



HIGH PERFORMANCE

END MILL
PRODUCT LINE

SC TOOL
CORP



MADE IN USA

CUT WITH PRECISION, PASSION, AND PRIDE

Engineering High Performance Solid Carbide Tools & Strong Relationships

Our relationship with our customers is one of the pillars of our business. Our customers find that we are very flexible and proactively respond to challenges while holding the tightest of industry tolerances. We are constantly improving our systems and services based on our customers' feedback. SCTool is looking to the future by constantly evolving our manufacturing techniques, research and development, technology, and communication.

Serving Diverse Industries

Our drills, end mills, reamers, and special carbide tooling products are currently producing the needed results in a multitude of applications across a broad range of industries.

- Aerospace
- Medical
- Automotive
- Custom Metal Working
- Energy
- Heavy Equipment
- Die & Mold

Engineering Capabilities

SCTool is certified to ISO 9001:2015 through TUV Rheinland of North America. The SCTool team has over 250 years of combined experience within the carbide cutting tool industry. We have a fully staffed engineering team who is always willing and able to answer your technical questions and machining concerns.

TOOL LIFE
Cradle to Grave

Design &
Engineering

Manufacturing

Technical
Assistance at
the Spindle

Reconditioning
to Original
Condition

WHAT'S INSIDE

Icon Guide

PG 3



AX2
PG 7



AX3
PG 13



AX3 CB
PG 19



AX3 NR
PG 23



AX4
PG 27



SV4
PG 31



SV4NR
PG 37



SV5
PG 39



SV5 CB
PG 45



SV5 NR
PG 47



SV6
PG 49



SV7
PG 53



SV7 CB
PG 57



S2F
PG 61



S4F
PG 63

Epic Solutions

PG 65

QwikMod Services

PG 67

Technical Information

PG 69

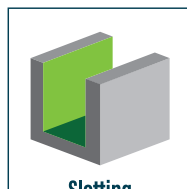
Corner Type	Flutes	2	3	3	3	4	4	4	5	5	5	6	7	7	2	4			
	Coating	SC-13	SC-13	SC-13	SC-13	SC-13	SC-3	SC-3	SC-3	SC-3	SC-3	SC-3	SC-3	SC-3					
	Uncoated	✓	✓	✓	✓	✓									✓	✓			
	Tool Series	AX2	AX3	AX3	AX3	AX4	SV4	SV4	SV5	SV5	SV5	SV6	SV7	SV7	S2F	S4F			
	Neck Relieved				✓			✓			✓								
	Square	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	Corner Radius	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
	Ball	✓	✓				✓	✓				✓			✓	✓			
Materials	Steel						●	●	●	●	●	●	●	●	○	○			
	Stainless Steel						●	●	●	●	●	●	●	●	○	○			
	Cast Iron						○	○	○	○	○	○	○	○	○	○			
	Hi-Temp Alloys						●	●	●	●	●	●	●	●	○	○			
	Hardened Steel						○	○	○	○	○	○	○	○		○			
	Alum< 10% Si	●	●	●	●	●									○				
	Alum> or = 10% Si	○	○	○	○	○									○				
	Copper/Brass	●	●	●	●	●									○				
	Carbon/Graphite														○				
	Plastic/Phenolic														○				

● Excellent Performance

○ Good Performance

ICON GUIDE

Types of Cut



Tool Specifications



Cut Materials

ISO 513 Color Coding System

Ferrous Materials

STEEL
STAINLESS STEEL
CAST IRON
HI-TEMP ALLOYS
HARDENED STEEL

Non-Ferrous Materials

ALUM < 10% Si
ALUM > or = 10% Si
COPPER/BRASS

End Mill Coatings

Uncoated	SC-2
SC-13	SC-3

PVD Coatings

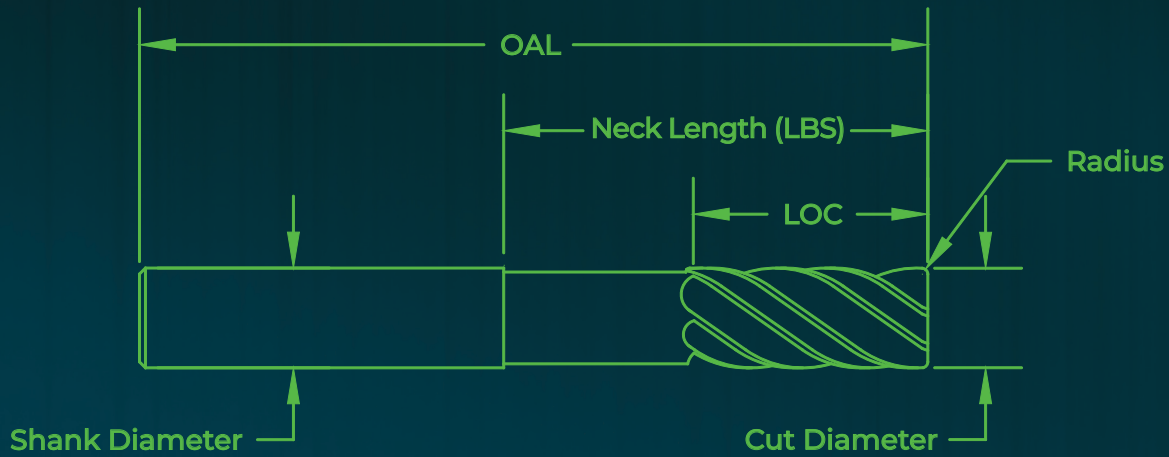
We offer the most advanced coatings available in the industry.

Coating Designation	SC-2	SC-3	SC-13
Coating Type	TiAlN	AlCrN	ZrN
Hardness	3365 HV	3671 HV	2600 HV
Coefficient of Friction	.3-.35	0.35	0.5
Thickness	4µm	4µm	2-4µm
Max Working Temp	900 C°	1100 C°	500 C°
Coating Color	Violet-Grey	Bright Grey	Pale Gold



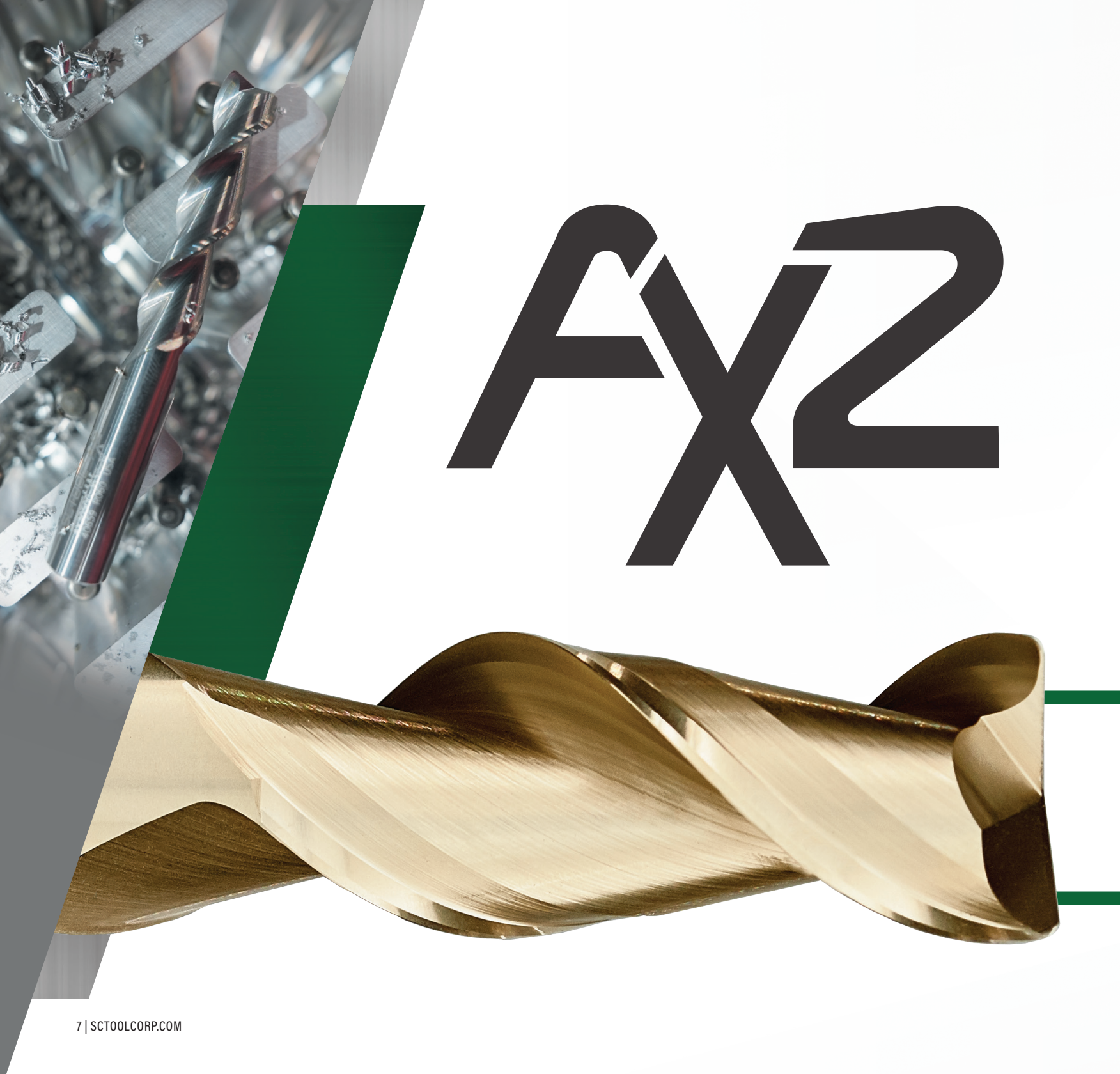
TOOL NUMBERS EXPLAINED

Each unique Tool number inherently contains specific information concerning every individual tool and ensures that you receive the tool you are expecting. Conveniently order SCTool end mills by either the Tool number or the five digit EDP number which are both listed on our product charts.



Ex. SV60500-1024-06

Series #	Cutting Diameter	Length of Cut	Overall Length	Corner Radius	Features
SV6	0500	10	24	06	N***
Formula		$\times \frac{1}{8}"(.125)$	$\times \frac{1}{8}"(.125)$	$\times .005"$	$(LBS) \times \frac{1}{8}"(.125)$
Example	0500 : .500"	$10 \times \frac{1}{8}$ = 1.250	$24 \times \frac{1}{8}$ = 3.00	$06 \times .005"$ = .030"	
Additional Options				S: Square Corner BN: Ball Nose	N**: Neck Length WF: Weldon Flat CB: Chip Breaker



AX2

AX2 END MILLS

Available Coated & Uncoated

The AX2 is an end mill solution for aluminum applications where balance and micro-geometries vastly improve your metal removal rates.

Our circular land reduces chatter and improves surface finishes on aluminum and other non-ferrous metals. Its double-rake flute design provides effective chip evacuation and improved feed rates.

Our AX2 series is designed for applications requiring high-speed machining of aluminum and other non-ferrous metals.



Superb in high-speed machining of aluminum

Excellent finishes

Stocked and ready to order in diameters of 1/4" to 1" including a variety of options: square end, corner radius, and ball nose

AX2 Series Uncoated											
Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option							Ball Nose
				Square	R.015	R.030	R.060	R.090	R.120	R.190	
0.2500	0.2500	0.750	2.500	AX20250-0620-S EDP:10005	AX20250-0620-03 EDP:10001	AX20250-0620-06 EDP:10002	AX20250-0620-12 EDP:10003	-	-	-	AX20250-0620-BN EDP:10004
0.3125	0.3125	0.875	2.500	AX20313-0720-S EDP:10010	AX20313-0720-03 EDP:10006	AX20313-0720-06 EDP:10007	AX20313-0720-12 EDP:10008	-	-	-	AX20313-0720-BN EDP:10009
0.3750	0.3750	0.875	2.500	AX20375-0720-S EDP:10016	AX20375-0720-03 EDP:10011	AX20375-0720-06 EDP:10012	AX20375-0720-12 EDP:10013	AX20375-0720-18 EDP:10014	-	-	AX20375-0720-BN EDP:10015
		1.250	3.000	AX20375-1024-S EDP:10021	AX20375-1024-03 EDP:10017	AX20375-1024-06 EDP:10018	AX20375-1024-12 EDP:10019	AX20375-1024-18 EDP:10020	-	-	-
0.5000	0.5000	1.250	3.000	AX20500-1024-S EDP:10028	AX20500-1024-03 EDP:10022	AX20500-1024-06 EDP:10023	AX20500-1024-12 EDP:10024	AX20500-1024-18 EDP:10025	AX20500-1024-24 EDP:10026	-	AX20500-1024-BN EDP:10027
		2.000	4.000	AX20500-1632-S EDP:10034	AX20500-1632-03 EDP:10029	AX20500-1632-06 EDP:10030	AX20500-1632-12 EDP:10031	AX20500-1632-18 EDP:10032	AX20500-1632-24 EDP:10033	-	-
0.6250	0.6250	1.250	3.500	AX20625-1028-S EDP:10040	-	AX20625-1028-06 EDP:10035	AX20625-1028-12 EDP:10036	AX20625-1028-18 EDP:10037	AX20625-1028-24 EDP:10038	-	AX20625-1028-BN EDP:10039
		2.125	4.000	AX20625-1732-S EDP:10045	-	AX20625-1732-06 EDP:10041	AX20625-1732-12 EDP:10042	AX20625-1732-18 EDP:10043	AX20625-1732-24 EDP:10044	-	-
0.7500	0.7500	1.750	4.000	AX20750-1432-S EDP:10052	-	AX20750-1432-06 EDP:10046	AX20750-1432-12 EDP:10047	AX20750-1432-18 EDP:10048	AX20750-1432-24 EDP:10049	AX20750-1432-38 EDP:10050	AX20750-1432-BN EDP:10051
		2.250	5.000	AX20750-1840-S EDP:10058	-	AX20750-1840-06 EDP:10053	AX20750-1840-12 EDP:10054	AX20750-1840-18 EDP:10055	AX20750-1840-24 EDP:10056	AX20750-1840-38 EDP:10057	-
1.0000	1.0000	1.750	4.000	AX21000-1432-S EDP:10065	-	AX21000-1432-06 EDP:10059	AX21000-1432-12 EDP:10060	AX21000-1432-18 EDP:10061	AX21000-1432-24 EDP:10062	AX21000-1432-38 EDP:10063	AX21000-1432-BN EDP:10064
		2.500	5.000	AX21000-2040-S EDP:10071	-	AX21000-2040-06 EDP:10066	AX21000-2040-12 EDP:10067	AX21000-2040-18 EDP:10068	AX21000-2040-24 EDP:10069	AX21000-2040-38 EDP:10070	-

AX2 Series with SC13 Coating

Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option							Ball Nose
				Square	R.015	R.030	R.060	R.090	R.120	R.190	
0.2500	0.2500	0.750	2.500	AX20250-0620-S-SC13 EDP:10076	AX20250-0620-03-SC13 EDP:10072	AX20250-0620-06-SC13 EDP:10073	AX20250-0620-12-SC13 EDP:10074	-	-	-	AX20250-0620-BN-SC13 EDP:10075
0.3125	0.3125	0.875	2.500	AX20313-0720-S-SC13 EDP:10081	AX20313-0720-03-SC13 EDP:10077	AX20313-0720-06-SC13 EDP:10078	AX20313-0720-12-SC13 EDP:10079	-	-	-	AX20313-0720-BN-SC13 EDP:10080
0.3750	0.3750	0.875	2.500	AX20375-0720-S-SC13 EDP:10087	AX20375-0720-03-SC13 EDP:10082	AX20375-0720-06-SC13 EDP:10083	AX20375-0720-12-SC13 EDP:10084	AX20375-0720-18-SC13 EDP:10085	-	-	AX20375-0720-BN-SC13 EDP:10086
		1.250	3.000	AX20375-1024-S-SC13 EDP:10092	AX20375-1024-03-SC13 EDP:10088	AX20375-1024-06-SC13 EDP:10089	AX20375-1024-12-SC13 EDP:10090	AX20375-1024-18-SC13 EDP:10091	-	-	-
0.5000	0.5000	1.250	3.000	AX20500-1024-S-SC13 EDP:10099	AX20500-1024-03-SC13 EDP:10093	AX20500-1024-06-SC13 EDP:10094	AX20500-1024-12-SC13 EDP:10095	AX20500-1024-18-SC13 EDP:10096	AX20500-1024-24-SC13 EDP:10097	-	AX20500-1024-BN-SC13 EDP:10098
		2.000	4.000	AX20500-1632-S-SC13 EDP:10105	AX20500-1632-03-SC13 EDP:10100	AX20500-1632-06-SC13 EDP:10101	AX20500-1632-12-SC13 EDP:10102	AX20500-1632-18-SC13 EDP:10103	AX20500-1632-24-SC13 EDP:10104	-	-
0.6250	0.6250	1.250	3.500	AX20625-1028-S-SC13 EDP:10111	-	AX20625-1028-06-SC13 EDP:10106	AX20625-1028-12-SC13 EDP:10107	AX20625-1028-18-SC13 EDP:10108	AX20625-1028-24-SC13 EDP:10109	-	AX20625-1028-BN-SC13 EDP:10110
		2.125	4.000	AX20625-1732-S-SC13 EDP:10116	-	AX20625-1732-06-SC13 EDP:10112	AX20625-1732-12-SC13 EDP:10113	AX20625-1732-18-SC13 EDP:10114	AX20625-1732-24-SC13 EDP:10115	-	-
0.7500	0.7500	1.750	4.000	AX20750-1432-S-SC13 EDP:10123	-	AX20750-1432-06-SC13 EDP:10117	AX20750-1432-12-SC13 EDP:10118	AX20750-1432-18-SC13 EDP:10119	AX20750-1432-24-SC13 EDP:10120	AX20750-1432-38-SC13 EDP:10121	AX20750-1432-BN-SC13 EDP:10122
		2.250	5.000	AX20750-1840-S-SC13 EDP:10129	-	AX20750-1840-06-SC13 EDP:10124	AX20750-1840-12-SC13 EDP:10125	AX20750-1840-18-SC13 EDP:10126	AX20750-1840-24-SC13 EDP:10127	AX20750-1840-38-SC13 EDP:10128	-
1.0000	1.0000	1.750	4.000	AX21000-1432-S-SC13 EDP:10136	-	AX21000-1432-06-SC13 EDP:10130	AX21000-1432-12-SC13 EDP:10131	AX21000-1432-18-SC13 EDP:10132	AX21000-1432-24-SC13 EDP:10133	AX21000-1432-38-SC13 EDP:10134	AX21000-1432-BN-SC13 EDP:10135
		2.500	5.000	AX21000-2040-S-SC13 EDP:10142	-	AX21000-2040-06-SC13 EDP:10137	AX21000-2040-12-SC13 EDP:10138	AX21000-2040-18-SC13 EDP:10139	AX21000-2040-24-SC13 EDP:10140	AX21000-2040-38-SC13 EDP:10141	-



Cut Materials

ALUM < 10% Si

ALUM > or = 10% Si

COPPER/BRASS

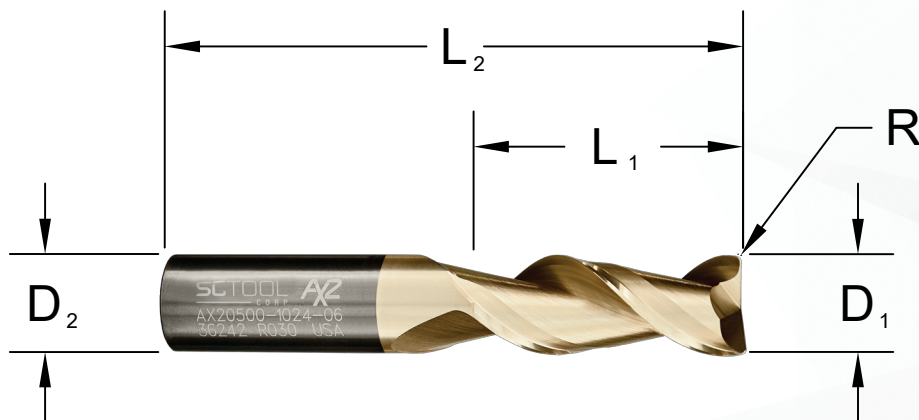


AX2 Recommended Starting Speeds and Feeds

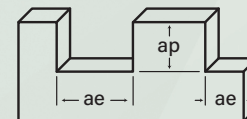
Material Group		Side Milling (A) and Slotting (B)			Uncoated		Feed per Tooth (IPT=inch/th) for side milling (A), for slotting (B) reduce IPT by 20%					
							D - Diameter					
		A		B	Speed (SFM)	frac.	1/4"	3/8"	1/2"	5/8"	3/4"	1"
		ap	ae	ap		dec.	0.250	0.375	0.500	0.625	0.750	1.000
N	Aluminum (<10% Si)	Ap1 max	<0.5 x D	<1 x D	Up to 6000	IPT	0.0023	0.0033	0.0044	0.0055	0.0068	0.0081
	Aluminum (> or= to 10% Si)	Ap1 max	<0.5 x D	<1 x D	Up to 5000	IPT	0.0019	0.0029	0.0039	0.0049	0.0059	0.0069
	Copper / Brass	Ap1 max	<0.5 x D	<1 x D	Up to 3000	IPT	0.0019	0.0029	0.0039	0.0049	0.0059	0.0069

Note:

- Ap1 max = Full length of cut of the tool
- For cutting aluminum with high silicon content, coating is recommended.
- For better surface finish, reduce feed per tooth.
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.



Side Milling (A) and Slotting (B)



2 FLUTE



SQ

RAD

BALL

CC

h6

2FL

Uncoated

SC-13

Tolerance

Shank	h6
Cut Diameter	+.000" - .0006"



AX3

AX3 END MILLS

Available Coated & Uncoated

The AX3 is an end mill solution for aluminum applications where balance and micro-geometries vastly improve your metal removal rates.

Our circular land reduces chatter and improves surface finishes on aluminum and other non-ferrous metals. Its double-rake flute design provides effective chip evacuation and improved feed rates. The symmetrical end gashing greatly improves balance for high speed applications.

Our AX3 series is designed for applications requiring high-speed machining of aluminum and other non-ferrous metals where balance, high metal removal rates, and finish are essential.



Superb in high-speed machining of aluminum

Excellent finishes

Stocked and ready to order in diameters of 1/4" to 1" including a variety of options: square end, corner radius, ball nose, OD chipbreakers, and neck relieved

AX3 Series Uncoated											
Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option							Ball Nose
				Square	R.015	R.030	R.060	R.090	R.120	R.190	
0.2500	0.2500	0.750	2.500	AX30250-0620-S EDP:10147	AX30250-0620-03 EDP:10143	AX30250-0620-06 EDP:10144	AX30250-0620-12 EDP:10145	-	-	-	AX30250-0620-BN EDP:10146
		1.250	3.000	AX30250-1024-S EDP:10151	AX30250-1024-03 EDP:10148	AX30250-1024-06 EDP:10149	AX30250-1024-12 EDP:10150	-	-	-	-
0.3125	0.3125	0.875	2.500	AX30313-0720-S EDP:10156	AX30313-0720-03 EDP:10152	AX30313-0720-06 EDP:10153	AX30313-0720-12 EDP:10154	-	-	-	AX30313-0720-BN EDP:10155
		1.250	3.000	AX30313-1024-S EDP:10160	AX30313-1024-03 EDP:10157	AX30313-1024-06 EDP:10158	AX30313-1024-12 EDP:10159	-	-	-	-
0.3750	0.3750	0.875	2.500	AX30375-0720-S EDP:10166	AX30375-0720-03 EDP:10161	AX30375-0720-06 EDP:10162	AX30375-0720-12 EDP:10163	AX30375-0720-18 EDP:10164	-	-	AX30375-0720-BN EDP:10165
		1.250	3.000	AX30375-1024-S EDP:10172	AX30375-1024-03 EDP:10167	AX30375-1024-06 EDP:10168	AX30375-1024-12 EDP:10169	AX30375-1024-18 EDP:10170	AX30375-1024-24 EDP:10171	-	-
		1.750	3.500	AX30375-1428-S EDP:10177	AX30375-1428-03 EDP:10173	AX30375-1428-06 EDP:10174	AX30375-1428-12 EDP:10175	AX30375-1428-18 EDP:10176	-	-	-
0.4375	0.4375	0.875	2.500	AX30438-0720-S EDP:10182	AX30438-0720-03 EDP:10178	AX30438-0720-06 EDP:10179	AX30438-0720-12 EDP:10180	AX30438-0720-18 EDP:10181	-	-	-
		1.250	3.000	AX30438-1024-S EDP:10187	AX30438-1024-03 EDP:10183	AX30438-1024-06 EDP:10184	AX30438-1024-12 EDP:10185	AX30438-1024-18 EDP:10186	-	-	-
0.5000	0.5000	1.000	3.000	AX30500-0824-S EDP:10193	AX30500-0824-03 EDP:10188	AX30500-0824-06 EDP:10189	AX30500-0824-12 EDP:10190	AX30500-0824-18 EDP:10191	AX30500-0824-24 EDP:10192	-	-
		1.250	3.000	AX30500-1024-S EDP:10200	AX30500-1024-03 EDP:10194	AX30500-1024-06 EDP:10195	AX30500-1024-12 EDP:10196	AX30500-1024-18 EDP:10197	AX30500-1024-24 EDP:10198	-	AX30500-1024-BN EDP:10199
		1.500	3.000	AX30500-1224-S EDP:10206	AX30500-1224-03 EDP:10201	AX30500-1224-06 EDP:10202	AX30500-1224-12 EDP:10203	AX30500-1224-18 EDP:10204	AX30500-1224-24 EDP:10205	-	-
		2.000	4.000	AX30500-1632-S EDP:10212	AX30500-1632-03 EDP:10207	AX30500-1632-06 EDP:10208	AX30500-1632-12 EDP:10209	AX30500-1632-18 EDP:10210	AX30500-1632-24 EDP:10211	-	-
		2.500	5.000	AX30500-2040-S EDP:10218	AX30500-2040-03 EDP:10213	AX30500-2040-06 EDP:10214	AX30500-2040-12 EDP:10215	AX30500-2040-18 EDP:10216	AX30500-2040-24 EDP:10217	-	-
0.6250	0.6250	1.250	3.500	AX30625-1028-S EDP:10224	-	AX30625-1028-06 EDP:10219	AX30625-1028-12 EDP:10220	AX30625-1028-18 EDP:10221	AX30625-1028-24 EDP:10222	-	AX30625-1028-BN EDP:10223
		1.750	4.000	AX30625-1432-S EDP:10229	-	AX30625-1432-06 EDP:10225	AX30625-1432-12 EDP:10226	AX30625-1432-18 EDP:10227	AX30625-1432-24 EDP:10228	-	-
		2.125	4.000	AX30625-1732-S EDP:10234	-	AX30625-1732-06 EDP:10230	AX30625-1732-12 EDP:10231	AX30625-1732-18 EDP:10232	AX30625-1732-24 EDP:10233	-	-
0.7500	0.7500	1.250	4.000	AX30750-1032-S EDP:10240	-	AX30750-1032-06 EDP:10235	AX30750-1032-12 EDP:10236	AX30750-1032-18 EDP:10237	AX30750-1032-24 EDP:10238	AX30750-1032-38 EDP:10239	-
		1.750	4.000	AX30750-1432-S EDP:10247	-	AX30750-1432-06 EDP:10241	AX30750-1432-12 EDP:10242	AX30750-1432-18 EDP:10243	AX30750-1432-24 EDP:10244	AX30750-1432-38 EDP:10245	AX30750-1432-BN EDP:10246
		2.250	5.000	AX30750-1840-S EDP:10253	-	AX30750-1840-06 EDP:10248	AX30750-1840-12 EDP:10249	AX30750-1840-18 EDP:10250	AX30750-1840-24 EDP:10251	AX30750-1840-38 EDP:10252	-
1.0000	1.0000	1.500	4.000	AX31000-1232-S EDP:10259	-	AX31000-1232-06 EDP:10254	AX31000-1232-12 EDP:10255	AX31000-1232-18 EDP:10256	AX31000-1232-24 EDP:10257	AX31000-1232-38 EDP:10258	-
		2.000	4.000	AX31000-1632-S EDP:10266	-	AX31000-1632-06 EDP:10260	AX31000-1632-12 EDP:10261	AX31000-1632-18 EDP:10262	AX31000-1632-24 EDP:10263	AX31000-1632-38 EDP:10264	AX31000-1632-BN EDP:10265
		2.500	5.000	AX31000-2040-S EDP:10272	-	AX31000-2040-06 EDP:10267	AX31000-2040-12 EDP:10268	AX31000-2040-18 EDP:10269	AX31000-2040-24 EDP:10270	AX31000-2040-38 EDP:10271	-

AX3 Series with SC13 Coating

Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option							Ball Nose
				Square	R.015	R.030	R.060	R.090	R.120	R.190	
0.2500	0.2500	0.750	2.500	AX30250-0620-S-SC13 EDP:10277	AX30250-0620-03-SC13 EDP:10273	AX30250-0620-06-SC13 EDP:10274	AX30250-0620-12-SC13 EDP:10275	-	-	-	AX30250-0620-BN-SC13 EDP:10276
		1.250	3.000	AX30250-1024-S-SC13 EDP:10281	AX30250-1024-03-SC13 EDP:10278	AX30250-1024-06-SC13 EDP:10279	AX30250-1024-12-SC13 EDP:10280	-	-	-	-
0.3125	0.3125	0.875	2.500	AX30313-0720-S-SC13 EDP:10286	AX30313-0720-03-SC13 EDP:10282	AX30313-0720-06-SC13 EDP:10283	AX30313-0720-12-SC13 EDP:10284	-	-	-	AX30313-0720-BN-SC13 EDP:10285
		1.250	3.000	AX30313-1024-S-SC13 EDP:10290	AX30313-1024-03-SC13 EDP:10287	AX30313-1024-06-SC13 EDP:10288	AX30313-1024-12-SC13 EDP:10289	-	-	-	-
0.3750	0.3750	0.875	2.500	AX30375-0720-S-SC13 EDP:10296	AX30375-0720-03-SC13 EDP:10291	AX30375-0720-06-SC13 EDP:10292	AX30375-0720-12-SC13 EDP:10293	AX30375-0720-18-SC13 EDP:10294	-	-	AX30375-0720-BN-SC13 EDP:10295
		1.250	3.000	AX30375-1024-S-SC13 EDP:10302	AX30375-1024-03-SC13 EDP:10297	AX30375-1024-06-SC13 EDP:10298	AX30375-1024-12-SC13 EDP:10299	AX30375-1024-18-SC13 EDP:10300	AX30375-1024-24-SC13 EDP:10301"	-	-
		1.750	3.500	AX30375-1428-S-SC13 EDP:10307	AX30375-1428-03-SC13 EDP:10303	AX30375-1428-06-SC13 EDP:10304	AX30375-1428-12-SC13 EDP:10305	AX30375-1428-18-SC13 EDP:10306	-	-	-
0.4375	0.4375	0.875	2.500	AX30438-0720-S-SC13 EDP:10312	AX30438-0720-03-SC13 EDP:10308	AX30438-0720-06-SC13 EDP:10309	AX30438-0720-12-SC13 EDP:10310	AX30438-0720-18-SC13 EDP:10311	-	-	-
		1.250	3.000	AX30438-1024-S-SC13 EDP:10317	AX30438-1024-03-SC13 EDP:10313	AX30438-1024-06-SC13 EDP:10314	AX30438-1024-12-SC13 EDP:10315	AX30438-1024-18-SC13 EDP:10316	-	-	-
0.5000	0.5000	1.000	3.000	AX30500-0824-S-SC13 EDP:10323	AX30500-0824-03-SC13 EDP:10318	AX30500-0824-06-SC13 EDP:10319	AX30500-0824-12-SC13 EDP:10320	AX30500-0824-18-SC13 EDP:10321	AX30500-0824-24-SC13 EDP:10322	-	-
		1.250	3.000	AX30500-1024-S-SC13 EDP:10330	AX30500-1024-03-SC13 EDP:10324	AX30500-1024-06-SC13 EDP:10325	AX30500-1024-12-SC13 EDP:10326	AX30500-1024-18-SC13 EDP:10327	AX30500-1024-24-SC13 EDP:10328	-	AX30500-1024-BN-SC13 EDP:10329
		1.500	3.000	AX30500-1224-S-SC13 EDP:10336	AX30500-1224-03-SC13 EDP:10331	AX30500-1224-06-SC13 EDP:10332	AX30500-1224-12-SC13 EDP:10333	AX30500-1224-18-SC13 EDP:10334	AX30500-1224-24-SC13 EDP:10335	-	-
		2.000	4.000	AX30500-1632-S-SC13 EDP:10342	AX30500-1632-03-SC13 EDP:10337	AX30500-1632-06-SC13 EDP:10338	AX30500-1632-12-SC13 EDP:10339	AX30500-1632-18-SC13 EDP:10340	AX30500-1632-24-SC13 EDP:10341	-	-
		2.500	5.000	AX30500-2040-S-SC13 EDP:10348	AX30500-2040-03-SC13 EDP:10343	AX30500-2040-06-SC13 EDP:10344	AX30500-2040-12-SC13 EDP:10345	AX30500-2040-18-SC13 EDP:10346	AX30500-2040-24-SC13 EDP:10347	-	-

*continued on next page

3 FLUTE

AX3 Series with SC13 Coating Continued											
Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option							Ball Nose
				Square	R.015	R.030	R.060	R.090	R.120	R.190	
0.6250	0.6250	1.250	3.500	AX30625-1028-S-SC13 EDP:10354	-	AX30625-1028-06-SC13 EDP:10349	AX30625-1028-12-SC13 EDP:10350	AX30625-1028-18-SC13 EDP:10351	AX30625-1028-24-SC13 EDP:10352	-	AX30625-1028-BN-SC13 EDP:10353
		1.750	4.000	AX30625-1432-S-SC13 EDP:10359	-	AX30625-1432-06-SC13 EDP:10355	AX30625-1432-12-SC13 EDP:10356	AX30625-1432-18-SC13 EDP:10357	AX30625-1432-24-SC13 EDP:10358	-	-
		2.125	4.000	AX30625-1732-S-SC13 EDP:10364	-	AX30625-1732-06-SC13 EDP:10360	AX30625-1732-12-SC13 EDP:10361	AX30625-1732-18-SC13 EDP:10362	AX30625-1732-24-SC13 EDP:10363	-	-
0.7500	0.7500	1.250	4.000	AX30750-1032-S-SC13 EDP:10370	-	AX30750-1032-06-SC13 EDP:10365	AX30750-1032-12-SC13 EDP:10366	AX30750-1032-18-SC13 EDP:10367	AX30750-1032-24-SC13 EDP:10368	AX30750-1032-38-SC13 EDP:10369	-
		1.750	4.000	AX30750-1432-S-SC13 EDP:10377	-	AX30750-1432-06-SC13 EDP:10371	AX30750-1432-12-SC13 EDP:10372	AX30750-1432-18-SC13 EDP:10373	AX30750-1432-24-SC13 EDP:10374	AX30750-1432-38-SC13 EDP:10375	AX30750-1432-BN-SC13 EDP:10376
		2.250	5.000	AX30750-1840-S-SC13 EDP:10383	-	AX30750-1840-06-SC13 EDP:10378	AX30750-1840-12-SC13 EDP:10379	AX30750-1840-18-SC13 EDP:10380	AX30750-1840-24-SC13 EDP:10381	AX30750-1840-38-SC13 EDP:10382	-
1.0000	1.0000	1.500	4.000	AX31000-1232-S-SC13 EDP:10389	-	AX31000-1232-06-SC13 EDP:10384	AX31000-1232-12-SC13 EDP:10385	AX31000-1232-18-SC13 EDP:10386	AX31000-1232-24-SC13 EDP:10387	AX31000-1232-38-SC13 EDP:10388	-
		2.000	4.000	AX31000-1632-S-SC13 EDP:10396	-	AX31000-1632-06-SC13 EDP:10390	AX31000-1632-12-SC13 EDP:10391	AX31000-1632-18-SC13 EDP:10392	AX31000-1632-24-SC13 EDP:10393	AX31000-1632-38-SC13 EDP:10394	AX31000-1632-BN-SC13 EDP:10395
		2.500	5.000	AX31000-2040-S-SC13 EDP:10402	-	AX31000-2040-06-SC13 EDP:10397	AX31000-2040-12-SC13 EDP:10398	AX31000-2040-18-SC13 EDP:10399	AX31000-2040-24-SC13 EDP:10400	AX31000-2040-38-SC13 EDP:10401	-

Cut Materials

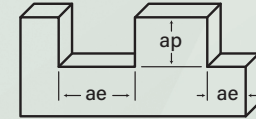
- ALUM < 10% Si
- ALUM > or = 10% Si
- COPPER/BRASS



AX3 Recommended Starting Speeds and Feeds

Material Group		Side Milling (A) and Slotting (B)			Uncoated		Feed per Tooth (IPT=inch/th) for side milling (A), for slotting (B) reduce IPT by 20%					
							D - Diameter					
		A		B	Speed (SFM)	frac.	1/4"	3/8"	1/2"	5/8"	3/4"	1"
		ap	ae	ap		dec.	0.250	0.375	0.500	0.625	0.750	1.000
N	Aluminum (<10% Si)	Ap1 max	<0.5 x D	<1 x D	Up to 6000	IPT	0.0023	0.0033	0.0044	0.0055	0.0068	0.0081
	Aluminum (> or= to 10% Si)	Ap1 max	<0.5 x D	<1 x D	Up to 5000	IPT	0.0019	0.0029	0.0039	0.0049	0.0059	0.0069
	Copper / Brass	Ap1 max	<0.5 x D	<1 x D	Up to 3000	IPT	0.0019	0.0029	0.0039	0.0049	0.0059	0.0069

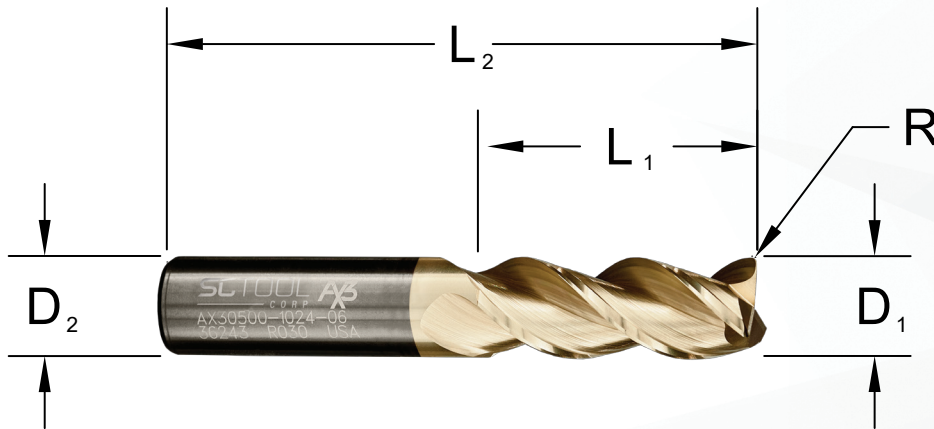
Side Milling (A) and Slotting (B)



3 FLUTE

Note:

- Ap1 max = Full length of cut of the tool
- For cutting aluminum with high silicon content, coating is recommended.
- For better surface finish, reduce feed per tooth.
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.



SQ

RAD

BALL

CC

h6

3FL

Uncoated

SC-13

Tolerance

Shank	h6
Cut Diameter	+.000" - .0006"

AX3 Series with Chipbreakers Uncoated										
Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option						
				Square	R.015	R.030	R.060	R.090	R.120	R.190
0.3750	0.3750	0.875	2.500	AX30375-0720-SCB EDP:10407	AX30375-0720-03CB EDP:10403	AX30375-0720-06CB EDP:10404	AX30375-0720-12CB EDP:10405	AX30375-0720-18CB EDP:10406	-	-
		1.250	3.000	AX30375-1024-SCB EDP:10412	AX30375-1024-03CB EDP:10408	AX30375-1024-06CB EDP:10409	AX30375-1024-12CB EDP:10410	AX30375-1024-18CB EDP:10411	-	-
0.5000	0.5000	1.000	3.000	AX30500-0824-SCB EDP:10418	AX30500-0824-03CB EDP:10413	AX30500-0824-06CB EDP:10414	AX30500-0824-12CB EDP:10415	AX30500-0824-18CB EDP:10416	AX30500-0824-24CB EDP:10417	-
		1.250	3.000	AX30500-1024-SCB EDP:10424	AX30500-1024-03CB EDP:10419	AX30500-1024-06CB EDP:10420	AX30500-1024-12CB EDP:10421	AX30500-1024-18CB EDP:10422	AX30500-1024-24CB EDP:10423	-
		1.500	3.000	AX30500-1224-SCB EDP:10430	AX30500-1224-03CB EDP:10425	AX30500-1224-06CB EDP:10426	AX30500-1224-12CB EDP:10427	AX30500-1224-18CB EDP:10428	AX30500-1224-24CB EDP:10429	-
		2.500	5.000	AX30500-2040-SCB EDP:10436	AX30500-2040-03CB EDP:10431	AX30500-2040-06CB EDP:10432	AX30500-2040-12CB EDP:10433	AX30500-2040-18CB EDP:10434	AX30500-2040-24CB EDP:10435	-
0.6250	0.6250	1.250	3.500	AX30625-1028-SCB EDP:10441	-	AX30625-1028-06CB EDP:10437	AX30625-1028-12CB EDP:10438	AX30625-1028-18CB EDP:10439	AX30625-1028-24CB EDP:10440	-
		1.750	4.000	AX30625-1432-SCB EDP:10446	-	AX30625-1432-06CB EDP:10442	AX30625-1432-12CB EDP:10443	AX30625-1432-18CB EDP:10444	AX30625-1432-24CB EDP:10445	-
		2.125	4.000	AX30625-1732-SCB EDP:10451	-	AX30625-1732-06CB EDP:10447	AX30625-1732-12CB EDP:10448	AX30625-1732-18CB EDP:10449	AX30625-1732-24CB EDP:10450	-
0.7500	0.7500	1.250	4.000	AX30750-1032-SCB EDP:10457	-	AX30750-1032-06CB EDP:10452	AX30750-1032-12CB EDP:10453	AX30750-1032-18CB EDP:10454	AX30750-1032-24CB EDP:10455	AX30750-1032-38CB EDP:10456
		1.750	4.000	AX30750-1432-SCB EDP:10463	-	AX30750-1432-06CB EDP:10458	AX30750-1432-12CB EDP:10459	AX30750-1432-18CB EDP:10460	AX30750-1432-24CB EDP:10461	AX30750-1432-38CB EDP:10462
		2.250	5.000	AX30750-1840-SCB EDP:10469	-	AX30750-1840-06CB EDP:10464	AX30750-1840-12CB EDP:10465	AX30750-1840-18CB EDP:10466	AX30750-1840-24CB EDP:10467	AX30750-1840-38CB EDP:10468
1.0000	1.0000	1.500	4.000	AX31000-1232-SCB EDP:10475	-	AX31000-1232-06CB EDP:10470	AX31000-1232-12CB EDP:10471	AX31000-1232-18CB EDP:10472	AX31000-1232-24CB EDP:10473	AX31000-1232-38CB EDP:10474
		2.000	4.000	AX31000-1632-SCB EDP:10481	-	AX31000-1632-06CB EDP:10476	AX31000-1632-12CB EDP:10477	AX31000-1632-18CB EDP:10478	AX31000-1632-24CB EDP:10479	AX31000-1632-38CB EDP:10480
		2.500	5.000	AX31000-2040-SCB EDP:10487	-	AX31000-2040-06CB EDP:10482	AX31000-2040-12CB EDP:10483	AX31000-2040-18CB EDP:10484	AX31000-2040-24CB EDP:10485	AX31000-2040-38CB EDP:10486

AX3 Series with Chipbreakers & SC13 Coating

Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option						
				Square	R.015	R.030	R.060	R.090	R.120	R.190
0.3750	0.3750	0.875	2.500	AX30375-0720-SCB-SC13 EDP:10492	AX30375-0720-03CB-SC13 EDP:10488	AX30375-0720-06CB-SC13 EDP:10489	AX30375-0720-12CB-SC13 EDP:10490	AX30375-0720-18CB-SC13 EDP:10491	-	-
		1.250	3.000	AX30375-1024-SCB-SC13 EDP:10497	AX30375-1024-03CB-SC13 EDP:10493	AX30375-1024-06CB-SC13 EDP:10494	AX30375-1024-12CB-SC13 EDP:10495	AX30375-1024-18CB-SC13 EDP:10496	-	-
0.5000	0.5000	1.000	3.000	AX30500-0824-SCB-SC13 EDP:10503	AX30500-0824-03CB-SC13 EDP:10498	AX30500-0824-06CB-SC13 EDP:10499	AX30500-0824-12CB-SC13 EDP:10500	AX30500-0824-18CB-SC13 EDP:10501	AX30500-0824-24CB-SC13 EDP:10502	-
		1.250	3.000	AX30500-1024-SCB-SC13 EDP:10509	AX30500-1024-03CB-SC13 EDP:10504	AX30500-1024-06CB-SC13 EDP:10505	AX30500-1024-12CB-SC13 EDP:10506	AX30500-1024-18CB-SC13 EDP:10507	AX30500-1024-24CB-SC13 EDP:10508	-
		1.500	3.000	AX30500-1224-SCB-SC13 EDP:10515	AX30500-1224-03CB-SC13 EDP:10510	AX30500-1224-06CB-SC13 EDP:10511	AX30500-1224-12CB-SC13 EDP:10512	AX30500-1224-18CB-SC13 EDP:10513	AX30500-1224-24CB-SC13 EDP:10514	-
		2.500	5.000	AX30500-2040-SCB-SC13 EDP:10521	AX30500-2040-03CB-SC13 EDP:10516	AX30500-2040-06CB-SC13 EDP:10517	AX30500-2040-12CB-SC13 EDP:10518	AX30500-2040-18CB-SC13 EDP:10519	AX30500-2040-24CB-SC13 EDP:10520	-
0.6250	0.6250	1.250	3.500	AX30625-1028-SCB-SC13 EDP:10526	-	AX30625-1028-06CB-SC13 EDP:10522	AX30625-1028-12CB-SC13 EDP:10523	AX30625-1028-18CB-SC13 EDP:10524	AX30625-1028-24CB-SC13 EDP:10525	-
		1.750	4.000	AX30625-1432-SCB-SC13 EDP:10531	-	AX30625-1432-06CB-SC13 EDP:10527	AX30625-1432-12CB-SC13 EDP:10528	AX30625-1432-18CB-SC13 EDP:10529	AX30625-1432-24CB-SC13 EDP:10530	-
		2.125	4.000	AX30625-1732-SCB-SC13 EDP:10536	-	AX30625-1732-06CB-SC13 EDP:10532	AX30625-1732-12CB-SC13 EDP:10533	AX30625-1732-18CB-SC13 EDP:10534	AX30625-1732-24CB-SC13 EDP:10535	-
0.7500	0.7500	1.250	4.000	AX30750-1032-SCB-SC13 EDP:10542	-	AX30750-1032-06CB-SC13 EDP:10537	AX30750-1032-12CB-SC13 EDP:10538	AX30750-1032-18CB-SC13 EDP:10539	AX30750-1032-24CB-SC13 EDP:10540	AX30750-1032-38CB-SC13 EDP:10541
		1.750	4.000	AX30750-1432-SCB-SC13 EDP:10548	-	AX30750-1432-06CB-SC13 EDP:10543	AX30750-1432-12CB-SC13 EDP:10544	AX30750-1432-18CB-SC13 EDP:10545	AX30750-1432-24CB-SC13 EDP:10546	AX30750-1432-38CB-SC13 EDP:10547
		2.250	5.000	AX30750-1840-SCB-SC13 EDP:10554	-	AX30750-1840-06CB-SC13 EDP:10549	AX30750-1840-12CB-SC13 EDP:10550	AX30750-1840-18CB-SC13 EDP:10551	AX30750-1840-24CB-SC13 EDP:10552	AX30750-1840-38CB-SC13 EDP:10553
1.0000	1.0000	1.500	4.000	AX31000-1232-SCB-SC13 EDP:10560	-	AX31000-1232-06CB-SC13 EDP:10555	AX31000-1232-12CB-SC13 EDP:10556	AX31000-1232-18CB-SC13 EDP:10557	AX31000-1232-24CB-SC13 EDP:10558	AX31000-1232-38CB-SC13 EDP:10559
		2.000	4.000	AX31000-1632-SCB-SC13 EDP:10566	-	AX31000-1632-06CB-SC13 EDP:10561	AX31000-1632-12CB-SC13 EDP:10562	AX31000-1632-18CB-SC13 EDP:10563	AX31000-1632-24CB-SC13 EDP:10564	AX31000-1632-38CB-SC13 EDP:10565
		2.500	5.000	AX31000-2040-SCB-SC13 EDP:10572	-	AX31000-2040-06CB-SC13 EDP:10567	AX31000-2040-12CB-SC13 EDP:10568	AX31000-2040-18CB-SC13 EDP:10569	AX31000-2040-24CB-SC13 EDP:10570	AX31000-2040-38CB-SC13 EDP:10571

3 FLUTE

3 FLUTE



Cut Materials

ALUM < 10% Si

ALUM > or = 10% Si

COPPER/BRASS



Ramping



Profiling



Finishing



Roughing



Plunging



Slotting



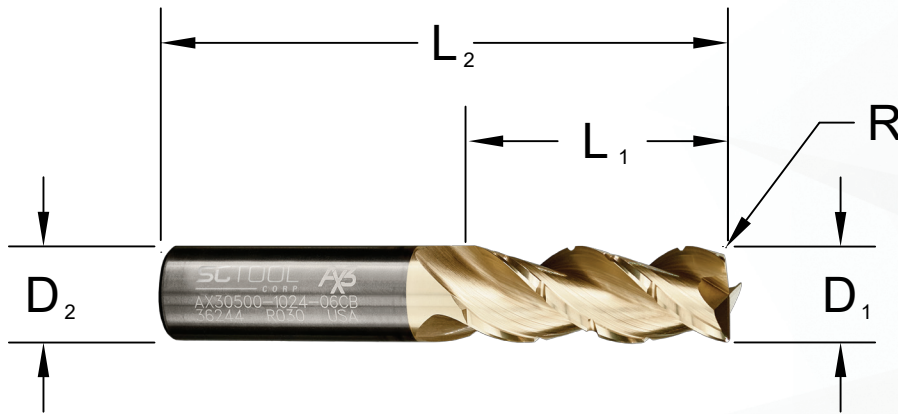
Pocketing

AX3CB Recommended Starting Speeds and Feeds

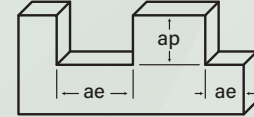
Material Group		Side Milling (A) and Slotting (B)			Uncoated		Feed per Tooth (IPT=inch/th) for side milling (A), for slotting (B) reduce IPT by 20%					
							D - Diameter					
		A		B	Speed (SFM)	frac. dec.	1/4"	3/8"	1/2"	5/8"	3/4"	1"
		ap	ae	ap			0.250	0.375	0.500	0.625	0.750	1.000
N	Aluminum (<10% Si)	Ap1 max	<0.5 x D	<1 x D	Up to 6000	IPT	0.0023	0.0033	0.0044	0.0055	0.0068	0.0081
	Aluminum (> or= to 10% Si)	Ap1 max	<0.5 x D	<1 x D	Up to 5000	IPT	0.0019	0.0029	0.0039	0.0049	0.0059	0.0069
	Copper / Brass	Ap1 max	<0.5 x D	<1 x D	Up to 3000	IPT	0.0019	0.0029	0.0039	0.0049	0.0059	0.0069

Note:

- Ap1 max = Full length of cut of the tool
- For cutting aluminum with high silicon content, coating is recommended.
- For better surface finish, reduce feed per tooth.
- All values are recommended starting points based on ideal conditions.
Adjust parameters accordingly for specific applications.



Side Milling (A) and Slotting (B)



3 FLUTE



SQ

RAD

CC

h6

3FL

3FL

Uncoated

SC-13

Tolerance

Shank	h6
Cut Diameter	+ .000" - .0006"

AX3 Series Neck Relieved Uncoated											
Cutting Diameter D1	Shank Diameter D2	LOC	OAL	LBS	Corner Option						
					Square	R.015	R.030	R.060	R.090	R.120	R.190
0.2500	0.2500	0.375	3.000	0.875	AX30250-0324-SN07 EDP:10576	AX30250-0324-03N07 EDP:10573	AX30250-0324-06N07 EDP:10574	AX30250-0324-12N07 EDP:10575	-	-	-
		0.375	3.500	1.500	AX30250-0328-SN12 EDP:10580	AX30250-0328-03N12 EDP:10577	AX30250-0328-06N12 EDP:10578	AX30250-0328-12N12 EDP:10579	-	-	-
0.3750	0.3750	0.500	3.000	1.125	AX30375-0424-SN09 EDP:10585	AX30375-0424-03N09 EDP:10581	AX30375-0424-06N09 EDP:10582	AX30375-0424-12N09 EDP:10583	AX30375-0424-18N09 EDP:10584	-	-
		0.500	4.000	2.125	AX30375-0432-SN17 EDP:10590	AX30375-0432-03N17 EDP:10586	AX30375-0432-06N17 EDP:10587	AX30375-0432-12N17 EDP:10588	AX30375-0432-18N17 EDP:10589	-	-
0.5000	0.5000	0.625	4.000	1.375	AX30500-0532-SN11 EDP:10596	AX30500-0532-03N11 EDP:10591	AX30500-0532-06N11 EDP:10592	AX30500-0532-12N11 EDP:10593	AX30500-0532-18N11 EDP:10594	AX30500-0532-24N11 EDP:10595	-
		0.625	5.000	2.375	AX30500-0540-SN19 EDP:10602	AX30500-0540-03N19 EDP:10597	AX30500-0540-06N19 EDP:10598	AX30500-0540-12N19 EDP:10599	AX30500-0540-18N19 EDP:10600	AX30500-0540-24N19 EDP:10601	-
		0.625	6.000	3.375	AX30500-0548-SN27 EDP:10608	AX30500-0548-03N27 EDP:10603	AX30500-0548-06N27 EDP:10604	AX30500-0548-12N27 EDP:10605	AX30500-0548-18N27 EDP:10606	AX30500-0548-24N27 EDP:10607	-
0.6250	0.6250	0.750	4.000	1.625	AX30625-0632-SN13 EDP:10613	-	AX30625-0632-06N13 EDP:10609	AX30625-0632-12N13 EDP:10610	AX30625-0632-18N13 EDP:10611	AX30625-0632-24N13 EDP:10612	-
		0.750	5.000	2.375	AX30625-0640-SN19 EDP:10618	-	AX30625-0640-06N19 EDP:10614	AX30625-0640-12N19 EDP:10615	AX30625-0640-18N19 EDP:10616	AX30625-0640-24N19 EDP:10617	-
		0.750	6.000	3.375	AX30625-0648-SN27 EDP:10623	-	AX30625-0648-06N27 EDP:10619	AX30625-0648-12N27 EDP:10620	AX30625-0648-18N27 EDP:10621	AX30625-0648-24N27 EDP:10622	-
0.7500	0.7500	1.000	5.000	1.750	AX30750-0840-SN14 EDP:10629	-	AX30750-0840-06N14 EDP:10624	AX30750-0840-12N14 EDP:10625	AX30750-0840-18N14 EDP:10626	AX30750-0840-24N14 EDP:10627	AX30750-0840-38N14 EDP:10628
		1.000	6.000	2.625	AX30750-0848-SN21 EDP:10635	-	AX30750-0848-06N21 EDP:10630	AX30750-0848-12N21 EDP:10631	AX30750-0848-18N21 EDP:10632	AX30750-0848-24N21 EDP:10633	AX30750-0848-38N21 EDP:10634
		1.000	6.000	3.375	AX30750-0848-SN27 EDP:10641	-	AX30750-0848-06N27 EDP:10636	AX30750-0848-12N27 EDP:10637	AX30750-0848-18N27 EDP:10638	AX30750-0848-24N27 EDP:10639	AX30750-0848-38N27 EDP:10640
1.0000	1.0000	1.125	6.000	2.250	AX31000-0948-SN18 EDP:10647	-	AX31000-0948-06N18 EDP:10642	AX31000-0948-12N18 EDP:10643	AX31000-0948-18N18 EDP:10644	AX31000-0948-24N18 EDP:10645	AX31000-0948-38N18 EDP:10646
		1.125	6.000	3.250	AX31000-0948-SN26 EDP:10653	-	AX31000-0948-06N26 EDP:10648	AX31000-0948-12N26 EDP:10649	AX31000-0948-18N26 EDP:10650	AX31000-0948-24N26 EDP:10651	AX31000-0948-38N26 EDP:10652
		1.125	7.000	4.250	AX31000-0956-SN34 EDP:10659	-	AX31000-0956-06N34 EDP:10654	AX31000-0956-12N34 EDP:10655	AX31000-0956-18N34 EDP:10656	AX31000-0956-24N34 EDP:10657	AX31000-0956-38N34 EDP:10658

AX3 Series Neck Relieved with SC13 Coating

Cutting Diameter D1	Shank Diameter D2	LOC	OAL	LBS	Corner Option						
					Square	R.015	R.030	R.060	R.090	R.120	R.190
0.2500	0.2500	0.375	3.000	0.875	AX30250-0324-SN07-SC13 EDP:10663	AX30250-0324-03N07-SC13 EDP:10660	AX30250-0324-06N07-SC13 EDP:10661	AX30250-0324-12N07-SC13 EDP:10662	-	-	-
		0.375	3.500	1.500	AX30250-0328-SN12-SC13 EDP:10667	AX30250-0328-03N12-SC13 EDP:10664	AX30250-0328-06N12-SC13 EDP:10665	AX30250-0328-12N12-SC13 EDP:10666	-	-	-
0.3750	0.3750	0.500	3.000	1.125	AX30375-0424-SN09-SC13 EDP:10672	AX30375-0424-03N09-SC13 EDP:10668	AX30375-0424-06N09-SC13 EDP:10669	AX30375-0424-12N09-SC13 EDP:10670	AX30375-0424-18N09-SC13 EDP:10671	-	-
		0.500	4.000	2.125	AX30375-0432-SN17-SC13 EDP:10677	AX30375-0432-03N17-SC13 EDP:10673	AX30375-0432-06N17-SC13 EDP:10674	AX30375-0432-12N17-SC13 EDP:10675	AX30375-0432-18N17-SC13 EDP:10676	-	-
0.5000	0.5000	0.625	4.000	1.375	AX30500-0532-SN11-SC13 EDP:10683	AX30500-0532-03N11-SC13 EDP:10678	AX30500-0532-06N11-SC13 EDP:10679	AX30500-0532-12N11-SC13 EDP:10680	AX30500-0532-18N11-SC13 EDP:10681	AX30500-0532-24N11-SC13 EDP:10682	-
		0.625	5.000	2.375	AX30500-0540-SN19-SC13 EDP:10689	AX30500-0540-03N19-SC13 EDP:10684	AX30500-0540-06N19-SC13 EDP:10685	AX30500-0540-12N19-SC13 EDP:10686	AX30500-0540-18N19-SC13 EDP:10687	AX30500-0540-24N19-SC13 EDP:10688	-
		0.625	6.000	3.375	AX30500-0548-SN27-SC13 EDP:10695	AX30500-0548-03N27-SC13 EDP:10690	AX30500-0548-06N27-SC13 EDP:10691	AX30500-0548-12N27-SC13 EDP:10692	AX30500-0548-18N27-SC13 EDP:10693	AX30500-0548-24N27-SC13 EDP:10694	-
0.6250	0.6250	0.750	4.000	1.625	AX30625-0632-SN13-SC13 EDP:10700	-	AX30625-0632-06N13-SC13 EDP:10696	AX30625-0632-12N13-SC13 EDP:10697	AX30625-0632-18N13-SC13 EDP:10698	AX30625-0632-24N13-SC13 EDP:10699	-
		0.750	5.000	2.375	AX30625-0640-SN19-SC13 EDP:10705	-	AX30625-0640-06N19-SC13 EDP:10701	AX30625-0640-12N19-SC13 EDP:10702	AX30625-0640-18N19-SC13 EDP:10703	AX30625-0640-24N19-SC13 EDP:10704	-
		0.750	6.000	3.375	AX30625-0648-SN27-SC13 EDP:10710	-	AX30625-0648-06N27-SC13 EDP:10706	AX30625-0648-12N27-SC13 EDP:10707	AX30625-0648-18N27-SC13 EDP:10708	AX30625-0648-24N27-SC13 EDP:10709	-
0.7500	0.7500	1.000	5.000	1.750	AX30750-0840-SN14-SC13 EDP:10716	-	AX30750-0840-06N14-SC13 EDP:10711	AX30750-0840-12N14-SC13 EDP:10712	AX30750-0840-18N14-SC13 EDP:10713	AX30750-0840-24N14-SC13 EDP:10714	AX30750-0840-38N14-SC13 EDP:10715
		1.000	6.000	2.625	AX30750-0848-SN21-SC13 EDP:10722	-	AX30750-0848-06N21-SC13 EDP:10717	AX30750-0848-12N21-SC13 EDP:10718	AX30750-0848-18N21-SC13 EDP:10719	AX30750-0848-24N21-SC13 EDP:10720	AX30750-0848-38N21-SC13 EDP:10721
		1.000	6.000	3.375	AX30750-0848-SN27-SC13 EDP:10728	-	AX30750-0848-06N27-SC13 EDP:10723	AX30750-0848-12N27-SC13 EDP:10724	AX30750-0848-18N27-SC13 EDP:10725	AX30750-0848-24N27-SC13 EDP:10726	AX30750-0848-38N27-SC13 EDP:10727
1.0000	1.0000	1.125	6.000	2.250	AX31000-0948-SN18-SC13 EDP:10734	-	AX31000-0948-06N18-SC13 EDP:10729	AX31000-0948-12N18-SC13 EDP:10730	AX31000-0948-18N18-SC13 EDP:10731	AX31000-0948-24N18-SC13 EDP:10732	AX31000-0948-38N18-SC13 EDP:10733
		1.125	6.000	3.250	AX31000-0948-SN26-SC13 EDP:10740	-	AX31000-0948-06N26-SC13 EDP:10735	AX31000-0948-12N26-SC13 EDP:10736	AX31000-0948-18N26-SC13 EDP:10737	AX31000-0948-24N26-SC13 EDP:10738	AX31000-0948-38N26-SC13 EDP:10739
		1.125	7.000	4.250	AX31000-0956-SN34-SC13 EDP:10746	-	AX31000-0956-06N34-SC13 EDP:10741	AX31000-0956-12N34-SC13 EDP:10742	AX31000-0956-18N34-SC13 EDP:10743	AX31000-0956-24N34-SC13 EDP:10744	AX31000-0956-38N34-SC13 EDP:10745

3 FLUTE

3 FLUTE



Cut Materials

ALUM < 10% Si

ALUM > or = 10% Si

COPPER/BRASS



Ramping



Profiling



Finishing



Roughing



Plunging



Slotting



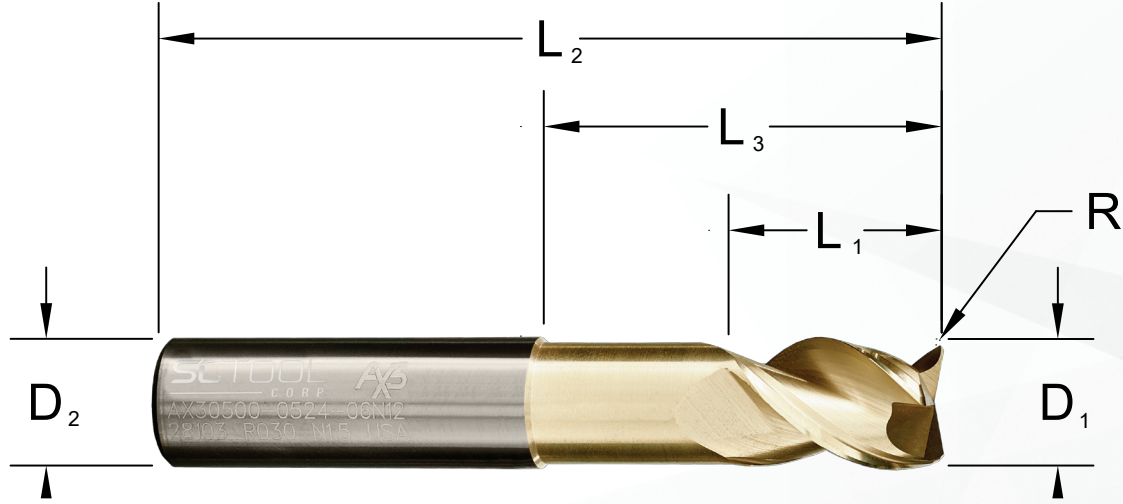
Pocketing

AX3NR Recommended Starting Speeds and Feeds

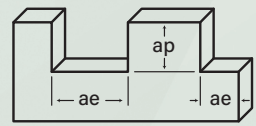
Material Group		Side Milling (A) and Slotting (B)			Uncoated		Feed per Tooth (IPT=inch/th) for side milling (A), for slotting (B) reduce IPT by 20%					
							D - Diameter					
		A		B	Speed (SFM)	frac.	1/4"	3/8"	1/2"	5/8"	3/4"	1"
		ap	ae	ap		dec.	0.250	0.375	0.500	0.625	0.750	1.000
N	Aluminum (<10% Si)	Ap1 max	<0.5 x D	<1 x D	Up to 6000	IPT	0.0018	0.0026	0.0035	0.0044	0.0054	0.0065
	Aluminum (> or= to 10% Si)	Ap1 max	<0.5 x D	<1 x D	Up to 5000	IPT	0.0015	0.0023	0.0031	0.0039	0.0047	0.0055
	Copper / Brass	Ap1 max	<0.5 x D	<1 x D	Up to 3000	IPT	0.0015	0.0023	0.0031	0.0039	0.0047	0.0055

Note:

- Ap1 max = Full length of cut of the tool
- For cutting aluminum with high silicon content, coating is recommended.
- For better surface finish, reduce feed per tooth.
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.



Side Milling (A) and Slotting (B)



3 FLUTE



Tolerance	
Shank	h6
Cut Diameter	+ .000" - .0006"

The image features a close-up of a metal drill bit in a machine on the left side. A large, bold, dark grey 'AX4' logo is positioned in the upper right. A thick green diagonal stripe runs from the top left towards the bottom right, partially obscuring the background. At the bottom, there is a detailed, close-up view of a brass-colored drill bit with a double-flute design.

AX4

AX4 END MILLS

Available Coated & Uncoated

The AX4 is an end mill solution for aluminum applications where balance and micro-geometries vastly improve your metal removal rates.

Our circular land reduces chatter and improves surface finishes on aluminum and other non-ferrous metals. Its double-rake flute design provides effective chip evacuation and improved feed rates. The 4-flute design provides the maximum for metal removal rates in aluminum.

Our AX4 series is designed for applications requiring high metal removal rates of aluminum and other non-ferrous metals where finish is essential.



Superb in high-speed machining of aluminum

Excellent finishes

Stocked and ready to order in diameters of 1/2", 5/8" and 3/4" with square end or corner radius options

AX4 Series Uncoated

Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option				
				Square	R.030	R.060	R.090	R.120
0.5000	0.5000	1.250	3.000	AX40500-1024-S EDP:10751	AX40500-1024-06 EDP:10747	AX40500-1024-12 EDP:10748	AX40500-1024-18 EDP:10749	AX40500-1024-24 EDP:10750
		2.000	4.000	AX40500-1632-S EDP:10756	AX40500-1632-06 EDP:10752	AX40500-1632-12 EDP:10753	AX40500-1632-18 EDP:10754	AX40500-1632-24 EDP:10755
		2.500	5.000	AX40500-2040-S EDP:10761	AX40500-2040-06 EDP:10757	AX40500-2040-12 EDP:10758	AX40500-2040-18 EDP:10759	AX40500-2040-24 EDP:10760
0.6250	0.6250	1.750	4.000	AX40625-1432-S EDP:10766	AX40625-1432-06 EDP:10762	AX40625-1432-12 EDP:10763	AX40625-1432-18 EDP:10764	AX40625-1432-24 EDP:10765
		2.125	4.000	AX40625-1732-S EDP:10771	AX40625-1732-06 EDP:10767	AX40625-1732-12 EDP:10768	AX40625-1732-18 EDP:10769	AX40625-1732-24 EDP:10770
0.7500	0.7500	1.750	4.000	AX40750-1432-S EDP:10776	AX40750-1432-06 EDP:10772	AX40750-1432-12 EDP:10773	AX40750-1432-18 EDP:10774	AX40750-1432-24 EDP:10775
		2.250	5.000	AX40750-1840-S EDP:10781	AX40750-1840-06 EDP:10777	AX40750-1840-12 EDP:10778	AX40750-1840-18 EDP:10779	AX40750-1840-24 EDP:10780

AX4 Series with SC13 Coating

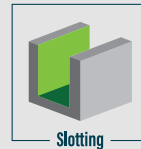
Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option				
				Square	R.030	R.060	R.090	R.120
0.5000	0.5000	1.250	3.000	AX40500-1024-S-SC13 EDP:10786	AX40500-1024-06-SC13 EDP:10782	AX40500-1024-12-SC13 EDP:10783	AX40500-1024-18-SC13 EDP:10784	AX40500-1024-24-SC13 EDP:10785
		2.000	4.000	AX40500-1632-S-SC13 EDP:10791	AX40500-1632-06-SC13 EDP:10787	AX40500-1632-12-SC13 EDP:10788	AX40500-1632-18-SC13 EDP:10789	AX40500-1632-24-SC13 EDP:10790
		2.500	5.000	AX40500-2040-S-SC13 EDP:10796	AX40500-2040-06-SC13 EDP:10792	AX40500-2040-12-SC13 EDP:10793	AX40500-2040-18-SC13 EDP:10794	AX40500-2040-24-SC13 EDP:10795
0.6250	0.6250	1.750	4.000	AX40625-1432-S-SC13 EDP:10801	AX40625-1432-06-SC13 EDP:10797	AX40625-1432-12-SC13 EDP:10798	AX40625-1432-18-SC13 EDP:10799	AX40625-1432-24-SC13 EDP:10800
		2.125	4.000	AX40625-1732-S-SC13 EDP:10806	AX40625-1732-06-SC13 EDP:10802	AX40625-1732-12-SC13 EDP:10803	AX40625-1732-18-SC13 EDP:10804	AX40625-1732-24-SC13 EDP:10805
0.7500	0.7500	1.750	4.000	AX40750-1432-S-SC13 EDP:10811	AX40750-1432-06-SC13 EDP:10807	AX40750-1432-12-SC13 EDP:10808	AX40750-1432-18-SC13 EDP:10809	AX40750-1432-24-SC13 EDP:10810
		2.250	5.000	AX40750-1840-S-SC13 EDP:10816	AX40750-1840-06-SC13 EDP:10812	AX40750-1840-12-SC13 EDP:10813	AX40750-1840-18-SC13 EDP:10814	AX40750-1840-24-SC13 EDP:10815

Cut Materials

ALUM < 10% Si

ALUM > or = 10% Si

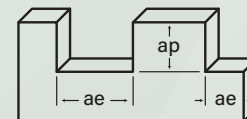
COPPER/BRASS



AX4 Recommended Starting Speeds and Feeds

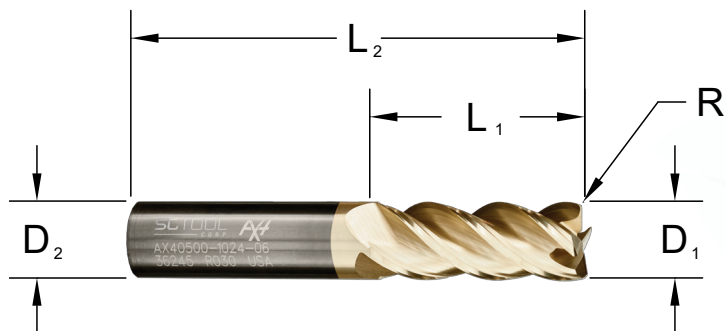
Material Group		Side Milling (A) and Slotting (B)			Uncoated		Feed per Tooth (IPT=inch/th) for side milling (A), for slotting (B) reduce IPT by 20%					
							D - Diameter					
		A		B	Speed (SFM)	frac.	1/4"	3/8"	1/2"	5/8"	3/4"	1"
		ap	ae	ap		dec.	0.250	0.375	0.500	0.625	0.750	1.000
N	Aluminum (<10% Si)	Ap1 max	<0.5 x D	<1 x D	Up to 6000	IPT	0.0023	0.0033	0.0044	0.0055	0.0068	0.0081
	Aluminum (> or= to 10% Si)	Ap1 max	<0.5 x D	<1 x D	Up to 5000	IPT	0.0019	0.0029	0.0039	0.0049	0.0059	0.0069
	Copper / Brass	Ap1 max	<0.5 x D	<1 x D	Up to 3000	IPT	0.0019	0.0029	0.0039	0.0049	0.0059	0.0069

Side Milling (A) and Slotting (B)



Note:

- Ap1 max = Full length of cut of the tool
- For cutting aluminum with high silicon content, coating is recommended.
- For better surface finish, reduce feed per tooth.
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.



4 FLUTE

SQ

RAD

CC

h6

4FL

Uncoated

SC-13

Tolerance

Shank	h6
Cut Diameter	+ .000" - .0006"



SV4 END MILLS

Super-Variable Flute Design Featuring Varying Helix Angles and Indexing

- Optimizes performance
- Maximizes stock removal
- Reduces chatter
- Increases tool life
- Improves productivity

Our SV4 end mills are manufactured with certified, premium, sub-micron grain carbide and they feature a super-variable flute design to increase metal removal rates and reduce chatter.

The SV4 can be run at aggressive rates while tackling heavy milling tasks like roughing and slotting.





Excels in a wide range of aggressive machining applications in all materials including stainless, Inconel, titanium, tool steels, and hardened materials

Stocked and ready to order in diameters of 1/8" to 1" including a variety of options: square end, corner radius, ball nose, and neck relieved – all with SC-3 coating

SV4 Series												
Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option								Ball Nose
				Square	R.015	R.030	R.060	R.090	R.120	R.190	R.250	
0.1250	0.1250	0.250	1.500	SV40125-0212-S EDP:20003	SV40125-0212-03 EDP:20001	SV40125-0212-06 EDP:20002	-	-	-	-	-	-
		0.500	1.500	SV40125-0412-S EDP:20007	SV40125-0412-03 EDP:20004	SV40125-0412-06 EDP:20005	-	-	-	-	-	SV40125-0412-BN EDP:20006
		0.625	1.500	SV40125-0512-S EDP:20009	SV40125-0512-03 EDP:20008	-						
0.1875	0.1875	0.375	2.000	SV40188-0316-S EDP:20012	SV40188-0316-03 EDP:20010	SV40188-0316-06 EDP:20011	-	-	-	-	-	-
		0.625	2.000	SV40188-0516-S EDP:20016	SV40188-0516-03 EDP:20013	SV40188-0516-06 EDP:20014	-	-	-	-	-	SV40188-0516-BN EDP:20015
0.2500	0.2500	0.625	2.000	SV40250-0516-S EDP:20020	SV40250-0516-03 EDP:20017	SV40250-0516-06 EDP:20018	SV40250-0516-12 EDP:20019	-	-	-	-	-
		0.750	2.500	SV40250-0620-S EDP:20025	SV40250-0620-03 EDP:20021	SV40250-0620-06 EDP:20022	SV40250-0620-12 EDP:20023	-	-	-	-	SV40250-0620-BN EDP:20024
		1.250	3.000	SV40250-1024-S EDP:20029	SV40250-1024-03 EDP:20026	SV40250-1024-06 EDP:20027	SV40250-1024-12 EDP:20028	-	-	-	-	-
		0.625	2.000	SV40313-0516-S EDP:20033	SV40313-0516-03 EDP:20030	SV40313-0516-06 EDP:20031	SV40313-0516-12 EDP:20032	-	-	-	-	-
0.3125	0.3125	0.875	2.500	SV40313-0720-S EDP:20038	SV40313-0720-03 EDP:20034	SV40313-0720-06 EDP:20035	SV40313-0720-12 EDP:20036	-	-	-	-	SV40313-0720-BN EDP:20037
		1.250	3.000	SV40313-1024-S EDP:20042	SV40313-1024-03 EDP:20039	SV40313-1024-06 EDP:20040	SV40313-1024-12 EDP:20041	-	-	-	-	-
0.3750	0.3750	0.875	2.500	SV40375-0720-S EDP:20049	SV40375-0720-03 EDP:20043	SV40375-0720-06 EDP:20044	SV40375-0720-12 EDP:20045	SV40375-0720-18 EDP:20046	SV40375-0720-24 EDP:20047	-	-	SV40375-0720-BN EDP:20048
		1.250	3.000	SV40375-1024-S EDP:20055	SV40375-1024-03 EDP:20050	SV40375-1024-06 EDP:20051	SV40375-1024-12 EDP:20052	SV40375-1024-18 EDP:20053	SV40375-1024-24 EDP:20054	-	-	-
		1.750	3.500	SV40375-1428-S EDP:20060	SV40375-1428-03 EDP:20056	SV40375-1428-06 EDP:20057	SV40375-1428-12 EDP:20058	SV40375-1428-18 EDP:20059	-	-	-	-
0.4375	0.4375	0.875	2.500	SV40438-0720-S EDP:20065	SV40438-0720-03 EDP:20061	SV40438-0720-06 EDP:20062	SV40438-0720-12 EDP:20063	SV40438-0720-18 EDP:20064	-	-	-	-
		1.250	3.000	SV40438-1024-S EDP:20071	SV40438-1024-03 EDP:20066	SV40438-1024-06 EDP:20067	SV40438-1024-12 EDP:20068	SV40438-1024-18 EDP:20069	-	-	-	SV40438-1024-BN EDP:20070

SV4 Series Continued

Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option								Ball Nose
				Square	R.015	R.030	R.060	R.090	R.120	R.190	R.250	
0.5000	0.5000	0.625	2.500	SV40500-0520-S EDP:20077	SV40500-0520-03 EDP:20072	SV40500-0520-06 EDP:20073	SV40500-0520-12 EDP:20074	SV40500-0520-18 EDP:20075	SV40500-0520-24 EDP:20076	-	-	-
		1.000	3.000	SV40500-0824-S EDP:20084	SV40500-0824-03 EDP:20078	SV40500-0824-06 EDP:20079	SV40500-0824-12 EDP:20080	SV40500-0824-18 EDP:20081	SV40500-0824-24 EDP:20082	-	-	-
		1.250	3.000	SV40500-1024-S EDP:20091	SV40500-1024-03 EDP:20085	SV40500-1024-06 EDP:20086	SV40500-1024-12 EDP:20087	SV40500-1024-18 EDP:20088	SV40500-1024-24 EDP:20089	-	-	SV40500-1024-BN EDP:20090
		1.375	3.000	SV40500-1124-S EDP:20097	SV40500-1124-03 EDP:20092	SV40500-1124-06 EDP:20093	SV40500-1124-12 EDP:20094	SV40500-1124-18 EDP:20095	SV40500-1124-24 EDP:20096	-	-	-
		2.000	4.000	SV40500-1632-S EDP:20103	SV40500-1632-03 EDP:20098	SV40500-1632-06 EDP:20099	SV40500-1632-12 EDP:20100	SV40500-1632-18 EDP:20101	SV40500-1632-24 EDP:20102	-	-	-
0.6250	0.6250	1.250	3.500	SV40625-1028-S EDP:20109	-	SV40625-1028-06 EDP:20104	SV40625-1028-12 EDP:20105	SV40625-1028-18 EDP:20106	SV40625-1028-24 EDP:20107	-	-	SV40625-1028-BN EDP:20108
		1.750	4.000	SV40625-1432-S EDP:20114	-	SV40625-1432-06 EDP:20110	SV40625-1432-12 EDP:20111	SV40625-1432-18 EDP:20112	SV40625-1432-24 EDP:20113	-	-	-
		2.125	4.000	SV40625-1732-S EDP:20119	-	SV40625-1732-06 EDP:20115	SV40625-1732-12 EDP:20116	SV40625-1732-18 EDP:20117	SV40625-1732-24 EDP:20118	-	-	-
0.7500	0.7500	1.250	4.000	SV40750-1032-S EDP:20126	-	SV40750-1032-06 EDP:20120	SV40750-1032-12 EDP:20121	SV40750-1032-18 EDP:20122	SV40750-1032-24 EDP:20123	SV40750-1032-38 EDP:20124	SV40750-1032-50 EDP:20125	-
		1.750	4.000	SV40750-1432-S EDP:20134	-	SV40750-1432-06 EDP:20127	SV40750-1432-12 EDP:20128	SV40750-1432-18 EDP:20129	SV40750-1432-24 EDP:20130	SV40750-1432-38 EDP:20131	SV40750-1432-50 EDP:20132	SV40750-1432-BN EDP:20133
		2.250	5.000	SV40750-1840-S EDP:20141	-	SV40750-1840-06 EDP:20135	SV40750-1840-12 EDP:20136	SV40750-1840-18 EDP:20137	SV40750-1840-24 EDP:20138	SV40750-1840-38 EDP:20139	SV40750-1840-50 EDP:20140	-
1.0000	1.0000	1.500	4.000	SV41000-1232-S EDP:20149	-	SV41000-1232-06 EDP:20142	SV41000-1232-12 EDP:20143	SV41000-1232-18 EDP:20144	SV41000-1232-24 EDP:20145	SV41000-1232-38 EDP:20146	SV41000-1232-50 EDP:20147	SV41000-1232-BN EDP:20148
		2.250	5.000	SV41000-1840-S EDP:20156	-	SV41000-1840-06 EDP:20150	SV41000-1840-12 EDP:20151	SV41000-1840-18 EDP:20152	SV41000-1840-24 EDP:20153	SV41000-1840-38 EDP:20154	SV41000-1840-50 EDP:20155	-
		3.000	6.000	SV41000-2448-S EDP:20163	-	SV41000-2448-06 EDP:20157	SV41000-2448-12 EDP:20158	SV41000-2448-18 EDP:20159	SV41000-2448-24 EDP:20160	SV41000-2448-38 EDP:20161	SV41000-2448-50 EDP:20162	-

4 FLUTE

4 FLUTE



Cut Materials

STEEL

STAINLESS STEEL

CAST IRON

HI-TEMP ALLOYS

HARDENED STEEL



Ramping



Profiling



Finishing



Roughing



Plunging



Slotting

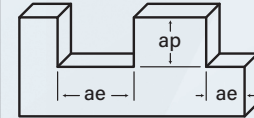


Pocketing

SV4 Recommended Starting Speeds and Feeds

Material Group		Side Milling (A) and Slotting (B)			Speed		frac. dec.	Effective Feed per Tooth (IPT=inch/th) for side milling (A) (Use Chip Thinning Calculations to correct for stepover), for slotting (B) reduce IPT by 20%					
								D - Diameter					
		A		B	A	B		1/4"	3/8"	1/2"	5/8"	3/4"	1"
		ap	ae	ap	(SFM)	(SFM)		0.250	0.375	0.500	0.625	0.750	1.000
P	Unalloyed Steel (AISI 1000, 1100, 1200, 1500 Series)	Ap1 max	<0.5 x D	<1 x D	500	200	IPT	0.0011	0.0018	0.0031	0.0035	0.0042	0.0049
	Low-alloy Steel (AISI 3000, 4000, 5000, 6000, 8000, 9000 Series)	Ap1 max	<0.5 x D	<1 x D	400	200	IPT	0.0011	0.0018	0.0031	0.0035	0.0042	0.0049
	High-alloy Steel/Tool Steel (SAE Classes A, D, H, O, S, M, T)	Ap1 max	<0.5 x D	<0.75 x D	350	175	IPT	0.001	0.002	0.0026	0.0029	0.0034	0.0038
M	Austenitic (AISI 200 & 300 Series)	Ap1 max	<0.5 x D	<1 x D	300	150	IPT	0.0015	0.0019	0.0022	0.0026	0.0031	0.0034
	Marensitic (AISI 400 & 500 Series)	Ap1 max	<0.5 x D	<1 x D	350	175	IPT	0.0016	0.002	0.0023	0.0028	0.0033	0.0036
	Precipitation (PH 15-7 Mo, 15-5 PH, 17-7 PH)	Ap1 max	<0.5 x D	<1 x D	300	150	IPT	0.001	0.0021	0.0027	0.0032	0.0036	0.004
K	Gray Iron GG	Ap1 max	<0.5 x D	<1 x D	450	200	IPT	0.0017	0.0025	0.003	0.0035	0.0041	0.0048
	Nodular Iron GGG	Ap1 max	<0.5 x D	<1 x D	500	200	IPT	0.0017	0.0025	0.003	0.0035	0.0041	0.0048
	Malleable Iron GTS/GTW	Ap1 max	<0.5 x D	<1 x D	400	200	IPT	0.0017	0.0025	0.003	0.0035	0.0041	0.0048
S	HRSA Iron-Based (Incoloy 800/909, A286)	Ap1 max	<0.5 x D	N/A	100	N/A	IPT	0.0007	0.001	0.0015	0.0019	0.0025	0.0033
	HRSA Cobalt-Based (Stellite, Haynes 21/25/188)	Ap1 max	<0.5 x D	N/A	80	N/A	IPT	0.0007	0.001	0.0015	0.0019	0.0025	0.0033
	HRSA Nickel-Based (Inconel 601/617/625/700/706/718, Hastelloy, Monel, Nimonic, Rene, Udimet, Waspaloy)	Ap1 max	<0.5 x D	<0.3 x D	120	50	IPT	0.0007	0.001	0.0015	0.0019	0.0025	0.0033
	Titanium (Pure, ASTM 1/2/3, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo-Si)	Ap1 max	<0.5 x D	N/A	300	N/A	IPT	0.0008	0.0011	0.0023	0.0026	0.0031	0.0035
H	Hardened Steels and Cast Irons (42-48HRC)	Ap1 max	<0.16 x D	N/A	180	N/A	IPT	0.0008	0.0012	0.0017	0.002	0.0022	0.0025

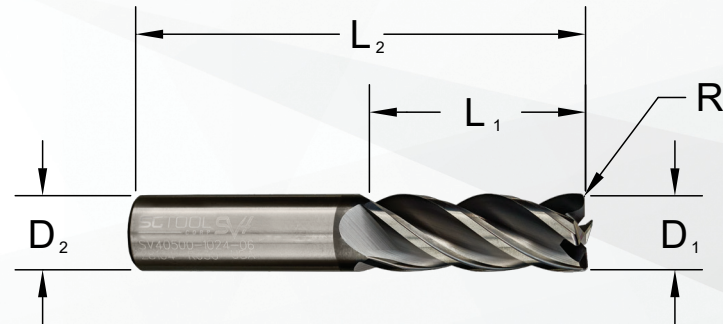
Side Milling (A) and Slotting (B)



4 FLUTE

Note:

- Ap1 max = Full length of cut of the tool
- Lower cutting speed value is recommended for high stock removal applications or higher hardness within group.
- Higher cutting speed value is recommended for finishing applications or lower hardness within group.
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.



SC-3

Tolerance	
Shank	h6
Cut Diameter	+ .000" - .002"

SV4 Series Neck Relieved

Cutting Diameter D1	Shank Diameter D2	LOC	OAL	LBS	Corner Option							
					Square	R.015	R.030	R.060	R.090	R.120	R.190	R.250
0.2500	0.2500	0.375	3.000	0.875	SV40250-0324-SN07 EDP:20167	SV40250-0324-03N07 EDP:20164	SV40250-0324-06N07 EDP:20165	SV40250-0324-12N07 EDP:20166	-	-	-	-
		0.375	3.500	1.500	SV40250-0328-SN12 EDP:20171	SV40250-0328-03N12 EDP:20168	SV40250-0328-06N12 EDP:20169	SV40250-0328-12N12 EDP:20170	-	-	-	-
0.3750	0.3750	0.500	3.000	1.125	SV40375-0424-SN09 EDP:20176	SV40375-0424-03N09 EDP:20172	SV40375-0424-06N09 EDP:20173	SV40375-0424-12N09 EDP:20174	SV40375-0424-18N09 EDP:20175	-	-	-
		0.500	4.000	2.125	SV40375-0432-SN17 EDP:20181	SV40375-0432-03N17 EDP:20177	SV40375-0432-06N17 EDP:20178	SV40375-0432-12N17 EDP:20179	SV40375-0432-18N17 EDP:20180	-	-	-
0.5000	0.5000	0.625	4.000	1.375	SV40500-0532-SN11 EDP:20187	SV40500-0532-03N11 EDP:20182	SV40500-0532-06N11 EDP:20183	SV40500-0532-12N11 EDP:20184	SV40500-0532-18N11 EDP:20185	SV40500-0532-24N11 EDP:20186	-	-
		0.625	5.000	2.375	SV40500-0540-SN19 EDP:20193	SV40500-0540-03N19 EDP:20188	SV40500-0540-06N19 EDP:20189	SV40500-0540-12N19 EDP:20190	SV40500-0540-18N19 EDP:20191	SV40500-0540-24N19 EDP:20192	-	-
		0.625	6.000	3.375	SV40500-0548-SN27 EDP:20199	SV40500-0548-03N27 EDP:20194	SV40500-0548-06N27 EDP:20195	SV40500-0548-12N27 EDP:20196	SV40500-0548-18N27 EDP:20197	SV40500-0548-24N27 EDP:20198	-	-
0.6250	0.6250	0.750	4.000	1.625	SV40625-0632-SN13 EDP:20204	-	SV40625-0632-06N13 EDP:20200	SV40625-0632-12N13 EDP:20201	SV40625-0632-18N13 EDP:20202	SV40625-0632-24N13 EDP:20203	-	-
		0.750	5.000	2.375	SV40625-0640-SN19 EDP:20209	-	SV40625-0640-06N19 EDP:20205	SV40625-0640-12N19 EDP:20206	SV40625-0640-18N19 EDP:20207	SV40625-0640-24N19 EDP:20208	-	-
		0.750	6.000	3.375	SV40625-0648-SN27 EDP:20214	-	SV40625-0648-06N27 EDP:20210	SV40625-0648-12N27 EDP:20211	SV40625-0648-18N27 EDP:20212	SV40625-0648-24N27 EDP:20213	-	-
0.7500	0.7500	1.000	5.000	1.750	SV40750-0840-SN14 EDP:20221	-	SV40750-0840-06N14 EDP:20215	SV40750-0840-12N14 EDP:20216	SV40750-0840-18N14 EDP:20217	SV40750-0840-24N14 EDP:20218	SV40750-0840-38N14 EDP:20219	SV40750-0840-50N14 EDP:20220
		1.000	6.000	2.625	SV40750-0848-SN21 EDP:20228	-	SV40750-0848-06N21 EDP:20222	SV40750-0848-12N21 EDP:20223	SV40750-0848-18N21 EDP:20224	SV40750-0848-24N21 EDP:20225	SV40750-0848-38N21 EDP:20226	SV40750-0848-50N21 EDP:20227
		1.000	6.000	3.375	SV40750-0848-SN27 EDP:20235	-	SV40750-0848-06N27 EDP:20229	SV40750-0848-12N27 EDP:20230	SV40750-0848-18N27 EDP:20231	SV40750-0848-24N27 EDP:20232	SV40750-0848-38N27 EDP:20233	SV40750-0848-50N27 EDP:20234
1.0000	1.0000	1.125	6.000	2.250	SV41000-0948-SN18 EDP:20242	-	SV41000-0948-06N18 EDP:20236	SV41000-0948-12N18 EDP:20237	SV41000-0948-18N18 EDP:20238	SV41000-0948-24N18 EDP:20239	SV41000-0948-38N18 EDP:20240	SV41000-0948-50N18 EDP:20241
		1.125	6.000	3.250	SV41000-0948-SN26 EDP:20249	-	SV41000-0948-06N26 EDP:20243	SV41000-0948-12N26 EDP:20244	SV41000-0948-18N26 EDP:20245	SV41000-0948-24N26 EDP:20246	SV41000-0948-38N26 EDP:20247	SV41000-0948-50N26 EDP:20248
		1.125	7.000	4.250	SV41000-0956-SN34 EDP:20256	-	SV41000-0956-06N34 EDP:20250	SV41000-0956-12N34 EDP:20251	SV41000-0956-18N34 EDP:20252	SV41000-0956-24N34 EDP:20253	SV41000-0956-38N34 EDP:20254	SV41000-0956-50N34 EDP:20255

Cut Materials

STEEL

STAINLESS STEEL

CAST IRON

HI-TEMP ALLOYS

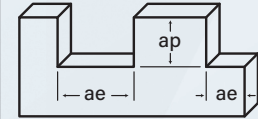
HARDENED STEEL



SV4NR Recommended Starting Speeds and Feeds

Material Group		Side Milling (A) and Slotting (B)			Speed			Effective Feed per Tooth (IPT=inch/th) for side milling (A) (Use Chip Thinning Calculations to correct for stepover), for slotting (B) reduce IPT by 20%					
								D - Diameter					
		A		B	A	B	frac.	1/4"	3/8"	1/2"	5/8"	3/4"	1"
		ap	ae	ap	(SFM)	(SFM)	dec.	0.250	0.375	0.500	0.625	0.750	1.000
P	Unalloyed Steel (AISI 1000, 1100, 1200, 1500 Series)	Ap1 max	<0.5 x D	<1 x D	500	200	IPT	0.0009	0.0014	0.0025	0.0028	0.0034	0.0039
	Low-alloy Steel (AISI 3000, 4000, 5000, 6000, 8000, 9000 Series)	Ap1 max	<0.5 x D	<1 x D	400	200	IPT	0.0009	0.0014	0.0025	0.0028	0.0034	0.0039
	High-alloy Steel/Tool Steel (SAE Classes A, D, H, O, S, M, T)	Ap1 max	<0.5 x D	<0.75 x D	350	175	IPT	0.0008	0.0016	0.0021	0.0023	0.0027	0.0030
M	Austenitic (AISI 200 & 300 Series)	Ap1 max	<0.5 x D	<1 x D	300	150	IPT	0.0012	0.0015	0.0018	0.0021	0.0025	0.0027
	Marensitic (AISI 400 & 500 Series)	Ap1 max	<0.5 x D	<1 x D	350	175	IPT	0.0013	0.0016	0.0018	0.0022	0.0026	0.0029
	Precipitation (PH 15-7 Mo, 15-5 PH, 17-7 PH)	Ap1 max	<0.5 x D	<1 x D	300	150	IPT	0.0008	0.0017	0.0022	0.0026	0.0029	0.0032
K	Gray Iron GG	Ap1 max	<0.5 x D	<1 x D	450	200	IPT	0.0014	0.0020	0.0024	0.0028	0.0033	0.0038
	Nodular Iron GGG	Ap1 max	<0.5 x D	<1 x D	500	200	IPT	0.0014	0.0020	0.0024	0.0028	0.0033	0.0038
	Malleable Iron GTS/GTW	Ap1 max	<0.5 x D	<1 x D	400	200	IPT	0.0014	0.0020	0.0024	0.0028	0.0033	0.0038
S	HRSA Iron-Based (Incoloy 800/909, A286)	Ap1 max	<0.5 x D	N/A	100	N/A	IPT	0.0006	0.0008	0.0012	0.0015	0.0020	0.0026
	HRSA Cobalt-Based (Stelite, Haynes 21/25/188)	Ap1 max	<0.5 x D	N/A	80	N/A	IPT	0.0006	0.0008	0.0012	0.0015	0.0020	0.0026
	HRSA Nickel-Based (Inconel 601/617/625/700/706/718, Hastelloy, Monel, Nimonic, Rene, Udimet, Waspaloy)	Ap1 max	<0.5 x D	<0.3 x D	120	50	IPT	0.0006	0.0008	0.0012	0.0015	0.0020	0.0026
	Titanium (Pure, ASTM 1/2/3, Ti6AL-4V, Ti6AL-2Sn-4Zr-2Mo-Si)	Ap1 max	<0.5 x D	N/A	300	N/A	IPT	0.0006	0.0009	0.0018	0.0021	0.0025	0.0028
H	Hardened Steels and Cast Irons (42-48Hrc)	Ap1 max	<0.16 x D	N/A	180	N/A	IPT	0.0006	0.0010	0.0014	0.0016	0.0018	0.0020

Side Milling (A) and Slotting (B)

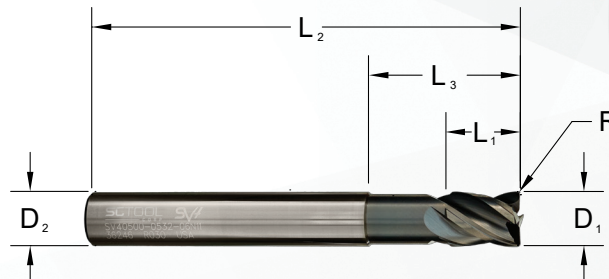


4 FLUTE



Note:

- Ap1 max = Full length of cut of the tool
- Lower cutting speed value is recommended for high stock removal applications or higher hardness within group.
- Higher cutting speed value is recommended for finishing applications or lower hardness within group.
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.



SC-3

Tolerance

Shank	h6
Cut Diameter	+ .000" - .002"



SV5 END MILLS

Super-Variable Flute Design Featuring Varying Helix Angles and Indexing

- Optimizes performance
- Maximizes stock removal
- Reduces chatter
- Increases tool life
- Improves productivity

Our SV5 end mills are manufactured with certified, premium, sub-micron grain carbide and they feature a super-variable flute design to increase metal removal rates, enhance finishes, and eliminate chatter.

The SV5 can be run at higher production rates and still produce an exceptional finish while tackling heavy milling tasks like roughing and slotting.





Excels in a wide range of roughing and finishing applications such as helical interpolation, ramping, peel, high speed, dynamic, trochoidal, and peripheral milling

Stocked and ready to order in diameters of 1/8" to 1" including a variety of options: square corner, corner radius, OD chipbreakers, and neck relieved - all with SC-3 coating

SV5 Series											
Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option							
				Square	R.015	R.030	R.060	R.090	R.120	R.190	R.250
0.1250	0.1250	0.250	1.500	SV50125-0212-S EDP:20259	SV50125-0212-03 EDP:20257	SV50125-0212-06 EDP:20258	-	-	-	-	-
		0.500	1.500	SV50125-0412-S EDP:20262	SV50125-0412-03 EDP:20260	SV50125-0412-06 EDP:20261	-	-	-	-	-
0.1875	0.1875	0.375	2.000	SV50188-0316-S EDP:20265	SV50188-0316-03 EDP:20263	SV50188-0316-06 EDP:20264	-	-	-	-	-
		0.625	2.000	SV50188-0516-S EDP:20268	SV50188-0516-03 EDP:20266	SV50188-0516-06 EDP:20267	-	-	-	-	-
0.2500	0.2500	0.625	2.000	SV50250-0516-S EDP:20272	SV50250-0516-03 EDP:20269	SV50250-0516-06 EDP:20270	SV50250-0516-12 EDP:20271	-	-	-	-
		0.750	2.500	SV50250-0620-S EDP:20276	SV50250-0620-03 EDP:20273	SV50250-0620-06 EDP:20274	SV50250-0620-12 EDP:20275	-	-	-	-
		1.250	3.000	SV50250-1024-S EDP:20280	SV50250-1024-03 EDP:20277	SV50250-1024-06 EDP:20278	SV50250-1024-12 EDP:20279	-	-	-	-
0.3125	0.3125	0.625	2.000	SV50313-0516-S EDP:20284	SV50313-0516-03 EDP:20281	SV50313-0516-06 EDP:20282	SV50313-0516-12 EDP:20283	-	-	-	-
		0.875	2.500	SV50313-0720-S EDP:20288	SV50313-0720-03 EDP:20285	SV50313-0720-06 EDP:20286	SV50313-0720-12 EDP:20287	-	-	-	-
		1.250	3.000	SV50313-1024-S EDP:20292	SV50313-1024-03 EDP:20289	SV50313-1024-06 EDP:20290	SV50313-1024-12 EDP:20291	-	-	-	-
0.3750	0.3750	0.875	2.500	SV50375-0720-S EDP:20297	SV50375-0720-03 EDP:20293	SV50375-0720-06 EDP:20294	SV50375-0720-12 EDP:20295	SV50375-0720-18 EDP:20296	-	-	-
		1.250	3.000	SV50375-1024-S EDP:20303	SV50375-1024-03 EDP:20298	SV50375-1024-06 EDP:20299	SV50375-1024-12 EDP:20300	SV50375-1024-18 EDP:20301	SV50375-1024-24 EDP:20302	-	-
		1.750	3.500	SV50375-1428-S EDP:20308	SV50375-1428-03 EDP:20304	SV50375-1428-06 EDP:20305	SV50375-1428-12 EDP:20306	SV50375-1428-18 EDP:20307	-	-	-
		2.000	3.500	SV50375-1628-S EDP:20902	-	SV50375-1628-06 EDP:20899	SV50375-1628-12 EDP:20900	-	SV50375-1628-24 EDP:20901	-	-
0.4375	0.4375	0.875	2.500	SV50438-0720-S EDP:20313	SV50438-0720-03 EDP:20309	SV50438-0720-06 EDP:20310	SV50438-0720-12 EDP:20311	SV50438-0720-18 EDP:20312	-	-	-
		1.250	3.000	SV50438-1024-S EDP:20318	SV50438-1024-03 EDP:20314	SV50438-1024-06 EDP:20315	SV50438-1024-12 EDP:20316	SV50438-1024-18 EDP:20317	-	-	-

SV5 Series Continued

Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option							
				Square	R.015	R.030	R.060	R.090	R.120	R.190	R.250
0.5000	0.5000	0.625	2.500	SV50500-0520-S EDP:20324	SV50500-0520-03 EDP:20319	SV50500-0520-06 EDP:20320	SV50500-0520-12 EDP:20321	SV50500-0520-18 EDP:20322	SV50500-0520-24 EDP:20323	-	-
		1.000	3.000	SV50500-0824-S EDP:20330	SV50500-0824-03 EDP:20325	SV50500-0824-06 EDP:20326	SV50500-0824-12 EDP:20327	SV50500-0824-18 EDP:20328	SV50500-0824-24 EDP:20329	-	-
		1.250	3.000	SV50500-1024-S EDP:20336	SV50500-1024-03 EDP:20331	SV50500-1024-06 EDP:20332	SV50500-1024-12 EDP:20333	SV50500-1024-18 EDP:20334	SV50500-1024-24 EDP:20335	-	-
		1.375	3.000	SV50500-1124-S EDP:20342	SV50500-1124-03 EDP:20337	SV50500-1124-06 EDP:20338	SV50500-1124-12 EDP:20339	SV50500-1124-18 EDP:20340	SV50500-1124-24 EDP:20341	-	-
		2.000	4.000	SV50500-1632-S EDP:20348	SV50500-1632-03 EDP:20343	SV50500-1632-06 EDP:20344	SV50500-1632-12 EDP:20345	SV50500-1632-18 EDP:20346	SV50500-1632-24 EDP:20347	-	-
0.6250	0.6250	1.250	3.500	SV50625-1028-S EDP:20353	-	SV50625-1028-06 EDP:20349	SV50625-1028-12 EDP:20350	SV50625-1028-18 EDP:20351	SV50625-1028-24 EDP:20352	-	-
		1.750	4.000	SV50625-1432-S EDP:20358	-	SV50625-1432-06 EDP:20354	SV50625-1432-12 EDP:20355	SV50625-1432-18 EDP:20356	SV50625-1432-24 EDP:20357	-	-
		2.125	4.000	SV50625-1732-S EDP:20363	-	SV50625-1732-06 EDP:20359	SV50625-1732-12 EDP:20360	SV50625-1732-18 EDP:20361	SV50625-1732-24 EDP:20362	-	-
0.7500	0.7500	1.000	3.000	SV50750-0824-S EDP:20905	-	SV50750-0824-06 EDP:20903	SV50750-0824-12 EDP:20904	-	-	-	-
		1.250	4.000	SV50750-1032-S EDP:20370	-	SV50750-1032-06 EDP:20364	SV50750-1032-12 EDP:20365	SV50750-1032-18 EDP:20366	SV50750-1032-24 EDP:20367	SV50750-1032-38 EDP:20368	SV50750-1032-50 EDP:20369
		1.750	4.000	SV50750-1432-S EDP:20377	-	SV50750-1432-06 EDP:20371	SV50750-1432-12 EDP:20372	SV50750-1432-18 EDP:20373	SV50750-1432-24 EDP:20374	SV50750-1432-38 EDP:20375	SV50750-1432-50 EDP:20376
		2.250	5.000	SV50750-1840-S EDP:20384	-	SV50750-1840-06 EDP:20378	SV50750-1840-12 EDP:20379	SV50750-1840-18 EDP:20380	SV50750-1840-24 EDP:20381	SV50750-1840-38 EDP:20382	SV50750-1840-50 EDP:20383
1.0000	1.0000	1.500	4.000	SV51000-1232-S EDP:20391	-	SV51000-1232-06 EDP:20385	SV51000-1232-12 EDP:20386	SV51000-1232-18 EDP:20387	SV51000-1232-24 EDP:20388	SV51000-1232-38 EDP:20389	SV51000-1232-50 EDP:20390
		2.250	5.000	SV51000-1840-S EDP:20398	-	SV51000-1840-06 EDP:20392	SV51000-1840-12 EDP:20393	SV51000-1840-18 EDP:20394	SV51000-1840-24 EDP:20395	SV51000-1840-38 EDP:20396	SV51000-1840-50 EDP:20397
		3.000	6.000	SV51000-2448-S EDP:20405	-	SV51000-2448-06 EDP:20399	SV51000-2448-12 EDP:20400	SV51000-2448-18 EDP:20401	SV51000-2448-24 EDP:20402	SV51000-2448-38 EDP:20403	SV51000-2448-50 EDP:20404

5 FLUTE



Cut Materials

STEEL

STAINLESS STEEL

CAST IRON

HI-TEMP ALLOYS

HARDENED STEEL



Ramping



Finishing



Roughing



Slotting

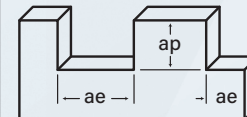


Pocketing

SV5 Recommended Starting Speeds and Feeds

Material Group		Side Milling (A) and Slotting (B)		Speed			Effective Feed per Tooth (IPT=inch/th) for side milling (A) (Use Chip Thinning Calculations to correct for stepover), for slotting (B) reduce IPT by 20%							
							D - Diameter							
		A		B	A		B	frac.	1/4"	3/8"	1/2"	5/8"	3/4"	1"
		ap	ae	ap	(SFM)		(SFM)	dec.	0.250	0.375	0.500	0.625	0.750	1.000
P	Unalloyed Steel (AISI 1000, 1100, 1200, 1500 Series)	Ap1 max	<0.35 x D	<1 x D	500	250	IPT	0.0011	0.0018	0.0031	0.0035	0.0042	0.0049	
	Low-alloy Steel (AISI 3000, 4000, 5000, 6000, 8000, 9000 Series)	Ap1 max	<0.35 x D	<1 x D	400	200	IPT	0.0011	0.0018	0.0031	0.0035	0.0042	0.0049	
	High-alloy Steel/Tool Steel (SAE Classes A, D, H, O, S, M, T)	Ap1 max	<0.35 x D	<0.75 x D	350	175	IPT	0.001	0.002	0.0026	0.0029	0.0034	0.0038	
M	Austenitic (AISI 200 & 300 Series)	Ap1 max	<0.35 x D	<1 x D	300	165	IPT	0.0015	0.0019	0.0022	0.0026	0.0031	0.0034	
	Martensitic (AISI 400 & 500 Series)	Ap1 max	<0.35 x D	<1 x D	350	180	IPT	0.0016	0.002	0.0023	0.0028	0.0033	0.0036	
	Precipitation (PH 15-7 Mo, 15-5 PH, 17-7 PH)	Ap1 max	<0.35 x D	<1 x D	300	160	IPT	0.001	0.0021	0.0027	0.0032	0.0036	0.004	
K	Gray Iron GG	Ap1 max	<0.35 x D	<1 x D	450	180	IPT	0.0017	0.0025	0.003	0.0035	0.0041	0.0048	
	Nodular Iron GGG	Ap1 max	<0.35 x D	<1 x D	500	180	IPT	0.0017	0.0025	0.003	0.0035	0.0041	0.0048	
	Malleable Iron GTS/GTW	Ap1 max	<0.35 x D	<1 x D	600	180	IPT	0.0017	0.0025	0.003	0.0035	0.0041	0.0048	
S	HRSA Iron-Based (Incoloy 800/909, A286)	Ap1 max	<0.35 x D	N/A	100	N/A	IPT	0.0007	0.001	0.0015	0.0019	0.0025	0.0033	
	HRSA Cobalt-Based (Stellite, Haynes 21/25/188)	Ap1 max	<0.35 x D	N/A	80	N/A	IPT	0.0007	0.001	0.0015	0.0019	0.0025	0.0033	
	HRSA Nickel-Based (Inconel 601/617/625/700/706/718, Hastelloy, Monel, Nimonic, Rene, Udimet, Waspaloy)	Ap1 max	<0.35 x D	<0.3 x D	120	60	IPT	0.0007	0.001	0.0015	0.0019	0.0025	0.0033	
	Titanium (Pure, ASTM 1/2/3, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo-Si)	Ap1 max	<0.35 x D	N/A	300	N/A	IPT	0.0008	0.0011	0.0023	0.0026	0.0031	0.0035	
H	Hardened Steels and Cast Irons (42-48HRC)	Ap1 max	<0.16 x D	N/A	180	N/A	IPT	0.0008	0.0012	0.0017	0.002	0.0022	0.0025	

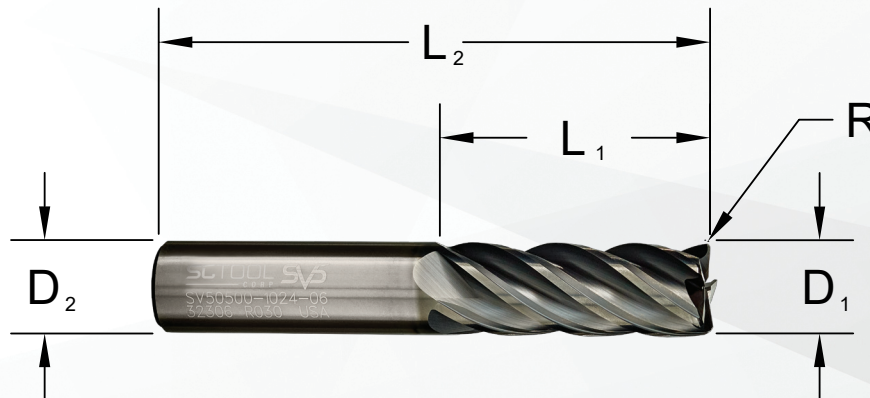
Side Milling (A) and Slotting (B)



5 FLUTE

Note:

- Ap1 max = Full length of cut of the tool
- Lower cutting speed value is recommended for high stock removal applications or higher hardness within group.
- Higher cutting speed value is recommended for finishing applications or lower hardness within group.
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.



SC-3

Tolerance	
Shank	h6
Cut Diameter	+ .000" - .002"

SV5 Series with Chipbreakers											
Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option							
				Square	R.015	R.030	R.060	R.090	R.120	R.190	R.250
0.3750	0.3750	0.875	2.500	SV50375-0720-SCB EDP:20410	SV50375-0720-03CB EDP:20406	SV50375-0720-06CB EDP:20407	SV50375-0720-12CB EDP:20408	SV50375-0720-18CB EDP:20409	-	-	-
		1.250	3.000	SV50375-1024-SCB EDP:20415	SV50375-1024-03CB EDP:20411	SV50375-1024-06CB EDP:20412	SV50375-1024-12CB EDP:20413	SV50375-1024-18CB EDP:20414	-	-	-
		1.750	3.500	SV50375-1428-SCB EDP:20420	SV50375-1428-03CB EDP:20416	SV50375-1428-06CB EDP:20417	SV50375-1428-12CB EDP:20418	SV50375-1428-18CB EDP:20419	-	-	-
0.5000	0.5000	1.000	3.000	SV50500-0824-SCB EDP:20426	SV50500-0824-03CB EDP:20421	SV50500-0824-06CB EDP:20422	SV50500-0824-12CB EDP:20423	SV50500-0824-18CB EDP:20424	SV50500-0824-24CB EDP:20425	-	-
		1.250	3.000	SV50500-1024-SCB EDP:20432	SV50500-1024-03CB EDP:20427	SV50500-1024-06CB EDP:20428	SV50500-1024-12CB EDP:20429	SV50500-1024-18CB EDP:20430	SV50500-1024-24CB EDP:20431	-	-
		2.000	4.000	SV50500-1632-SCB EDP:20438	SV50500-1632-03CB EDP:20433	SV50500-1632-06CB EDP:20434	SV50500-1632-12CB EDP:20435	SV50500-1632-18CB EDP:20436	SV50500-1632-24CB EDP:20437	-	-
0.6250	0.6250	1.250	3.500	SV50625-1028-SCB EDP:20443	-	SV50625-1028-06CB EDP:20439	SV50625-1028-12CB EDP:20440	SV50625-1028-18CB EDP:20441	SV50625-1028-24CB EDP:20442	-	-
		1.750	4.000	SV50625-1432-SCB EDP:20448	-	SV50625-1432-06CB EDP:20444	SV50625-1432-12CB EDP:20445	SV50625-1432-18CB EDP:20446	SV50625-1432-24CB EDP:20447	-	-
		2.125	4.000	SV50625-1732-SCB EDP:20453	-	SV50625-1732-06CB EDP:20449	SV50625-1732-12CB EDP:20450	SV50625-1732-18CB EDP:20451	SV50625-1732-24CB EDP:20452	-	-
0.7500	0.7500	1.250	4.000	SV50750-1032-SCB EDP:20460	-	SV50750-1032-06CB EDP:20454	SV50750-1032-12CB EDP:20455	SV50750-1032-18CB EDP:20456	SV50750-1032-24CB EDP:20457	SV50750-1032-38CB EDP:20458	SV50750-1032-50CB EDP:20459
		1.750	4.000	SV50750-1432-SCB EDP:20467	-	SV50750-1432-06CB EDP:20461	SV50750-1432-12CB EDP:20462	SV50750-1432-18CB EDP:20463	SV50750-1432-24CB EDP:20464	SV50750-1432-38CB EDP:20465	SV50750-1432-50CB EDP:20466
		2.250	5.000	SV50750-1840-SCB EDP:20474	-	SV50750-1840-06CB EDP:20468	SV50750-1840-12CB EDP:20469	SV50750-1840-18CB EDP:20470	SV50750-1840-24CB EDP:20471	SV50750-1840-38CB EDP:20472	SV50750-1840-50CB EDP:20473
1.0000	1.0000	1.500	4.000	SV51000-1232-SCB EDP:20481	-	SV51000-1232-06CB EDP:20475	SV51000-1232-12CB EDP:20476	SV51000-1232-18CB EDP:20477	SV51000-1232-24CB EDP:20478	SV51000-1232-38CB EDP:20479	SV51000-1232-50CB EDP:20480
		2.250	5.000	SV51000-1840-SCB EDP:20488	-	SV51000-1840-06CB EDP:20482	SV51000-1840-12CB EDP:20483	SV51000-1840-18CB EDP:20484	SV51000-1840-24CB EDP:20485	SV51000-1840-38CB EDP:20486	SV51000-1840-50CB EDP:20487
		3.000	6.000	SV51000-2448-SCB EDP:20495	-	SV51000-2448-06CB EDP:20489	SV51000-2448-12CB EDP:20490	SV51000-2448-18CB EDP:20491	SV51000-2448-24CB EDP:20492	SV51000-2448-38CB EDP:20493	SV51000-2448-50CB EDP:20494

Cut Materials

STEEL

STAINLESS STEEL

CAST IRON

HI-TEMP ALLOYS

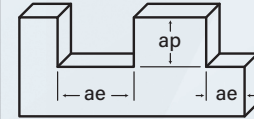
HARDENED STEEL



SV5CB Recommended Starting Speeds and Feeds

Material Group		Side Milling (A) and Slotting (B)			Speed			Effective Feed per Tooth (IPT=inch/th) for side milling (A) (Use Chip Thinning Calculations to correct for stepover), for slotting (B) reduce IPT by 20%					
								D - Diameter					
		A		B	A	B	frac.	1/4"	3/8"	1/2"	5/8"	3/4"	1"
		ap	ae	ap	(SFM)	(SFM)	dec.	0.250	0.375	0.500	0.625	0.750	1.000
P	Unalloyed Steel (AISI 1000, 1100, 1200, 1500 Series)	Ap1 max	<0.35 x D	<1 x D	500	250	IPT	0.0011	0.0018	0.0031	0.0035	0.0042	0.0049
	Low-alloy Steel (AISI 3000, 4000, 5000, 6000, 8000, 9000 Series)	Ap1 max	<0.35 x D	<1 x D	400	200	IPT	0.0011	0.0018	0.0031	0.0035	0.0042	0.0049
	High-alloy Steel/Tool Steel (SAE Classes A, D, H, O, S, M, T)	Ap1 max	<0.35 x D	<0.75 x D	350	175	IPT	0.001	0.002	0.0026	0.0029	0.0034	0.0038
M	Austenitic (AISI 200 & 300 Series)	Ap1 max	<0.35 x D	<1 x D	300	165	IPT	0.0015	0.0019	0.0022	0.0026	0.0031	0.0034
	Marensitic (AISI 400 & 500 Series)	Ap1 max	<0.35 x D	<1 x D	350	180	IPT	0.0016	0.002	0.0023	0.0028	0.0033	0.0036
	Precipitation (PH 15-7 Mo, 15-5 PH, 17-7 PH)	Ap1 max	<0.35 x D	<1 x D	300	160	IPT	0.001	0.0021	0.0027	0.0032	0.0036	0.004
K	Gray Iron GG	Ap1 max	<0.35 x D	<1 x D	450	180	IPT	0.0017	0.0025	0.003	0.0035	0.0041	0.0048
	Nodular Iron GGG	Ap1 max	<0.35 x D	<1 x D	500	180	IPT	0.0017	0.0025	0.003	0.0035	0.0041	0.0048
	Malleable Iron GTS/GTW	Ap1 max	<0.35 x D	<1 x D	600	180	IPT	0.0017	0.0025	0.003	0.0035	0.0041	0.0048
S	HRSA Iron-Based (Incoloy 800/909, A286)	Ap1 max	<0.35 x D	N/A	100	N/A	IPT	0.0007	0.001	0.0015	0.0019	0.0025	0.0033
	HRSA Cobalt-Based (Stelite, Haynes 21/25/188)	Ap1 max	<0.35 x D	N/A	80	N/A	IPT	0.0007	0.001	0.0015	0.0019	0.0025	0.0033
	HRSA Nickel-Based (Inconel 601/617/625/700/706/718, Hastelloy, Monel, Nimonic, Rene, Udimet, Waspaloy)	Ap1 max	<0.35 x D	<0.3 x D	120	60	IPT	0.0007	0.001	0.0015	0.0019	0.0025	0.0033
	Titanium (Pure, ASTM 1/2/3, Ti6AL-4V, Ti6Al-2Sn-4Zr-2Mo-Si)	Ap1 max	<0.35 x D	N/A	300	N/A	IPT	0.0008	0.0011	0.0023	0.0026	0.0031	0.0035
H	Hardened Steels and Cast Irons (42-48HRC)	Ap1 max	<0.16 x D	N/A	180	N/A	IPT	0.0008	0.0012	0.0017	0.002	0.0022	0.0025

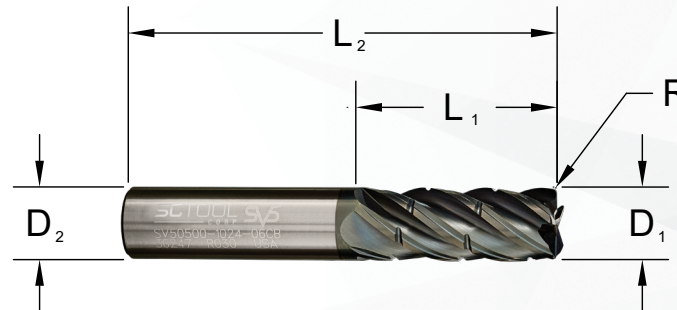
Side Milling (A) and Slotting (B)



5 FLUTE

Note:

- Ap1 max = Full length of cut of the tool
- Lower cutting speed value is recommended for high stock removal applications or higher hardness within group.
- Higher cutting speed value is recommended for finishing applications or lower hardness within group.
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.



SQ

RAD

CC

VAR

h6

5FL

SC-3

Tolerance

Shank	h6
Cut Diameter	+ .000" - .002"

SV5 Series Neck Relieved												
Cutting Diameter D1	Shank Diameter D2	LOC	OAL	LBS	Corner Option							
					Square	R.015	R.030	R.060	R.090	R.120	R.190	R.250
0.2500	0.2500	0.375	3.000	0.875	SV50250-0324-SN07 EDP:20499	SV50250-0324-03N07 EDP:20496	SV50250-0324-06N07 EDP:20497	SV50250-0324-12N07 EDP:20498	-	-	-	-
		0.375	3.500	1.500	SV50250-0328-SN12 EDP:20503	SV50250-0328-03N12 EDP:20500	SV50250-0328-06N12 EDP:20501	SV50250-0328-12N12 EDP:20502	-	-	-	-
0.3750	0.3750	0.500	3.000	1.125	SV50375-0424-SN09 EDP:20508	SV50375-0424-03N09 EDP:20504	SV50375-0424-06N09 EDP:20505	SV50375-0424-12N09 EDP:20506	SV50375-0424-18N09 EDP:20507	-	-	-
		0.500	4.000	2.125	SV50375-0432-SN17 EDP:20513	SV50375-0432-03N17 EDP:20509	SV50375-0432-06N17 EDP:20510	SV50375-0432-12N17 EDP:20511	SV50375-0432-18N17 EDP:20512	-	-	-
0.5000	0.5000	0.625	4.000	1.375	SV50500-0532-SN11 EDP:20519	SV50500-0532-03N11 EDP:20514	SV50500-0532-06N11 EDP:20515	SV50500-0532-12N11 EDP:20516	SV50500-0532-18N11 EDP:20517	SV50500-0532-24N11 EDP:20518	-	-
		0.625	5.000	2.375	SV50500-0540-SN19 EDP:20525	SV50500-0540-03N19 EDP:20520	SV50500-0540-06N19 EDP:20521	SV50500-0540-12N19 EDP:20522	SV50500-0540-18N19 EDP:20523	SV50500-0540-24N19 EDP:20524	-	-
		0.625	6.000	3.375	SV50500-0548-SN27 EDP:20531	SV50500-0548-03N27 EDP:20526	SV50500-0548-06N27 EDP:20527	SV50500-0548-12N27 EDP:20528	SV50500-0548-18N27 EDP:20529	SV50500-0548-24N27 EDP:20530	-	-
0.6250	0.6250	0.750	4.000	1.625	SV50625-0632-SN13 EDP:20536	-	SV50625-0632-06N13 EDP:20532	SV50625-0632-12N13 EDP:20533	SV50625-0632-18N13 EDP:20534	SV50625-0632-24N13 EDP:20535	-	-
		0.750	5.000	2.375	SV50625-0640-SN19 EDP:20541	-	SV50625-0640-06N19 EDP:20537	SV50625-0640-12N19 EDP:20538	SV50625-0640-18N19 EDP:20539	SV50625-0640-24N19 EDP:20540	-	-
		0.750	6.000	3.375	SV50625-0648-SN27 EDP:20546	-	SV50625-0648-06N27 EDP:20542	SV50625-0648-12N27 EDP:20543	SV50625-0648-18N27 EDP:20544	SV50625-0648-24N27 EDP:20545	-	-
0.7500	0.7500	1.000	5.000	1.750	SV50750-0840-SN14 EDP:20553	-	SV50750-0840-06N14 EDP:20547	SV50750-0840-12N14 EDP:20548	SV50750-0840-18N14 EDP:20549	SV50750-0840-24N14 EDP:20550	SV50750-0840-38N14 EDP:20551	SV50750-0840-50N14 EDP:20552
		1.000	6.000	2.625	SV50750-0848-SN21 EDP:20560	-	SV50750-0848-06N21 EDP:20554	SV50750-0848-12N21 EDP:20555	SV50750-0848-18N21 EDP:20556	SV50750-0848-24N21 EDP:20557	SV50750-0848-38N21 EDP:20558	SV50750-0848-50N21 EDP:20559
		1.000	6.000	3.375	SV50750-0848-SN27 EDP:20567	-	SV50750-0848-06N27 EDP:20561	SV50750-0848-12N27 EDP:20562	SV50750-0848-18N27 EDP:20563	SV50750-0848-24N27 EDP:20564	SV50750-0848-38N27 EDP:20565	SV50750-0848-50N27 EDP:20566
1.0000	1.0000	1.125	6.000	2.250	SV51000-0948-SN18 EDP:20574	-	SV51000-0948-06N18 EDP:20568	SV51000-0948-12N18 EDP:20569	SV51000-0948-18N18 EDP:20570	SV51000-0948-24N18 EDP:20571	SV51000-0948-38N18 EDP:20572	SV51000-0948-50N18 EDP:20573
		1.125	6.000	3.250	SV51000-0948-SN26 EDP:20581	-	SV51000-0948-06N26 EDP:20575	SV51000-0948-12N26 EDP:20576	SV51000-0948-18N26 EDP:20577	SV51000-0948-24N26 EDP:20578	SV51000-0948-38N26 EDP:20579	SV51000-0948-50N26 EDP:20580
		1.125	7.000	4.250	SV51000-0956-SN34 EDP:20588	-	SV51000-0956-06N34 EDP:20582	SV51000-0956-12N34 EDP:20583	SV51000-0956-18N34 EDP:20584	SV51000-0956-24N34 EDP:20585	SV51000-0956-38N34 EDP:20586	SV51000-0956-50N34 EDP:20587

Cut Materials

STEEL

STAINLESS STEEL

CAST IRON

HI-TEMP ALLOYS

HARDENED STEEL



Ramping



Finishing



Roughing



Slotting

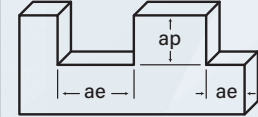


Pocketing

SV5NR Recommended Starting Speeds and Feeds

Material Group		Side Milling (A) and Slotting (B)			Speed			Effective Feed per Tooth (IPT=inch/th) for side milling (A) (Use Chip Thinning Calculations to correct for stepover), for slotting (B) reduce IPT by 20%						
								D - Diameter						
		A		B	A	B		frac.	1/4"	3/8"	1/2"	5/8"	3/4"	1"
		ap	ae	ap	(SFM)	(SFM)		dec.	0.250	0.375	0.500	0.625	0.750	1.000
P	Unalloyed Steel (AISI 1000, 1100, 1200, 1500 Series)	Ap1 max	<0.35 x D	<1 x D	500	250	IPT	0.0009	0.0014	0.0025	0.0028	0.0034	0.0039	
	Low-alloy Steel (AISI 3000, 4000, 5000, 6000, 8000, 9000 Series)	Ap1 max	<0.35 x D	<1 x D	400	200	IPT	0.0009	0.0014	0.0025	0.0028	0.0034	0.0039	
	High-alloy Steel/Tool Steel (SAE Classes A, D, H, O, S, M, T)	Ap1 max	<0.35 x D	<0.75 x D	350	175	IPT	0.0008	0.0016	0.0021	0.0023	0.0027	0.0030	
M	Austenitic (AISI 200 & 300 Series)	Ap1 max	<0.35 x D	<1 x D	300	165	IPT	0.0012	0.0015	0.0018	0.0021	0.0025	0.0027	
	Marensitic (AISI 400 & 500 Series)	Ap1 max	<0.35 x D	<1 x D	350	180	IPT	0.0013	0.0016	0.0018	0.0022	0.0026	0.0029	
	Precipitation (PH 15-7 Mo, 15-5 PH, 17-7 PH)	Ap1 max	<0.35 x D	<1 x D	300	160	IPT	0.0008	0.0017	0.0022	0.0026	0.0029	0.0032	
K	Gray Iron GG	Ap1 max	<0.35 x D	<1 x D	450	180	IPT	0.0014	0.0020	0.0024	0.0028	0.0033	0.0038	
	Nodular Iron GGG	Ap1 max	<0.35 x D	<1 x D	500	180	IPT	0.0014	0.0020	0.0024	0.0028	0.0033	0.0038	
	Malleable Iron GTS/GTW	Ap1 max	<0.35 x D	<1 x D	600	180	IPT	0.0014	0.0020	0.0024	0.0028	0.0033	0.0038	
S	HRSA Iron-Based (Incoloy 800/909, A286)	Ap1 max	<0.35 x D	N/A	100	N/A	IPT	0.0006	0.0008	0.0012	0.0015	0.0020	0.0026	
	HRSA Cobalt-Based (Stellite, Haynes 21/25/188)	Ap1 max	<0.35 x D	N/A	80	N/A	IPT	0.0006	0.0008	0.0012	0.0015	0.0020	0.0026	
	HRSA Nickel-Based (Inconel 601/617/625/700/706/718, Hastelloy, Monel, Nimonic, Rene, Udimet, Waspaloy)	Ap1 max	<0.35 x D	<0.3 x D	120	60	IPT	0.0006	0.0008	0.0012	0.0015	0.0020	0.0026	
	Titanium (Pure, ASTM 1/2/3, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo-Si)	Ap1 max	<0.35 x D	N/A	300	N/A	IPT	0.0006	0.0009	0.0018	0.0021	0.0025	0.0028	
H	Hardened Steels and Cast Irons (42-48HRC)	Ap1 max	<0.16 x D	N/A	180	N/A	IPT	0.0006	0.0010	0.0014	0.0016	0.0018	0.0020	

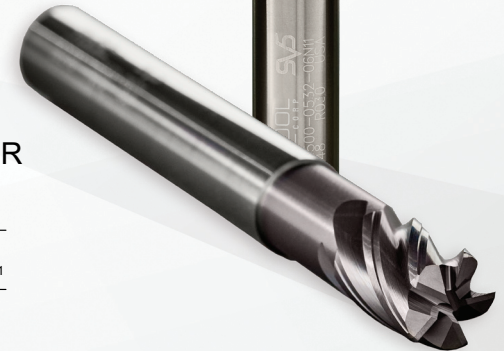
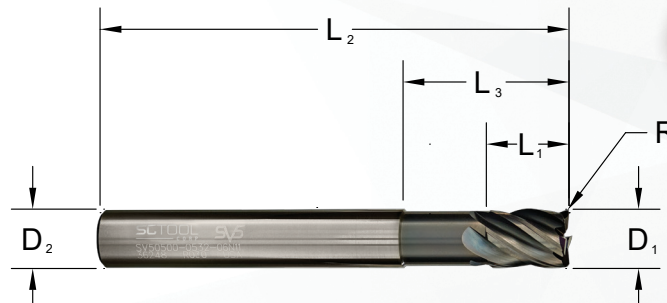
Side Milling (A) and Slotting (B)



5 FLUTE

Note:

- Ap1 max = Full length of cut of the tool
- Lower cutting speed value is recommended for high stock removal applications or higher hardness within group.
- Higher cutting speed value is recommended for finishing applications or lower hardness within group.
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.



SC-3

Tolerance

Shank	h6
Cut Diameter	+ .000" - .002"



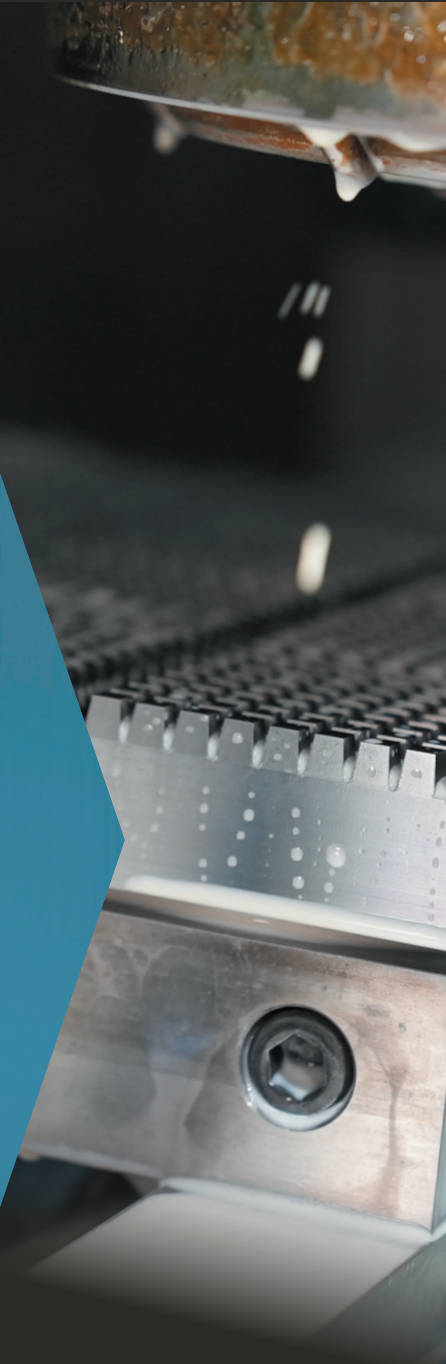
SV6 END MILLS

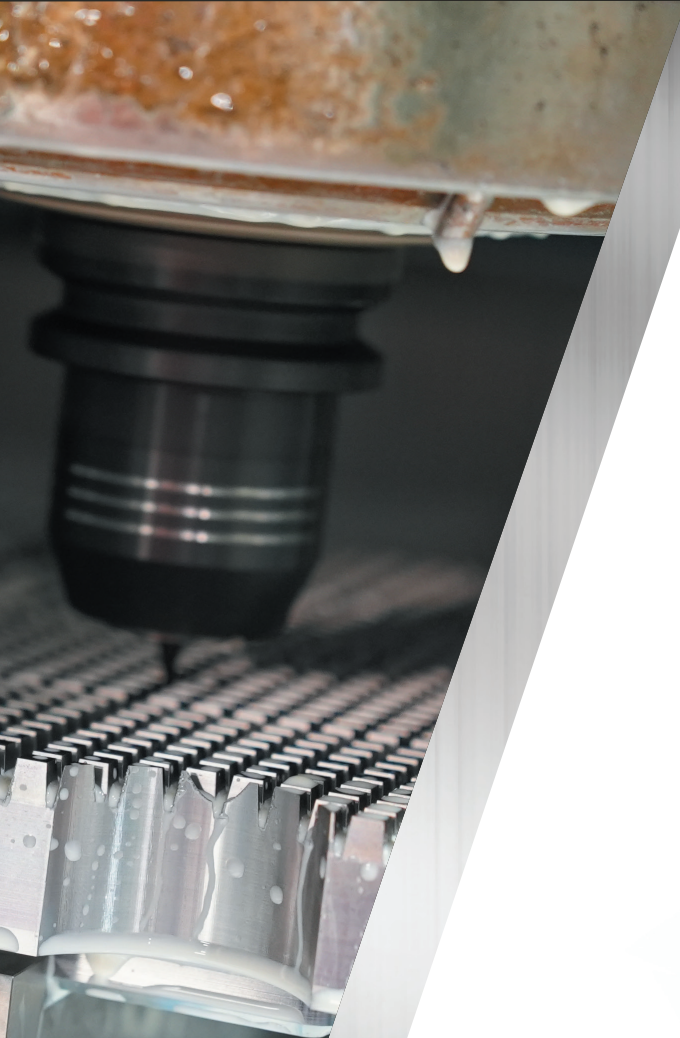
Super-Variable Flute Design Featuring Varying Helix Angles and Indexing

- Optimizes performance
- Maximizes stock removal
- Eliminates chatter
- Increases tool life
- Improves productivity

Our SV6 end mills are manufactured with certified, premium, sub-micron grain carbide and they feature a super-variable flute design to increase metal removal rates, enhance finishes, and eliminate chatter.

With the SV6, our clients have seen an increase in feeds while maintaining cutting-edge strength and sharpness for improved tool life.





Created for difficult-to-machine materials while obtaining high feed rates with traditional and high-efficiency machining techniques

Dominates in a wide range of semi-roughing and finishing applications such as high speed, dynamic, trochoidal, peel, and peripheral milling

Stocked and ready to order in diameters of ¼" to 1" including a variety of options: square end, corner radius, ball nose - all with SC-3 coating

SV6 Series

Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option								Ball Nose
				Square	R.015	R.030	R.060	R.090	R.120	R.190	R.250	
0.2500	0.2500	0.625	2.000	SV60250-0516-S EDP:20593	SV60250-0516-03 EDP:20589	SV60250-0516-06 EDP:20590	SV60250-0516-12 EDP:20591	-	-	-	-	SV60250-0516-BN EDP:20592
		0.750	2.500	SV60250-0620-S EDP:20597	SV60250-0620-03 EDP:20594	SV60250-0620-06 EDP:20595	SV60250-0620-12 EDP:20596	-	-	-	-	-
0.3125	0.3125	0.625	2.000	SV60313-0516-S EDP:20601	SV60313-0516-03 EDP:20598	SV60313-0516-06 EDP:20599	SV60313-0516-12 EDP:20600	-	-	-	-	-
		0.875	2.500	SV60313-0720-S EDP:20606	SV60313-0720-03 EDP:20602	SV60313-0720-06 EDP:20603	SV60313-0720-12 EDP:20604	-	-	-	-	SV60313-0720-BN EDP:20605
0.3750	0.3750	0.875	2.500	SV60375-0720-S EDP:20612	SV60375-0720-03 EDP:20607	SV60375-0720-06 EDP:20608	SV60375-0720-12 EDP:20609	SV60375-0720-18 EDP:20610	-	-	-	SV60375-0720-BN EDP:20611
		1.250	3.000	SV60375-1024-S EDP:20618	SV60375-1024-03 EDP:20613	SV60375-1024-06 EDP:20614	SV60375-1024-12 EDP:20615	SV60375-1024-18 EDP:20616	SV60375-1024-24 EDP:20617	-	-	-
0.5000	0.5000	1.250	3.000	SV60500-1024-S EDP:20625	SV60500-1024-03 EDP:20619	SV60500-1024-06 EDP:20620	SV60500-1024-12 EDP:20621	SV60500-1024-18 EDP:20622	SV60500-1024-24 EDP:20623	-	-	SV60500-1024-BN EDP:20624
		1.375	3.000	SV60500-1124-S EDP:20631	SV60500-1124-03 EDP:20626	SV60500-1124-06 EDP:20627	SV60500-1124-12 EDP:20628	SV60500-1124-18 EDP:20629	SV60500-1124-24 EDP:20630	-	-	-
		1.625	3.500	SV60500-1328-S EDP:20913	-	SV60500-1328-06 EDP:20910	SV60500-1328-12 EDP:20911	-	SV60500-1328-24 EDP:20912	-	-	-
		2.000	4.000	SV60500-1632-S EDP:20637	SV60500-1632-03 EDP:20632	SV60500-1632-06 EDP:20633	SV60500-1632-12 EDP:20634	SV60500-1632-18 EDP:20635	SV60500-1632-24 EDP:20636	-	-	-
0.6250	0.6250	1.250	3.500	SV60625-1028-S EDP:20643	-	SV60625-1028-06 EDP:20638	SV60625-1028-12 EDP:20639	SV60625-1028-18 EDP:20640	SV60625-1028-24 EDP:20641	-	-	SV60625-1028-BN EDP:20642
		2.000	4.000	SV60625-1632-S EDP:20648	-	SV60625-1632-06 EDP:20644	SV60625-1632-12 EDP:20645	SV60625-1632-18 EDP:20646	SV60625-1632-24 EDP:20647	-	-	-
0.7500	0.7500	1.750	4.000	SV60750-1432-S EDP:20656	-	SV60750-1432-06 EDP:20649	SV60750-1432-12 EDP:20650	SV60750-1432-18 EDP:20651	SV60750-1432-24 EDP:20652	SV60750-1432-38 EDP:20653	SV60750-1432-50 EDP:20654	SV60750-1432-BN EDP:20655
		2.250	5.000	SV60750-1840-S EDP:20663	-	SV60750-1840-06 EDP:20657	SV60750-1840-12 EDP:20658	SV60750-1840-18 EDP:20659	SV60750-1840-24 EDP:20660	SV60750-1840-38 EDP:20661	SV60750-1840-50 EDP:20662	-
1.0000	1.0000	1.500	4.000	SV61000-1232-S EDP:20671	-	SV61000-1232-06 EDP:20664	SV61000-1232-12 EDP:20665	SV61000-1232-18 EDP:20666	SV61000-1232-24 EDP:20667	SV61000-1232-38 EDP:20668	SV61000-1232-50 EDP:20669	SV61000-1232-BN EDP:20670
		2.250	5.000	SV61000-1840-S EDP:20678	-	SV61000-1840-06 EDP:20672	SV61000-1840-12 EDP:20673	SV61000-1840-18 EDP:20674	SV61000-1840-24 EDP:20675	SV61000-1840-38 EDP:20676	SV61000-1840-50 EDP:20677	-

Cut Materials

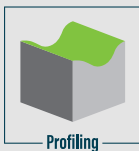
STEEL

STAINLESS STEEL

CAST IRON

HI-TEMP ALLOYS

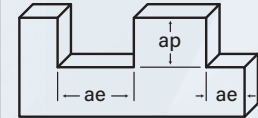
HARDENED STEEL



SV6 Recommended Starting Speeds and Feeds

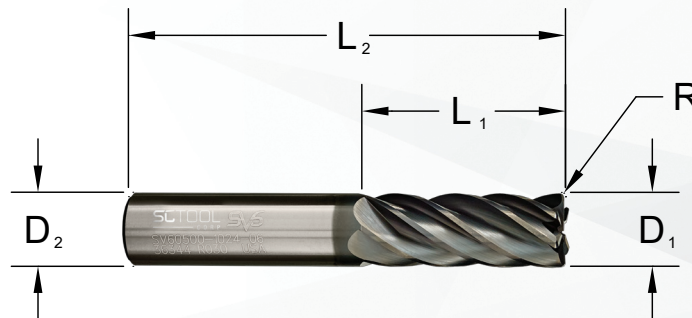
Material Group		Side Milling (A)		Speed		Effective Feed per Tooth (IPT=inch/th) for side milling (A) (Use Chip Thinning Calculations to correct for stepover					
						D - Diameter					
		A				A	frac.	1/4"	3/8"	1/2"	5/8"
		ap	ae	(SFM)	dec.	0.250	0.375	0.500	0.625	0.750	1.000
P	Unalloyed Steel (AISI 1000, 1100, 1200, 1500 Series)	Ap1 max	<0.25 x D	500	IPT	0.00099	0.00162	0.00279	0.00315	0.00378	0.00441
	Low-alloy Steel (AISI 3000, 4000, 5000, 6000, 8000, 9000 Series)	Ap1 max	<0.25 x D	400	IPT	0.00099	0.00162	0.00279	0.00315	0.00378	0.00441
	High-alloy Steel/Tool Steel (SAE Classes A, D, H, O, S, M, T)	Ap1 max	<0.25 x D	350	IPT	0.0009	0.0018	0.00234	0.00261	0.00306	0.00342
M	Austenitic (AISI 200 & 300 Series)	Ap1 max	<0.25 x D	300	IPT	0.00135	0.00171	0.00198	0.00234	0.00279	0.00306
	Marensitic (AISI 400 & 500 Series)	Ap1 max	<0.25 x D	350	IPT	0.00144	0.0018	0.00207	0.00252	0.00297	0.00324
	Precipitation (PH 15-7 Mo, 15-5 PH, 17-7 PH)	Ap1 max	<0.25 x D	300	IPT	0.0009	0.00189	0.00243	0.00288	0.00324	0.0036
K	Gray Iron GG	Ap1 max	<0.25 x D	450	IPT	0.00153	0.00225	0.0027	0.00315	0.00369	0.00432
	Nodular Iron GGG	Ap1 max	<0.25 x D	500	IPT	0.00153	0.00225	0.0027	0.00315	0.00369	0.00432
	Malleable Iron GTS/GTW	Ap1 max	<0.25 x D	600	IPT	0.00153	0.00225	0.0027	0.00315	0.00369	0.00432
S	HRSA Iron-Based (Incoloy 800/909, A286)*	Ap1 max	<0.25 x D	100	IPT	0.00063	0.0009	0.00135	0.00171	0.00225	0.00297
	HRSA Cobalt-Based (Stellite, Haynes 21/25/188)	Ap1 max	<0.25 x D	80	IPT	0.00063	0.0009	0.00135	0.00171	0.00225	0.00297
	HRSA Nickel-Based (Inconel 601/617/625/700/706/718, Hastelloy, Monel, Nimonic, Rene, Udimet, Waspaloy)	Ap1 max	<0.25 x D	120	IPT	0.00063	0.0009	0.00135	0.00171	0.00225	0.00297
	Titanium (Pure, ASTM 1/2/3, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo-Si)	Ap1 max	<0.25 x D	300	IPT	0.00072	0.00099	0.00207	0.00234	0.00279	0.00315
H	Hardened Steels and Hardened or Chilled Cast Irons (42-48HRC)	Ap1 max	<0.16 x D	180	IPT	0.0008	0.0012	0.0017	0.002	0.0022	0.0025

Side Milling (A)



Note:

- Ap1 max = Full length of cut of the tool
- Lower cutting speed value is recommended for high stock removal applications or higher hardness within group.
- Higher cutting speed value is recommended for finishing applications or lower hardness within group.
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.
- Slotting is not recommend with this end mill.



6 FLUTE



SC-3

Tolerance

Shank	h6
Cut Diameter	+ .000" - .002"



SV7 END MILLS

Super-Variable Flute Indexing

- Optimizes performance
- Eliminates chatter
- Increases tool life
- Improves productivity

Our SV7 end mills are manufactured with certified, premium, sub-micron grain carbide and they feature a super-variable flute indexing design to increase metal removal rates, enhance finishes, and eliminate chatter.

The SV7 is designed to be run at higher production rates while still producing an exceptional finish.



Created for difficult-to-machine materials while obtaining high feed rates with high-efficiency machining techniques

Dominates in a wide range of finishing applications such as high speed, dynamic, trochoidal, peel, and peripheral milling

Stocked and ready to order in diameters of 1/4" to 1" including a variety of options: square end, corner radius, and OD chipbreakers - all with SC-3 coating

SV7 Series

Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option							
				Square	R.015	R.030	R.060	R.090	R.120	R.190	R.250
0.2500	0.2500	0.625	2.000	SV70250-0516-S EDP:20682	SV70250-0516-03 EDP:20679	SV70250-0516-06 EDP:20680	SV70250-0516-12 EDP:20681	-	-	-	-
		0.750	2.500	SV70250-0620-S EDP:20686	SV70250-0620-03 EDP:20683	SV70250-0620-06 EDP:20684	SV70250-0620-12 EDP:20685	-	-	-	-
		1.250	3.000	SV70250-1024-S EDP:20690	SV70250-1024-03 EDP:20687	SV70250-1024-06 EDP:20688	SV70250-1024-12 EDP:20689	-	-	-	-
0.3125	0.3125	0.625	2.000	SV70313-0516-S EDP:20694	SV70313-0516-03 EDP:20691	SV70313-0516-06 EDP:20692	SV70313-0516-12 EDP:20693	-	-	-	-
		0.875	2.500	SV70313-0720-S EDP:20698	SV70313-0720-03 EDP:20695	SV70313-0720-06 EDP:20696	SV70313-0720-12 EDP:20697	-	-	-	-
		1.250	3.000	SV70313-1024-S EDP:20702	SV70313-1024-03 EDP:20699	SV70313-1024-06 EDP:20700	SV70313-1024-12 EDP:20701	-	-	-	-
0.3750	0.3750	0.875	2.500	SV70375-0720-S EDP:20707	SV70375-0720-03 EDP:20703	SV70375-0720-06 EDP:20704	SV70375-0720-12 EDP:20705	SV70375-0720-18 EDP:20706	-	-	-
		1.250	3.000	SV70375-1024-S EDP:20712	SV70375-1024-03 EDP:20708	SV70375-1024-06 EDP:20709	SV70375-1024-12 EDP:20710	SV70375-1024-18 EDP:20711	-	-	-
		1.750	3.500	SV70375-1428-S EDP:20717	SV70375-1428-03 EDP:20713	SV70375-1428-06 EDP:20714	SV70375-1428-12 EDP:20715	SV70375-1428-18 EDP:20716	-	-	-
0.4375	0.4375	0.875	2.500	SV70438-0720-S EDP:20722	SV70438-0720-03 EDP:20718	SV70438-0720-06 EDP:20719	SV70438-0720-12 EDP:20720	SV70438-0720-18 EDP:20721	-	-	-
		1.250	3.000	SV70438-1024-S EDP:20727	SV70438-1024-03 EDP:20723	SV70438-1024-06 EDP:20724	SV70438-1024-12 EDP:20725	SV70438-1024-18 EDP:20726	-	-	-
0.5000	0.5000	1.000	3.000	SV70500-0824-S EDP:20733	SV70500-0824-03 EDP:20728	SV70500-0824-06 EDP:20729	SV70500-0824-12 EDP:20730	SV70500-0824-18 EDP:20731	SV70500-0824-24 EDP:20732	-	-
		1.250	3.000	SV70500-1024-S EDP:20739	SV70500-1024-03 EDP:20734	SV70500-1024-06 EDP:20735	SV70500-1024-12 EDP:20736	SV70500-1024-18 EDP:20737	SV70500-1024-24 EDP:20738	-	-
		1.625	3.500	SV70500-1328-S EDP:20745	SV70500-1328-03 EDP:20740	SV70500-1328-06 EDP:20741	SV70500-1328-12 EDP:20742	SV70500-1328-18 EDP:20743	SV70500-1328-24 EDP:20744	-	-
		2.000	4.000	SV70500-1632-S EDP:20751	SV70500-1632-03 EDP:20746	SV70500-1632-06 EDP:20747	SV70500-1632-12 EDP:20748	SV70500-1632-18 EDP:20749	SV70500-1632-24 EDP:20750	-	-
0.6250	0.6250	1.250	3.500	SV70625-1028-S EDP:20756	-	SV70625-1028-06 EDP:20752	SV70625-1028-12 EDP:20753	SV70625-1028-18 EDP:20754	SV70625-1028-24 EDP:20755	-	-
		1.750	4.000	SV70625-1432-S EDP:20761	-	SV70625-1432-06 EDP:20757	SV70625-1432-12 EDP:20758	SV70625-1432-18 EDP:20759	SV70625-1432-24 EDP:20760	-	-
		2.125	4.000	SV70625-1732-S EDP:20766	-	SV70625-1732-06 EDP:20762	SV70625-1732-12 EDP:20763	SV70625-1732-18 EDP:20764	SV70625-1732-24 EDP:20765	-	-
0.7500	0.7500	1.250	4.000	SV70750-1032-S EDP:20773	-	SV70750-1032-06 EDP:20767	SV70750-1032-12 EDP:20768	SV70750-1032-18 EDP:20769	SV70750-1032-24 EDP:20770	SV70750-1032-38 EDP:20771	SV70750-1032-50 EDP:20772
		1.750	4.000	SV70750-1432-S EDP:20780	-	SV70750-1432-06 EDP:20774	SV70750-1432-12 EDP:20775	SV70750-1432-18 EDP:20776	SV70750-1432-24 EDP:20777	SV70750-1432-38 EDP:20778	SV70750-1432-50 EDP:20779
		2.000	4.000	SV70750-1636-S EDP:20909	-	SV70750-1636-06 EDP:20906	SV70750-1636-12 EDP:20907	-	SV70750-1636-24 EDP:20908	-	-
		2.250	5.000	SV70750-1840-S EDP:20787	-	SV70750-1840-06 EDP:20781	SV70750-1840-12 EDP:20782	SV70750-1840-18 EDP:20783	SV70750-1840-24 EDP:20784	SV70750-1840-38 EDP:20785	SV70750-1840-50 EDP:20786
1.0000	1.0000	1.500	4.000	SV71000-1232-S EDP:20794	-	SV71000-1232-06 EDP:20788	SV71000-1232-12 EDP:20789	SV71000-1232-18 EDP:20790	SV71000-1232-24 EDP:20791	SV71000-1232-38 EDP:20792	SV71000-1232-50 EDP:20793
		2.250	5.000	SV71000-1840-S EDP:20801	-	SV71000-1840-06 EDP:20795	SV71000-1840-12 EDP:20796	SV71000-1840-18 EDP:20797	SV71000-1840-24 EDP:20798	SV71000-1840-38 EDP:20799	SV71000-1840-50 EDP:20800
		3.000	6.000	SV71000-2448-S EDP:20808	-	SV71000-2448-06 EDP:20802	SV71000-2448-12 EDP:20803	SV71000-2448-18 EDP:20804	SV71000-2448-24 EDP:20805	SV71000-2448-38 EDP:20806	SV71000-2448-50 EDP:20807

Cut Materials

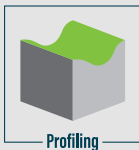
STEEL

STAINLESS STEEL

CAST IRON

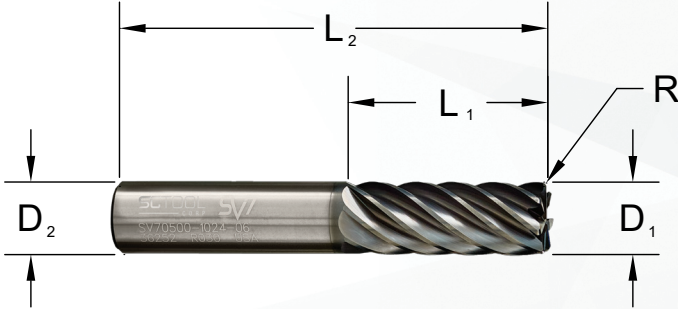
HI-TEMP ALLOYS

HARDENED STEEL



SV7 Recommended Starting Speeds and Feeds											
Material Group		Side Milling (A)		Speed	frac. dec.	Effective Feed per Tooth (IPT=inch/th) for side milling (A) (Use Chip Thinning Calculations to correct for stepover)					
						D - Diameter					
		ap	ae	A (SFM)		1/4"	3/8"	1/2"	5/8"	3/4"	1"
P	Unalloyed Steel (AISI 1000, 1100, 1200, 1500 Series)	Ap1 max	<0.25 x D	500	IPT	0.00099	0.00162	0.00279	0.00315	0.00378	0.00441
	Low-alloy Steel (AISI 3000, 4000, 5000, 6000, 8000, 9000 Series)	Ap1 max	<0.25 x D	400	IPT	0.00099	0.00162	0.00279	0.00315	0.00378	0.00441
	High-alloy Steel/Tool Steel (SAE Classes A, D, H, O, S, M, T)	Ap1 max	<0.25 x D	350	IPT	0.0009	0.0018	0.00234	0.00261	0.00306	0.00342
M	Austenitic (AISI 200 & 300 Series)	Ap1 max	<0.25 x D	300	IPT	0.00135	0.00171	0.00198	0.00234	0.00279	0.00306
	Marensitic (AISI 400 & 500 Series)	Ap1 max	<0.25 x D	350	IPT	0.00144	0.0018	0.00207	0.00252	0.00297	0.00324
	Precipitation (PH 15-7 Mo, 15-5 PH, 17-7 PH)	Ap1 max	<0.25 x D	300	IPT	0.0009	0.00189	0.00243	0.00288	0.00324	0.0036
K	Gray Iron GG	Ap1 max	<0.25 x D	450	IPT	0.00153	0.00225	0.0027	0.00315	0.00369	0.00432
	Nodular Iron GGG	Ap1 max	<0.25 x D	500	IPT	0.00153	0.00225	0.0027	0.00315	0.00369	0.00432
	Malleable Iron GTS/GTW	Ap1 max	<0.25 x D	600	IPT	0.00153	0.00225	0.0027	0.00315	0.00369	0.00432
S	HRSA Iron-Based (Incoloy 800/909, A286)	Ap1 max	<0.25 x D	100	IPT	0.00063	0.0009	0.00135	0.00171	0.00225	0.00297
	HRSA Cobalt-Based (Stellite, Haynes 21/25/188)	Ap1 max	<0.25 x D	80	IPT	0.00063	0.0009	0.00135	0.00171	0.00225	0.00297
	HRSA Nickel-Based (Inconel 601/617/625/700/706/718, Hastelloy, Monel, Nimonic, Rene, Udimet, Waspaloy)	Ap1 max	<0.25 x D	120	IPT	0.00063	0.0009	0.00135	0.00171	0.00225	0.00297
	Titanium (Pure, ASTM 1/2/3, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo-Si)	Ap1 max	<0.25 x D	300	IPT	0.00072	0.00099	0.00207	0.00234	0.00279	0.00315
H	Hardened Steels and Hardened or Chilled Cast Irons (42-48HRc)	Ap1 max	<0.16 x D	180	IPT	0.0008	0.0012	0.0017	0.002	0.0022	0.0025

- Note:**
- Ap1 max = Full length of cut of the tool
 - Lower cutting speed value is recommended for high stock removal applications or higher hardness within group.
 - Higher cutting speed value is recommended for finishing applications or lower hardness within group.
 - All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.
 - Slotting is not recommend with this end mill.



7 FLUTE

SQ

RAD

CC

VAR

h6

7FL

SC-3

Tolerance	
Shank	h6
Cut Diameter	+ .000" - .002"

SV7 Series with Chipbreakers

Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option							
				Square	R.015	R.030	R.060	R.090	R.120	R.190	R.250
0.3750	0.3750	0.875	2.500	SV70375-0720-SCB EDP:20813	SV70375-0720-03CB EDP:20809	SV70375-0720-06CB EDP:20810	SV70375-0720-12CB EDP:20811	SV70375-0720-18CB EDP:20812	-	-	-
		1.250	3.000	SV70375-1024-SCB EDP:20818	SV70375-1024-03CB EDP:20814	SV70375-1024-06CB EDP:20815	SV70375-1024-12CB EDP:20816	SV70375-1024-18CB EDP:20817	-	-	-
		1.750	3.500	SV70375-1428-SCB EDP:20823	SV70375-1428-03CB EDP:20819	SV70375-1428-06CB EDP:20820	SV70375-1428-12CB EDP:20821	SV70375-1428-18CB EDP:20822	-	-	-
0.5000	0.5000	1.000	3.000	SV70500-0824-SCB EDP:20829	SV70500-0824-03CB EDP:20824	SV70500-0824-06CB EDP:20825	SV70500-0824-12CB EDP:20826	SV70500-0824-18CB EDP:20827	SV70500-0824-24CB EDP:20828	-	-
		1.250	3.000	SV70500-1024-SCB EDP:20835	SV70500-1024-03CB EDP:20830	SV70500-1024-06CB EDP:20831	SV70500-1024-12CB EDP:20832	SV70500-1024-18CB EDP:20833	SV70500-1024-24CB EDP:20834	-	-
		2.000	4.000	SV70500-1632-SCB EDP:20841	SV70500-1632-03CB EDP:20836	SV70500-1632-06CB EDP:20837	SV70500-1632-12CB EDP:20838	SV70500-1632-18CB EDP:20839	SV70500-1632-24CB EDP:20840	-	-
0.6250	0.6250	1.250	3.500	SV70625-1028-SCB EDP:20846	-	SV70625-1028-06CB EDP:20842	SV70625-1028-12CB EDP:20843	SV70625-1028-18CB EDP:20844	SV70625-1028-24CB EDP:20845	-	-
		1.750	4.000	SV70625-1432-SCB EDP:20851	-	SV70625-1432-06CB EDP:20847	SV70625-1432-12CB EDP:20848	SV70625-1432-18CB EDP:20849	SV70625-1432-24CB EDP:20850	-	-
		2.125	4.000	SV70625-1732-SCB EDP:20856	-	SV70625-1732-06CB EDP:20852	SV70625-1732-12CB EDP:20853	SV70625-1732-18CB EDP:20854	SV70625-1732-24CB EDP:20855	-	-
0.7500	0.7500	1.250	4.000	SV70750-1032-SCB EDP:20863	-	SV70750-1032-06CB EDP:20857	SV70750-1032-12CB EDP:20858	SV70750-1032-18CB EDP:20859	SV70750-1032-24CB EDP:20860	SV70750-1032-38CB EDP:20861	SV70750-1032-50CB EDP:20862
		1.750	4.000	SV70750-1432-SCB EDP:20870	-	SV70750-1432-06CB EDP:20864	SV70750-1432-12CB EDP:20865	SV70750-1432-18CB EDP:20866	SV70750-1432-24CB EDP:20867	SV70750-1432-38CB EDP:20868	SV70750-1432-50CB EDP:20869
		2.250	5.000	SV70750-1840-SCB EDP:20877	-	SV70750-1840-06CB EDP:20871	SV70750-1840-12CB EDP:20872	SV70750-1840-18CB EDP:20873	SV70750-1840-24CB EDP:20874	SV70750-1840-38CB EDP:20875	SV70750-1840-50CB EDP:20876
1.0000	1.0000	1.500	4.000	SV71000-1232-SCB EDP:20884	-	SV71000-1232-06CB EDP:20878	SV71000-1232-12CB EDP:20879	SV71000-1232-18CB EDP:20880	SV71000-1232-24CB EDP:20881	SV71000-1232-38CB EDP:20882	SV71000-1232-50CB EDP:20883
		2.250	5.000	SV71000-1840-SCB EDP:20891	-	SV71000-1840-06CB EDP:20885	SV71000-1840-12CB EDP:20886	SV71000-1840-18CB EDP:20887	SV71000-1840-24CB EDP:20888	SV71000-1840-38CB EDP:20889	SV71000-1840-50CB EDP:20890
		3.000	6.000	SV71000-2448-SCB EDP:20898	-	SV71000-2448-06CB EDP:20892	SV71000-2448-12CB EDP:20893	SV71000-2448-18CB EDP:20894	SV71000-2448-24CB EDP:20895	SV71000-2448-38CB EDP:20896	SV71000-2448-50CB EDP:20897

7 FLUTE

Cut Materials

STEEL

STAINLESS STEEL

CAST IRON

HI-TEMP ALLOYS

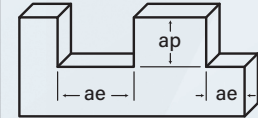
HARDENED STEEL



SV7CB Recommended Starting Speeds and Feeds

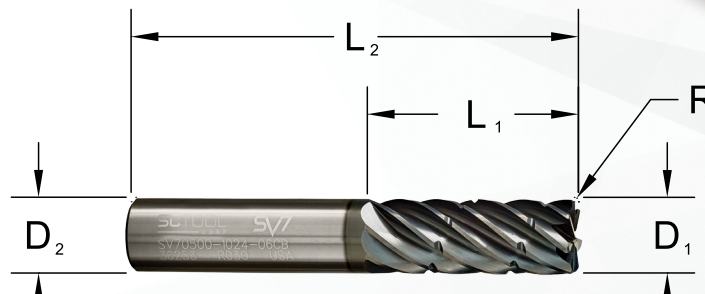
Material Group		Side Milling (A)		Speed		Effective Feed per Tooth (IPT=inch/th) for side milling (A) (Use Chip Thinning Calculations to correct for stepover)					
						D - Diameter					
		A				A	frac.	1/4"	3/8"	1/2"	5/8"
		ap	ae	(SFM)	dec.	0.250	0.375	0.500	0.625	0.750	1.000
P	Unalloyed Steel (AISI 1000, 1100, 1200, 1500 Series)	Ap1 max	<0.25 x D	500	IPT	0.00099	0.00162	0.00279	0.00315	0.00378	0.00441
	Low-alloy Steel (AISI 3000, 4000, 5000, 6000, 8000, 9000 Series)	Ap1 max	<0.25 x D	400	IPT	0.00099	0.00162	0.00279	0.00315	0.00378	0.00441
	High-alloy Steel/Tool Steel (SAE Classes A, D, H, O, S, M, T)	Ap1 max	<0.25 x D	350	IPT	0.0009	0.0018	0.00234	0.00261	0.00306	0.00342
M	Austenitic (AISI 200 & 300 Series)	Ap1 max	<0.25 x D	300	IPT	0.00135	0.00171	0.00198	0.00234	0.00279	0.00306
	Marensitic (AISI 400 & 500 Series)	Ap1 max	<0.25 x D	350	IPT	0.00144	0.0018	0.00207	0.00252	0.00297	0.00324
	Precipitation (PH 15-7 Mo, 15-5 PH, 17-7 PH)	Ap1 max	<0.25 x D	300	IPT	0.0009	0.00189	0.00243	0.00288	0.00324	0.0036
K	Gray Iron GG	Ap1 max	<0.25 x D	450	IPT	0.00153	0.00225	0.0027	0.00315	0.00369	0.00432
	Nodular Iron GGG	Ap1 max	<0.25 x D	500	IPT	0.00153	0.00225	0.0027	0.00315	0.00369	0.00432
	Malleable Iron GTS/GTW	Ap1 max	<0.25 x D	600	IPT	0.00153	0.00225	0.0027	0.00315	0.00369	0.00432
S	HRSA Iron-Based (Incoloy 800/909, A286)	Ap1 max	<0.25 x D	100	IPT	0.00063	0.0009	0.00135	0.00171	0.00225	0.00297
	HRSA Cobalt-Based (Stelite, Haynes 21/25/188)	Ap1 max	<0.25 x D	80	IPT	0.00063	0.0009	0.00135	0.00171	0.00225	0.00297
	HRSA Nickel-Based (Inconel 601/617/625/700/706/718, Hastelloy, Monel, Nimonic, Rene, Udimet, Waspaloy)	Ap1 max	<0.25 x D	120	IPT	0.00063	0.0009	0.00135	0.00171	0.00225	0.00297
	Titanium (Pure, ASTM 1/2/3, Ti6AL-4V, Ti6Al-2Sn-4Zr-2Mo-Si)	Ap1 max	<0.25 x D	300	IPT	0.00072	0.00099	0.00207	0.00234	0.00279	0.00315
H	Hardened Steels and Hardened or Chilled Cast Irons (42-48HRc)	Ap1 max	<0.16 x D	180	IPT	0.0008	0.0012	0.0017	0.002	0.0022	0.0025

Side Milling (A)



Note:

- Ap1 max = Full length of cut of the tool
- Lower cutting speed value is recommended for high stock removal applications or higher hardness within group.
- Higher cutting speed value is recommended for finishing applications or lower hardness within group.
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.
- Slotting is not recommend with this end mill.



7 FLUTE



SC-3

Tolerance

Shank	h6
Cut Diameter	+ .000" - .002"

STANDARD PERFORMANCE END MILLS

S2F



Our Standard Performance End Mills are not your everyday general purpose end mills. These end mills are manufactured with sub-micron grain carbide and extremely versatile in a multitude of materials.

S4F

Stocked and ready to order in diameters of 1/8" to 1" including a variety of options: square end, corner radius, and ball nose – all uncoated.



S2F Series Uncoated

Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option								Ball Nose
				Square	R.015	R.030	R.060	R.090	R.120	R.190	R.250	
0.1250	0.1250	0.500	1.500	S2F0125-0412-S EDP:30004	S2F0125-0412-03 EDP:30001	S2F0125-0412-06 EDP:30002	-	-	-	-	-	S2F0125-0412-BN EDP:30003
		0.750	2.000	S2F0125-0616-S EDP:30005	-	-	-	-	-	-	-	-
0.1875	0.1875	0.625	2.000	S2F0188-0516-S EDP:30009	S2F0188-0516-03 EDP:30006	S2F0188-0516-06 EDP:30007	-	-	-	-	-	S2F0188-0516-BN EDP:30008
		1.125	2.500	S2F0188-0516-S EDP:30009	-	-	-	-	-	-	-	-
0.2500	0.2500	0.750	2.500	S2F0250-0620-S EDP:30015	S2F0250-0620-03 EDP:30011	S2F0250-0620-06 EDP:30012	S2F0250-0620-12 EDP:30013	-	-	-	-	S2F0250-0620-BN EDP:30014
		1.250	3.000	S2F0250-1024-S EDP:30016	-	-	-	-	-	-	-	-
0.3125	0.3125	0.875	2.500	S2F0313-0720-S EDP:30021	S2F0313-0720-03 EDP:30017	S2F0313-0720-06 EDP:30018	S2F0313-0720-12 EDP:30019	-	-	-	-	S2F0313-0720-BN EDP:30020
		1.250	3.000	S2F0313-1024-S EDP:30022	-	-	-	-	-	-	-	-
0.3750	0.3750	0.875	2.500	S2F0375-0720-S EDP:30028	S2F0375-0720-03 EDP:30023	S2F0375-0720-06 EDP:30024	S2F0375-0720-12 EDP:30025	S2F0375-0720-18 EDP:30026	-	-	-	S2F0375-0720-BN EDP:30027
		1.250	3.000	S2F0375-1024-S EDP:30029	-	-	-	-	-	-	-	-
		1.750	3.500	S2F0375-1428-S EDP:30030	-	-	-	-	-	-	-	-
0.4375	0.4375	1.250	3.000	S2F0438-1024-S EDP:30032	-	-	-	-	-	-	-	S2F0438-1024-BN EDP:30031
0.5000	0.5000	1.000	3.000	S2F0500-0824-S EDP:30039	S2F0500-0824-03 EDP:30033	S2F0500-0824-06 EDP:30034	S2F0500-0824-12 EDP:30035	S2F0500-0824-18 EDP:30036	S2F0500-0824-24 EDP:30037	-	-	S2F0500-0824-BN EDP:30038
		1.500	3.500	S2F0500-1228-S EDP:30040	-	-	-	-	-	-	-	-
		2.000	4.000	S2F0500-1632-S EDP:30041	-	-	-	-	-	-	-	-
0.5625	0.5625	1.250	3.500	S2F0563-1028-S EDP:30043	-	-	-	-	-	-	-	S2F0563-1028-BN EDP:30042*
0.6250	0.6250	1.250	3.500	S2F0625-1028-S EDP:30049	-	S2F0625-1028-06 EDP:30044	S2F0625-1028-12 EDP:30045	S2F0625-1028-18 EDP:30046	S2F0625-1028-24 EDP:30047	-	-	S2F0625-1028-BN EDP:30048
		1.750	4.000	S2F0625-1432-S EDP:30050	-	-	-	-	-	-	-	-
		2.250	5.000	S2F0625-1840-S EDP:30051	-	-	-	-	-	-	-	-
0.7500	0.7500	1.500	4.000	S2F0750-1232-S EDP:30059	-	S2F0750-1232-06 EDP:30052	S2F0750-1232-12 EDP:30053	S2F0750-1232-18 EDP:30054	S2F0750-1232-24 EDP:30055	S2F0750-1232-38 EDP:30056	S2F0750-1232-50 EDP:30057	S2F0750-1232-BN EDP:30058
		2.000	5.000	S2F0750-1640-S EDP:30060	-	-	-	-	-	-	-	-
		3.000	6.000	S2F0750-2448-S EDP:30061	-	-	-	-	-	-	-	-
1.0000	1.0000	1.500	4.000	S2F1000-1232-S EDP:30069	-	S2F1000-1232-06 EDP:30062	S2F1000-1232-12 EDP:30063	S2F1000-1232-18 EDP:30064	S2F1000-1232-24 EDP:30065	S2F1000-1232-38 EDP:30066	S2F1000-1232-50 EDP:30067	S2F1000-1232-BN EDP:30068
		2.250	5.000	S2F1000-1840-S EDP:30070	-	-	-	-	-	-	-	-
		3.000	6.000	S2F1000-2448-S EDP:30071	-	-	-	-	-	-	-	-

Cut Materials

ALUM < 10% Si

ALUM > or = 10% Si

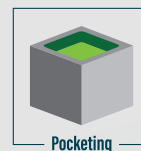
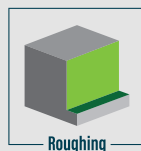
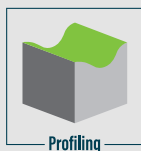
COPPER/BRASS

STEEL

STAINLESS STEEL

CAST IRON

HI-TEMP ALLOYS

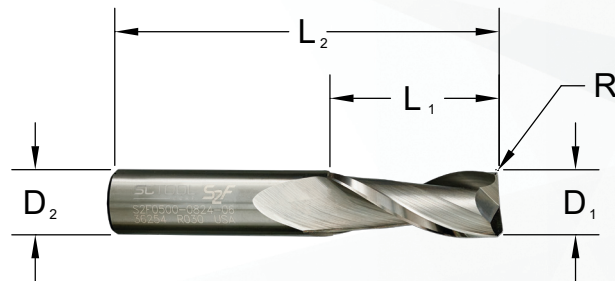


S2F Recommended Starting Speeds and Feeds

Material Group			Series S2F	Series S4F		D - Diameter					
		Rc Hardness	Speed		frac. dec.	1/4"	3/8"	1/2"	5/8"	3/4"	1"
			(SFM)			0.250	0.375	0.500	0.625	0.750	1.000
P	Unalloyed Steel (AISI 1000, 1100, 1200, 1500 Series)	>32	-	200-250	IPT	.0007-.0015	.0010-.0025	.0010-.0025	.0030-.0050	.0030-.0050	.0040-.0060
		<32	-	125-175	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
	Low-alloy Steel (AISI 3000, 4000, 5000, 6000, 8000, 9000 Series)	>32	-	200-250	IPT	.0007-.0015	.0010-.0025	.0010-.0025	.0030-.0050	.0030-.0050	.0040-.0060
		<32	-	125-175	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
	High-alloy Steel/Tool Steel (SAE Classes A, D, H, O, S, M, T)"	>32	-	150-225	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	60-125	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
M	Austenitic (AISI 200 & 300 Series)	>32	-	200-250	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	150-200	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
	Martensitic (AISI 400 & 500 Series)	>32	-	150-250	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	125-175	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
	Precipitation (PH 15-7 Mo, 15-5 PH, 17-7 PH)	>32	-	150-250	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	125-175	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
K	Gray Iron GG	-	225-325	250-350	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0100	.0030-.0100	.0050-.0100
	Nodular Iron GGG	-	250-350	300-400	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0100	.0030-.0100	.0050-.0100
	Malleable Iron GTS/GTW	-	250-350	300-400	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0100	.0030-.0100	.0050-.0100
S	HRSA Iron-Based (Incoloy 800/909, A286)	>32	-	175-225	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	125-175	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
	HRSA Cobalt-Based (Stellite, Haynes 21/25/188)	>32	-	175-225	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	125-175	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
	HRSA Nickel-Based (Inconel 601/617/625/700/706/718, Hastelloy, Monel, Nimonic, Rene, Udimet, Waspaloy)	>32	-	125-175	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	70-115	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
	"Titanium (Pure, ASTM 1/2/3, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo-Si)	-	200-300	200-300	IPT	.0007-.0015	.0010-.0025	.0010-.0025	.0030-.0050	.0030-.0050	.0040-.0060
N	Aluminum (<10% Si)	-	500 min.	-	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0150	.0030-.0150	.0050-.0150
	Aluminum (> or= to 10% Si)	-	500 min.	-	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0150	.0030-.0150	.0050-.0150
	Copper / Brass	-	350-500	-	IPT	0.0015	0.0023	0.0031	0.0039	0.0047	0.0055
H	Hardened Steels and Hardened or Chilled Cast Irons (42-48HRc)	-	-	-	-	-	-	-	-	-	

Note:

- These values are for uncoated tools.
- For coated tools increase SFM:
SC-2 = +40%
- For tools with a LOC greater than 3xD lower SFM by no less than 15%
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.



Uncoated

Tolerance	
Shank	h6
Cut Diameter	+ .000" - .002"

S4F Series Uncoated

Cutting Diameter D1	Shank Diameter D2	LOC	OAL	Corner Option								Ball Nose
				Square	R.015	R.030	R.060	R.090	R.120	R.190	R.250	
0.1250	0.1250	0.500	1.500	S4F0125-0412-S EDP:30217	S4F0125-0412-03 EDP:30214	S4F0125-0412-06 EDP:30215	-	-	-	-	-	S4F0125-0412-BN EDP:30216
		0.750	2.000	S4F0125-0616-S EDP:30218	-	-	-	-	-	-	-	-
0.1875	0.1875	0.625	2.000	S4F0188-0516-S EDP:30222	S4F0188-0516-03 EDP:30219	S4F0188-0516-06 EDP:30220	-	-	-	-	-	S4F0188-0516-BN EDP:30221
		1.125	2.500	S4F0188-0516-S EDP:30222	-	-	-	-	-	-	-	-
0.2500	0.2500	0.750	2.500	S4F0250-0620-S EDP:30228	S4F0250-0620-03 EDP:30224	S4F0250-0620-06 EDP:30225	S4F0250-0620-12 EDP:30226	-	-	-	-	S4F0250-0620-BN EDP:30227
		1.250	3.000	S4F0250-1024-S EDP:30229	-	-	-	-	-	-	-	-
0.3125	0.3125	0.875	2.500	S4F0313-0720-S EDP:30234	S4F0313-0720-03 EDP:30230	S4F0313-0720-06 EDP:30231	S4F0313-0720-12 EDP:30232	-	-	-	-	S4F0313-0720-BN EDP:30233
		1.250	3.000	S4F0313-1024-S EDP:30235	-	-	-	-	-	-	-	-
0.3750	0.3750	0.875	2.500	S4F0375-0720-S EDP:30241	S4F0375-0720-03 EDP:30236	S4F0375-0720-06 EDP:30237	S4F0375-0720-12 EDP:30238	S4F0375-0720-18 EDP:30239	-	-	-	S4F0375-0720-BN EDP:30240
		1.250	3.000	S4F0375-1024-S EDP:30242	-	-	-	-	-	-	-	-
		1.750	3.500	S4F0375-1428-S EDP:30243	-	-	-	-	-	-	-	-
0.4375	0.4375	1.250	3.000	S4F0438-1024-S EDP:30245	-	-	-	-	-	-	-	S4F0438-1024-BN EDP:30244
0.5000	0.5000	1.000	3.000	S4F0500-0824-S EDP:30252	S4F0500-0824-03 EDP:30246	S4F0500-0824-06 EDP:30247	S4F0500-0824-12 EDP:30248	S4F0500-0824-18 EDP:30249	S4F0500-0824-24 EDP:30250	-	-	S4F0500-0824-BN EDP:30251
		1.500	3.500	S4F0500-1228-S EDP:30253	-	-	-	-	-	-	-	-
		2.000	4.000	S4F0500-1632-S EDP:30254	-	-	-	-	-	-	-	-
0.5625	0.5625	1.250	3.500	S4F0563-1028-S EDP:30256	-	-	-	-	-	-	-	S4F0563-1028-BN EDP:30255
0.6250	0.6250	1.250	3.500	S4F0625-1028-S EDP:30262	-	S4F0625-1028-06 EDP:30257	S4F0625-1028-12 EDP:30258	S4F0625-1028-18 EDP:30259	S4F0625-1028-24 EDP:30260	-	-	S4F0625-1028-BN EDP:30261
		1.750	4.000	S4F0625-1432-S EDP:30263	-	-	-	-	-	-	-	-
		2.250	5.000	S4F0625-1840-S EDP:30264	-	-	-	-	-	-	-	-
0.7500	0.7500	1.500	4.000	S4F0750-1232-S EDP:30272	-	S4F0750-1232-06 EDP:30265	S4F0750-1232-12 EDP:30266	S4F0750-1232-18 EDP:30267	S4F0750-1232-24 EDP:30268	S4F0750-1232-38 EDP:30269	S4F0750-1232-50 EDP:30270	S4F0750-1232-BN EDP:30271
		2.000	5.000	S4F0750-1640-S EDP:30273	-	-	-	-	-	-	-	-
		3.000	6.000	S4F0750-2448-S EDP:30274	-	-	-	-	-	-	-	-
1.0000	1.0000	1.500	4.000	S4F1000-1232-S EDP:30282	-	S4F1000-1232-06 EDP:30275	S4F1000-1232-12 EDP:30276	S4F1000-1232-18 EDP:30277	S4F1000-1232-24 EDP:30278	S4F1000-1232-38 EDP:30279	S4F1000-1232-50 EDP:30280	S4F1000-1232-BN EDP:30281
		2.250	5.000	S4F1000-1840-S EDP:30283	-	-	-	-	-	-	-	-
		3.000	6.000	S4F1000-2448-S EDP:30284	-	-	-	-	-	-	-	-

Cut Materials

ALUM < 10% Si

ALUM > or = 10% Si

COPPER/BRASS

STEEL

STAINLESS STEEL

CAST IRON

HI-TEMP ALLOYS

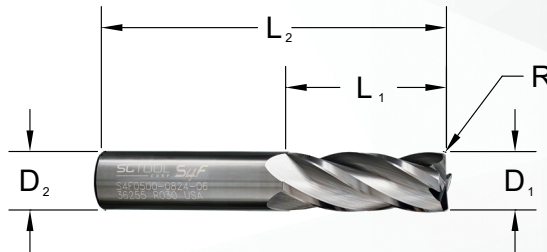


S4F Recommended Starting Speeds and Feeds

Material Group			Series S2F	Series S4F		D - Diameter					
		Rc Hardness	Speed (SFM)		frac. dec.	1/4" 0.250	3/8" 0.375	1/2" 0.500	5/8" 0.625	3/4" 0.750	1" 1.000
P	Unalloyed Steel (AISI 1000, 1100, 1200, 1500 Series)	>32	-	200-250	IPT	.0007-.0015	.0010-.0025	.0010-.0025	.0030-.0050	.0030-.0050	.0040-.0060
		<32	-	125-175	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
	Low-alloy Steel (AISI 3000, 4000, 5000, 6000, 8000, 9000 Series)	>32	-	200-250	IPT	.0007-.0015	.0010-.0025	.0010-.0025	.0030-.0050	.0030-.0050	.0040-.0060
		<32	-	125-175	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
	High-alloy Steel/Tool Steel (SAE Classes A, D, H, O, S, M, T)	>32	-	150-225	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	60-125	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
M	Austenitic (AISI 200 & 300 Series)	>32	-	200-250	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	150-200	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
	Martensitic (AISI 400 & 500 Series)	>32	-	150-250	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	125-175	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
	Precipitation (PH 15-7 Mo, 15-5 PH, 17-7 PH)	>32	-	150-250	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	125-175	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
K	Gray Iron GG	-	225-325	250-350	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0100	.0030-.0100	.0050-.0100
	Nodular Iron GGG	-	250-350	300-400	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0100	.0030-.0100	.0050-.0100
	Malleable Iron GTS/GTW	-	250-350	300-400	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0100	.0030-.0100	.0050-.0100
S	HRSA Iron-Based (Incoloy 800/909, A286)	>32	-	175-225	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	125-175	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
	HRSA Cobalt-Based (Stellite, Haynes 21/25/188)	>32	-	175-225	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	125-175	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
	HRSA Nickel-Based (Inconel 601/617/625/700/706/718, Hastelloy, Monel, Nimonic, Rene, Udimet, Waspaloy)	>32	-	125-175	IPT	.0005-.0010	.0008-.0020	.0008-.0020	.0020-.0040	.0020-.0040	.0030-.0050
		<32	-	70-115	IPT	.0003-.0005	.0005-.0015	.0005-.0015	.0010-.0030	.0010-.0030	.0020-.0040
N	Titanium (Pure, ASTM 1/2/3, Ti6Al-4V, Ti6Al-2Sn-4Zr-2Mo-Si)	-	200-300	200-300	IPT	.0007-.0015	.0010-.0025	.0010-.0025	.0030-.0050	.0030-.0050	.0040-.0060
	Aluminum (<10% Si)	-	500 min.	-	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0150	.0030-.0150	.0050-.0150
	Aluminum (> or= to 10% Si)	-	500 min.	-	IPT	.0010-.0020	.0015-.0040	.0015-.0040	.0030-.0150	.0030-.0150	.0050-.0150
H	Copper / Brass	-	350-500	-	IPT	0.0015	0.0023	0.0031	0.0039	0.0047	0.0055
H	Hardened Steels and Hardened or Chilled Cast Irons (42-48HRC)	-	-	-	-	-	-	-	-	-	-

Note:

- These values are for uncoated tools.
- For coated tools increase SFM: SC-2 = +40%
- For tools with a LOC greater than 3xD lower SFM by no less than 15%
- All values are recommended starting points based on ideal conditions. Adjust parameters accordingly for specific applications.



4 FLUTE



Uncoated

Tolerance	
Shank	h6
Cut Diameter	+ .000" - .002"

EPIC SOLUTIONS FOR YOUR EVERY NEED

Custom Tool Manufacturing

We specialize in personally connecting and creating solutions that meet the goals of our customer. For any drilling, reaming, routing, or milling applications, SCTool's Master Tool Makers can expertly build customized tooling solutions for your specific needs. Contact us to discuss a customized solution for any machining need!



Reconditioning

SCTool's abilities are not limited to manufacturing. We take pride in our ability to service a customer's product from inception all the way through the life cycle of the product – cradle to grave.



Our Reconditioning Capabilities

- Professional regrinding, original recoating, and high precision reconditioning of other cutting tool brands back to original specs
- CNC reconditioning of high-performance drills, reamers, end mills, and many other types of carbide, cobalt, and high-speed steel rotary cutting tools
- Upon request, expedited regrinding in case of an emergency
- Upon request, SCTool laser etches the tool each time the tool is reground to track the number of regrinds

We make it easy

Place your tools in our company regrind box and we will return them to you clean, sorted, sharpened, and sized – ready to be placed in the spindle. SCTool will send you an appropriately sized box for your application. Email us at info@sctoolcorp.com to start your reconditioning service.

Accommodating Special Requests

- Edge Prep
- End Work Only
- Laser Etch Each Tool's Shank for Tracking Number of Regrinds
- Recoating
- Cutting Diameter Only
- Additional Modifications

With our Reconditioning Program, our customers save **40-75%** per tool on average.

THE SCTOOL “QWIKMOD” SERVICE

Try our 5 day “QwikMod”
modification service!

- Chipbreakers
- Corner Radius
- Corner Chamfer
- Weldon Flat
- Shank Coolant Grooves
- Neck Additions

Add a corner radius, corner chamfer, chipbreakers, LOC adjustment, weldon flat, shank coolant grooves, or neck additions to any end mill and we will ship in 5 business days. This includes all end mills in our catalog, including all our high-performance lines.

Distributor Information

Please email rfq@sctoolcorp.com the EDP# and what modification your customer needs, and we will respond ASAP with pricing. Distributors can also login and add the modification to the end of the tool on our e-commerce website, www.sctoolcorp.com, for an immediate quote. We look forward to serving all your modification needs!

- * We will coat the tool if the modification requires coating (i.e. corner radius, corner chamfer, LOC adjustment)*
- * We will not re-coat the tool if the modification does not require re-coating (i.e. chipbreakers, weldon flat, shank coolant grooves, neck additions)*
- * Minimum order quantity is 5 per EDP# within the QwikMod service*
- * Please allow additional time for coatings*



END MILL TROUBLESHOOTING

Problem	Possible Cause	Possible Solution
Excessive Flank Wear	Speed too high	Reduce the cutting speed RPM's (n).
	Improper feed speed (too slow)	Increase feed per tooth (fz).
	Hard workpiece material >55 Rc	Try 90-100 SFM (vc) with multi-fluted tool (5 flutes+).
	Recutting chips	Change feed speed to change chip size or clear chips with coolant or air pressure.
	Milling strategy	Ensure you are climb milling unless workpiece material has hard/abrasive outer skin or high impact tool steel like D2, then conventional milling technique is preferred for breakthrough.
	Improper cutting angle	Change to correct cutting angle, tilt tool at 15 degrees.
	Too low a primary relief angle	Change to larger relief angle.
Excessive Corner Wear	No corner radius	Implementing corner radius on tool adds strength and increases tool life.
	Speed too high	Reduce the cutting speed RPM's (n).
	Tool runout	Check tool runout in holder/spindle. <.0003" (.0076mm) desired. Hand ground flats can be suspect and common cause. Use collet, milling chuck, or shrink fit holders if possible.
	Tool overhang	Ensure you are using shortest OAL possible, stub tool in holder. Utilize stronger necked tool for longer reaches.
Cutting Edge Chipping	Lack of rigidity (tool)	Use shortest end mill available, hold shank deeper in holder, investigate for tool slippage. Use short gage length holder.
	Lack of rigidity (workpiece)	Tighten workpiece fixture - a common problem.
	Feed too high	Decrease feed per tooth (fz).
	Feed too high on first pass	Decrease feed per tooth (fz) on first pass through workpiece skin or reduce radial width of cut (ae) first pass.
	Part entry	Reduce FPT on entry - implement radius in or sweeping entrances - avoid 90° (perpendicular) entry.
	Milling strategy	Ensure you are climb milling unless workpiece material has hard/abrasive outer skin or high impact tool steel like D2, then conventional milling technique is preferred for breakthrough.
	Tool overhang	Ensure you are using shortest OAL possible, stub tool in holder. Utilize stronger necked tool for longer reaches.
	Tool runout	Check tool runout in holder/spindle, <.0003" (.0076mm) desired. Hand ground flats can be suspect and common cause. Use collet, milling chuck, or shrink fit holders if possible.
	Not enough rigidity of machine tool & holder	Change rigid machine tool or holder.
	Cutting edge prep	Ensure tool has proper edge prep for workpiece material.
	Teeth too sharp	Change to lower cutting angle, primary relief.

Problem	Possible Cause	Possible Solution
Breakage	Lack of rigidity (workpiece)	Tighten workpiece fixture - a common problem.
	Lack of rigidity (workpiece)	Increase the cutting speed RPM's (n).
	Feed too high	Decrease feed per tooth (fz).
	Heavy depth of cut	Reduce width of cut, radial depth of cut (ae) & depth of cut, axial depth of cut (ap).
	Part entry	Reduce FPT on entry - implement radius in or sweeping entrances - avoid 90° (perpendicular) entry.
	Milling strategy	Review tool path and ensure there are no arbitrary moves, extreme arc of engagement increases & undesirable situations for the tool. Keep constant radial engagement.
	Tool overhang	Ensure you are using shortest OAL possible, stub tool in holder. Utilize stronger necked tool for longer reaches.
	Tool runout	Check tool runout in holder/spindle, <.0003" (.007 6mm) desired. Hand ground flats can be suspect and common cause. Use collet, milling chuck, or shrink fit holders if possible.
	Excessive edge wear	Recondition at earlier stage. Factory recondition service is recommended.
Built Up Edge (BUE)	Chip welding to cutting edge	Utilize proper tool coating for workpiece material being cut. Climb mill preferred.
	Feed too low	Increase feed per tooth (fz).
	Speed too low	Increase the cutting speed RPM's (n).
	Coolant strategy	Add coolant or readjust coolant flow, use through tool coolant if available. Check coolant mixture concentration.
Chip Packing	Insufficient chip room	Use end mill with fewer flutes.
	Feed too high	Decrease feed per tooth (fz).
	Heavy depth of cut	Reduce width of cut, radial depth of cut (ae) & depth of cut, axial depth of cut (ap).
	Not enough coolant	Apply more coolant to flush chips. Use air pressure or op. stop to clear chips away.
	Large heavy chip	Utilize chipbreaker style tool to cut chip size.
Poor Surface Finish	Feed too high	Decrease feed per tooth (fz).
	Speed too low	Increase width of cut, radial depth of cut (ae) to stabilize tool in cut.
	Too light width of cut	Increase width of cut, radial depth of cut (ae) to stabilize tool in cut.
	Tool runout	Check tool runout in holder/spindle, <.0003" (.007 6mm) desired. Hand ground flats can be suspect and common cause. Use collet, milling chuck, or shrink fit holders.
	Built up edge	Use flood coolant.
	Recutting chips	Redirect/Evaluate coolant flush – or use fewer number of flutes.
	No end tooth concavity	Add margin (touch primary with oilstone).

Problem	Possible Cause	Possible Solution
Chatter/Vibration	Lack of rigidity (workpiece)	Tighten workpiece figure – a common problem.
	Lack of rigidity (machine & holder)	Use better machine tool holder or change condition.
	Tool runout	Check tool runout in holder/spindle, <.0003" (.0076mm) desired. Hand ground flats can be suspect and common cause. Use collet, milling chuck, or shrink fit holders if possible.
	Speed too high	Reduce the cutting speed RPM's (n).
	Feed too low	Increase feed per tooth (fz).
	Chip too thin	Utilize chip thinning adjustment multiplier.
	Arc of engagement violation	Use smaller tools and generate corner radii in pockets. Avoid tools that diameter matches workpiece corner radius, or rough plunge corners.
	Milling strategy	Ensure you are climb milling unless workpiece material has hard/abrasive outer skin or high impact tool steel like D2, then conventional milling technique is preferred for breakthrough.
Tool Deflection	Tool overhang	Ensure you are using shortest OAL possible, stub tool in holder. Utilize stronger necked tool for longer reaches.
	End mill diameter	Increase diameter of end mill for higher strength to length ratio.
	Increase number of flutes	Higher number of flutes = larger core diameter = increased strength.
	Feed too high	Decrease feed per tooth (fz).
	Too high width of cut	Decrease width of cut, radial depth of cut (ae).
	Milling strategy	Climb milling can help reduce the amount of deflection in some cases.
No Dimensional Accuracy (Wall Tapered)	Coolant strategy	Add coolant or readjust coolant flow, use through tool coolant if available. Check coolant mixture concentration.
	Tool deflection	See Tool Deflection section above.
	Feed too high	Decrease feed per tooth (fz).
	Too high width of cut	Decrease width of cut, radial depth of cut (ae).
	Tool runout	Check tool runout in holder/spindle, <.0003" (.0076mm) desired. Hand ground flats can be suspect and common cause. Use collet, milling chuck, or shrink fit holders if possible.



RADIAL CHIP THINNING

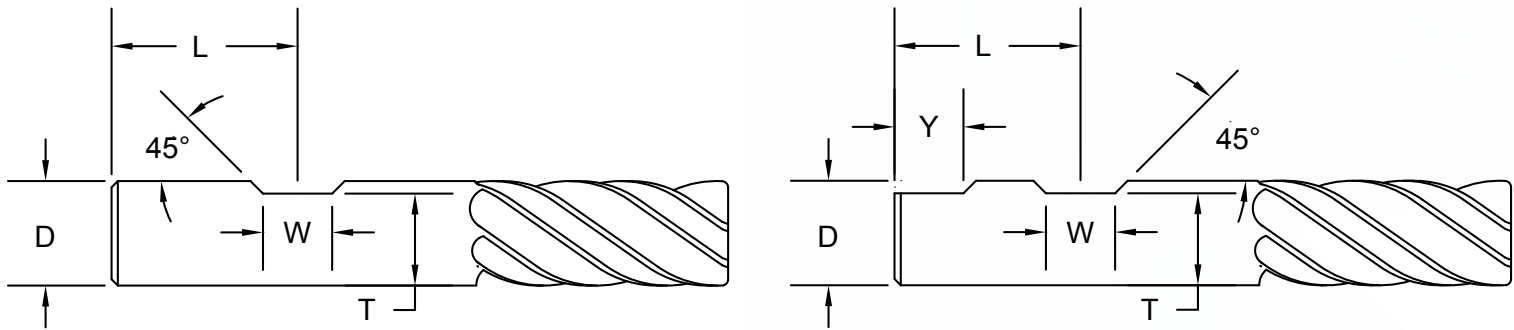
During profile or side milling with a solid carbide end mill at 50% (ae) radial width of cut, the chip formed is at full programmed thickness. When your radial depth of cut decreases to something less than 50%, the chip formed is not as thick. This is known as "radial chip thinning." When less than 50% (ae) radial depths are used, it becomes necessary to increase your feed to achieve full chip thickness.

With the utilization of new programming methods, such as trochoidal and peel milling, manufacturers can increase productivity and tool life. These methods take advantage of much deeper (ap) axial cuts with less (ae) radial width of cut. With these methods, it's possible to run higher surface footages (SFM or m/min) along with these higher feed rates (IPM or mm/min) because less heat is generated at the cutting zone. Plus, you're utilizing chip thinning.

With SCTool's super variable tools, harmonics have virtually been eliminated. Advancements in coatings enable our tools to withstand 900°F, thus eliminating heat concerns. In addition, machine tools have advanced greatly to take advantage of these new methods. Use the following chart as a reference to increase feed rates by multiplying recommended feed rate by the increase feed factor, according to your (ae) radial depth of cut as % of (Dc) cutter diameter.

(ae) Radial Depth of Cut as to % of (Dc) Cutter Diameter	Increase Feed Factor
30%	1.10
25%	1.20
20%	1.20
15%	1.41
10%	1.80
7%	2.00
5%	2.30
3%	2.93
2%	3.60
1%	5.00

SHANK FLAT DIMENSIONS



D Diameter	L ± .015	W ± .002	T +0/-0.010	Y ± .020
1/4	.500	.281	.230	-
3/8	.781	.281	.325	-
1/2	.890	.331	.440	-
5/8	.953	.401	.560	-
3/4	1.016	.456	.675	-
7/8	1.016	.456	.810	.500
1	1.141	.516	.925	.500
1-1/4	1.141	.516	1.156	.500

SCTOOL

C O R P

AX2

AX3

AX4

SV4

SV5

SV6

SV7

S2F

S4F



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