



- **고경도강(HRc52~62), 프리하든강 계열의 고정밀 가공엔드밀**
- 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 날부인선의 조도가 뛰어나 피삭재의 면조도가 우수합니다.
- 초미립자 초경합금(0.2 μ m)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.
- **Endmills for pre-hardened and hardened steel(HRc52~62)**
- Good wear resistance by Si-based PVD coating.
- High precise edge tolerance.
- Very nice work surface finish.
- Outstanding performance at high speed machining by ultra fine (0.2 μ m) WC grade.

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UWC
코팅층

TISIN
Coating

R
±0.005

R
±0.01

30°
Helix Angle

CUTTING
DATA

0.05 ~ 2.5R 3 ~ 6R 409P

D Size	D Tolerance
Ø 0.1 ~ 0.15	+0 ~ -0.005mm
Ø 0.2 ~ 5	+0 ~ -0.01mm
Ø 6 ~ 12	-0.005 ~ -0.015mm

단위 : mm

Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2HRB 001 003 S04	0.05R X 0.1	0.15	0.3	40	4		2HRB 005 140 S04	0.25R X 0.5	0.5	14	45	4	
2HRB 001 005 S04	0.05R X 0.1	0.15	0.5	40	4		2HRB 006 010 S04	0.3R X 0.6	0.6	1	45	4	
2HRB 0015 003 S04	0.075R X 0.15	0.15	0.3	40	4		2HRB 006 020 S04	0.3R X 0.6	0.6	2	45	4	
2HRB 0015 005 S04	0.075R X 0.15	0.15	0.5	40	4		2HRB 006 030 S04	0.3R X 0.6	0.6	3	45	4	
2HRB 0015 010 S04	0.075R X 0.15	0.15	1	40	4		2HRB 006 040 S04	0.3R X 0.6	0.6	4	45	4	
2HRB 002 005 S04	0.1R X 0.2	0.2	0.5	40	4		2HRB 006 050 S04	0.3R X 0.6	0.6	5	45	4	
2HRB 002 010 S04	0.1R X 0.2	0.2	1	40	4		2HRB 006 060 S04	0.3R X 0.6	0.6	6	45	4	
2HRB 002 015 S04	0.1R X 0.2	0.2	1.5	40	4		2HRB 006 080 S04	0.3R X 0.6	0.6	8	45	4	
2HRB 002 020 S04	0.1R X 0.2	0.2	2	40	4		2HRB 006 100 S04	0.3R X 0.6	0.6	10	45	4	
2HRB 002 025 S04	0.1R X 0.2	0.2	2.5	40	4		2HRB 006 120 S04	0.3R X 0.6	0.6	12	45	4	
2HRB 002 030 S04	0.1R X 0.2	0.2	3	40	4		2HRB 006 140 S04	0.3R X 0.6	0.6	14	45	4	
2HRB 0025 005 S04	0.125R X 0.25	0.25	0.5	40	4		2HRB 006 160 S04	0.3R X 0.6	0.6	16	45	4	
2HRB 0025 010 S04	0.125R X 0.25	0.25	1	40	4		2HRB 007 020 S04	0.35R X 0.7	0.7	2	45	4	
2HRB 0025 015 S04	0.125R X 0.25	0.25	1.5	40	4		2HRB 007 040 S04	0.35R X 0.7	0.7	4	45	4	
2HRB 0025 020 S04	0.125R X 0.25	0.25	2	40	4		2HRB 007 060 S04	0.35R X 0.7	0.7	6	45	4	
2HRB 0025 025 S04	0.125R X 0.25	0.25	2.5	40	4		2HRB 007 080 S04	0.35R X 0.7	0.7	8	45	4	
2HRB 0025 030 S04	0.125R X 0.25	0.25	3	40	4		2HRB 007 100 S04	0.35R X 0.7	0.7	10	45	4	
2HRB 003 010 S04	0.15R X 0.3	0.3	1	40	4		2HRB 007 120 S04	0.35R X 0.7	0.7	12	45	4	
2HRB 003 015 S04	0.15R X 0.3	0.3	1.5	40	4		2HRB 008 020 S04	0.4R X 0.8	0.8	2	45	4	
2HRB 003 020 S04	0.15R X 0.3	0.3	2	40	4		2HRB 008 030 S04	0.4R X 0.8	0.8	3	45	4	
2HRB 003 025 S04	0.15R X 0.3	0.3	2.5	40	4		2HRB 008 040 S04	0.4R X 0.8	0.8	4	45	4	
2HRB 003 030 S04	0.15R X 0.3	0.3	3	40	4		2HRB 008 050 S04	0.4R X 0.8	0.8	5	45	4	
2HRB 003 035 S04	0.15R X 0.3	0.3	3.5	40	4		2HRB 008 060 S04	0.4R X 0.8	0.8	6	45	4	
2HRB 003 040 S04	0.15R X 0.3	0.3	4	40	4		2HRB 008 080 S04	0.4R X 0.8	0.8	8	45	4	
2HRB 003 050 S04	0.15R X 0.3	0.3	5	40	4		2HRB 008 100 S04	0.4R X 0.8	0.8	10	45	4	
2HRB 004 010 S04	0.2R X 0.4	0.4	1	40	4		2HRB 008 120 S04	0.4R X 0.8	0.8	12	45	4	
2HRB 004 015 S04	0.2R X 0.4	0.4	1.5	40	4		2HRB 008 140 S04	0.4R X 0.8	0.8	14	45	4	
2HRB 004 020 S04	0.2R X 0.4	0.4	2	40	4		2HRB 008 160 S04	0.4R X 0.8	0.8	16	45	4	
2HRB 004 025 S04	0.2R X 0.4	0.4	2.5	40	4		2HRB 009 040 S04	0.45R X 0.9	0.9	4	45	4	
2HRB 004 030 S04	0.2R X 0.4	0.4	3	40	4		2HRB 010 020 S04	0.5R X 1	1	2	45	4	
2HRB 004 035 S04	0.2R X 0.4	0.4	3.5	40	4		2HRB 010 020 S06	0.5R X 1	1	2	50	6	
2HRB 004 040 S04	0.2R X 0.4	0.4	4	40	4		2HRB 010 030 S04	0.5R X 1	1	3	45	4	
2HRB 004 045 S04	0.2R X 0.4	0.4	4.5	40	4		2HRB 010 030 S06	0.5R X 1	1	3	50	6	
2HRB 004 050 S04	0.2R X 0.4	0.4	5	40	4		2HRB 010 040 S04	0.5R X 1	1	4	45	4	
2HRB 004 060 S04	0.2R X 0.4	0.4	6	40	4		2HRB 010 040 S06	0.5R X 1	1	4	50	6	
2HRB 004 080 S04	0.2R X 0.4	0.4	8	40	4		2HRB 010 050 S04	0.5R X 1	1	5	45	4	
2HRB 004 100 S04	0.2R X 0.4	0.4	10	40	4		2HRB 010 050 S06	0.5R X 1	1	5	50	6	
2HRB 005 010 S04	0.25R X 0.5	0.5	1	45	4		2HRB 010 060 S04	0.5R X 1	1	6	45	4	
2HRB 005 015 S04	0.25R X 0.5	0.5	1.5	45	4		2HRB 010 060 S06	0.5R X 1	1	6	50	6	
2HRB 005 020 S04	0.25R X 0.5	0.5	2	45	4		2HRB 010 080 S04	0.5R X 1	1	8	45	4	
2HRB 005 025 S04	0.25R X 0.5	0.5	2.5	45	4		2HRB 010 080 S06	0.5R X 1	1	8	50	6	
2HRB 005 030 S04	0.25R X 0.5	0.5	3	45	4		2HRB 010 100 S04	0.5R X 1	1	10	50	4	
2HRB 005 035 S04	0.25R X 0.5	0.5	3.5	45	4		2HRB 010 100 S06	0.5R X 1	1	10	50	6	
2HRB 005 040 S04	0.25R X 0.5	0.5	4	45	4		2HRB 010 120 S04	0.5R X 1	1	12	50	4	
2HRB 005 045 S04	0.25R X 0.5	0.5	4.5	45	4		2HRB 010 120 S06	0.5R X 1	1	12	50	6	
2HRB 005 050 S04	0.25R X 0.5	0.5	5	45	4		2HRB 010 140 S04	0.5R X 1	1	14	50	4	
2HRB 005 060 S04	0.25R X 0.5	0.5	6	45	4		2HRB 010 140 S06	0.5R X 1	1	14	50	6	
2HRB 005 080 S04	0.25R X 0.5	0.5	8	45	4		2HRB 010 160 S04	0.5R X 1	1	16	50	4	
2HRB 005 100 S04	0.25R X 0.5	0.5	10	45	4		2HRB 010 160 S06	0.5R X 1	1	16	60	6	
2HRB 005 120 S04	0.25R X 0.5	0.5	12	45	4		2HRB 010 180 S04	0.5R X 1	1	18	50	4	

단위 : mm

Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고	Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	생크 Shank Dia d	비고
2HRB 010 180 S06	0.5R X 1	1	18	60	6		2HRB 015 250 S06	0.75R X 1.5	1.5	25	65	6	
2HRB 010 200 S04	0.5R X 1	1	20	50	4		2HRB 015 300 S04	0.75R X 1.5	1.5	30	70	4	
2HRB 010 200 S06	0.5R X 1	1	20	60	6		2HRB 015 300 S06	0.75R X 1.5	1.5	30	70	6	
2HRB 010 220 S04	0.5R X 1	1	22	60	4		2HRB 015 350 S04	0.75R X 1.5	1.5	35	70	4	
2HRB 010 220 S06	0.5R X 1	1	22	65	6		2HRB 015 400 S04	0.75R X 1.5	1.5	40	80	4	
2HRB 010 250 S04	0.5R X 1	1	25	60	4		2HRB 016 060 S04	0.8R X 1.6	1.6	6	45	4	
2HRB 010 300 S04	0.5R X 1	1	30	70	4		2HRB 016 080 S04	0.8R X 1.6	1.6	8	45	4	
2HRB 012 040 S04	0.6R X 1.2	1.2	4	45	4		2HRB 016 120 S04	0.8R X 1.6	1.6	12	50	4	
2HRB 012 040 S06	0.6R X 1.2	1.2	4	50	6		2HRB 016 160 S04	0.8R X 1.6	1.6	16	50	4	
2HRB 012 060 S04	0.6R X 1.2	1.2	6	45	4		2HRB 016 200 S04	0.8R X 1.6	1.6	20	50	4	
2HRB 012 060 S06	0.6R X 1.2	1.2	6	50	6		2HRB 018 060 S04	0.9R X 1.8	1.8	6	45	4	
2HRB 012 080 S04	0.6R X 1.2	1.2	8	45	4		2HRB 018 080 S04	0.9R X 1.8	1.8	8	45	4	
2HRB 012 080 S06	0.6R X 1.2	1.2	8	50	6		2HRB 018 120 S04	0.9R X 1.8	1.8	12	50	4	
2HRB 012 100 S04	0.6R X 1.2	1.2	10	50	4		2HRB 018 160 S04	0.9R X 1.8	1.8	16	50	4	
2HRB 012 100 S06	0.6R X 1.2	1.2	10	50	6		2HRB 018 200 S04	0.9R X 1.8	1.8	20	50	4	
2HRB 012 120 S04	0.6R X 1.2	1.2	12	50	4		2HRB 020 040 S04	1R X 2	2	4	45	4	
2HRB 012 120 S06	0.6R X 1.2	1.2	12	50	6		2HRB 020 040 S06	1R X 2	2	4	50	6	
2HRB 012 160 S04	0.6R X 1.2	1.2	16	50	4		2HRB 020 060 S04	1R X 2	2	6	45	4	
2HRB 012 160 S06	0.6R X 1.2	1.2	16	60	6		2HRB 020 060 S06	1R X 2	2	6	50	6	
2HRB 012 200 S04	0.6R X 1.2	1.2	20	50	4		2HRB 020 080 S04	1R X 2	2	8	45	4	
2HRB 012 200 S06	0.6R X 1.2	1.2	20	60	6		2HRB 020 080 S06	1R X 2	2	8	50	6	
2HRB 012 240 S04	0.6R X 1.2	1.2	24	60	4		2HRB 020 100 S04	1R X 2	2	10	50	4	
2HRB 012 240 S06	0.6R X 1.2	1.2	24	65	6		2HRB 020 100 S06	1R X 2	2	10	50	6	
2HRB 014 060 S04	0.7R X 1.4	1.4	6	45	4		2HRB 020 120 S04	1R X 2	2	12	50	4	
2HRB 014 080 S04	0.7R X 1.4	1.4	8	45	4		2HRB 020 120 S06	1R X 2	2	12	50	6	
2HRB 014 120 S04	0.7R X 1.4	1.4	12	50	4		2HRB 020 140 S04	1R X 2	2	14	50	4	
2HRB 014 160 S04	0.7R X 1.4	1.4	16	50	4		2HRB 020 140 S06	1R X 2	2	14	50	6	
2HRB 015 030 S04	0.75R X 1.5	1.5	3	45	4		2HRB 020 160 S04	1R X 2	2	16	50	4	
2HRB 015 030 S06	0.75R X 1.5	1.5	3	50	6		2HRB 020 160 S06	1R X 2	2	16	60	6	
2HRB 015 040 S04	0.75R X 1.5	1.5	4	45	4		2HRB 020 180 S04	1R X 2	2	18	50	4	
2HRB 015 040 S06	0.75R X 1.5	1.5	4	50	6		2HRB 020 180 S06	1R X 2	2	18	60	6	
2HRB 015 060 S04	0.75R X 1.5	1.5	6	45	4		2HRB 020 200 S04	1R X 2	2	20	50	4	
2HRB 015 060 S06	0.75R X 1.5	1.5	6	50	6		2HRB 020 200 S06	1R X 2	2	20	60	6	
2HRB 015 080 S04	0.75R X 1.5	1.5	8	45	4		2HRB 020 220 S04	1R X 2	2	22	60	4	
2HRB 015 080 S06	0.75R X 1.5	1.5	8	50	6		2HRB 020 220 S06	1R X 2	2	22	65	6	
2HRB 015 100 S04	0.75R X 1.5	1.5	10	50	4		2HRB 020 250 S04	1R X 2	2	25	60	4	
2HRB 015 100 S06	0.75R X 1.5	1.5	10	50	6		2HRB 020 250 S06	1R X 2	2	25	65	6	
2HRB 015 120 S04	0.75R X 1.5	1.5	12	50	4		2HRB 020 300 S04	1R X 2	2	30	70	4	
2HRB 015 120 S06	0.75R X 1.5	1.5	12	50	6		2HRB 020 300 S06	1R X 2	2	30	70	6	
2HRB 015 140 S04	0.75R X 1.5	1.5	14	50	4		2HRB 020 350 S04	1R X 2	2	35	70	4	
2HRB 015 140 S06	0.75R X 1.5	1.5	14	50	6		2HRB 020 350 S06	1R X 2	2	35	75	6	
2HRB 015 160 S04	0.75R X 1.5	1.5	16	50	4		2HRB 020 400 S04	1R X 2	2	40	80	4	
2HRB 015 160 S06	0.75R X 1.5	1.5	16	60	6		2HRB 020 400 S06	1R X 2	2	40	80	6	
2HRB 015 180 S04	0.75R X 1.5	1.5	18	50	4		2HRB 020 450 S04	1R X 2	2	45	80	4	
2HRB 015 180 S06	0.75R X 1.5	1.5	18	60	6		2HRB 020 500 S04	1R X 2	2	50	90	4	
2HRB 015 200 S04	0.75R X 1.5	1.5	20	50	4		2HRB 025 080 S04	1.25R X 2.5	2.5	8	45	4	
2HRB 015 200 S06	0.75R X 1.5	1.5	20	60	6		2HRB 025 080 S06	1.25R X 2.5	2.5	8	50	6	
2HRB 015 220 S04	0.75R X 1.5	1.5	22	60	4		2HRB 025 100 S04	1.25R X 2.5	2.5	10	50	4	
2HRB 015 220 S06	0.75R X 1.5	1.5	22	65	6		2HRB 025 100 S06	1.25R X 2.5	2.5	10	50	6	
2HRB 015 250 S04	0.75R X 1.5	1.5	25	60	4		2HRB 025 120 S04	1.25R X 2.5	2.5	12	50	4	

단위 : mm

Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter R × D	날장 Length of cut L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2HRB 025 120 S06	1.25R X 2.5	2.5	12	50	6		2HRB 080 250 060	4R X 8	12	25	60	8	
2HRB 025 160 S04	1.25R X 2.5	2.5	16	50	4		2HRB 080 300 100	4R X 8	12	30	100	8	
2HRB 025 160 S06	1.25R X 2.5	2.5	16	60	6		2HRB 100 300 070	5R X 10	16	30	70	10	
2HRB 025 200 S04	1.25R X 2.5	2.5	20	60	4		2HRB 100 350 100	5R X 10	16	35	100	10	
2HRB 025 250 S04	1.25R X 2.5	2.5	25	60	4		2HRB 120 300 075	6R X 12	18	30	75	12	
2HRB 025 300 S04	1.25R X 2.5	2.5	30	70	4		2HRB 120 400 110	6R X 12	18	40	110	12	
2HRB 025 350 S04	1.25R X 2.5	2.5	35	70	4								
2HRB 025 400 S04	1.25R X 2.5	2.5	40	80	4								
2HRB 030 060 S06	1.5R X 3	3	6	50	6								
2HRB 030 080 S06	1.5R X 3	3	8	50	6								
2HRB 030 100 S06	1.5R X 3	3	10	50	6								
2HRB 030 120 S06	1.5R X 3	3	12	50	6								
2HRB 030 160 S06	1.5R X 3	3	16	60	6								
2HRB 030 200 S06	1.5R X 3	3	20	60	6								
2HRB 030 250 S06	1.5R X 3	3	25	65	6								
2HRB 030 300 S06	1.5R X 3	3	30	70	6								
2HRB 030 350 S06	1.5R X 3	3	35	75	6								
2HRB 030 400 S06	1.5R X 3	3	40	80	6								
2HRB 030 450 S06	1.5R X 3	3	45	90	6								
2HRB 030 500 S06	1.5R X 3	3	50	100	6								
2HRB 030 600 S06	1.5R X 3	3	60	100	6								
2HRB 030 650 S06	1.5R X 3	3	65	110	6								
2HRB 030 700 S06	1.5R X 3	3	70	110	6								
2HRB 040 080 S06	2R X 4	4	8	50	6								
2HRB 040 100 S06	2R X 4	4	10	50	6								
2HRB 040 120 S06	2R X 4	4	12	50	6								
2HRB 040 160 S06	2R X 4	4	16	60	6								
2HRB 040 200 S06	2R X 4	4	20	60	6								
2HRB 040 250 S06	2R X 4	4	25	65	6								
2HRB 040 300 S06	2R X 4	4	30	70	6								
2HRB 040 350 S06	2R X 4	4	35	75	6								
2HRB 040 400 S06	2R X 4	4	40	80	6								
2HRB 040 450 S06	2R X 4	4	45	90	6								
2HRB 040 500 S06	2R X 4	4	50	100	6								
2HRB 040 550 S06	2R X 4	4	55	100	6								
2HRB 040 600 S06	2R X 4	4	60	100	6								
2HRB 040 650 S06	2R X 4	4	65	110	6								
2HRB 040 700 S06	2R X 4	4	70	110	6								
2HRB 050 160 S06	2.5R X 5	6	16	60	6								
2HRB 050 200 S06	2.5R X 5	6	20	60	6								
2HRB 050 250 S06	2.5R X 5	6	25	70	6								
2HRB 050 300 S06	2.5R X 5	6	30	75	6								
2HRB 050 400 S06	2.5R X 5	6	40	80	6								
2HRB 050 450 S06	2.5R X 5	6	45	90	6								
2HRB 050 500 S06	2.5R X 5	6	50	100	6								
2HRB 050 600 S06	2.5R X 5	6	60	100	6								
2HRB 050 650 S06	2.5R X 5	6	65	110	6								
2HRB 050 700 S06	2.5R X 5	6	70	110	6								
2HRB 060 150 S06	3R X 6	10	15	55	6								
2HRB 060 300 S06	3R X 6	10	30	110	6								