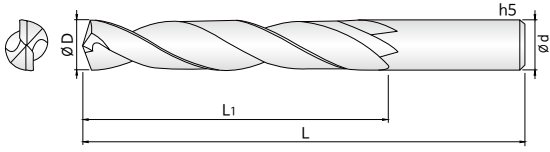


초경 2날 두베 드릴



- HRC28이하, S45C, SCM, 주강, 주철용 고정밀 드릴
 - T-CRO 코팅을 적용하여 드릴 가공 시 발생하는 윤착 현상을 최소화 하였습니다.
 - 절삭 저항을 최소화하는 Point thinning을 채택 하였습니다.
 - 특수 인선처리와 최적의 형상으로 치핑 및 돌발파손을 방지합니다.
 - 우수한 공구의 강성과 칩 배출의 설계를 적용하여 칩 배출성을 향상시켰습니다.
- High-speed drills for materials up to HRC28, S45C, SCM, cast steels, and cast irons
 - Minimized adhesion during drilling operations by applying T-CRO coating.
 - Adopted point thinning to minimize cutting resistance.
 - Prevents chipping and unexpected fractures with special edge treatment and optimal shape.
 - Enhanced chip evacuation with the application of a design for superior tool rigidity and chip evacuation.

2

WC
미립자

TCRO
COATING

h7
Diameter
Tolerance

30°
Helix Angle

140°

CUTTING
DATA

513P

단위 : mm

Order Number	날경 Diameter D	홀길이 Flute Length L1	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	홀길이 Flute Length L1	전장 Overall Length L	샙크 Shank Dia d	비고
2DUBE 010 080 S03	1	8	40	3		2DUBE 060 360 S06	6	36	65	6	
2DUBE 011 090 S03	1.1	9	40	3		2DUBE 061 360 S06	6.1	36	65	6	
2DUBE 012 100 S03	1.2	10	40	3		2DUBE 062 420 S07	6.2	42	75	7	
2DUBE 013 100 S03	1.3	10	40	3		2DUBE 063 420 S07	6.3	42	75	7	
2DUBE 014 110 S03	1.4	11	40	3		2DUBE 064 420 S07	6.4	42	75	7	
2DUBE 015 110 S03	1.5	11	40	3		2DUBE 065 420 S07	6.5	42	75	7	
2DUBE 016 120 S03	1.6	12	40	3		2DUBE 066 420 S07	6.6	42	75	7	
2DUBE 017 120 S03	1.7	12	40	3		2DUBE 067 420 S07	6.7	42	75	7	
2DUBE 018 130 S03	1.8	13	40	3		2DUBE 068 420 S07	6.8	42	75	7	
2DUBE 019 130 S03	1.9	13	40	3		2DUBE 069 420 S07	6.9	42	75	7	
2DUBE 020 170 S03	2	17	50	3		2DUBE 070 420 S07	7	42	75	7	
2DUBE 021 170 S03	2.1	17	50	3		2DUBE 071 420 S07	7.1	42	75	7	
2DUBE 022 170 S03	2.2	17	50	3		2DUBE 072 460 S08	7.2	46	80	8	
2DUBE 023 170 S03	2.3	17	50	3		2DUBE 073 460 S08	7.3	46	80	8	
2DUBE 024 170 S03	2.4	17	50	3		2DUBE 074 460 S08	7.4	46	80	8	
2DUBE 025 170 S03	2.5	17	50	3		2DUBE 075 460 S08	7.5	46	80	8	
2DUBE 026 170 S03	2.6	17	50	3		2DUBE 076 460 S08	7.6	46	80	8	
2DUBE 027 170 S03	2.7	17	50	3		2DUBE 077 460 S08	7.7	46	80	8	
2DUBE 028 170 S03	2.8	17	50	3		2DUBE 078 460 S08	7.8	46	80	8	
2DUBE 029 170 S03	2.9	17	50	3		2DUBE 079 460 S08	7.9	46	80	8	
2DUBE 030 200 S04	3	20	55	4		2DUBE 080 460 S08	8	46	80	8	
2DUBE 031 200 S04	3.1	20	55	4		2DUBE 081 460 S08	8.1	46	80	8	
2DUBE 032 200 S04	3.2	20	55	4		2DUBE 082 500 S09	8.2	50	85	9	
2DUBE 033 200 S04	3.3	20	55	4		2DUBE 083 500 S09	8.3	50	85	9	
2DUBE 034 200 S04	3.4	20	55	4		2DUBE 084 500 S09	8.4	50	85	9	
2DUBE 035 200 S04	3.5	20	55	4		2DUBE 085 500 S09	8.5	50	85	9	
2DUBE 036 250 S04	3.6	25	55	4		2DUBE 086 500 S09	8.6	50	85	9	
2DUBE 037 250 S04	3.7	25	55	4		2DUBE 087 500 S09	8.7	50	85	9	
2DUBE 038 250 S04	3.8	25	55	4		2DUBE 088 500 S09	8.8	50	85	9	
2DUBE 039 250 S04	3.9	25	55	4		2DUBE 089 500 S09	8.9	50	85	9	
2DUBE 040 250 S04	4	25	55	4		2DUBE 090 500 S09	9	50	85	9	
2DUBE 041 250 S04	4.1	25	55	4		2DUBE 091 500 S09	9.1	50	85	9	
2DUBE 042 320 S05	4.2	32	60	5		2DUBE 092 530 S10	9.2	53	90	10	
2DUBE 043 320 S05	4.3	32	60	5		2DUBE 093 530 S10	9.3	53	90	10	
2DUBE 044 320 S05	4.4	32	60	5		2DUBE 094 530 S10	9.4	53	90	10	
2DUBE 045 320 S05	4.5	32	60	5		2DUBE 095 530 S10	9.5	53	90	10	
2DUBE 046 320 S05	4.6	32	60	5		2DUBE 096 530 S10	9.6	53	90	10	
2DUBE 047 320 S05	4.7	32	60	5		2DUBE 097 530 S10	9.7	53	90	10	
2DUBE 048 320 S05	4.8	32	60	5		2DUBE 098 530 S10	9.8	53	90	10	
2DUBE 049 320 S05	4.9	32	60	5		2DUBE 099 530 S10	9.9	53	90	10	
2DUBE 050 320 S05	5	32	60	5		2DUBE 100 530 S10	10	53	90	10	
2DUBE 051 320 S05	5.1	32	60	5		2DUBE 101 530 S10	10.1	53	90	10	
2DUBE 052 360 S06	5.2	36	65	6		2DUBE 102 550 S11	10.2	55	95	11	
2DUBE 053 360 S06	5.3	36	65	6		2DUBE 103 550 S11	10.3	55	95	11	
2DUBE 054 360 S06	5.4	36	65	6		2DUBE 104 550 S11	10.4	55	95	11	
2DUBE 055 360 S06	5.5	36	65	6		2DUBE 105 550 S11	10.5	55	95	11	
2DUBE 056 360 S06	5.6	36	65	6		2DUBE 106 550 S11	10.6	55	95	11	
2DUBE 057 360 S06	5.7	36	65	6		2DUBE 107 550 S11	10.7	55	95	11	
2DUBE 058 360 S06	5.8	36	65	6		2DUBE 108 550 S11	10.8	55	95	11	
2DUBE 059 360 S06	5.9	36	65	6		2DUBE 109 550 S11	10.9	55	95	11	

단위 : mm

Order Number	날경 Diameter D	홈길이 Flute Length L1	전장 Overall Length L	샙크 Dia d	비고	Order Number	날경 Diameter D	홈길이 Flute Length L1	전장 Overall Length L	샙크 Dia d	비고
2DUBE 110 550 S11	11	55	100	11		2DUBE 160 690 S16	16	69	115	16	
2DUBE 111 550 S11	11.1	55	100	11		2DUBE 161 690 S16	16.1	69	115	16	
2DUBE 112 620 S12	11.2	62	100	12		2DUBE 162 710 S17	16.2	71	120	17	
2DUBE 113 620 S12	11.3	62	100	12		2DUBE 163 710 S17	16.3	71	120	17	
2DUBE 114 620 S12	11.4	62	100	12		2DUBE 164 710 S17	16.4	71	120	17	
2DUBE 115 620 S12	11.5	62	100	12		2DUBE 165 710 S17	16.5	71	120	17	
2DUBE 116 620 S12	11.6	62	100	12		2DUBE 166 710 S17	16.6	71	120	17	
2DUBE 117 620 S12	11.7	62	100	12		2DUBE 167 710 S17	16.7	71	120	17	
2DUBE 118 620 S12	11.8	62	100	12		2DUBE 168 710 S17	16.8	71	120	17	
2DUBE 119 620 S12	11.9	62	100	12		2DUBE 169 710 S17	16.9	71	120	17	
2DUBE 120 620 S12	12	62	100	12		2DUBE 170 710 S17	17	71	120	17	
2DUBE 121 620 S12	12.1	62	100	12		2DUBE 171 710 S17	17.1	71	120	17	
2DUBE 122 620 S13	12.2	62	100	13		2DUBE 172 740 S18	17.2	74	125	18	
2DUBE 123 620 S13	12.3	62	100	13		2DUBE 173 740 S18	17.3	74	125	18	
2DUBE 124 620 S13	12.4	62	100	13		2DUBE 174 740 S18	17.4	74	125	18	
2DUBE 125 620 S13	12.5	62	100	13		2DUBE 175 740 S18	17.5	74	125	18	
2DUBE 126 620 S13	12.6	62	100	13		2DUBE 176 740 S18	17.6	74	125	18	
2DUBE 127 620 S13	12.7	62	100	13		2DUBE 177 740 S18	17.7	74	125	18	
2DUBE 128 620 S13	12.8	62	100	13		2DUBE 178 740 S18	17.8	74	125	18	
2DUBE 129 620 S13	12.9	62	100	13		2DUBE 179 740 S18	17.9	74	125	18	
2DUBE 130 620 S13	13	62	100	13		2DUBE 180 740 S18	18	74	125	18	
2DUBE 131 620 S13	13.1	62	100	13		2DUBE 181 740 S18	18.1	74	125	18	
2DUBE 132 640 S14	13.2	64	105	14		2DUBE 182 760 S19	18.2	76	130	19	
2DUBE 133 640 S14	13.3	64	105	14		2DUBE 183 760 S19	18.3	76	130	19	
2DUBE 134 640 S14	13.4	64	105	14		2DUBE 184 760 S19	18.4	76	130	19	
2DUBE 135 640 S14	13.5	64	105	14		2DUBE 185 760 S19	18.5	76	130	19	
2DUBE 136 640 S14	13.6	64	105	14		2DUBE 186 760 S19	18.6	76	130	19	
2DUBE 137 640 S14	13.7	64	105	14		2DUBE 187 760 S19	18.7	76	130	19	
2DUBE 138 640 S14	13.8	64	105	14		2DUBE 188 760 S19	18.8	76	130	19	
2DUBE 139 640 S14	13.9	64	105	14		2DUBE 189 760 S19	18.9	76	130	19	
2DUBE 140 640 S14	14	64	105	14		2DUBE 190 760 S19	19	76	130	19	
2DUBE 141 640 S14	14.1	64	105	14		2DUBE 191 760 S19	19.1	76	130	19	
2DUBE 142 670 S15	14.2	67	110	15		2DUBE 192 800 S20	19.2	80	130	20	
2DUBE 143 670 S15	14.3	67	110	15		2DUBE 193 800 S20	19.3	80	130	20	
2DUBE 144 670 S15	14.4	67	110	15		2DUBE 194 800 S20	19.4	80	130	20	
2DUBE 145 670 S15	14.5	67	110	15		2DUBE 195 800 S20	19.5	80	130	20	
2DUBE 146 670 S15	14.6	67	110	15		2DUBE 196 800 S20	19.6	80	130	20	
2DUBE 147 670 S15	14.7	67	110	15		2DUBE 197 800 S20	19.7	80	130	20	
2DUBE 148 670 S15	14.8	67	110	15		2DUBE 198 800 S20	19.8	80	130	20	
2DUBE 149 670 S15	14.9	67	110	15		2DUBE 199 800 S20	19.9	80	130	20	
2DUBE 150 670 S15	15	67	110	15		2DUBE 200 800 S20	20	80	130	20	
2DUBE 151 670 S15	15.1	67	110	15							
2DUBE 152 690 S16	15.2	69	115	16							
2DUBE 153 690 S16	15.3	69	115	16							
2DUBE 154 690 S16	15.4	69	115	16							
2DUBE 155 690 S16	15.5	69	115	16							
2DUBE 156 690 S16	15.6	69	115	16							
2DUBE 157 690 S16	15.7	69	115	16							
2DUBE 158 690 S16	15.8	69	115	16							
2DUBE 159 690 S16	15.9	69	115	16							

2DUBE(short length) Cutting Condition

• RPM : rev./min • Feed : mm/min

피삭재 Material	일반구조강/쾌삭강 Mild Steels/Free cutting steels HP/SM		구조용강/탄소강/회주철 Structural steels / Carbon Steels /Gray cast irons SS/SC/FC		공구강/금형강 Tool steels / Mold steels SCM/HPM		덕타일 주철 Ductile cast irons FCD	
	~ 200HB		~ 30HRc		30~40HRc		-	
외경 Outside Diameter	회전수 RPM	이송 속도 FEED	회전수 RPM	이송 속도 FEED	회전수 RPM	이송 속도 FEED	회전수 RPM	이송 속도 FEED
ø1	19,100	840	19,200	430	13,000	360	11,500	385
ø2	9,500	630	9,700	430	6,000	330	6,100	330
ø3	8,500	840	8,200	360	5,900	450	5,950	460
ø4	6,400	770	6,500	430	4,500	450	4,400	440
ø5	5,000	940	5,200	680	3,450	550	3,500	560
ø6	4,250	880	4,500	600	4,000	550	3,000	560
ø8	3,200	740	3,300	580	2,100	440	2,200	460
ø10	2,550	640	2,500	580	1,700	400	1,800	420
ø12	2,200	600	2,100	530	1,400	350	1,500	390

- 피삭재의 고정시 불안정 할 시 내구성이 떨어지므로, 확실한 클램핑을 하십시오.
- 원활한 칩 배출을 위해 절삭유 사용을 권장하며, 수용성 절삭유가 효과적입니다.
- 상기 절삭 조건은 참고 수치이므로, 실 가공 시 가공 형상, 가공 목적, 적용 기계에 따라 조건 변경 요망합니다.
- 조건표가 기계의 최대 스핀들 속도를 초과하거나 버 및 적열 현상이 발생할 때 스핀들 속도와 이송 속도를 비례하여 조정하십시오.
- Ensure a stable clamping when fixing the cutting tool, as durability may be compromised if the clamping is unstable.
- For smooth chip evacuation, we recommend using cutting oil, and a soluble cutting fluid is effective as well.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- If the cutting conditions exceed the maximum spindle speed of the machine or if chattering and thermal phenomena occur, adjust the spindle speed and feed rate proportionally.

2DUBE(Standard length) Cutting Condition

• RPM : rev./min • Feed : mm/min

피삭재 Material	일반구조강/쾌삭강 Mild Steels/Free cutting steels HP/SM		구조용강/탄소강/회주철 Structural steels / Carbon Steels /Gray cast irons SS/SC/FC		공구강/금형강 Tool steels / Mold steels SCM/HPM		덕타일 주철 Ductile cast irons FCD	
	~ 200HB		~ 30HRc		30~40HRc		-	
외경 Outside Diameter	회전수 RPM	이송 속도 FEED	회전수 RPM	이송 속도 FEED	회전수 RPM	이송 속도 FEED	회전수 RPM	이송 속도 FEED
ø1	19,100	760	19,200	390	13,000	330	11,500	350
ø2	9,500	570	9,700	390	6,000	300	6,100	300
ø3	8,500	760	8,200	330	5,900	410	5,950	420
ø4	6,400	700	6,500	390	4,500	410	4,400	400
ø5	5,000	850	5,200	620	3,450	520	3,500	510
ø6	4,250	800	4,500	550	4,000	500	3,000	510
ø8	3,200	670	3,300	530	2,100	400	2,200	420
ø10	2,550	850	2,500	530	1,700	360	1,800	380
ø12	2,200	550	2,100	480	1,400	320	1,500	350
ø16	1,600	530	1,600	430	1,150	310	1,100	300
ø20	1,300	450	1,300	430	950	310	900	300

- 피삭재의 고정시 불안정 할 시 내구성이 떨어지므로, 확실한 클램핑을 하십시오.
- 원활한 칩 배출을 위해 절삭유 사용을 권장하며, 수용성 절삭유가 효과적입니다.
- 상기 절삭 조건은 참고 수치이므로, 실 가공 시 가공 형상, 가공 목적, 적용 기계에 따라 조건 변경 요망합니다.
- 절삭하는 피삭재의 따라 구멍깊이 최대 5xDc 이상의 드릴링 시 peck(Q) 절입량을 변경하십시오.
- 조건표가 기계의 최대 스핀들 속도를 초과하거나 버 및 적열 현상이 발생할 때 스핀들 속도와 이송 속도를 비례하여 조정하십시오.
- Ensure a stable clamping when fixing the cutting tool, as durability may be compromised if the clamping is unstable.
- For smooth chip evacuation, we recommend using cutting oil, and a soluble cutting fluid is effective as well.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- Please adjust the peck (Q) feed rate when drilling with a cutting tool that has a depth of cut (Dc) exceeding 5 times the diameter.
- If the cutting conditions exceed the maximum spindle speed of the machine or if chattering and thermal phenomena occur, adjust the spindle speed and feed rate proportionally.