



S-WING

Suitable for difficult to cut material
such as STS, Ti, Ni and Inconel

New coatings with high oxidation
resistance and surface hardness

Advanced surface roughness with improved
chip emission and deposition resistance

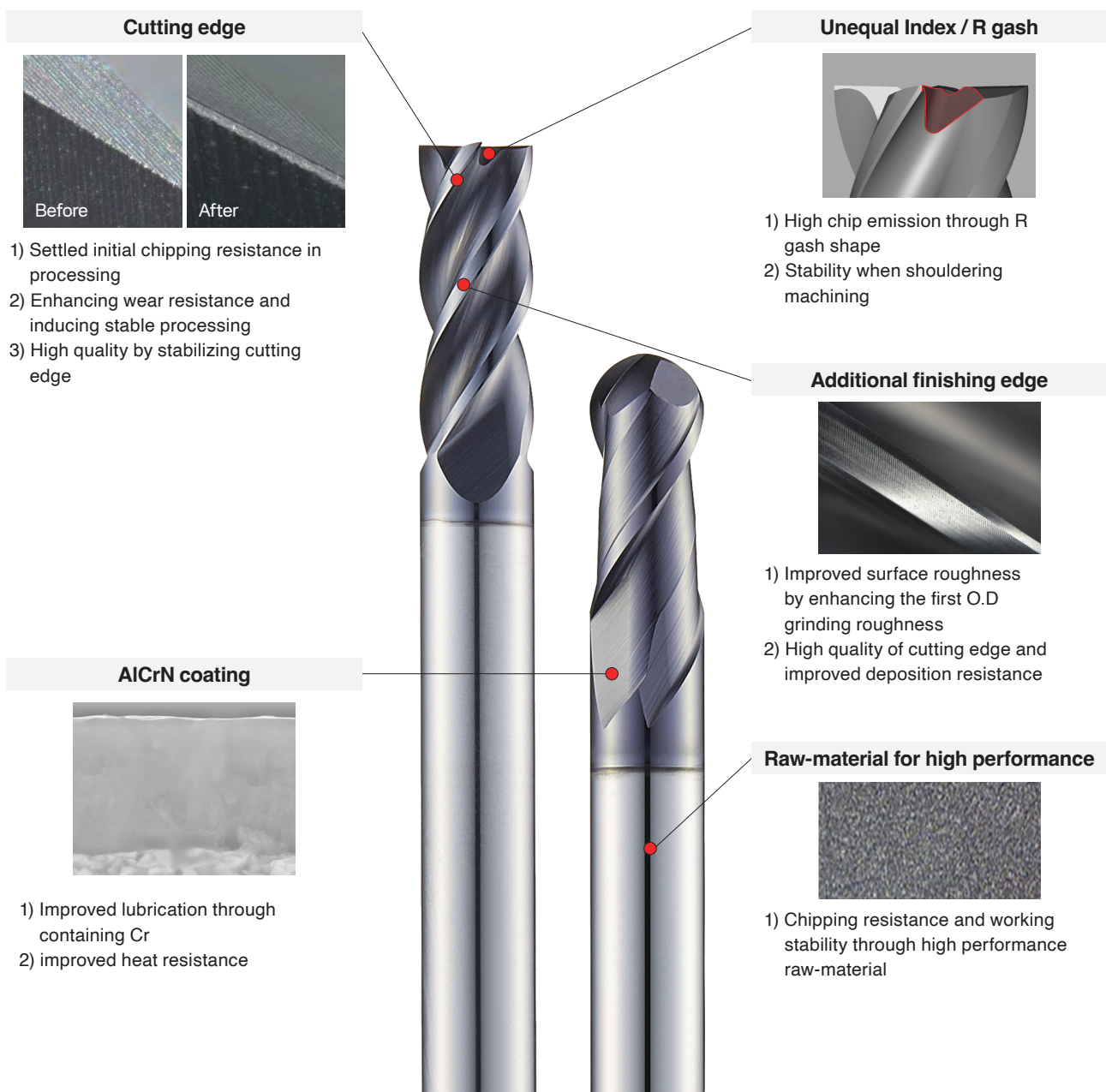


**Add
Trochoidal
Line up**

S-WING SERIES

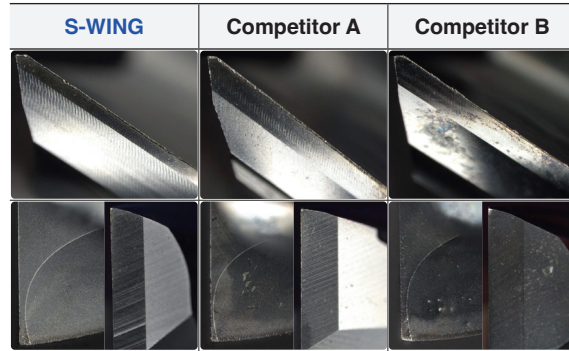
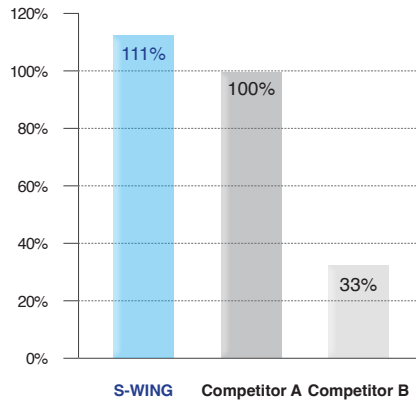
Features

- Stable high speed processing with minimum vibration, unequal index and optimal rake angle
- High processability and low vibration by applying unequal index in cutting edge
- Minimum vibration through optimized helix angle and R gash, enhanced chip emission with stiffness supplementation
- Reduced friction resistance and improved chip emission by applying new coatings with high surface hardness oxidation resistance
- Enhanced chipping resistance and deposition resistance with new strengthened flute



Case Study

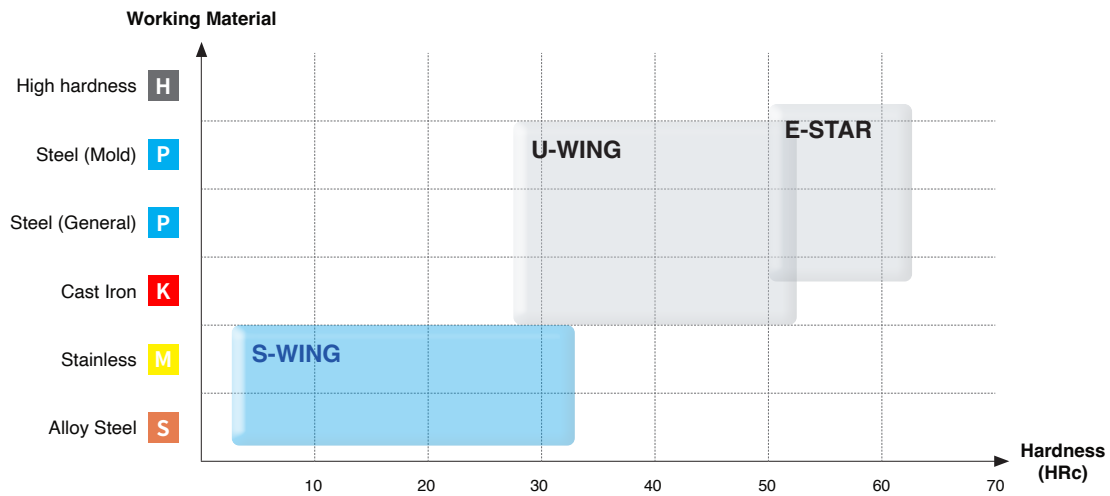
4F D6.0 SQUARE ENDMILL - STS304 SERIES



Cutting Condition

Cutting Method	rpm	feed	ap	ae	Note
Shouldering	3200	380	9	0.6	Wet Machining

Applications



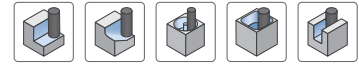
EDP No. System

S	F	5	1	4	120	03	H
Section	Geometry	Grade	Length, Shank Type	Flutes	Cutting Dia.	Corner Radius	Helix
S : STS high performance	B : Ball Type	5 : Grade	0 - Standard	2 : 2Flute	1	0.1	H : High Helix
	E : Square Type		1 - Straight, Neck	3 : 3Flute	~	~	
	R : Radius Type			4 : 4Flute	20	2	
	F : Roughing			5 : 5Flute			
				6 : 6Flute			
				7 : 7Flute			

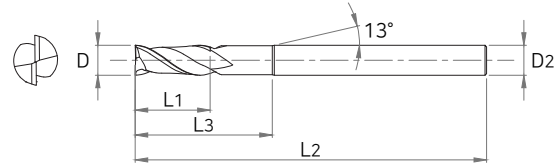
S-WING SERIES

Contents

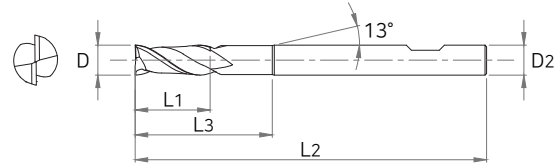
Section		EDP No.	Geometry	Type	Diameter		Page
Type	Flutes				Min	Max	
Square	2F	SE502		2 FLUTES SQUARE ENDMILL	1	20	5
	3F	SE503		3 FLUTES SQUARE ENDMILL	1	20	6
	4F	SE504		4 FLUTES SQUARE ENDMILL	1	20	7
	6F	SE506		6 FLUTES SQUARE ENDMILL	6	20	8
Radius	4F	SR504		4 FLUTES RADIUS ENDMILL	1	20	9
	5F	SR505		5 FLUTES CHIP BREAKER TYPE RADIUS ENDMILL	6	20	11
	7F	SR507		7 FLUTES CHIP BREAKER TYPE RADIUS ENDMILL	6	20	12
Ball	2F	SB502		2 FLUTES BALL ENDMILL	1	12	13
	4F	SB504		4 FLUTES BALL ENDMILL	3	20	14
Roughing	3F ~ 5F	SF51H		3~5 FLUTES ROUGHING ENDMILL	3	20	15
Recommended Cutting Condition							16~22



JIS



DIN



■ Tolerance

D		Shank Dia
D1 ~ 5	0 ~ -0.015	h5
D6	0 ~ -0.02	
D8 ~ 20	0 ~ -0.03	

DIN
6535HB

CARBIDE

AlCrN

2

36°
HELIXDATA
P.16

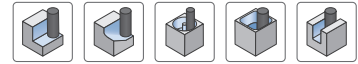
EDP No		SIZES (mm)				
JIS	DIN	D	L1	L3	L2	D2
SE502 010	SE502 010F	1	2.5	7.5	50	6
SE502 012	SE502 012F	1.2	3	8	50	6
SE502 015	SE502 015F	1.5	4	9	50	6
SE502 020	SE502 020F	2	6	11	50	6
SE502 025	SE502 025F	2.5	7	12	50	6
SE502 030	SE502 030F	3	8	13	55	6
SE502 040	SE502 040F	4	10	15	55	6
SE502 050	SE502 050F	5	15	20	55	6
SE502 060	SE502 060F	6	15	22	60	6
SE502 080	SE502 080F	8	20	32	70	8
SE502 100	SE502 100F	10	25	33	75	10
SE502 120	SE502 120F	12	30	35	80	12
SE502 140	SE502 140F	14	35	42	90	16
SE502 160	SE502 160F	16	42	52	100	16
SE502 180	-	18	45	-	100	16
SE502 200	SE502 200F	20	48	50	100	20

※ The tools of DIN standard do not consider of holding inventory

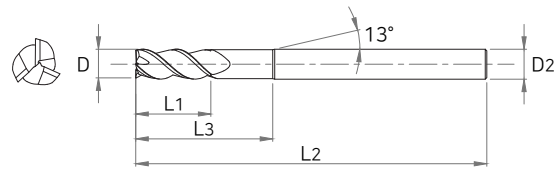
■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Cast Iron ~FCD500	Aluminum	Stainless Steel	Ti Alloy	Ni Alloy
			SKD61 ~HRc55	SKD11 HRc55~					
○	○	○					◎	○	○

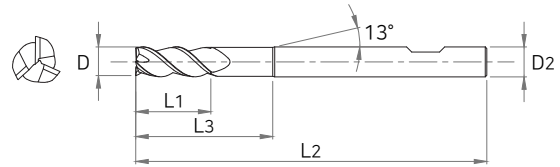
○ : GOOD ◎ : EXCELLENT



JIS



DIN



Tolerance

D		Shank Dia
D1 ~ 5	0 ~ -0.015	h5
D6	0 ~ -0.02	
D8 ~ 20	0 ~ -0.03	

DIN
6535HB

CARBIDE

AlCrN

3

42°
HELIX

43.5°
HELIX

45°
HELIX

DATA
P.17

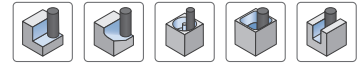
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JIS	DIN	D	L1	L3	L2	D2
SE503 010	SE503 010F	1	2.5	7.5	50	6
SE503 012	SE503 012F	1.2	3	8	50	6
SE503 015	SE503 015F	1.5	4	9	50	6
SE503 020	SE503 020F	2	6	11	50	6
SE503 025	SE503 025F	2.5	7	12	50	6
SE503 030	SE503 030F	3	8	13	55	6
SE503 03010	SE503 03010F	3	10	15	60	6
SE503 040	SE503 040F	4	10	15	55	6
SE503 04012	SE503 04012F	4	12	17	60	6
SE503 050	SE503 050F	5	13	18	55	6
SE503 060	SE503 060F	6	15	22	60	6
SE503 06020	SE503 06020F	6	20	27	65	6
SE503 080	SE503 080F	8	20	32	70	8
SE503 08030	SE503 08030F	8	30	42	80	8
SE503 100	SE503 100F	10	25	33	75	10
SE503 10035	SE503 10035F	10	35	43	85	10
SE503 120	SE503 120F	12	30	35	80	12
SE503 12040	SE503 12040F	12	40	45	90	12
SE503 140	SE503 140F	14	35	42	90	16
SE503 160	SE503 160F	16	42	52	100	16
SE503 180	-	18	45	-	100	16
SE503 200	SE503 200F	20	48	58	100	20

※ The tools of DIN standard do not consider of holding inventory

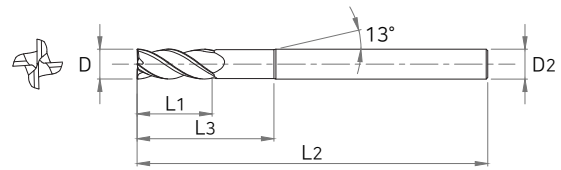
Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Cast Iron ~FCD500	Aluminum	Stainless Steel	Ti Alloy	Ni Alloy
			SKD61 ~HRC55	SKD11 HRC55~					
○	○	○					◎	○	○

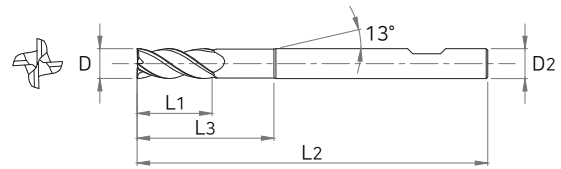
○ : GOOD ◎ : EXCELLENT



JIS



DIN



Tolerance

D		Shank Dia
D1 ~ 5.5	0 ~ -0.015	h5
D6 ~ 7	0 ~ -0.02	
D8 ~ 20	0 ~ -0.03	



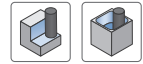
EDP No		SIZES (mm)				
JIS	DIN	D	L1	L3	L2	D2
SE504010	SE504010F	1	2.5	7.5	50	6
SE504012	SE504012F	1.2	3	8	50	6
SE504015	SE504015F	1.5	4	9	50	6
SE504020	SE504020F	2	6	11	50	6
SE504025	SE504025F	2.5	7	12	50	6
SE504030	SE504030F	3	8	13	55	6
SE50403010	SE50403010F	3	10	15	60	6
SE504035	SE504035F	3.5	10	15	55	6
SE504040	SE504040F	4	10	15	55	6
SE50404012	SE50404012F	4	12	17	60	6
SE504045	SE504045F	4.5	12	17	55	6
SE504050	SE504050F	5	15	20	55	6
SE504055	SE504055F	5.5	15	20	60	6
SE504060	SE504060F	6	15	22	60	6
SE50406020	SE50406020F	6	20	27	65	6
SE504065	SE504065F	6.5	15	22	60	8
SE504070	SE504070F	7	20	42	80	8
SE504080	SE504080F	8	20	32	70	8
SE50408025	SE50408025F	8	25	32	70	8
SE50408030	SE50408030F	8	30	42	80	8
SE504085	SE504085F	8.5	20	28	70	10
SE504090	SE504090F	9	25	38	80	10
SE504100	SE504100F	10	25	33	75	10
SE50410035	SE50410035F	10	35	43	85	10
SE504120	SE504120F	12	30	35	80	12
SE50412040	SE50412040F	12	40	45	90	12
SE504140	SE504140F	14	35	42	90	16
SE504160	SE504160F	16	42	52	100	16
SE504180	-	18	45	-	100	16
SE504200	SE504200F	20	48	50	100	20

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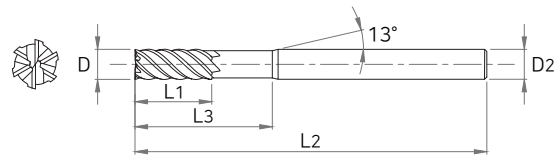
Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Cast Iron ~FCD500	Aluminum	Stainless Steel	Ti Alloy	Ni Alloy
			SKD61 ~HRC55	SKD11 HRC55~					
○	○	○					◎	○	○

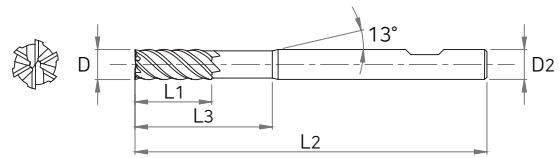
○ : GOOD ◎ : EXCELLENT



JIS



DIN



■ Tolerance

D		Shank Dia
D6	0 ~ -0.02	h5
D8 ~ 20	0 ~ -0.03	

DIN
6535HB

CARBIDE

AlCrN

6

45°
HELIX

DATA
P.19

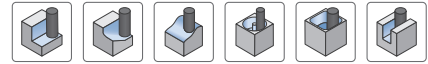
EDP No		SIZES (mm)				
JIS	DIN	D	L1	L3	L2	D2
SE506 060	SE506 060F	6	15	22	60	6
SE506 080	SE506 080F	8	20	32	70	8
SE506 100	SE506 100F	10	25	33	75	10
SE506 120	SE506 120F	12	30	35	80	12
SE506 160	SE506 160F	16	42	52	100	16
SE506 200	SE506 200F	20	48	50	100	20

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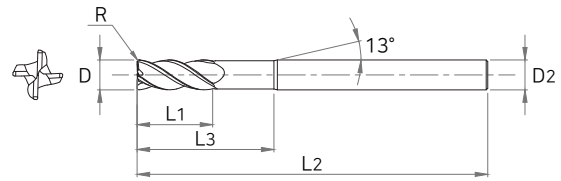
■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Cast Iron ~FCD500	Aluminum	Stainless Steel	Ti Alloy	Ni Alloy
			SKD61 ~HRc55	SKD11 HRc55~					
○	○	○					◎	○	○

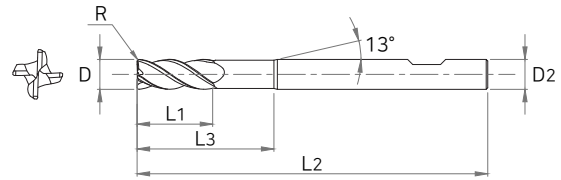
○ : GOOD ◎ : EXCELLENT



JIS



DIN



■ Tolerance

D		Shank Dia
D1 ~ 5	0 ~ -0.015	h5
D6 ~ 7	0 ~ -0.02	
D8 ~ 20	0 ~ -0.03	



EDP No		SIZES (mm)					
JIS	DIN	D	R	L1	L3	L2	D2
SR504 01001	SR504 01001F	1	0.1	2.5	7.5	50	6
SR504 01002	SR504 01002F	1	0.2	2.5	7.5	50	6
SR504 01201	SR504 01201F	1.2	0.1	3	8	50	6
SR504 01501	SR504 01501F	1.5	0.1	4	9	50	6
SR504 01502	SR504 01502F	1.5	0.2	4	9	50	6
SR504 02001	SR504 02001F	2	0.1	6	11	50	6
SR504 02002	SR504 02002F	2	0.2	6	11	50	6
SR504 02502	SR504 02502F	2.5	0.2	7	12	50	6
SR504 03002	SR504 03002F	3	0.2	8	13	55	6
SR504 03003	SR504 03003F	3	0.3	8	13	55	6
SR504 03005	SR504 03005F	3	0.5	8	13	55	6
SR504 04002	SR504 04002F	4	0.2	10	15	55	6
SR504 04003	SR504 04003F	4	0.3	10	15	55	6
SR504 04005	SR504 04005F	4	0.5	10	15	55	6
SR504 05002	SR504 05002F	5	0.2	15	20	55	6
SR504 05003	SR504 05003F	5	0.3	15	20	55	6
SR504 05005	SR504 05005F	5	0.5	15	20	55	6
SR504 06003	SR504 06003F	6	0.3	15	22	60	6
SR504 06005	SR504 06005F	6	0.5	15	22	60	6
SR504 06010	SR504 06010F	6	1	15	22	60	6
SR504 07003	SR504 07003F	7	0.3	15	22	60	8
SR504 08002	SR504 08002F	8	0.2	20	32	70	8
SR504 08003	SR504 08003F	8	0.3	20	32	70	8
SR504 08005	SR504 08005F	8	0.5	20	32	70	8
SR504 08010	SR504 08010F	8	1	20	32	70	8
SR504 10003	SR504 10003F	10	0.3	25	33	75	10
SR504 10005	SR504 10005F	10	0.5	25	33	75	10
SR504 10010	SR504 10010F	10	1	25	33	75	10
SR504 10015	SR504 10015F	10	1.5	25	33	75	10
SR504 10020	SR504 10020F	10	2	25	33	75	10

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■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Cast Iron ~FCD500	Aluminum	Stainless Steel	Ti Alloy	Ni Alloy
			SKD61 ~HRc55	SKD11 HRc55~					
○	○	○					◎	○	○

○ : GOOD ◎ : EXCELLENT

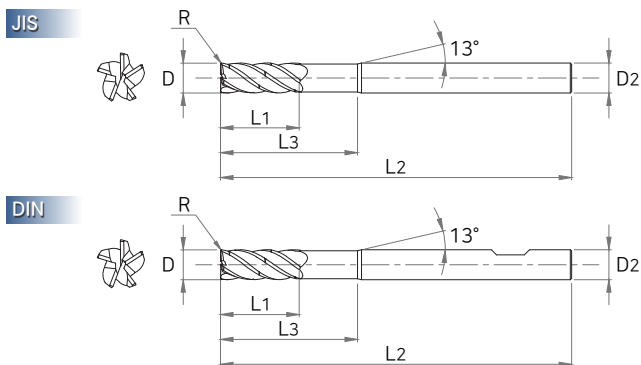
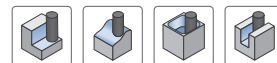
EDP No		SIZES (mm)					
JIS	DIN	D	R	L1	L3	L2	D2
SR504 10030	SR504 10030F	10	3	25	33	75	10
SR504 12003	SR504 12003F	12	0.3	30	35	80	12
SR504 12005	SR504 12005F	12	0.5	30	35	80	12
SR504 12010	SR504 12010F	12	1	30	35	80	12
SR504 12015	SR504 12015F	12	1.5	30	35	80	12
SR504 12020	SR504 12020F	12	2	30	35	80	12
SR504 12030	SR504 12030F	12	3	30	35	80	12
SR504 12040	SR504 12040F	12	4	30	35	80	12
SR504 14005	SR504 14005F	14	0.5	35	42	90	16
SR504 14010	SR504 14010F	14	1	35	42	90	16
NEW SR504 14020	SR504 14020F	14	2	35	42	90	16
NEW SR504 14030	SR504 14030F	14	3	35	42	90	16
NEW SR504 14040	SR504 14040F	14	4	35	42	90	16
SR504 16005	SR504 16005F	16	0.5	42	52	100	16
SR504 16010	SR504 16010F	16	1	42	52	100	16
NEW SR504 16020	SR504 16020F	16	2	42	52	100	16
NEW SR504 16030	SR504 16030F	16	3	42	52	100	16
NEW SR504 16040	SR504 16040F	16	4	42	52	100	16
NEW SR504 16050	SR504 16050F	16	5	42	52	100	16
SR504 18005	-	18	0.5	45	-	100	16
SR504 20005	SR504 20005F	20	0.5	48	50	100	20
SR504 20010	SR504 20010F	20	1	48	50	100	20
NEW SR504 20020	SR504 20020F	20	2	48	50	100	20
NEW SR504 20030	SR504 20030F	20	3	48	50	100	20
NEW SR504 20040	SR504 20040F	20	4	48	50	100	20
NEW SR504 20050	SR504 20050F	20	5	48	50	100	20

※ The tools of DIN standard do not consider of holding inventory

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Cast Iron ~FCD500	Aluminum	Stainless Steel	Ti Alloy	Ni Alloy
			SKD61 ~HRc55	SKD11 HRc55~					
○	○	○					◎	○	○

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia
D6	0 ~ -0.02	h5
D8 ~ 20	0 ~ -0.03	



EDP No		SIZES (mm)					
JIS	DIN	D	R	L1	L3	L2	D2
SR505 06005	SR505 06005F	6	0.5	15	22	60	6
SR505 0602405	SR505 0602405F	6	0.5	24	32	70	6
SR505 08005	SR505 08005F	8	0.5	20	32	70	8
SR505 0803205	SR505 0803205F	8	0.5	32	52	90	8
SR505 10005	SR505 10005F	10	0.5	25	33	75	10
SR505 1004005	SR505 1004005F	10	0.5	40	58	100	10
SR505 12005	SR505 12005F	12	0.5	30	35	80	12
NEW SR505 12010	SR505 12010F	12	1	30	35	80	12
NEW SR505 12020	SR505 12020F	12	2	30	35	80	12
NEW SR505 12030	SR505 12030F	12	3	30	35	80	12
SR505 1204805	SR505 1204805F	12	0.5	48	63	110	12
SR505 16005	SR505 16005F	16	0.5	42	52	100	16
NEW SR505 16010	SR505 16010F	16	1	42	52	100	16
NEW SR505 16020	SR505 16020F	16	2	42	52	100	16
NEW SR505 16030	SR505 16030F	16	3	42	52	100	16
NEW SR505 16040	SR505 16040F	16	4	42	52	100	16
SR505 1606505	SR505 1606505F	16	0.5	65	80	130	16
SR505 20005	SR505 20005F	20	0.5	48	58	110	20
SR505 2006505	SR505 2006505F	20	0.5	65	78	130	20

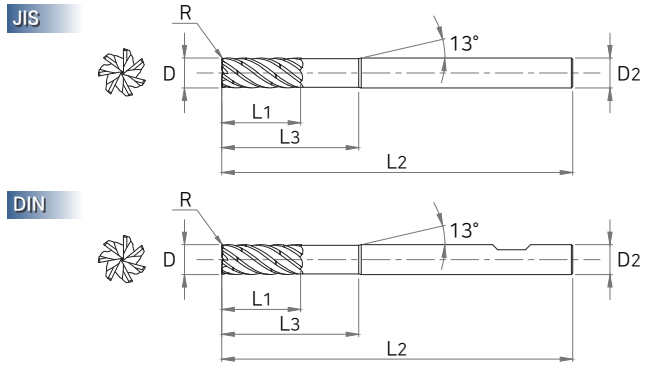
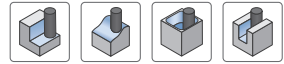
※ The tools of DIN standard do not consider of holding inventory

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Cast Iron ~FCD500	Aluminum	Stainless Steel	Ti Alloy	Ni Alloy
			SKD61 ~HRc55	SKD11 HRc55~					
○	○	○					◎	○	○

※ Trochoidal Milling Possible

○ : GOOD ◎ : EXCELLENT



Tolerance

D		Shank Dia
D6	0 ~ -0.02	h5
D8 ~ 20	0 ~ -0.03	



EDP No		SIZES (mm)					
JIS	DIN	D	R	L1	L3	L2	D2
SR507 06005	SR507 06005F	6	0.5	15	22	60	6
SR507 0602405	SR507 0602405F	6	0.5	24	32	70	6
SR507 08005	SR507 08005F	8	0.5	20	32	70	8
SR507 0803205	SR507 0803205F	8	0.5	32	52	90	8
SR507 10005	SR507 10005F	10	0.5	25	33	75	10
SR507 1004005	SR507 1004005F	10	0.5	40	58	100	10
SR507 12005	SR507 12005F	12	0.5	30	35	80	12
NEW SR507 12010	SR507 12010F	12	1	30	35	80	12
NEW SR507 12020	SR507 12020F	12	2	30	35	80	12
NEW SR507 12030	SR507 12030F	12	3	30	35	80	12
NEW SR507 12040	SR507 12040F	12	4	30	35	80	12
SR507 1204805	SR507 1204805F	12	0.5	48	63	110	12
SR507 16005	SR507 16005F	16	0.5	42	52	100	16
NEW SR507 16010	SR507 16010F	16	1	42	52	100	16
NEW SR507 16020	SR507 16020F	16	2	42	52	100	16
NEW SR507 16030	SR507 16030F	16	3	42	52	100	16
NEW SR507 16040	SR507 16040F	16	4	42	52	100	16
NEW SR507 16050	SR507 16050F	16	5	42	52	100	16
SR507 1606505	SR507 1606505F	16	0.5	65	80	130	16
SR507 20005	SR507 20005F	20	0.5	48	58	110	20
SR507 2006505	SR507 2006505F	20	0.5	65	78	130	20

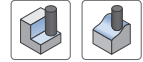
※ The tools of DIN standard do not consider of holding inventory

Applicable working material

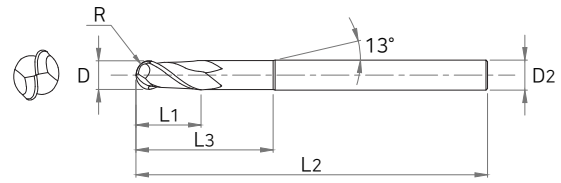
Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Cast Iron ~FCD500	Aluminum	Stainless Steel	Ti Alloy	Ni Alloy
			SKD61 ~HRc55	SKD11 HRc55~					
○	○	○					◎	○	○

※ Trochoidal Milling Possible

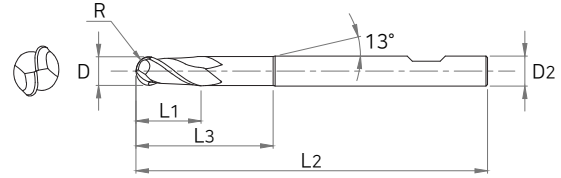
○ : GOOD ◎ : EXCELLENT



JIS



DIN



Tolerance

D		Shank Dia
D1 ~ 5	0 ~ -0.015	h5
D6 ~ 7	0 ~ -0.02	
D8 ~ 20	0 ~ -0.03	

DIN
6535HB

CARBIDE

AlCrN

2

38°
HELIX

R
±0.01

DATA
P.21

EDP No		SIZES (mm)					
JIS	DIN	D	R	L1	L3	L2	D2
SB502 010	SB502 010F	1	0.5	3	8	50	6
SB502 020	SB502 020F	2	1	6	11	50	6
SB502 030	SB502 030F	3	1.5	8	13	50	6
SB502 030L	SB502 030LF	3	1.5	8	13	70	6
SB502 040	SB502 040F	4	2	10	15	50	6
SB502 040L	SB502 040LF	4	2	10	15	70	6
SB502 050	SB502 050F	5	2.5	13	18	50	6
SB502 050L	SB502 050LF	5	2.5	13	18	80	6
SB502 060	SB502 060F	6	3	13	20	50	6
SB502 060L	SB502 060LF	6	3	13	52	90	6
SB502 080	SB502 080F	8	4	19	24	60	8
SB502 080L	SB502 080LF	8	4	19	62	100	8
SB502 100	SB502 100F	10	5	22	30	70	10
SB502 100L	SB502 100LF	10	5	22	58	100	10
SB502 120	SB502 120F	12	6	26	30	75	12
SB502 120L	SB502 120LF	12	6	26	63	110	12

※ The tools of DIN standard do not consider of holding inventory

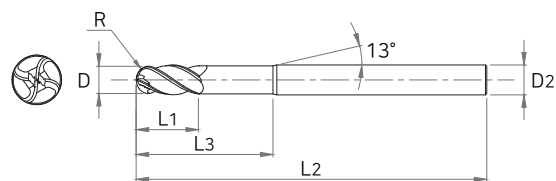
Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Cast Iron ~FCD500	Aluminum	Stainless Steel	Ti Alloy	Ni Alloy
			SKD61 ~HRc55	SKD11 HRc55~					
○	○	○					◎	○	○

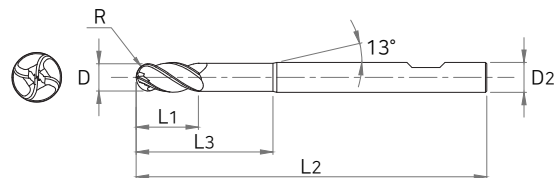
○ : GOOD ◎ : EXCELLENT



JIS



DIN



Tolerance

D		Shank Dia
D1 ~ 5	0 ~ -0.015	h5
D6	0 ~ -0.02	
D8 ~ 20	0 ~ -0.03	



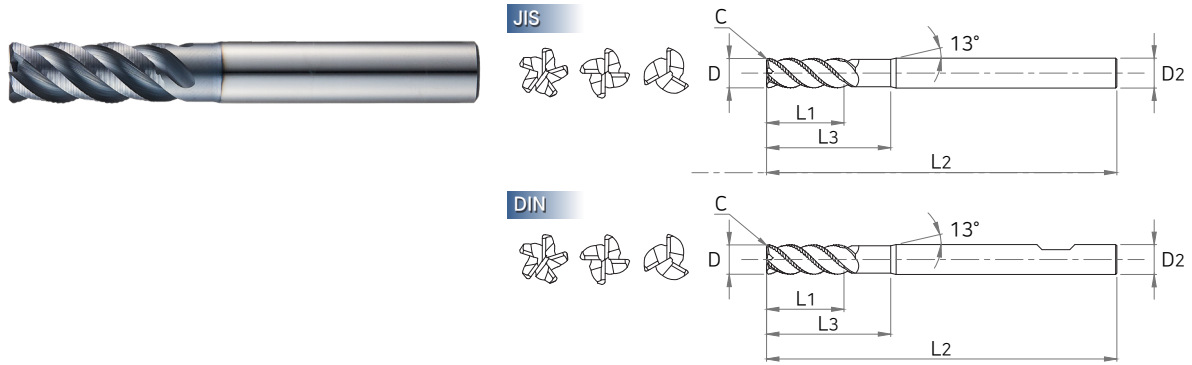
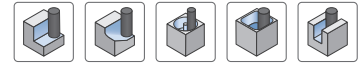
EDP No		SIZES (mm)					
JIS	DIN	D	R	L1	L3	L2	D2
SB504 030	SB504 030F	3	1.5	8	13	60	6
SB504 040	SB504 040F	4	2	8	13	70	6
SB504 050	SB504 050F	5	2.5	12	17	80	6
SB504 060	SB504 060F	6	3	12	52	90	6
SB504 080	SB504 080F	8	4	16	62	100	8
SB504 100	SB504 100F	10	5	20	58	100	10
SB504 120	SB504 120F	12	6	25	53	100	12
SB504 160	SB504 160F	16	8	30	50	100	16
SB504 200	SB504 200F	20	10	38	48	100	20

※ The tools of DIN standard do not consider of holding inventory

Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Cast Iron ~FCD500	Aluminum	Stainless Steel	Ti Alloy	Ni Alloy
			SKD61 ~HRc55	SKD11 HRc55~					
○	○	○					◎	○	○

○ : GOOD ◎ : EXCELLENT



■ Tolerance

D	Shank Dia
D3~20	0~-0.05 h5

DIN 6535HB	CARBIDE	AlCrN	3~5	45° HELIX	R ±0.01	DATA P.22
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EDP No		SIZES (mm)						
JIS	DIN	D	C	L1	L3	L2	D2	Z
SF51 303002H	SF51 303002HF	3	0.2	8	13	50	6	3
SF51 304002H	SF51 304002HF	4	0.2	10	15	50	6	3
SF51 405002H	SF51 405002HF	5	0.3	13	18	50	6	4
SF51 406002H	SF51 406002HF	6	0.3	13	22	60	6	4
SF51 406002NH	SF51 406002NHF	6	0.3	10	22	60	6	4
SF51 407002H	SF51 407002HF	7	0.4	18	32	70	8	4
SF51 408002H	SF51 408002HF	8	0.4	19	32	70	8	4
SF51 408002NH	SF51 408002NHF	8	0.4	12	32	70	8	4
SF51 409003H	SF51 409003HF	9	0.4	20	28	70	10	4
SF51 410003H	SF51 410003HF	10	0.4	22	33	75	10	4
SF51 410003NH	SF51 410003NHF	10	0.4	15	33	75	10	4
SF51 411003H	SF51 411003HF	11	0.5	25	33	80	12	4
SF51 412003H	SF51 412003HF	12	0.5	26	35	80	12	4
SF51 412003NH	SF51 412003NHF	12	0.5	20	35	80	12	4
SF51 506002H	SF51 506002HF	6	0.5	13	22	60	6	5
SF51 508002H	SF51 508002HF	8	0.5	19	27	65	8	5
SF51 510003H	SF51 510003HF	10	0.5	22	30	70	10	5
SF51 512003H	SF51 512003HF	12	0.5	26	35	80	12	5
SF51 514005H	SF51 514005HF	14	0.5	28	40	90	16	5
SF51 516005H	SF51 516005HF	16	0.5	32	50	100	16	5
SF51 51600542H	SF51 51600542HF	16	0.5	42	52	100	16	5
SF51 520005H	SF51 520005HF	20	0.5	38	48	100	20	5
SF51 52000545H	SF51 52000545HF	20	0.5	45	50	100	20	5

※ The tools of DIN standard do not consider of holding inventory

■ Applicable working material

Carbon steel ~HB225	Alloy Steel HB225 ~ 325	Pre hardened Steel HB225 ~ 325	Hardened steel		Cast Iron ~FCD500	Aluminum	Stainless Steel	Ti Alloy	Ni Alloy
			SKD61 ~HRc55	SKD11 HRc55~					
○	○	○					◎	○	○

○ : GOOD ◎ : EXCELLENT

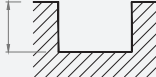
Recommended Cutting Condition

SE502 SERIES ▶ Slotting

Workpiece	Carbon Steel, Alloy Steel, Tool Steel				Stainless Steel 300 SERIES	
Hardness	~HRc 30		HRc 30 ~ HRc 40			
Cutting Dia. (mm)	RPM	FEED	RPM	FEED	RPM	FEED
1	13000	220	9800	160	21000	170
1.2	12500	210	9000	150	17500	140
1.5	12000	200	8300	140	14000	110
2	11560	190	7560	120	10500	85
2.5	10240	200	6560	130	8500	70
3	8920	210	5560	140	8000	65
4	7560	300	4620	180	7500	75
5	6300	320	3780	190	6000	80
6	5560	350	3360	220	5000	80
8	4200	380	2520	200	3750	90
10	3260	330	2000	160	3000	90
12	2740	280	1680	130	2500	95
14	2470	250	1520	120	2150	100
16	2200	220	1360	110	1880	105
18	1940	195	1210	95	1670	110
20	1680	170	1060	80	1500	115

RPM = rev / min
FEED - mm / min

ap : 0.5D



(ap : UP TO Ø3.0 : 0.2D)

ap : 0.02D



SE503 SERIES ▶ Slotting

Workpiece	Carbon Steel, Alloy Steel, Tool Steel						Cast Iron		Stainless Steel		Copper Alloy		Ti Alloy		Ti Alloy	
Hardness	~HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 45											
Cutting Dia. (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	30000	1000	23000	800	16500	450	20000	500	16500	350	25000	360	16500	380	6500	100
1.5	20000	1000	15500	800	11000	450	13000	500	11000	350	16500	360	11000	380	4500	100
2	15000	1000	11500	800	8200	450	10000	500	8400	350	12500	360	8200	380	3500	100
2.5	12000	1000	9400	800	7500	450	8000	500	6500	350	10000	360	6500	380	2600	100
3	10080	950	7750	740	5550	395	6700	520	5550	350	8300	360	5550	395	2200	100
4	7550	1400	5850	1100	4200	595	5050	550	4200	320	6200	400	4200	595	1650	105
5	6000	1500	4700	1200	3300	650	4000	600	3300	350	5000	420	3300	600	1400	120
6	5050	1650	3850	1250	2800	700	3350	660	2800	370	4100	440	2800	700	1150	130
8	3750	1700	2950	1330	2100	710	2500	665	2100	375	3100	500	2100	710	850	120
10	3050	1650	2300	1250	1650	665	2000	630	1350	355	2500	530	1650	665	650	120
12	2500	1500	2000	1200	1350	605	1650	570	1350	320	2000	550	1350	605	555	110
14	2150	1550	1700	1200	1200	605	1450	580	1200	250	1700	600	1200	605	500	110
16	1850	1600	1450	1250	1000	650	1250	600	1000	200	1500	650	1000	610	400	115
18	1650	1650	1300	1300	920	700	1100	620	900	150	1300	700	900	615	350	120
20	1500	1700	1150	1350	840	750	1000	640	800	100	1200	750	800	620	320	125

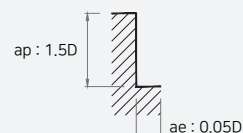
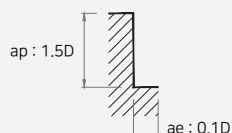
RPM = rev / min
FEED = mm / min



SE503 SERIES ▶ Side Machining

Workpiece	Carbon Steel, Alloy Steel, Tool Steel						Cast Iron		Stainless Steel		Copper Alloy		Ti Alloy		Ti Alloy	
Hardness	~HRc 20		HRc 20 ~ HRc 30		HRc 30 ~ HRc 45											
Cutting Dia. (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	30000	1130	23000	904	16500	510	20000	565	16500	395	25000	405	16500	430	6500	115
1.5	20000	1130	15500	904	11000	510	13000	565	11000	395	16500	405	11000	430	4500	115
2	15000	1130	11500	904	8200	510	10000	565	8400	395	12500	405	8200	430	3500	115
2.5	12000	1130	9400	904	7500	510	8000	565	6500	395	10000	405	6500	430	2600	115
3	10080	1080	7750	850	5550	450	6700	605	5550	365	8300	390	5550	450	2200	110
4	7550	1630	5850	1260	4200	680	5050	630	4200	365	6200	440	4200	680	1650	125
5	6000	1695	4700	1355	3300	735	4000	680	3300	395	5000	475	3300	680	1400	135
6	5050	1910	3850	1470	2800	810	3350	755	2800	430	4100	490	2800	810	1150	150
8	3750	1950	2950	1500	2100	810	2500	770	2100	430	3100	550	2100	810	850	140
10	3050	1890	2300	1400	1650	775	2000	720	1350	415	2500	570	1650	775	650	140
12	2500	1700	2000	1340	1350	700	1650	665	1350	365	2000	620	1350	700	555	125
14	2150	1750	1700	1355	1200	685	1450	655	1200	280	1700	680	1200	685	500	125
16	1850	1805	1450	1410	1000	735	1250	680	1000	225	1500	735	1000	690	400	130
18	1650	1865	1300	1470	920	790	1100	700	900	170	1300	790	900	695	350	135
20	1500	1920	1150	1525	840	845	1000	725	800	115	1200	850	800	700	320	140

RPM = rev / min
FEED = mm / min

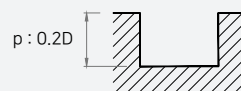
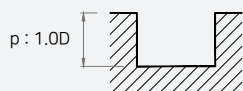


Recommended Cutting Condition

SE504 , SR504 SERIES ▶ Slotting

Workpiece	Alloy Steel, Cast Iron		Stainless Steel 300 SERIES		Stainless Steel 400 SERIES		Titanium		Inconel	
Hardness	~HB230									
Cutting Dia. (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	40,500	300	20,000	250	28,000	160	23,925	225	9330	60
1.5	27,000	300	13,000	180	18,500	160	15,730	185	6135	50
2	20,300	300	10,000	150	14,000	160	12,010	165	4685	45
2.5	16,200	300	8,000	120	11,000	165	9,490	155	3700	40
3	13,500	275	6,690	105	9,350	145	8,045	135	3135	35
4	10,100	370	5,050	135	7,000	185	6,005	195	2340	50
5	8,090	410	4,050	165	5,600	230	4,815	360	1875	60
6	6,750	480	3,350	190	4,700	265	4,030	415	1570	70
8	5,050	620	2,500	250	3,500	340	3,000	545	1170	95
10	4,050	780	2,050	320	2,800	430	2,430	695	945	120
12	3,370	750	1,680	310	2,350	435	2,010	685	780	115
14	2,890	670	1,400	280	2,000	405	1,700	820	715	150
16	2,500	630	1,250	265	1,750	370	1,500	950	600	180
18	2,250	630	1,100	260	1,550	365	1,320	1,245	515	250
20	2,000	620	1,000	260	1,400	365	1,200	1,875	480	390

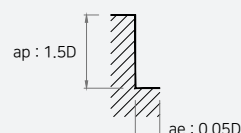
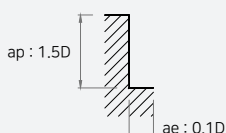
RPM = rev / min
FEED = mm / min



SE504 , SR504 SERIES ▶ Side Machining

Workpiece	Alloy Steel, Cast Iron		Stainless Steel 300 SERIES		Stainless Steel 400 SERIES		Titanium		Inconel	
Hardness	~HB230									
Cutting Dia. (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
1	40,500	335	20,000	280	28,000	180	23,925	260	9570	65
1.5	27,000	335	13,000	200	18,500	180	15,730	215	6290	55
2	20,300	335	10,000	170	14,000	180	12,010	195	4805	50
2.5	16,200	335	8,000	135	11,000	185	9,490	180	3795	45
3	13,500	310	6,690	115	9,350	160	8,045	155	3215	40
4	10,100	415	5,050	150	7,000	205	6,005	335	2520	60
5	8,090	460	4,050	185	5,600	260	4,815	410	2020	75
6	6,750	540	3,350	215	4,700	295	4,030	470	1690	85
8	5,050	700	2,500	280	3,500	380	3,000	620	1260	110
10	4,050	880	2,050	360	2,800	485	2,430	790	1020	145
12	3,370	845	1,680	350	2,350	490	2,010	780	845	140
14	2,890	755	1,400	315	2,000	455	1,700	925	715	170
16	2,500	710	1,250	295	1,750	415	1,500	1075	600	205
18	2,250	710	1,100	290	1,550	410	1,320	1410	515	275
20	2,000	700	1,000	290	1,400	410	1,200	2120	480	430

RPM = rev / min
FEED = mm / min



SE506 SERIES ► Side Machining - Normal Speed

Workpiece	Carbon Steel, Alloy Steel, Tool Steel				Stainless Steel, Ti Alloy		Inconel	
Hardness	~HRc 30		HRc 30 ~ HRc 40					
Cutting Dia. (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
6	5560	2000	3880	1370	3370	1100	1350	280
8	4200	2000	2940	1370	2490	1100	1000	280
10	3360	2000	2320	1370	1920	1100	440	280
12	2840	1680	2000	1160	1610	1000	400	250
16	2100	1260	1480	880	1160	770	310	190
20	1680	1010	1160	690	900	620	250	155

RPM = rev / min
FEED - mm / min

ap : 1.5D
ae : 0.1D

ap : 1.5D
ae : 0.05D

ap : 1.0D
ae : 0.02D

SE506 SERIES ► Side Machining - High Speed

Workpiece	Carbon Steel, Alloy Steel, Tool Steel			
Hardness	~HRc 30		HRc 30 ~ HRc 40	
Cutting Dia. (mm)	RPM	FEED	RPM	FEED
6	22200	8000	16800	6090
8	16800	8000	12600	6090
10	13400	8000	9988	5990
12	11350	6720	8400	5040
16	8400	5040	6300	3780
20	6700	4040	5040	3050

RPM = rev / min
FEED - mm / min

ap : 1.5D
ae : 0.1D

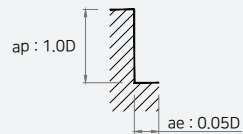
ap : 1.5D
ae : 0.05D

Recommended Cutting Condition

SR505, SR507 SERIES ► Side Machining

Workpiece	Alloy Steel, Cast Iron		Stainless Steel, Titanium		High Hardened Steel	
Hardness	SKD61					
Cutting Dia. (mm)	RPM	FEED	RPM	FEED	RPM	FEED
6	3700	450	3200	380	1100	65
8	2800	400	2350	420	950	60
10	2250	325	1990	350	750	60
12	1990	300	1550	270	600	55
16	1550	250	1250	250	500	50
20	1200	180	900	150	350	50

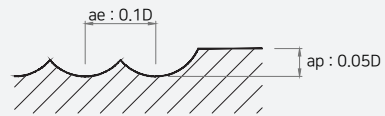
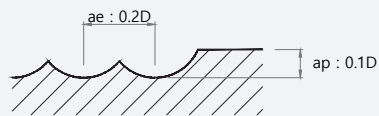
RPM = rev / min
FEED = mm / min



SB502 SERIES

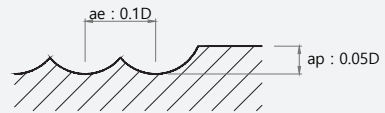
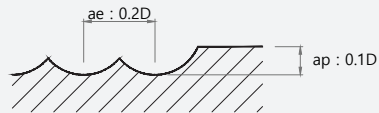
Workpiece	Carbon Steel, Cast Iron		Alloy Steel, Prehardened Steel		Heat Treated Steel			
Hardness	150~250HB		25~35HRc		35~45HRc		45~55HRc	
Cutting Dia. (mm)	RPM	FEED	RPM	FEED	RPM	FEED	RPM	FEED
2	19100	770	12800	370	10200	270	8900	190
4	10800	1100	7200	550	5700	400	5000	280
6	7700	1300	5200	660	4100	480	3600	330
8	6000	1400	4000	700	3200	510	2800	360
10	4800	1400	3200	700	2600	520	2300	370
12	4000	1400	2700	710	2200	530	1900	370

RPM = rev / min
FEED = mm / min



Workpiece	Stainless Steel 300 SERIES		Ni Alloy, Ti Alloy	
Hardness				
Cutting Dia. (mm)	RPM	FEED	RPM	FEED
2	8900	210	6400	120
4	5000	310	3600	180
6	3600	380	2600	210
8	2800	400	2000	230
10	2300	410	1600	230
12	1900	410	1400	240

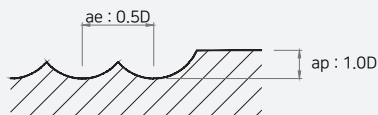
RPM = rev / min
FEED = mm / min



SB504 SERIES

Workpiece	Alloy Steel, Cast Iron		Stainless Steel 300 SERIES, Titanium		Stainless Steel 400 SERIES	
Hardness	~ HB230					
Cutting Dia. (mm)	RPM	FEED	RPM	FEED	RPM	FEED
3	13500	275	6690	105	9350	145
4	10100	370	5050	135	7000	185
5	8090	410	4050	165	5600	230
6	6750	480	3350	190	4700	265
8	5050	620	2500	250	3500	340
10	4050	780	2050	320	2800	430
12	3370	750	1680	310	2350	435
16	2530	700	1250	300	1750	395
20	2030	680	1000	290	1400	370

RPM = rev / min
FEED = mm / min



SF51H SERIES ▶ Slotting

Workpiece	Stainless Steel, Titanium alloys	
Hardness	SUS304, SUS316, Ti6A	
Cutting Dia. (mm)	RPM	FEED
3	5000	380
4	4800	350
5	4700	350
6	4400	340
7	3800	340
8	3300	340
9	3000	340
10	2700	330
12	2200	330
14	2000	310
16	1750	300
20	1300	210

RPM = rev / min
FEED = mm / min





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