14,500	480	0.019~0.032	11,500	330	0.015~0.025	8,600	210	0.01~0.017
		12	13,000	620	0.011~0.023	13,000	520	0.011~0.019	11,000	380	0.01~0.017	9,000	270	0.008~0.013	8,600	220	0.005~0.009
		14	13,000	620	0.011~0.023	13,000	520	0.011~0.019	11,000	380	0.01~0.017	9,000	270	0.008~0.013	8,600	220	0.005~0.009
		16	11,000	430	0.01~0.020	11,000	360	0.01~0.017	9,000	270	0.009~0.015	8,000	220	0.007~0.011	8,100	180	0.005~0.008
		22	10,000	310	0.005~0.010	10,000	260	0.005~0.008	8,000	190	0.004~0.007	7,000	150	0.003~0.005	7,200	120	0.002~0.004
2015	1.5	6	18,000	1,030	0.045~0.090	18,000	860	0.045~0.075	15,000	650	0.04~0.068	12,000	460	0.031~0.052	8,400	260	0.022~0.037
		8	16,000	810	0.023~0.046	16,000	680	0.023~0.038	13,000	500	0.02~0.034	10,000	340	0.016~0.026	8,000	220	0.011~0.019
		10	16,000	810	0.023~0.046	16,000	680	0.023~0.038	13,000	500	0.02~0.034	10,000	340	0.016~0.026	8,000	220	0.011~0.019
		12	16,000	810	0.023~0.046	16,000	680	0.023~0.038	13,000	500	0.02~0.034	10,000	340	0.016~0.026	8,000	220	0.011~0.019
		14	12,700	620	0.012~0.025	12,700	520	0.012~0.021	10,600	390	0.011~0.018	8,400	270	0.008~0.014	8,000	220	0.006~0.01
		16	10,300	450	0.01~0.022	10,300	380	0.01~0.018	8,600	280	0.009~0.016	8,000	230	0.007~0.012	7,600	180	0.005~0.009
		18	10,300	450	0.01~0.022	10,300	380	0.01~0.018	8,600	280	0.009~0.016	8,000	230	0.007~0.012	7,600	180	0.005~0.009
		20	9,000	320	0.005~0.011	9,000	270	0.005~0.009	7,000	200	0.004~0.008	7,200	160	0.003~0.006	6,700	130	0.002~0.004

Square
Square
Long Neck SquareRadius
Radius
Long Neck Radius

Ball / Long Shank Ball

Ball
Long Neck Ball

Taper Neck Ball

Taper
Taper

Spiral V Cutter

Drill Thread Mill

EURO Series

Technical Data

Milling Conditions for C-CER

WORK MATERIAL		COPPER OFC / TPC			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 (45~50HRC)			
Velocity		Vc=50~65m/min			Vc=50~65m/min			Vc=40~55m/min			Vc=30~50m/min			Vc=30~40m/min			
Model Number	Outside Diameter (mm)	Effective Length (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)
2016	1.6	6	17,000	1,050	0.048~0.096	17,000	880	0.048~0.08	14,000	670	0.043~0.072	11,900	470	0.033~0.056	7,900	260	0.024~0.04
		8	17,000	1,050	0.048~0.096	17,000	880	0.048~0.08	14,000	670	0.043~0.072	11,900	470	0.033~0.056	7,900	260	0.024~0.04
		10	15,000	820	0.024~0.048	15,000	690	0.024~0.04	12,700	500	0.022~0.036	10,100	350	0.017~0.028	7,500	220	0.012~0.02
		12	15,000	820	0.024~0.048	15,000	690	0.024~0.04	12,700	500	0.022~0.036	10,100	350	0.017~0.028	7,500	220	0.012~0.02
		14	11,900	630	0.013~0.026	11,900	530	0.013~0.022	9,900	390	0.012~0.02	7,900	270	0.009~0.015	7,500	220	0.006~0.011
		16	11,900	630	0.013~0.026	11,900	530	0.013~0.022	9,900	390	0.012~0.02	7,900	270	0.009~0.015	7,500	220	0.006~0.011
		18	9,700	460	0.011~0.023	9,700	390	0.011~0.019	8,100	290	0.01~0.017	7,500	230	0.008~0.013	7,100	190	0.005~0.009
		20	9,000	450	0.011~0.023	9,000	380	0.011~0.019	8,100	280	0.01~0.017	7,500	230	0.008~0.013	7,100	180	0.005~0.009
		26	8,000	280	0.005~0.011	8,000	240	0.005~0.009	7,300	180	0.005~0.008	6,700	140	0.004~0.006	6,300	120	0.002~0.004
2018	1.8	6	15,000	1,030	0.051~0.102	15,000	860	0.051~0.085	13,200	650	0.045~0.076	10,600	460	0.035~0.059	7,000	260	0.025~0.042
		8	15,000	1,030	0.051~0.102	15,000	860	0.051~0.085	13,200	650	0.045~0.076	10,600	460	0.035~0.059	7,000	260	0.025~0.042
		10	13,700	810	0.027~0.055	13,700	680	0.027~0.046	11,400	500	0.024~0.041	9,000	340	0.019~0.032	6,700	220	0.013~0.023
		12	13,700	810	0.027~0.055	13,700	680	0.027~0.046	11,400	500	0.024~0.041	9,000	340	0.019~0.032	6,700	220	0.013~0.023
		14	13,700	810	0.027~0.055	13,700	680	0.027~0.046	11,400	500	0.024~0.041	9,000	340	0.019~0.032	6,700	220	0.013~0.023
		16	10,600	620	0.015~0.030	10,600	520	0.015~0.025	8,800	380	0.013~0.022	7,000	270	0.01~0.017	6,700	220	0.007~0.012
		18	10,600	620	0.015~0.030	10,600	520	0.015~0.025	8,800	380	0.013~0.022	7,000	270	0.01~0.017	6,700	220	0.007~0.012
		20	8,600	450	0.012~0.024	8,600	380	0.012~0.02	7,200	280	0.01~0.018	6,700	230	0.008~0.014	6,300	180	0.006~0.01
		25	7,700	310	0.006~0.012	7,700	260	0.006~0.01	6,500	200	0.005~0.009	6,000	160	0.004~0.007	5,600	130	0.003~0.005
2020	2	6	14,000	1,080	0.058~0.118	14,000	900	0.058~0.098	12,000	680	0.052~0.088	9,600	480	0.041~0.068	6,400	270	0.029~0.049
		8	14,000	1,020	0.052~0.106	14,000	850	0.052~0.088	12,000	650	0.047~0.079	9,600	450	0.037~0.061	6,400	260	0.026~0.044
		10	14,000	1,020	0.052~0.106	14,000	850	0.052~0.088	12,000	650	0.047~0.079	9,600	450	0.037~0.061	6,400	260	0.026~0.044
		12	12,300	790	0.026~0.053	12,300	660	0.026~0.044	10,400	500	0.024~0.04	8,100	340	0.018~0.031	6,000	220	0.013~0.022
		14	12,300	790	0.026~0.053	12,300	660	0.026~0.044	10,400	500	0.024~0.04	8,100	340	0.018~0.031	6,000	220	0.013~0.022
		16	12,300	790	0.026~0.053	12,300	660	0.026~0.044	10,400	500	0.024~0.04	8,100	340	0.018~0.031	6,000	220	0.013~0.022
		18	9,500	610	0.014~0.029	9,500	510	0.014~0.024	7,900	380	0.013~0.022	6,300	270	0.01~0.017	6,000	220	0.007~0.012
		20	9,500	610	0.014~0.029	9,500	510	0.014~0.024	7,900	380	0.013~0.022	6,300	270	0.01~0.017	6,000	220	0.007~0.012
		25	7,700	430	0.012~0.025	7,700	360	0.012~0.021	6,400	270	0.011~0.018	6,000	220	0.008~0.014	5,700	180	0.006~0.01
		30	7,000	310	0.006~0.012	7,000	260	0.006~0.01	5,800	190	0.005~0.009	5,400	150	0.004~0.007	5,000	120	0.003~0.005

Square
Long Neck Square

Radius
Long Neck Radius

Ball / Long Shank Ball
Long Neck Ball
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Technical Data

Milling Conditions for C-CER

WORK MATERIAL		COPPER OFC / TPC			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 (45~50HRC)					
Velocity		Vc=50~65m/min			Vc=50~65m/min			Vc=40~55m/min			Vc=30~50m/min			Vc=30~40m/min					
Model Number	Outside Diameter (mm)	Effective Length (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)		
2025	2.5	8	10,800	1,390	0.066~0.132	10,800	1,160	0.066~0.11	9,100	880	0.059~0.099	7,600	640	0.046~0.077	5,100	360	0.033~0.055		
		10	10,800	1,390	0.066~0.132	10,800	1,160	0.066~0.11	9,100	880	0.059~0.099	7,600	640	0.046~0.077	5,100	360	0.033~0.055		
		12	10,800	1,390	0.066~0.132	10,800	1,160	0.066~0.11	9,100	880	0.059~0.099	7,600	640	0.046~0.077	5,100	360	0.033~0.055		
		14	9,500	1,090	0.033~0.067	9,500	910	0.033~0.056	8,000	680	0.03~0.05	6,500	490	0.023~0.039	4,800	310	0.016~0.028		
		16	9,500	1,090	0.033~0.067	9,500	910	0.033~0.056	8,000	680	0.03~0.05	6,500	490	0.023~0.039	4,800	310	0.016~0.028		
		18	9,500	1,090	0.033~0.067	9,500	910	0.033~0.056	8,000	680	0.03~0.05	6,500	490	0.023~0.039	4,800	310	0.016~0.028		
		20	9,500	1,090	0.033~0.067	9,500	910	0.033~0.056	8,000	680	0.03~0.05	6,500	490	0.023~0.039	4,800	310	0.016~0.028		
		25	7,600	820	0.018~0.036	7,600	690	0.018~0.03	6,300	510	0.016~0.027	5,000	360	0.012~0.021	4,800	290	0.009~0.015		
		30	6,200	480	0.014~0.029	6,200	400	0.014~0.024	5,200	300	0.013~0.022	4,800	240	0.01~0.017	4,500	200	0.007~0.012		
2030	3	8	8,700	1,580	0.088~0.176	8,700	1,320	0.088~0.147	7,300	990	0.079~0.132	5,900	700	0.055~0.092	4,200	420	0.044~0.073		
		10	8,700	1,500	0.079~0.158	8,700	1,250	0.079~0.132	7,300	940	0.071~0.119	5,900	660	0.055~0.092	4,200	400	0.039~0.066		
		12	8,700	1,500	0.079~0.158	8,700	1,250	0.079~0.132	7,300	940	0.071~0.119	5,900	660	0.055~0.092	4,200	400	0.039~0.066		
		14	8,700	1,500	0.079~0.158	8,700	1,250	0.079~0.132	7,300	940	0.071~0.119	5,900	660	0.055~0.092	4,200	400	0.039~0.066		
		16	7,600	1,160	0.04~0.080	7,600	970	0.04~0.067	6,300	720	0.036~0.06	5,000	500	0.028~0.047	3,900	340	0.02~0.033		
		18	7,600	1,160	0.04~0.080	7,600	970	0.04~0.067	6,300	720	0.036~0.06	5,000	500	0.028~0.047	3,900	340	0.02~0.033		
		20	7,600	1,160	0.04~0.080	7,600	970	0.04~0.067	6,300	720	0.036~0.06	5,000	500	0.028~0.047	3,900	340	0.02~0.033		
		25	6,300	970	0.022~0.043	6,300	810	0.022~0.036	5,300	600	0.019~0.033	4,200	420	0.015~0.025	3,900	340	0.011~0.018		
				30	6,300	970	0.022~0.043	6,300	810	0.022~0.036	5,300	600	0.019~0.033	4,200	420	0.015~0.025	3,900	340	0.011~0.018
				35	5,100	490	0.017~0.035	5,100	410	0.017~0.029	4,300	300	0.016~0.026	4,000	240	0.012~0.02	3,800	200	0.008~0.014
		40	4,600	310	0.007~0.014	4,600	260	0.007~0.012	3,900	200	0.006~0.01	3,600	160	0.005~0.008	3,300	130	0.003~0.006		
2035	3.5	12	7,100	1,280	0.092~0.185	7,100	1,070	0.092~0.154	6,000	790	0.083~0.138	4,800	560	0.064~0.108	3,300	330	0.046~0.077		
		15	7,100	1,280	0.092~0.185	7,100	1,070	0.092~0.154	6,000	790	0.083~0.138	4,800	560	0.064~0.108	3,300	330	0.046~0.077		
		16	7,100	1,280	0.092~0.185	7,100	1,070	0.092~0.154	6,000	790	0.083~0.138	4,800	560	0.064~0.108	3,300	330	0.046~0.077		
		20	6,200	990	0.043~0.086	6,200	830	0.043~0.072	5,100	610	0.039~0.065	4,000	420	0.03~0.05	3,100	280	0.021~0.036		
		25	6,200	990	0.043~0.086	6,200	830	0.043~0.072	5,100	610	0.039~0.065	4,000	420	0.03~0.05	3,100	280	0.021~0.036		
		30	5,000	800	0.025~0.050	5,000	670	0.025~0.042	4,200	500	0.023~0.038	3,300	340	0.018~0.03	3,100	280	0.012~0.021		
		35	5,000	800	0.025~0.050	5,000	670	0.025~0.042	4,200	500	0.023~0.038	3,300	340	0.018~0.03	3,100	280	0.012~0.021		

Square
Square
Long Neck SquareRadius
Radius
Long Neck RadiusBall / Long Shank Ball
BallLong Neck Ball
Taper Neck BallTaper
Taper

Spiral V Cutter

Drill Thread Mill

EURO Series

Technical Data

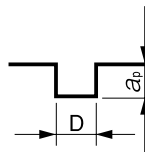
Milling Conditions for C-CER

WORK MATERIAL		COPPER OFC / TPC				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 (45~50HRC)		
Velocity		Vc=50~65m/min				Vc=50~65m/min			Vc=40~55m/min			Vc=30~50m/min			Vc=30~40m/min		
Model Number	Outside Diameter (mm)	Effective Length (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)	Spindle Speed (min ⁻¹)	Feed Rate (mm/min)	a _p Axial Depth (mm)
2040	4	12	6,000	1,170	0.1 ~0.202	6,000	980	0.1 ~0.168	5,000	720	0.09 ~0.151	3,900	500	0.07 ~0.117	2,700	290	0.05 ~0.084
		16	6,000	1,110	0.09 ~0.181	6,000	930	0.09 ~0.151	5,000	690	0.081~0.136	3,900	480	0.063~0.105	2,700	280	0.045~0.075
		20	6,000	1,110	0.09 ~0.181	6,000	930	0.09 ~0.151	5,000	690	0.081~0.136	3,900	480	0.063~0.105	2,700	280	0.045~0.075
		25	5,200	860	0.046~0.091	5,200	720	0.046~0.076	4,200	520	0.041~0.069	3,300	350	0.032~0.053	2,500	230	0.023~0.038
		30	5,200	860	0.046~0.091	5,200	720	0.046~0.076	4,200	520	0.041~0.069	3,300	350	0.032~0.053	2,500	230	0.023~0.038
		35	4,200	660	0.025~0.050	4,200	550	0.025~0.042	3,500	400	0.022~0.037	2,700	270	0.017~0.029	2,500	220	0.012~0.021
		40	4,200	660	0.025~0.050	4,200	550	0.025~0.042	3,500	400	0.022~0.037	2,700	270	0.017~0.029	2,500	220	0.012~0.021
		45	3,400	430	0.018~0.037	3,400	360	0.018~0.031	2,800	270	0.016~0.028	2,500	210	0.013~0.021	2,300	160	0.009~0.015
		50	3,400	380	0.018~0.037	3,400	320	0.018~0.031	2,800	240	0.016~0.028	2,500	190	0.013~0.021	2,300	140	0.009~0.015
2050	5	16	4,400	870	0.113~0.227	4,400	730	0.113~0.189	3,600	530	0.102~0.17	2,800	360	0.079~0.132	1,700	190	0.056~0.094
		20	4,400	870	0.113~0.227	4,400	730	0.113~0.189	3,600	530	0.102~0.17	2,800	360	0.079~0.132	1,700	190	0.056~0.094
		25	4,400	870	0.113~0.227	4,400	730	0.113~0.189	3,600	530	0.102~0.17	2,800	360	0.079~0.132	1,700	190	0.056~0.094
		30	3,800	630	0.057~0.115	3,800	530	0.057~0.096	3,000	380	0.051~0.086	2,200	240	0.04 ~0.067	1,600	150	0.028~0.048
		35	3,800	630	0.057~0.115	3,800	530	0.057~0.096	3,000	380	0.051~0.086	2,200	240	0.04 ~0.067	1,600	150	0.028~0.048
		40	3,800	630	0.057~0.115	3,800	530	0.057~0.096	3,000	380	0.051~0.086	2,200	240	0.022~0.036	1,600	150	0.028~0.048
		50	2,900	460	0.031~0.062	2,900	390	0.031~0.052	2,400	280	0.028~0.047	1,700	180	0.022~0.036	1,600	140	0.015~0.026
2060	6	20	3,300	670	0.113~0.227	3,300	560	0.113~0.189	2,700	400	0.102~0.17	2,000	260	0.079~0.132	1,100	130	0.056~0.094
		30	3,300	670	0.113~0.227	3,300	560	0.113~0.189	2,700	400	0.102~0.17	2,000	260	0.079~0.132	1,100	130	0.056~0.094
		40	2,800	480	0.057~0.115	2,800	400	0.057~0.096	2,200	270	0.051~0.086	1,500	170	0.04 ~0.067	1,000	100	0.028~0.048
		50	2,100	330	0.031~0.062	2,100	280	0.031~0.052	1,600	200	0.028~0.047	1,100	120	0.022~0.036	1,000	90	0.015~0.026
		60	2,100	330	0.031~0.062	2,100	280	0.031~0.052	1,600	200	0.028~0.047	1,100	120	0.022~0.036	1,000	90	0.015~0.026

Slotting

D : Outside Diameter (mm)

a_p : Axial Depth (mm)



Note:

- Decrease both spindle speed and feed rate proportionally when the milling parameters exceed the machine's maximum spindle speed.
- Recommend water soluble or oil coolant.
- Recommend oil coolant for Titanium Alloys and Heat Resistant Alloys.