Size φ0.3～φ12

CPS

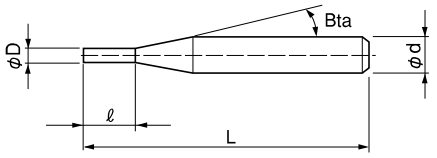
MG | 30° | Flatland | Shank Dia 0/-0.005

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

Medium length of cut design for Plastic milling.
Original flute design offers excellent surface finish.
Length of cut = outside diameter x3 (Note: outside diameter x1.5~2 is partially included).
Provides excellent milling surface for long overhang milling on Plastics.



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 23 models　　Unit（mm）

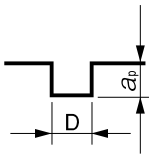
	Model Number	Outside Diameter φD	Length of Cut ℓ	Shank Taper Angle Bta	Overall Length L	Shank Diameter φd	Suggested Retail Price ¥
	CPS 2003	0.3	0.9	16°	45	4	6,480
	CPS 2004	0.4	1.2	16°	45	4	7,080
	CPS 2005	0.5	1.5	16°	45	4	4,800
	CPS 2006	0.6	1.8	16°	45	4	5,520
	CPS 2007	0.7	2.1	16°	45	4	6,000
	CPS 2008	0.8	2.4	16°	45	4	5,520
	CPS 2009	0.9	2.7	16°	45	4	6,000
	CPS 2010	1	3	16°	50	4	3,840
	CPS 2012	1.2	3.6	16°	50	4	4,200
	CPS 2015	1.5	4.5	16°	50	4	4,200
	CPS 2020	2	6	16°	55	4	4,200
	CPS 2025	2.5	7.5	16°	55	4	4,300
	CPS 2030	3	9	16°	60	6	5,400
◎	CPS 2030SS		4.5	—	60	3	5,200
◎	CPS 2030SSL		6		100	3	7,800
	CPS 2040	4	12	16°	60	6	5,400
◎	CPS 2040SS		6	—	60	4	5,200
◎	CPS 2040SSL		8		100	4	9,600
	CPS 2050	5	15	16°	60	6	6,240
◎	CPS 2060	6	18	—	60	6	6,600
◎	CPS 2080	8	24	—	80	8	12,100
◎	CPS 2100	10	30	—	80	10	14,850
◎	CPS 2120	12	36	—	90	12	22,000

◎ Straight shank type

Milling Conditions for CPS

WORK MATERIAL			ABS / MC NYLON			ACRYLIC / POLYACETAL			POLYCARBONATE			GLASS FIBER REINFORCED POLYCARBONATE		
Model Number	Outside Diameter (mm)	Length of Cut (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)
2003	**0.3**	0.9	20,000	320	0.3	16,000	160	0.3	16,000	130	0.2	16,000	260	0.2
2004	**0.4**	1.2	20,000	400	0.4	16,000	160	0.4	16,000	130	0.2	16,000	260	0.3
2005	**0.5**	1.5	20,000	480	0.5	16,000	160	0.5	16,000	130	0.3	16,000	320	0.4
2006	**0.6**	1.8	20,000	600	0.6	16,000	200	0.5	16,000	130	0.3	16,000	390	0.5
2007	**0.7**	2.1	20,000	720	0.7	16,000	260	0.6	16,000	160	0.4	16,000	390	0.6
2008	**0.8**	2.4	20,000	800	0.8	16,000	320	0.7	16,000	160	0.4	15,200	430	0.6
2009	**0.9**	2.7	20,000	880	0.9	14,200	340	0.8	14,200	170	0.5	14,200	460	0.7
2010	**1**	3	20,000	1,000	1	14,100	430	0.9	14,100	290	0.5	14,100	510	0.8
2012	**1.2**	3.6	20,000	1,080	1.2	14,100	480	1.1	14,100	340	0.6	14,100	650	1
2015	**1.5**	4.5	20,000	1,160	1.5	12,800	460	1.4	12,800	390	0.8	13,200	740	1.2
2020	**2**	6	20,000	1,200	2	12,800	510	1.6	12,500	430	0.6	13,100	740	1.4
2025	**2.5**	7.5	20,000	1,200	2.5	12,800	570	2	10,200	450	0.8	12,700	760	1.8
2030	**3**	9	20,000	1,200	3	12,800	640	2.4	9,600	430	0.9	10,700	810	2.1
2030SS	**3**	4.5	20,000	1,200	3	12,800	640	2.4	9,600	430	0.9	10,700	810	2.1
2030SSL	**3**	6	20,000	1,200	3	12,800	640	2.4	9,600	430	0.9	10,700	810	2.1
2040	**4**	12	14,900	1,200	4	12,000	600	3.2	8,000	400	1.2	8,000	770	2.8
2040SS	**4**	6	14,900	1,200	4	12,000	600	3.2	8,000	400	1.2	8,000	770	2.8
2040SSL	**4**	8	14,900	1,200	4	12,000	600	3.2	8,000	400	1.2	8,000	770	2.8
2050	**5**	15	12,000	960	5	9,600	480	4	6,400	320	1.5	6,400	620	3.5
2060	**6**	18	10,000	800	6	8,000	400	4.8	5,400	270	1.8	5,400	510	4.2
2080	**8**	24	7,500	600	8	6,000	300	6.4	4,000	200	2.4	4,000	390	5.6
2100	**10**	30	6,000	480	10	4,800	240	8	3,200	160	3	3,200	310	7
2120	**12**	36	5,000	400	12	4,000	200	9.6	2,700	140	3.6	2,700	260	8.4

Milling Amount for Slotting (mm)

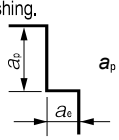


D : Outside Diameter (mm)

CPS finishing conditions for side milling

Refer to the slotting parameters for spindle speed and feed rate.
Set the milling amount as below during side milling finishing.

Milling Amount for Side Finishing (mm)
a_e : 0.01 ~ 0.015D (Min 0.01 mm)
D : Outside Diameter (mm)



a_p = 2D
length of cut or below

Note:
- Control the radial depth (a_e) by approximately 0.01-0.015 times of the outside diameter or set to 0.01 mm the minimum during side milling finishing.
- Increase the feed rate per flute to reduce burring on surface of softer materials.
- Chattering may occur when using a spindle with low rigidity or when milling unstable work piece. Reduce the milling amount in this case.
- Recommend to reduce the milling amount when using a machine with low spindle speed. Not recommend to reduce the feed rate.
- Adjust the milling parameters based on the overhang length.
- Recommend water soluble coolant for Aluminum Alloys and Copper.
- Recommend air blow for Plastics.
- Remove chips from the work piece to keep the milling surface quality.
- If chips clog on the tool, stop the operation and remove them accordingly.
- Straight shank type (2030SS, 2030SSL, 2040SS, 2040SSL, etc.) has smaller outside diameter than shank diameter. Prevent the shank making contact with the work piece.