

피삭재 Work Material		프리하든강 Prehardened Steel NAK, HPM			열처리강 Hardened Steel SKD61, STAVAX		
		35~45 HRC			55~60 HRC		
날경 Dia	유효장 Effective Length	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)
2.5	10	15,000	1,800	0.130	12,000	900	0.070
	16	12,000	1,200	0.080	9,000	550	0.050
	20	10,000	1,000	0.070	8,000	450	0.050
3	12	13,000	1,800	0.150	10,000	950	0.080
	16	12,000	1,500	0.120	9,000	800	0.070
	20	11,000	1,200	0.100	8,000	600	0.060
	25	10,000	1,000	0.080	7,500	500	0.050
	30	9,000	800	0.060	6,500	400	0.030
	35	8,000	500	0.030	5,500	300	0.010
4	12	10,000	2,300	0.200	9,000	1,000	0.100
	16	8,000	2,000	0.160	7,000	800	0.090
	20	7,000	1,700	0.140	6,000	750	0.080
	25	7,000	1,500	0.120	5,500	700	0.070
	30	6,000	900	0.080	4,500	500	0.040
	35	5,000	500	0.050	4,000	400	0.020
6	20	12,000	1,300	0.100	12,000	1,100	0.090
	30	11,000	1,100	0.090	11,000	900	0.070
8	24	12,000	1,300	0.100	12,000	1,100	0.090
	40	11,000	1,100	0.090	11,000	900	0.070
10	30	12,000	1,400	0.100	12,000	1,200	0.090
	50	11,000	1,200	0.090	11,000	1,000	0.070
12	30	10,000	1,600	0.100	10,000	1,400	0.090
	55	9,000	1,400	0.090	9,000	1,200	0.070

NOTE

- 정밀하고 강성이 있는 홀더와 장비를 사용해 주십시오.
- ap는 축방향의 절입량을 표시합니다. ae는 반경방향의 절입량을 표시합니다.
- ae의 설정은 [날경-(2x코너R값)] x 20~40% 범위로 권장합니다.
- 홀 절삭시, 조건표의 ap와 피드를 50%이하로 설정해 주십시오.
- 피삭재와 가공형상에 따라 적절한 절삭유를 사용해 주십시오.
- 절삭 조건표는 참고자료 입니다. 실제 가공시에는 가공형상, 기계에 따라 조건을 조정해서 가공하시기 바랍니다.

- Use a rigid and precise machine and holder.
- ap(mm) : Axial Depth of Cut / ae(mm) : Radial Depth of Cut
- We recommend setting ae in the range of [Dia-(2xCorner R value)] x 20~40%
- For slotting, set ap and Feed in the condition table to 50% or less.
- Use the appropriate coolant for the workpiece and machining shape.
- The cutting condition table is a reference. In actual machining, adjust the conditions according to the machining shape and machine.

HMRR430, HMR430, WMRR430, WMR430 절삭조건 참고 자료
HMRR430, HMR430, WMRR430, WMR430 Cutting Conditions Reference Table

WIDE-MAX Series										
HY-MAX Series										
피삭재 Work Material		프리하든강 Prehardened Steel NAK, HPM			열처리강 Hardened Steel SKD61, STAVAX			열처리강 Hardened Steel SKD11		
		35~45 HRC			45~55 HRC			55~60 HRC		
날경 Dia	유효장 Effective Length	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)
0.6	2	30,000	1,200	0.030	25,000	1,000	0.020	23,000	800	0.010
	4	25,000	900	0.020	23,000	800	0.015	20,000	600	0.007
	6	23,000	600	0.010	20,000	400	0.008	18,000	300	0.005
0.8	2	28,000	2,000	0.040	25,000	1,600	0.030	23,000	1,400	0.020
	4	28,000	1,800	0.030	25,000	1,400	0.020	23,000	1,200	0.010
	6	23,000	1,400	0.020	20,000	1,100	0.010	18,000	900	0.007
1	2.5	25,000	2,100	0.050	20,000	1,900	0.040	16,000	1,000	0.020
	4	23,000	1,800	0.040	18,000	1,500	0.030	14,000	900	0.010
	6	18,000	1,400	0.020	14,000	1,100	0.010	10,000	800	0.007
	8	16,000	1,200	0.020	12,000	950	0.010	8,000	650	0.005
	10	14,000	1,000	0.010	10,000	800	0.007	6,000	500	0.005
	12	12,000	800	0.007	8,000	650	0.005	5,000	400	0.003
1.5	4	25,000	2,000	0.050	20,000	1,600	0.040	15,000	1,100	0.030
	6	20,000	1,600	0.040	18,000	1,400	0.030	14,000	1,000	0.020
	8	18,000	1,200	0.040	14,000	1,200	0.030	10,000	750	0.010
	10	16,000	1,100	0.030	13,000	1,000	0.020	9,000	700	0.007
	12	14,000	1,000	0.030	12,000	850	0.020	8,000	630	0.007
	14	12,000	900	0.020	10,000	800	0.010	7,000	550	0.005
	16	12,000	850	0.020	9,500	700	0.010	6,500	500	0.005
	20	8,500	550	0.010	7,000	400	0.070	5,500	300	0.005
2	6	18,000	1,800	0.060	15,000	1,500	0.050	12,000	1,100	0.030
	8	16,000	1,600	0.050	12,000	1,200	0.040	10,000	950	0.020
	10	14,000	1,400	0.040	12,000	1,100	0.030	9,500	850	0.010
	12	12,000	1,200	0.040	10,000	1,000	0.030	8,000	800	0.010
	16	10,000	1,000	0.030	9,000	800	0.020	7,500	650	0.007
	20	9,000	750	0.020	8,500	700	0.010	6,000	500	0.005
2.5	10	14,000	1,600	0.070	10,000	1,400	0.050	8,000	900	0.030
	16	10,000	1,200	0.050	8,000	1,100	0.020	6,000	700	0.010
	20	8,500	1,100	0.050	7,500	950	0.020	5,000	650	0.010
3	10	18,000	2,200	0.100	13,000	1,800	0.070	10,000	1,200	0.050
	12	12,000	1,600	0.080	10,000	1,400	0.060	8,000	1,000	0.040
	16	10,000	1,400	0.070	8,500	1,200	0.050	7,000	800	0.030
	20	9,000	1,400	0.070	7,500	1,200	0.040	6,000	800	0.020
	25	8,000	1,200	0.060	7,000	1,000	0.030	5,000	700	0.010
	30	7,000	1,200	0.030	6,500	1,000	0.020	4,500	600	0.007
4	12	12,000	2,000	0.100	10,000	1,500	0.060	8,500	1,100	0.050
	16	10,000	1,800	0.100	8,000	1,400	0.060	6,000	900	0.050
	20	9,000	1,500	0.080	7,000	1,300	0.050	5,500	850	0.030
	25	6,500	1,400	0.080	5,500	1,200	0.050	4,500	750	0.030
	30	5,000	1,000	0.050	4,000	800	0.020	4,000	600	0.010
	35	4,500	900	0.030	3,800	750	0.010	3,200	500	0.007

피삭재 Work Material		프리하든강 Prehardened Steel NAK, HPM			열처리강 Hardened Steel SKD61, STAVAX			열처리강 Hardened Steel SKD11		
		35~45 HRC			45~55 HRC			55~60 HRC		
날경 Dia	유효장 Effective Length	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)
5	20	7,000	1,800	0.100	6,000	1,600	0.070	5,000	1,100	0.050
6	20	7,000	1,800	0.120	6,000	1,400	0.098	5,500	1,000	0.090
	30	6,000	1,500	0.080	5,500	1,200	0.065	5,000	900	0.050
8	24	6,000	2,300	0.150	5,800	2,200	0.100	5,000	2,200	0.050
	40	5,000	1,900	0.100	4,800	1,800	0.050	4,000	1,700	0.030
10	30	5,600	2,700	0.150	5,200	2,400	0.100	4,000	2,200	0.050
	50	4,600	2,200	0.100	4,200	1,900	0.050	3,000	1,600	0.030
12	30	4,500	2,500	0.200	4,000	1,800	0.150	3,000	1,400	0.050
	55	3,500	1,900	0.150	3,000	1,400	0.100	2,000	850	0.030

NOTE

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- ae의 설정은 [날경-(2x코너R값)] x 20~40% 범위로 권장합니다.
- 홀 절삭시, 조건표의 ap와 피드를 50%이하로 설정해 주십시오.
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- Use the appropriate coolant for the workpiece and machining shape.
- The cutting condition table is a reference. In actual machining, adjust the conditions according to the machining shape and machine.

HMRE230 절삭조건 참고 자료

HMRE230 Cutting Conditions Reference Table

피삭재 Work Material		탄소강,합금강,주철 Carbon Steel, Alloy Steel, Cast Iron S50C, SCM, FC250			프리하든강 Prehardened Steel NAK, HPM			열처리강 Hardened Steel SKD61, STAVAX		
		~1000 N/mm ²			35~45 HRC			45~52 HRC		
날경 Dia	유효장 Effective Length	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)
0.1	0.5	40,000	130	0.003	40,000	110	0.003	40,000	90	0.002
0.15	0.5	40,000	170	0.004	40,000	150	0.003	40,000	120	0.003
	1	40,000	130	0.002	40,000	110	0.002	40,000	90	0.002
0.2	0.5	40,000	340	0.008	36,000	240	0.007	32,000	170	0.005
	1	40,000	310	0.006	36,000	210	0.005	32,000	140	0.004
	1.5	36,000	160	0.005	34,000	140	0.004	30,000	120	0.003
	2	32,000	120	0.003	30,000	100	0.003	27,000	60	0.002
0.3	1	36,000	380	0.016	34,000	260	0.013	30,000	210	0.010
	1.5	36,000	380	0.015	34,000	260	0.012	30,000	210	0.008
	2	30,000	290	0.010	30,000	230	0.008	27,000	170	0.005
	3	30,000	270	0.006	30,000	210	0.005	27,000	150	0.003
0.4	1	28,000	540	0.024	27,000	380	0.020	24,000	280	0.015
	2	28,000	540	0.020	27,000	380	0.016	24,000	280	0.013
	3	26,000	400	0.013	25,000	310	0.010	22,000	230	0.008
	4	26,000	380	0.008	25,000	290	0.007	22,000	210	0.005
	5	23,000	270	0.008	22,000	200	0.007	19,000	160	0.005
	6	23,000	260	0.005	22,000	190	0.004	19,000	150	0.003

피삭재 Work Material		탄소강,합금강,주철 Carbon Steel, Alloy Steel, Cast Iron S50C, SCM, FC250			프리하든강 Prehardened Steel NAK, HPM			열처리강 Hardened Steel SKD61, STAVAX		
		35~45 HRC			35~45 HRC			45~52 HRC		
날경 Dia	유효장 Effective Length	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)	Spindle Speed (min ⁻¹)	Feed (mm/min)	Depth of Cut ap(mm)
0.5	2	28,000	550	0.024	27,000	440	0.020	24,000	290	0.015
	3	26,000	410	0.016	25,000	360	0.013	22,000	240	0.010
	4	26,000	410	0.014	25,000	320	0.012	22,000	230	0.009
	5	26,000	390	0.010	25,000	300	0.008	22,000	210	0.007
	6	23,000	320	0.008	22,000	210	0.007	19,000	170	0.005
	8	23,000	270	0.004	22,000	170	0.003	19,000	140	0.003
	10	20,000	210	0.002	19,000	120	0.002	17,000	100	0.002
0.6	2	28,000	790	0.032	27,000	560	0.026	24,000	420	0.018
	3	26,000	670	0.028	24,000	500	0.023	21,000	370	0.016
	4	26,000	670	0.019	24,000	500	0.016	21,000	370	0.012
	5	26,000	590	0.016	24,000	440	0.013	21,000	330	0.010
	6	26,000	590	0.012	24,000	440	0.010	21,000	330	0.008
	8	23,000	460	0.010	21,000	280	0.008	19,000	250	0.006
	10	23,000	430	0.006	21,000	250	0.005	19,000	220	0.003
0.7	2	28,000	790	0.048	27,000	560	0.039	24,000	420	0.025
	4	26,000	590	0.032	24,000	440	0.026	21,000	330	0.018
	6	26,000	580	0.014	24,000	430	0.012	21,000	320	0.009
0.8	2	28,000	790	0.064	27,000	630	0.052	24,000	470	0.035
	3	26,000	730	0.048	24,000	560	0.039	21,000	410	0.030
	4	26,000	730	0.040	24,000	560	0.033	21,000	410	0.024
	5	26,000	590	0.032	24,000	560	0.026	21,000	410	0.017
	6	26,000	590	0.024	24,000	560	0.020	21,000	410	0.012
	8	26,000	590	0.016	24,000	440	0.013	21,000	330	0.008
	10	23,000	400	0.012	21,000	240	0.010	19,000	210	0.006
	12	23,000	370	0.008	21,000	210	0.007	19,000	180	0.003
	3	26,000	1,100	0.056	24,000	910	0.046	21,000	680	0.035
	4	26,000	1,100	0.052	24,000	910	0.042	21,000	680	0.032
1	5	26,000	1,100	0.040	24,000	910	0.033	21,000	680	0.025
	6	23,000	890	0.032	22,000	770	0.026	19,000	560	0.020
	8	23,000	890	0.028	22,000	770	0.023	19,000	560	0.018
	10	23,000	800	0.020	22,000	690	0.016	19,000	450	0.013
	12	20,000	600	0.016	19,000	390	0.013	17,000	340	0.010
	14	20,000	600	0.014	19,000	390	0.011	17,000	340	0.009
	16	20,000	510	0.009	19,000	370	0.007	17,000	290	0.006
	20	18,000	420	0.005	17,000	260	0.004	15,000	200	0.003
1.2	4	23,000	970	0.064	22,000	760	0.052	19,000	500	0.040
	6	23,000	970	0.056	22,000	760	0.046	19,000	500	0.035
	8	20,000	770	0.036	19,000	660	0.029	17,000	450	0.023
	10	20,000	770	0.024	19,000	660	0.020	17,000	450	0.015
	12	20,000	620	0.024	19,000	530	0.020	17,000	400	0.015
	14	18,000	530	0.020	17,000	460	0.016	15,000	340	0.013
	16	18,000	520	0.016	17,000	450	0.013	15,000	330	0.010
1.5	4	20,000	940	0.008	19,000	660	0.007	17,000	500	0.005
	6	20,000	940	0.008	19,000	660	0.007	17,000	500	0.005
	8	18,000	770	0.048	17,000	590	0.039	15,000	440	0.030
	10	18,000	700	0.048	17,000	570	0.039	15,000	430	0.030
	12	18,000	700	0.048	17,000	570	0.039	15,000	400	0.030
	14	18,000	690	0.030	17,000	560	0.025	15,000	390	0.019
	16	16,000	540	0.028	15,000	340	0.023	13,000	300	0.018
	20	16,000	480	0.024	15,000	300	0.020	13,000	260	0.015