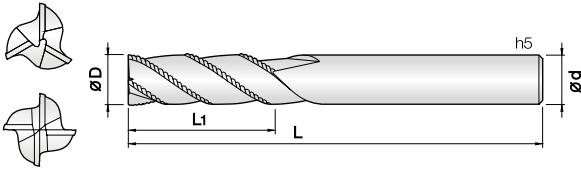


3&4HROUG

3&4 Flutes 45 ° Helix Fine Pitch Roughing End Mills for Generality



- Roughing Endmills for hard to cut materials, alloy steel, SUS, Inconel and structural steel.
- JCRO coating provides wear resistance improvement as well as avoid edge stress in various applications.
- Long tool life with low cutting force by 45 ° degree helix design.
- Fine pitch shape design for high speed roughing application.

3

4

WC

JCRO
Coating

D
-0.02 -0.04
ø4~ø9

D
-0.02 -0.05
ø10~ø20

45°
Helix Angle

Shield Edge

D Size	D Tolerance
ø4 ~ 9	0.02 ~ -0.04 mm
ø10 ~ 20	0.02 ~ -0.05 mm

Side Cutting

Material	Mild Steels/ Carbon Steels		Alloy Steels/ Tool Steels		Tool Steels/ Prehardened Steels		Tool Steels/ Stainless Steels	
	SS400 / S55C		SCM / SKT / SKD		SKD / SKT / NAK55 / HPM1		SUS304 / SKD	
Hardness	~750N/mm ²		~30HRC		30 ~ 38HRC		38 ~ 45HRC	
Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	5,800	600	4,800	300	4,100	200	3,200	150
5mm	5,800	600	4,800	310	3,700	230	2,800	170
6mm	4,800	600	4,200	330	3,200	250	2,400	200
8mm	3,700	600	3,100	380	2,400	290	1,800	220
10mm	3,000	600	2,500	400	1,800	300	1,500	250
12mm	2,400	600	2,100	410	1,600	310	1,300	250
16mm	1,850	600	1,600	440	1,200	330	1,000	250
20mm	1,500	550	1,300	430	900	320	750	240

Depth of Cut	Ap		Ae	
	1.5D	0.4D		

Depth of Cut	Ap		Aa	
	1.5D	0.3D		

Slotting

Material	Mild Steels/ Carbon Steels		Alloy Steels/ Tool Steels		Tool Steels/ Prehardened Steels		Tool Steels/ Stainless Steels	
	SS400 / S55C		SCM / SKT / SKD		SKD / SKT / NAK55 / HPM1		SUS304 / SKD	
Hardness	~750N/mm ²		~30HRC		30 ~ 38HRC		38 ~ 45HRC	
Outside Diameter	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
4mm	4,600	500	4,400	230	3,200	160	2,800	130
5mm	4,600	500	4,000	250	2,900	180	2,500	150
6mm	4,100	500	3,500	280	2,700	210	2,200	170
8mm	3,100	500	2,500	310	2,100	240	1,700	210
10mm	2,500	500	2,100	330	1,600	250	1,300	210
12mm	2,100	500	1,700	350	1,400	270	1,100	220
16mm	1,600	500	1,300	360	1,000	290	800	230
20mm	1,300	480	1,000	360	800	270	650	210

Depth of Cut	Ap : 0.75D ApMax=12mm		Ap	

Depth of Cut	Ap : 0.5D	