



Size  $\phi 3 \sim \phi 12$

# CRN-ES4000

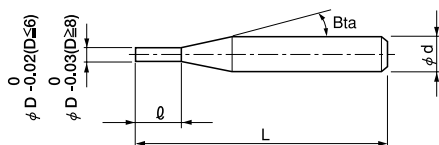


Material Applications (☆ Highly Recommended ● Recommended ○ Suggested)

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
			~55HRC	~60HRC	~70HRC										
S45C S55C	SK / SCM SUS	NAK HPM					○		☆	○					

**Features**

**CrN COAT offers longer tool life.**  
**Special geometry designed for Copper offers excellent milling performance.**  
**Refer to page 80 for 2 flute CRN-ES.**  
**Diameter Tolerance: 0/-0.02(D ≤ 6), 0/-0.03(D ≥ 8)**



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 10 models

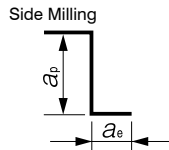
Unit (mm)

Model Number	Outside Diameter $\phi D$	Length of Cut $\ell$	Shank Taper Angle Bta	Overall Length L	Shank Diameter $\phi d$	Price (¥)
CRN-ES 4030-0900	3	9	11°	50	6	4,620
CRN-ES 4030-1200	3	12	11°	55	6	6,820
CRN-ES 4040-1200	4	12	11°	50	6	4,950
CRN-ES 4040-1600	4	16	11°	55	6	7,150
CRN-ES 4050-1500	5	15	11°	55	6	5,060
CRN-ES 4060-1800	6	18	—	60	6	5,390
CRN-ES 4060-2400	6	24	—	65	6	8,250
CRN-ES 4080-2400	8	24	—	80	8	9,480
CRN-ES 4100-3000	10	30	—	100	10	12,720
CRN-ES 4120-3600	12	36	—	100	12	15,840

## Milling Conditions for CRN-ES (4 Flutes)

### ◆3D flute length type

WORK MATERIAL		COPPER C1100	
		Side Milling	
Model Number	Outside Diameter (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)
4030-0900	3	10,000	600
4040-1200	4	8,000	650
4050-1500	5	6,500	750
4060-1800	6	5,500	750
4080-2400	8	4,200	700
4100-3000	10	3,500	700
4120-3600	12	2,800	700



$a_p$  : Axial Depth (mm)  
 $a_e$  : Radial Depth (mm)  
 D : Outside Diameter (mm)

### ◆4D flute length type

WORK MATERIAL		COPPER C1100	
		Side Milling	
Model Number	Outside Diameter (mm)	Spindle Speed (min <sup>-1</sup> )	Feed Rate (mm/min)
4030-1200	3	5,000	300
4040-1600	4	4,000	325
4060-2400	6	3,500	400

Length of Cut	3D Flute Length Type	4D Flute Length Type
Milling	$a_p$ 1.5D $a_e$ 0.1D	$a_p$ 2.5D $a_e$ 0.05D
Side Milling	$a_p$ 1.5D $a_e$ 0.1D	$a_p$ 2.5D $a_e$ 0.05D

#### Note:

- Decrease both spindle speed and feed rate proportionally in case of chattering.
- Adjust the milling amount and feed rate in accordance with required precision.
- Recommend water soluble or oil coolant.
- Recommended for Pure Copper. Not suitable for Tungsten Copper.

Square  
 Square  
 Long Neck Square

Radius  
 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