



- End mills for finishing and roughing of alloy steels, SUS, Inconel, Mild steels and various hard-to-cut materials.
- Chip emission is excellent for slotting, and thick double core designed enables continuous machining without chattering.
- Minimize fracturing by high TRS fine(0.5µm) WC grade.
- TISIN-R coating provides wear resistance improvement as well as avoid edge stress in various applications.

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C Cutting

Condition	D Size	D Tolerance	Condition	D Size	D Tolerance
ØD ≠ Ød	Ø 1 ~ 6	+0 ~ -0.01mm	ØD = Ød	Ø 6	-0.005 ~ -0.015mm
	Ø 8 ~ 20	+0 ~ -0.015mm		Ø 8 ~ 12	-0.01 ~ -0.025mm
		Ø 14 ~ 20		-0.015 ~ -0.03mm	

mm

Order Number	Diameter D	Length of cut L1	Chamfer C	Effective Length L2	Overall Length L	Shank Dia d
New 4SLE 010 030 S04	1	3	0.02	-	50	4
New 4SLE 010 060 S04	1	3	0.02	6	60	4
New 4SLE 010 080 S04	1	3	0.02	8	60	4
New 4SLE 010 100 S04	1	3	0.02	10	60	4
New 4SLE 015 040 S04	1.5	4	0.03	-	50	4
New 4SLE 015 060 S04	1.5	4	0.03	6	60	4
New 4SLE 015 080 S04	1.5	4	0.03	8	60	4
New 4SLE 015 100 S04	1.5	4	0.03	10	60	4
New 4SLE 015 120 S04	1.5	4	0.03	12	60	4
New 4SLE 020 060 S04	2	6	0.04	-	50	4
New 4SLE 020 080 S04	2	6	0.04	8	60	4
New 4SLE 020 100 S04	2	6	0.04	10	60	4
New 4SLE 020 120 S04	2	6	0.04	12	60	4
New 4SLE 020 160 S04	2	6	0.04	16	60	4
New 4SLE 025 070 S04	2.5	7	0.05	-	50	4
New 4SLE 025 180 S04	2.5	7	0.05	18	60	4
4SLE 030 080 S06	3	8	0.06	-	50	6
4SLE 030 210 S06	3	8	0.06	21	60	6
4SLE 040 100 S06	4	10	0.08	-	50	6
4SLE 040 210 S06	4	10	0.08	21	60	6
4SLE 060 150 S06	6	15	0.12	-	60	6
4SLE 060 210 S06	6	15	0.12	21	60	6
4SLE 080 200 S08	8	20	0.16	-	70	8
4SLE 080 270 S08	8	20	0.16	27	70	8
4SLE 100 250 S10	10	25	0.2	-	80	10
4SLE 100 350 S10	10	25	0.2	35	80	10
4SLE 120 300 S12	12	30	0.24	-	90	12
4SLE 120 400 S12	12	30	0.24	40	90	12
New 4SLE 140 350 S14	14	35	0.28	-	100	14
New 4SLE 140 450 S14	14	35	0.28	45	100	14
4SLE 160 400 S16	16	40	0.32	-	100	16
4SLE 160 500 S16	16	40	0.32	50	100	16
4SLE 200 450 S20	20	45	0.4	-	110	20
4SLE 200 550 S20	20	45	0.4	55	110	20

Order Number	Diameter D	Length of cut L1	Chamfer C	Effective Length L2	Overall Length L	Shank Dia d

V series

5VCC Cutting Condition

• RPM : rev./min • Feed : mm/min

Material	Structural steels / Carbon Steels / Gray cast irons SS/SC/FC				Tool steels / Mold steels SCM/HPM				Titanium alloy steels Ti6A				Heat Resistance Alloys				Stainless Steels SUS304 / SUS316			
	~30HRC				30 ~ 40HRC				-				-				-			
mm Outside Diameter	RPM	FEED	Ap Axial Depth	AE Radial Depth	RPM	FEED	Ap Axial Depth	AE Radial Depth	RPM	FEED	Ap Axial Depth	AE Radial Depth	RPM	FEED	Ap Axial Depth	AE Radial Depth	RPM	FEED	Ap Axial Depth	AE Radial Depth
Ø6	12,000	3,025	9.0	0.3	8,000	2,020	9.0	3.0	5,180	525	6.00	1.80	1,890	186	6.00	1.20	5,930	1,600	9.0	2.10
Ø8	9,000	3,300	12.0	0.4	5,900	2,300	12.0	4.0	3,800	670	8.00	2.40	1,430	186	8.00	1.60	4,480	1,820	12.0	2.80
Ø10	7,200	4,290	15.0	0.5	5,100	2,700	15.0	5.0	3,240	800	10.00	3.00	1,145	209	10.00	2.00	3,560	1,940	15.0	3.50
Ø12	6,000	4,400	18.0	0.6	4,300	2,700	18.0	6.0	2,590	840	12.00	3.60	945	230	12.00	2.40	2,970	2,000	18.0	4.20
Ø14	8,300	4,150	21.0	0.7	3,840	2,700	21.0	7.0	2,300	790	14.00	4.20	820	220	14.00	2.80	2,540	1,780	21.0	4.90
Ø16	4,500	3,850	24.0	0.8	3,250	2,700	24.0	8.0	1,900	735	16.00	4.80	715	210	16.00	3.20	2,240	1,520	24.0	5.60
Ø18	3,950	3,850	27.0	0.9	2,860	2,560	27.0	9.0	1,750	700	18.00	5.40	630	195	18.00	3.60	2,010	1,350	27.0	6.30
Ø20	3,480	3,850	30.0	1.0	2,500	2,430	30.0	10.0	1,620	670	20.00	6.00	570	185	20.00	4.00	1,800	1,220	30.0	7.00

Depth of Cut	Side Milling • Ap : Axial Depth • Ae : Radial Depth				Side Milling • Ap : Axial Depth • Ae : Radial Depth				Side Milling • Ap : Axial Depth • Ae : Radial Depth			

- When entering the tool to the workpiece, enter the tool from outside to the workpiece.
- If the diameter or effective length of your tool are not on the table, adjust it compared similarity value on the table.
- Set ae figure considering Corner C figure of diameter.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- If the table over the maximum RPM and feed of your machine, or found red heat on the material, adjust RPM and feed in the same proportion.
- Use a machine with low vibration and good rigidity (1 or less, the vibration tolerance management should be within 5µm)
- Air blow or mist coolants are recommended and note for chip emission, heat, or ignition.

4SLE Cutting Condition

• RPM : rev./min • Feed : mm/min

Material	Alloy Steels / Pre-hardened Steels NAK80 / KP4M 40~45HRC				Stainless Steels / Titanium alloy steels SUS304 / SUS316 / Ti6A				Heat Resistance Alloys			
	40 ~ 45HRC				-				-			
Outside Diameter	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth	RPM	FEED	Ap Axial Depth	Ae Radial Depth
Ø 3	13,270	740	2.4	3.0	5,840	260	2.4	3.0	3,185	115	2.4	3.0
Ø 4	9,950	710	3.2	4.0	4,380	245	3.2	4.0	2,390	115	3.2	4.0
Ø 6	6,630	720	4.8	6.0	2,920	245	4.8	6.0	1,590	115	4.8	6.0
Ø 8	4,970	800	6.4	8.0	2,190	245	6.4	8.0	1,190	115	6.4	8.0
Ø 10	3,980	800	8.0	10.0	1,750	245	8.0	10.0	955	115	8.0	10.0
Ø 12	3,320	800	9.6	12.0	1,460	245	9.6	12.0	796	115	9.6	12.0
Ø 16	2,490	800	12.8	16.0	1,095	245	12.8	16.0	597	115	12.8	16.0
Ø 20	1,990	800	16.0	20.0	880	245	16.0	20.0	480	115	16.0	20.0

Depth of Cut	Side Milling	

- If the effective length is long, reduce the RPM and feed in the same proportion.
- When entering the tool to the workpiece, enter the tool from outside to the workpiece.
- If the diameter or effective length of your tool are not on the table, adjust it compared similarity value on the table.
- The edge of the flute precisely grinded. If you want to measure the tool, and to avoid damaging on the flutes, use non-contact measuring method.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- If the table over the maximum RPM and feed of your machine, or found red heat on the material, adjust RPM and feed in the same proportion.
- Air blow or mist coolants are recommended and note for chip emission, heat, or ignition.