



Size  $\phi 0.5 \sim \phi 4$

# CPRL



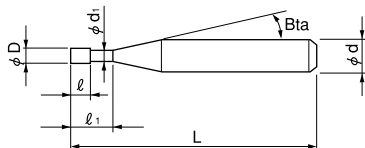
( $\phi 0.5 \sim \phi 2$ ) ( $\phi 3$  and above)

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

Long neck & shank design for milling Plastics.  
High performance for deep rib cut milling.  
Excellent cutting performance for milling 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 36 models

Unit (mm)

Model Number	Outside Diameter $\phi D$	Effective Length $\ell_1$	Length of Cut $\ell$	Neck Diameter $\phi d_1$	Shank Taper Angle Bta	Overall Length L	Shank Diameter $\phi d$	Price (¥)				
CPRL 2005-4	0.5	4	1	0.45	11°	80	4	8,000				
CPRL 2005-6		6				80	4	8,000				
CPRL 2005-8		8				80	4	9,000				
CPRL 2005-10		10				80	4	9,800				
CPRL 2010-6	1	6	2	0.9	11°	80	4	6,000				
CPRL 2010-8		8				80	4	6,000				
CPRL 2010-10		10				80	4	6,000				
CPRL 2010-12		12				80	4	6,000				
CPRL 2010-14		14				80	4	6,000				
CPRL 2010-16		16				80	4	6,000				
CPRL 2010-18		18				80	4	7,200				
CPRL 2010-21		21				80	4	7,800				
CPRL 2015-6		1.5				6	3	1.4	11°	80	4	6,000
CPRL 2015-8						8				80	4	6,000
CPRL 2015-10	10		80	4	6,000							
CPRL 2015-14	14		80	4	6,000							
CPRL 2015-16	16		80	4	6,000							
CPRL 2015-21	21		80	4	6,000							

Unit (mm)

Model Number	Outside Diameter $\phi D$	Effective Length $\ell_1$	Length of Cut $\ell$	Neck Diameter $\phi d_1$	Shank Taper Angle Bta	Overall Length L	Shank Diameter $\phi d$	Price (¥)
CPRL 2020-8	2	8	4	1.9	11°	80	4	6,000
CPRL 2020-10		10				80	4	6,000
CPRL 2020-12		12				80	4	6,000
CPRL 2020-14		14				80	4	6,000
CPRL 2020-16		16				80	4	6,000
CPRL 2020-18		18				80	4	6,000
CPRL 2020-21		21				80	4	6,000
CPRL 2020-26		26				80	4	6,000
CPRL 2020-32		32				80	4	6,000
CPRL 2020-40		40				100	4	9,400
CPRL 2030-12	3	12	6	2.8	11°	100	6	7,800
CPRL 2030-16		16				100	6	7,800
CPRL 2030-21		21				100	6	7,800
CPRL 2030-26		26				100	6	7,800
CPRL 2030-32		32				100	6	8,600
CPRL 2040-18	4	18	8	3.8	11°	100	6	8,300
CPRL 2040-24		24				100	6	8,300
CPRL 2040-32		32				100	6	8,300

\* Model 2005 to 2020 has a sharp corner design.



\* Model 2030 to 2040 has a flatland design.



CPRL Series  
Acrylic  
Milling Video



Square

Square  
Long Neck  
Square

Radius

Radius  
Long Neck  
RadiusBall / Long  
Shank BallBall  
Long Neck  
BallTaper Neck  
BallTaper  
TaperSpiral  
V CutterDrill  
Thread Mill

EURO Series

Technical Data

Milling Conditions for CPRL

Model Number	Outside Diameter (mm)	Effective Length (mm)	ABS/MC Nylon			Acrylic/Polyacetal			Polycarbonate			Glass Fiber Reinforced Polycarbonate		
			Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	a <sub>p</sub> Axial Depth (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	a <sub>p</sub> Axial Depth (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	a <sub>p</sub> Axial Depth (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)	a <sub>p</sub> Axial Depth (mm)
2005-4	0.5	4	6,000	300	0.2	15,000	300	0.2	9,000	300	0.2	9,000	90	0.2
2005-6	0.5	6	6,000	300	0.2	15,000	300	0.2	9,000	300	0.2	9,000	90	0.2
2005-8	0.5	8	6,000	300	0.2	15,000	300	0.2	9,000	300	0.2	9,000	90	0.2
2005-10	0.5	10	6,000	300	0.2	15,000	300	0.2	9,000	300	0.2	9,000	90	0.2
2010-6	1	6	6,000	500	0.3	12,000	300	0.3	8,000	1,500	0.3	8,000	1,500	0.3
2010-8	1	8	6,000	500	0.3	11,500	270	0.3	7,700	1,400	0.3	7,700	1,400	0.3
2010-10	1	10	6,000	500	0.3	11,000	240	0.3	7,500	1,200	0.3	7,500	1,400	0.3
2010-12	1	12	6,000	500	0.3	10,400	220	0.3	7,200	1,100	0.3	7,200	1,300	0.3
2010-14	1	14	6,000	500	0.3	9,900	190	0.3	6,900	970	0.3	6,900	1,200	0.3
2010-16	1	16	6,000	500	0.3	9,300	160	0.3	6,700	830	0.3	6,700	1,200	0.3
2010-18	1	18	6,000	500	0.3	8,800	130	0.3	6,400	700	0.3	6,400	1,100	0.3
2010-21	1	21	6,000	500	0.3	8,000	90	0.3	6,000	500	0.3	6,000	1,000	0.3
2015-6	1.5	6	6,100	780	0.5	11,200	380	0.5	8,000	1,600	0.5	8,000	1,700	0.5
2015-8	1.5	8	6,100	770	0.5	10,700	350	0.5	7,700	1,500	0.5	7,700	1,600	0.5
2015-10	1.5	10	6,000	760	0.5	10,200	330	0.5	7,500	1,400	0.5	7,500	1,600	0.5
2015-14	1.5	14	6,000	730	0.5	9,600	270	0.5	7,000	1,100	0.5	7,000	1,400	0.5
2015-16	1.5	16	6,000	730	0.5	8,800	250	0.5	6,700	1,000	0.5	6,700	1,400	0.5
2015-21	1.5	21	5,900	700	0.5	7,600	180	0.5	6,100	750	0.5	6,100	1,200	0.5
2020-8	2	8	6,100	1,000	1	10,100	440	1	7,900	1,700	1	7,900	1,800	1
2020-10	2	10	6,000	980	1	9,800	420	1	7,700	1,600	1	7,700	1,800	1
2020-12	2	12	6,000	970	1	9,500	400	1	7,500	1,600	1	7,500	1,700	1
2020-14	2	14	5,900	950	1	9,100	380	1	7,300	1,500	1	7,300	1,700	1
2020-16	2	16	5,900	930	1	8,800	360	1	7,100	1,400	1	7,100	1,600	1
2020-18	2	18	5,800	920	1	8,500	340	1	6,900	1,300	1	6,900	1,600	1
2020-21	2	21	5,700	890	1	8,000	300	1	6,500	1,200	1	6,500	1,500	1
2020-26	2	26	5,600	850	1	7,200	250	1	6,000	1,100	1	6,000	1,400	1
2020-32	2	32	5,400	800	1	6,200	190	1	5,400	850	1	5,400	1,300	1
2020-40	2	40	5,200	730	1	4,900	110	1	4,600	570	1	4,600	1,100	1
2030-12	3	12	6,000	1,500	1.5	8,000	560	1.5	7,500	1,800	1.5	7,500	2,100	1.5
2030-16	3	16	5,800	1,400	1.5	7,300	510	1.5	7,000	1,700	1.5	7,000	2,000	1.5
2030-21	3	21	5,600	1,300	1.5	6,400	440	1.5	6,300	1,500	1.5	6,300	1,800	1.5
2030-26	3	26	5,400	1,200	1.5	5,500	370	1.5	5,600	1,400	1.5	5,600	1,700	1.5
2030-32	3	32	5,200	1,100	1.5	4,500	290	1.5	4,800	1,200	1.5	4,800	1,400	1.5
2040-18	4	18	4,800	1,400	2	6,300	470	2	5,400	1,400	2	5,400	1,700	2
2040-24	4	24	4,700	1,300	2	5,600	410	2	4,900	1,300	2	4,900	1,600	2
2040-32	4	32	4,500	1,300	2	4,700	340	2	4,400	1,100	2	4,400	1,500	2

Square  
Long Neck Square

Radius  
Long Neck Radius

Ball / Long Shank Ball

Ball  
Long Neck Ball  
Taper Neck Ball

Taper

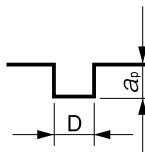
Spiral V Cutter

Drill Thread Mill

EURO Series

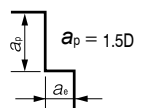
Technical Data

Milling Amount for Slotting (mm)  
 $a_p \leq 0.5D$   
 $D$  : Outside Diameter (mm)  
 $a_p$  : Axial Depth (mm)



CPRL Finishing Conditions for Side Milling  
 Refer to the slotting parameters for speeds and feeds.  
 Set the milling amount as below during side milling finishing.

Milling Amount for Slotting (mm)  
 $a_p$  : Axial Depth (mm)  
 $a_e$  : Radial Depth (mm)  
 $a_e : 0.01 \sim 0.015D$  (min. 0.01mm)  
 $D$  : Outside Diameter (mm)



## Milling Conditions for CPRL

- Note:
- Control the radial depth (ae) by approximately 0.01-0.015 times of the outside diameter or set to 0.01mm 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.
  - Recommend water soluble coolant for Stainless Steels and Aluminum Alloys.
  - 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.

Square

Long Neck  
Square

Radius

Long Neck  
RadiusBall / Long  
Shank BallLong Neck  
BallTaper Neck  
Ball

Taper

Spiral  
V CutterDrill  
Thread Mill

EURO Series

Technical Data