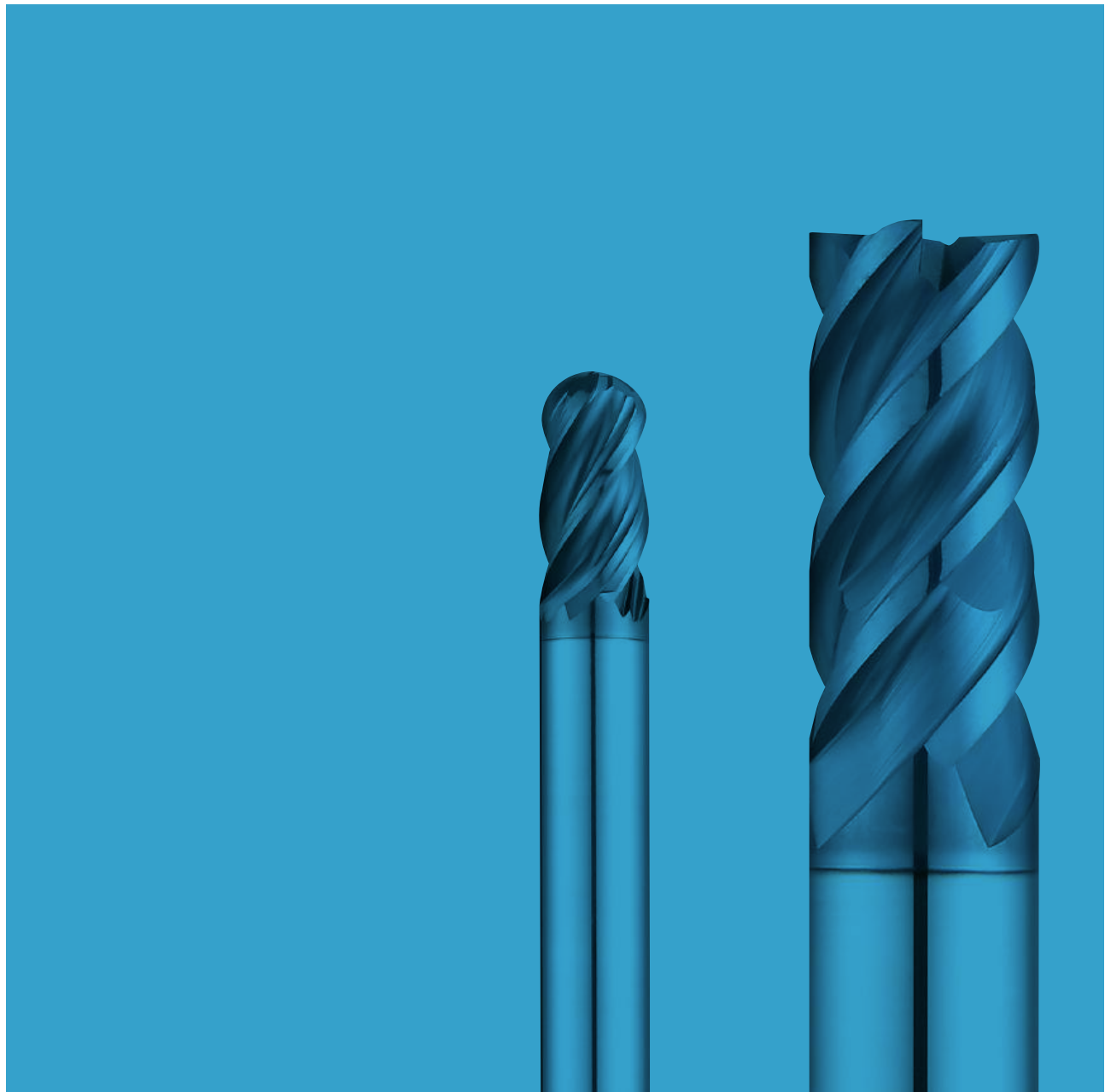


S-PRO 06



R-PRO

H-PRO

A-PRO

X-PRO

SUS MILL

S-PRO

D-PRO

A-PLUS

AL-PRO

AL MILL

ABS

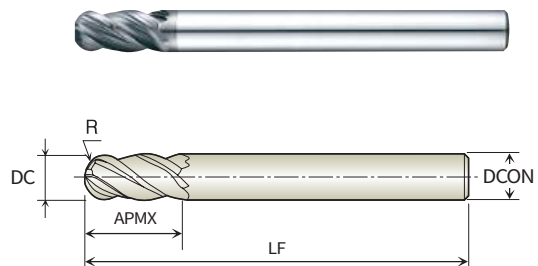
MICRO
GRAIN

MULTI

Technical data

4SUB

4날 SUS용 볼 엔드밀 4 Flutes Ball End Mills For SUS

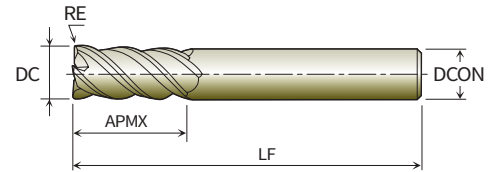


(Unit: mm)

제품코드 Product Code	직경 DC	날수 ZEFP	반경 RE	날장 APMX	생크경 DCON	전장 LF
4SUB-030-080-660	3	4	R1.5	8	6	60
4SUB-040-080-670	4	4	R2.0	8	6	70
4SUB-050-120-680	5	4	R2.5	12	6	80
4SUB-060-120-690	6	4	R3.0	12	6	90
4SUB-080-160-8A0	8	4	R4.0	16	8	100
4SUB-100-200-AA0	10	4	R5.0	20	10	100
4SUB-120-250-CA0	12	4	R6.0	25	12	100
4SUB-160-300-GA0	16	4	R8.0	30	16	100
4SUB-200-380-KA0	20	4	R10.0	38	20	100

4SUR

4날 SUS용 코너 라디우스 엔드밀 4 Flutes Corner Radius End Mills For SUS



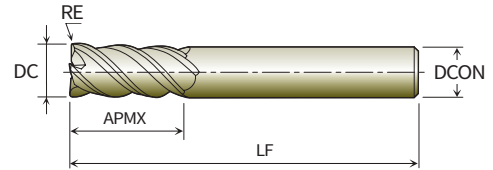
(Unit: mm)

제품코드 Product Code	직경 DC	날수 ZEPF	반경 RE	날장 APMX	샙크경 DCON	전장 LF
4SUR-010-R01-025-650	1	4	R0.1	2.5	6	50
4SUR-010-R02-025-650	1	4	R0.2	2.5	6	50
4SUR-012-R01-030-650	1.2	4	R0.1	3	6	50
4SUR-015-R01-040-650	1.5	4	R0.1	4	6	50
4SUR-015-R02-040-650	1.5	4	R0.2	4	6	50
4SUR-020-R01-060-650	2	4	R0.1	6	6	50
4SUR-020-R02-060-650	2	4	R0.2	6	6	50
4SUR-025-R02-070-650	2.5	4	R0.2	7	6	50
4SUR-030-R02-080-655	3	4	R0.2	8	6	55
4SUR-030-R03-080-655	3	4	R0.3	8	6	55
4SUR-030-R05-080-655	3	4	R0.5	8	6	55
4SUR-040-R02-100-655	4	4	R0.2	10	6	55
4SUR-040-R03-100-655	4	4	R0.3	10	6	55
4SUR-040-R05-100-655	4	4	R0.5	10	6	55
4SUR-050-R02-150-660	5	4	R0.2	15	6	60
4SUR-050-R03-150-660	5	4	R0.3	15	6	60
4SUR-050-R05-150-660	5	4	R0.5	15	6	60
4SUR-060-R02-150-660	6	4	R0.2	15	6	60
4SUR-060-R03-130-660	6	4	R0.3	13	6	60
4SUR-060-R03-150-660	6	4	R0.3	15	6	60
4SUR-060-R05-150-660	6	4	R0.5	15	6	60
4SUR-070-R03-160-865	7	4	R0.3	16	8	65
4SUR-080-R03-200-870	8	4	R0.3	20	8	70
4SUR-080-R05-200-870	8	4	R0.5	20	8	70
4SUR-080-R10-200-870	8	4	R1.0	20	8	70
4SUR-090-R03-190-A70	9	4	R0.3	19	10	70

(Unit: mm)																				
Technical data	MULTI	MICRO GRAIN	ABS	AL MILL	AL-PRO	A-PLUS	D-PRO	S-PRO	SUS MILL	X-PRO	A-PRO	H-PRO	R-PRO							
													제품코드 Product Code	직경 DC	날수 ZEFP	반경 RE	날장 APMX	생크경 DCON	전장 LF	
														4SUR-100-R03-220-A70	10	4	R0.3	22	10	70
														4SUR-100-R03-250-A75	10	4	R0.3	25	10	75
														4SUR-100-R05-250-A75	10	4	R0.5	25	10	75
														4SUR-100-R10-250-A75	10	4	R1.0	25	10	75
														4SUR-100-R15-250-A75	10	4	R1.5	25	10	75
														4SUR-100-R20-250-A75	10	4	R2.0	25	10	75
														4SUR-100-R30-250-A75	10	4	R3.0	25	10	75
														4SUR-120-R03-260-C80	12	4	R0.3	26	12	80
														4SUR-120-R05-300-C80	12	4	R0.5	30	12	80
														4SUR-120-R10-300-C80	12	4	R1.0	30	12	80
														4SUR-120-R15-300-C80	12	4	R1.5	30	12	80
														4SUR-120-R20-300-C80	12	4	R2.0	30	12	80
														4SUR-120-R30-300-C80	12	4	R3.0	30	12	80
														4SUR-120-R40-300-C80	12	4	R4.0	30	12	80
														4SUR-140-R03-260-E90	14	4	R0.3	26	14	90
														4SUR-160-R03-320-GA0	16	4	R0.3	32	16	100
														4SUR-180-R03-320-IA0	18	4	R0.3	32	18	100
														4SUR-200-R03-380-KA0	20	4	R0.3	38	20	100

4SURA

4날 인코넬용 코너 래디우스 엔드밀 4 Flutes Corner Radius End Mills For INCONEL



(Unit: mm)

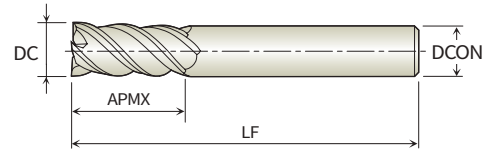
제품코드 Product Code	직경 DC	날수 ZEPF	반경 RE	날장 APMX	샙크경 DCON	전장 LF
4SURA-010-R01-025-650	1	4	R0.1	2.5	6	50
4SURA-010-R02-025-650	1	4	R0.2	2.5	6	50
4SURA-012-R01-030-650	1.2	4	R0.1	3	6	50
4SURA-015-R01-040-650	1.5	4	R0.1	4	6	50
4SURA-015-R02-040-650	1.5	4	R0.2	4	6	50
4SURA-020-R01-060-650	2	4	R0.1	6	6	50
4SURA-020-R02-060-650	2	4	R0.2	6	6	50
4SURA-025-R02-070-650	2.5	4	R0.2	7	6	50
4SURA-030-R02-080-655	3	4	R0.2	8	6	55
4SURA-030-R03-080-655	3	4	R0.3	8	6	55
4SURA-030-R05-080-655	3	4	R0.5	8	6	55
4SURA-040-R02-100-655	4	4	R0.2	10	6	55
4SURA-040-R03-100-655	4	4	R0.3	10	6	55
4SURA-040-R05-100-655	4	4	R0.5	10	6	55
4SURA-050-R02-150-660	5	4	R0.2	15	6	60
4SURA-050-R03-150-660	5	4	R0.3	15	6	60
4SURA-050-R05-150-660	5	4	R0.5	15	6	60
4SURA-060-R02-150-660	6	4	R0.2	15	6	60
4SURA-060-R03-130-660	6	4	R0.3	13	6	60
4SURA-060-R03-150-660	6	4	R0.3	15	6	60
4SURA-060-R05-150-660	6	4	R0.5	15	6	60
4SURA-070-R03-160-865	7	4	R0.3	16	8	65
4SURA-080-R03-200-870	8	4	R0.3	20	8	70
4SURA-080-R05-200-870	8	4	R0.5	20	8	70
4SURA-080-R10-200-870	8	4	R1.0	20	8	70
4SURA-090-R03-190-A70	9	4	R0.3	19	10	70

(Unit: mm)

(Unit: mm)							
제품코드 Product Code	직경 DC	날수 ZEFP	반경 RE	날장 APMX	생크경 DCON	전장 LF	R-PRO
4SURA-100-R03-220-A70	10	4	R0.3	22	10	70	
4SURA-100-R03-250-A75	10	4	R0.3	25	10	75	H-PRO
4SURA-100-R05-250-A75	10	4	R0.5	25	10	75	
4SURA-100-R10-250-A75	10	4	R1.0	25	10	75	
4SURA-100-R15-250-A75	10	4	R1.5	25	10	75	A-PRO
4SURA-100-R20-250-A75	10	4	R2.0	25	10	75	
4SURA-100-R30-250-A75	10	4	R3.0	25	10	75	
4SURA-120-R03-260-C80	12	4	R0.3	26	12	80	X-PRO
4SURA-120-R05-300-C80	12	4	R0.5	30	12	80	
4SURA-120-R10-300-C80	12	4	R1.0	30	12	80	
4SURA-120-R15-300-C80	12	4	R1.5	30	12	80	SUS MILL
4SURA-120-R20-300-C80	12	4	R2.0	30	12	80	
4SURA-120-R30-300-C80	12	4	R3.0	30	12	80	
4SURA-120-R40-300-C80	12	4	R4.0	30	12	80	S-PRO
4SURA-140-R03-260-E90	14	4	R0.3	26	14	90	
4SURA-160-R03-320-GA0	16	4	R0.3	32	16	100	
4SURA-180-R03-320-IA0	18	4	R0.3	32	18	100	D-PRO
4SURA-200-R03-380-KA0	20	4	R0.3	38	20	100	
							A-PLUS
							AL-PRO
							AL MILL
							ABS
							MICRO GRAIN
							MULTI
Technical data							

4SUE

4날 SUS용 플랫 엔드밀 4 Flutes Flat End Mills For SUS



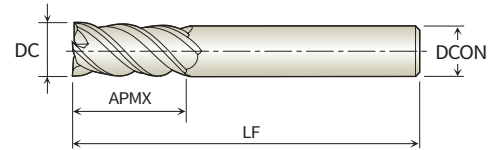
(Unit: mm)

제품코드 Product Code	직경 DC	날수 ZFP	날장 APMX	생크경 DCON	전장 LF
4SUE-010-025-650	1	4	2.5	6	50
4SUE-012-030-650	1.2	4	3	6	50
4SUE-015-040-650	1.5	4	4	6	50
4SUE-020-060-650	2	4	6	6	50
4SUE-025-070-650	2.5	4	7	6	50
4SUE-030-080-655	3	4	8	6	55
4SUE-030-100-660	3	4	10	6	60
4SUE-035-100-655	3.5	4	10	6	55
4SUE-040-100-655	4	4	10	6	55
4SUE-040-120-660	4	4	12	6	60
4SUE-045-120-655	4.5	4	12	6	55
4SUE-050-150-655	5	4	15	6	55
4SUE-055-150-660	5.5	4	15	6	60
4SUE-060-130-660	6	4	13	6	60
4SUE-060-150-660	6	4	15	6	60
4SUE-060-200-665	6	4	20	6	65
4SUE-065-150-860	6.5	4	15	8	60
4SUE-070-160-865	7	4	16	8	65
4SUE-070-200-870	7	4	20	8	70
4SUE-080-160-865	8	4	16	8	65
4SUE-080-200-870	8	4	20	8	70
4SUE-080-250-870	8	4	25	8	70
4SUE-080-300-880	8	4	30	8	80
4SUE-085-200-A70	8.5	4	20	10	70
4SUE-090-190-A70	9	4	19	10	70
4SUE-090-250-A80	9	4	25	10	80

	R-PRO	(Unit: mm)				
		제품코드 Product Code	직경 DC	날수 ZEPF	날장 APMX	생크경 DCON
		4SUE-100-220-A70	10	4	22	10
		4SUE-100-250-A75	10	4	25	10
		4SUE-100-350-A85	10	4	35	10
		4SUE-120-260-C80	12	4	26	12
		4SUE-120-300-C80	12	4	30	12
		4SUE-120-400-C90	12	4	40	12
		4SUE-140-260-E90	14	4	26	14
		4SUE-160-320-GA0	16	4	32	16
		4SUE-180-320-IA0	18	4	32	18
		4SUE-200-380-KA0	20	4	38	20
	SUS MILL					
	S-PRO					
	D-PRO					
	A-PLUS					
	AL-PRO					
	AL MILL					
	ABS					
	MICRO GRAIN					
	MULTI					
	Technical data					

4SUEA

4날 인코넬용 플랫 엔드밀
4 Flutes Flat End Mills For INCONEL



(Unit: mm)

제품코드 Product Code	직경 DC	날수 ZFP	날장 APMX	생크경 DCON	전장 LF
4SUEA-010-025-650	1	4	2.5	6	50
4SUEA-012-030-650	1.2	4	3	6	50
4SUEA-015-040-650	1.5	4	4	6	50
4SUEA-020-060-650	2	4	6	6	50
4SUEA-025-070-650	2.5	4	7	6	50
4SUEA-030-080-655	3	4	8	6	55
4SUEA-030-100-660	3	4	10	6	60
4SUEA-035-100-655	3.5	4	10	6	55
4SUEA-040-100-655	4	4	10	6	55
4SUEA-040-120-660	4	4	12	6	60
4SUEA-045-120-655	4.5	4	12	6	55
4SUEA-050-150-655	5	4	15	6	55
4SUEA-055-150-660	5.5	4	15	6	60
4SUEA-060-130-660	6	4	13	6	60
4SUEA-060-150-660	6	4	15	6	60
4SUEA-060-200-665	6	4	20	6	65
4SUEA-065-150-860	6.5	4	15	8	60
4SUEA-070-160-865	7	4	16	8	65
4SUEA-070-200-870	7	4	20	8	70
4SUEA-080-160-865	8	4	16	8	65
4SUEA-080-200-870	8	4	20	8	70
4SUEA-080-250-870	8	4	25	8	70
4SUEA-080-300-880	8	4	30	8	80
4SUEA-085-200-A70	8.5	4	20	10	70
4SUEA-090-190-A70	9	4	19	10	70
4SUEA-090-250-A80	9	4	25	10	80

	R-PRO	(Unit: mm)				
		제품코드 Product Code	직경 DC	날수 ZEPF	날장 APMX	생크경 DCON
		4SUEA-100-220-A70	10	4	22	10
		4SUEA-100-250-A75	10	4	25	10
		4SUEA-100-350-A85	10	4	35	10
		4SUEA-120-260-C80	12	4	26	12
		4SUEA-120-300-C80	12	4	30	12
		4SUEA-120-400-C90	12	4	40	12
		4SUEA-140-260-E90	14	4	26	14
		4SUEA-160-320-GA0	16	4	32	16
		4SUEA-180-320-IA0	18	4	32	18
		4SUEA-200-380-KA0	20	4	38	20
	SUS MILL					
	S-PRO					
	D-PRO					
	A-PLUS					
	AL-PRO					
	AL MILL					
	ABS					
	MICRO GRAIN					
	MULTI					
	Technical data					

R-PRO

H-PRO

A-PRO

X-PRO

SUS MILL

S-PRO

D-PRO

A-PLUS

AL-PRO

AL MILL

ABS

MICRO
GRAIN

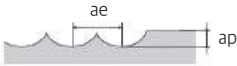
MULTI

Technical data

S-PRO

4SUB

Milling Condition

피삭재	구상흑연주철		SUS 300 계열		SUS 400 계열	
Workpiece	Cast Iron		Stainless Steel (300 Series)		Stainless Steel (400 Series)	
Radius of Ball Nose	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
R1.5	12,000~15,000	250~300	6,000~8,000	80~150	8,000~12,000	130~180
R2.0	8,000~12,000	300~400	4,500~7,000	100~150	6,000~8,000	150~200
R2.5	7,000~9,000	400~500	3,000~5,000	150~200	4,500~7,000	200~250
R3.0	6,000~8,000	450~600	2,500~4,500	180~230	3,000~5,000	230~280
R4.0	4,500~7,000	500~700	2,300~3,500	230~280	2,500~4,500	400~500
R5.0	3,000~5,000	700~900	1,500~2,500	280~330	2,300~3,500	400~500
R6.0	2,500~4,500	700~900	1,200~2,000	280~330	1,500~2,500	300~400
R8.0	2,300~3,500	700~900	1,000~1,600	280~330	1,500~2,500	380~430
R10.0	1,500~2,500	600~900	800~1,200	280~330	1,300~1,800	350~400
Depth of Cut						

⚠ 경고 WARNING

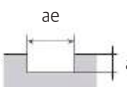
1. 정밀하고 강성이 있는 홀더와 장비를 사용해주시요.
2. 절입량의 ap는 축방향 절입량을 표시합니다.
3. 회전수와 테이블 이송은 같은 비율로 조정해주시요.
4. 상기 조건표는 참고 자료이니 실제 가공 시 가공 형상, 기계 용량, 작업환경에 따라 조건을 조정해서 가공하시기 바랍니다.

1. Use a rigid precise machine and holder.
2. ap(mm) : Axial Depth of Cut.
3. Adjust both Spindle speed and Feedrate by the same proportion.
4. The above condition are only reference. In actual machining conditions adjust these parameters according to the milling shape, machine capability and the operation environment.

S-PRO

4SUR & 4SURA

Milling Condition

피삭재	구상흑연주철		SUS 300 계열		SUS 400 계열	
Workpiece	Cast Iron		Stainless Steel (300 Series)		Stainless Steel (400 Series)	
Outside Diameter	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
1.0	35,000~42,000	250~300	18,000~25,000	230~280	18,000~25,000	150~200
2.0	18,000~25,000	250~300	12,000~18,000	150~200	12,000~20,000	150~200
3.0	12,000~20,000	250~350	6,000~10,000	80~120	8,000~13,000	120~170
4.0	8,000~13,000	320~420	4,000~6,000	100~150	6,000~10,000	150~200
5.0	6,000~10,000	230~280	3,500~4,000	150~200	5,000~6,000	300~500
6.0	5,500~6,000	500~700	3,200~3,700	150~200	5,000~6,000	400~600
8.0	4,000~4,500	600~750	2,500~3,000	230~280	3,200~3,700	500~700
10.0	3,200~3,700	650~850	1,800~2,300	300~350	2,800~3,300	600~750
12.0	2,800~3,300	700~800	1,500~2,000	300~350	2,300~2,800	600~750
16.0	2,000~2,500	550~650	1,200~2,000	250~300	1,800~2,300	400~500
18.0	1,800~2,300	500~650	1,000~1,600	250~300	1,500~2,000	400~500
20.0	1,500~2,000	500~650	800~1,200	250~300	1,200~1,800	350~450
Depth of Cut	 $ap=1.0D$ $ae=1.0D(\text{Max.})$				 $ap=1.0D(\text{Max.})$ $ae=0.5D(\text{Max.})$	

△ 경고 WARNING

- 정밀하고 강성이 있는 홀더와 장비를 사용해주시시오.
- 절입량의 ap 는 측방향 절입량을 표시합니다.
- 회전수와 테이블 이송은 같은 비율로 조정해주시시오.
- 상기 조건표는 참고 자료이니 실제 가공 시 가공 형상, 기계 용량, 작업환경에 따로 조건을 조정해서 가공하시기 바랍니다.

- Use a rigid precise machine and holder.
- $ap(\text{mm})$: Axial Depth of Cut.
- Adjust both Spindle speed and Feedrate by the same proportion.
- The above condition are only reference. In actual machining conditions adjust these parameters according to the milling shape, machine capability and the operation environment.

R-PRO

H-PRO

A-PRO

X-PRO

SUS MILL

S-PRO

D-PRO

A-PLUS

AL-PRO

AL MILL

ABS

MICRO GRAIN

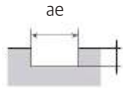
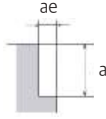
MULTI

Technical data

S-PRO

4SUE & 4SUEA

Milling Condition

피삭재	구상흑연주철		SUS 300 계열		SUS 400 계열	
Workpiece	Cast Iron		Stainless Steel (300 Series)		Stainless Steel (400 Series)	
Outside Diameter	RPM	Feed (mm/min)	RPM	Feed (mm/min)	RPM	Feed (mm/min)
1.0	35,000~42,000	250~300	18,000~25,000	230~280	18,000~25,000	150~200
2.0	18,000~25,000	250~300	12,000~18,000	150~200	12,000~20,000	150~200
3.0	12,000~20,000	250~350	6,000~10,000	80~120	8,000~13,000	120~170
4.0	8,000~13,000	320~420	4,000~6,000	100~150	6,000~10,000	150~200
5.0	6,000~10,000	230~280	3,500~4,000	150~200	5,000~6,000	300~500
6.0	5,500~6,000	500~700	3,200~3,700	150~200	5,000~6,000	400~600
8.0	4,000~4,500	600~750	2,500~3,000	230~280	3,200~3,700	500~700
10.0	3,200~3,700	650~850	1,800~2,300	300~350	2,800~3,300	600~750
12.0	2,800~3,300	700~800	1,500~2,000	300~350	2,300~2,800	600~750
16.0	2,000~2,500	550~650	1,200~2,000	250~300	1,800~2,300	400~500
18.0	1,800~2,300	500~650	1,000~1,600	250~300	1,500~2,000	400~500
20.0	1,500~2,000	500~650	800~1,200	250~300	1,200~1,800	350~450
Depth of Cut	 $ap=1.0D$ $ae=1.0D(\text{Max.})$				 $ap=1.0D(\text{Max.})$ $ae=0.5D(\text{Max.})$	

⚠ 경고 WARNING

- 정밀하고 강성이 있는 홀더와 장비를 사용해주시시오.
- 절입량의 ap 는 축방향 절입량을 표시합니다.
- 회전수와 테이블 이송은 같은 비율로 조정해주시시오.
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