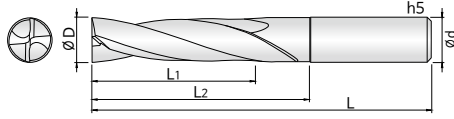
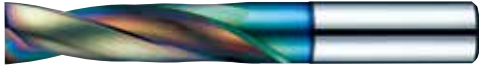




초경 2날/ 다기능 플랫 드릴



- HRc50이하, 프리하드강, 합금강, 주철 가공용 플랫 드릴
- 밑날 플랫타입으로 다양한 경사면과 곡면 드릴가공에 탁월한 성능을 발휘합니다.
- 20도 헬릭스를 채택하여 칩배출 성능이 매우 우수합니다.
- 관통 드릴 작업시 버 발생을 최소화 합니다.
- HR 코팅으로 내열성과 내마모성이 우수, 긴 공구수명을 실현 하였습니다.
- Flat drills for materials up to HRc50, pre-hardened steels, alloy steels, cast irons
- With flat type of end face, excellent performance drilling is available to a variety of inclined and curved surfaces.
- Chip emission is great and stable drilling is available with 20 degree helix design.
- Minimize burrs during penetration drilling.
- Increased tool life by applying HR coating with great heat and wear resistance.



517P

단위 : mm

Order Number	날경 Diameter D	홀길이 Flute Length L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Dia d	비고	Order Number	날경 Diameter D	홀길이 Flute Length L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Dia d	비고
2FDR 002 009 S03	0.2	0.8	0.9	50	3		2FDR 044 189 S06	4.4	17.6	18.9	60	6	
2FDR 0025 011 S03	0.25	1	1.1	50	3		2FDR 045 194 S06	4.5	18	19.4	60	6	
2FDR 003 013 S03	0.3	1.2	1.3	50	3		2FDR 046 198 S06	4.6	18.4	19.8	60	6	
2FDR 0035 015 S03	0.35	1.4	1.5	50	3		2FDR 047 202 S06	4.7	18.8	20.2	60	6	
2FDR 004 017 S03	0.4	1.6	1.7	50	3		2FDR 048 206 S06	4.8	19.2	20.6	60	6	
2FDR 0045 019 S03	0.45	1.8	1.9	50	3		2FDR 049 211 S06	4.9	19.6	21.1	60	6	
2FDR 005 022 S03	0.5	2	2.2	50	3		2FDR 050 215 S06	5	20	21.5	60	6	
2FDR 0055 024 S03	0.55	2.2	2.4	50	3		2FDR 051 219 S06	5.1	20.4	21.9	60	6	
2FDR 006 026 S03	0.6	2.4	2.6	50	3		2FDR 052 224 S06	5.2	20.8	22.4	60	6	
2FDR 0065 028 S03	0.65	2.6	2.8	50	3		2FDR 053 228 S06	5.3	21.2	22.8	60	6	
2FDR 007 030 S03	0.7	2.8	3	50	3		2FDR 054 232 S06	5.4	21.6	23.2	60	6	
2FDR 0075 032 S03	0.75	3	3.2	50	3		2FDR 055 237 S06	5.5	22	23.7	60	6	
2FDR 008 034 S03	0.8	3.2	3.4	50	3		2FDR 056 241 S06	5.6	22.4	24.1	60	6	
2FDR 0085 037 S03	0.85	3.4	3.7	50	3		2FDR 057 245 S06	5.7	22.8	24.5	60	6	
2FDR 009 039 S03	0.9	3.6	3.9	50	3		2FDR 058 249 S06	5.8	23.2	24.9	60	6	
2FDR 0095 041 S03	0.95	3.8	4.1	50	3		2FDR 059 254 S06	5.9	23.6	25.4	60	6	
2FDR 010 043 S03	1	4	4.3	50	3		2FDR 060 258 S06	6	24	25.8	60	6	
2FDR 011 047 S03	1.1	4.4	4.7	50	3		2FDR 061 262 S08	6.1	24.4	26.2	70	8	
2FDR 012 052 S03	1.2	4.8	5.2	50	3		2FDR 062 267 S08	6.2	24.8	26.7	70	8	
2FDR 013 056 S03	1.3	5.2	5.6	50	3		2FDR 063 271 S08	6.3	25.2	27.1	70	8	
2FDR 014 060 S03	1.4	5.6	6	50	3		2FDR 064 275 S08	6.4	25.6	27.5	70	8	
2FDR 015 065 S03	1.5	6	6.5	50	3		2FDR 065 280 S08	6.5	26	28	70	8	
2FDR 016 069 S03	1.6	6.4	6.9	50	3		2FDR 066 284 S08	6.6	26.4	28.4	70	8	
2FDR 017 073 S03	1.7	6.8	7.3	50	3		2FDR 067 288 S08	6.7	26.8	28.8	70	8	
2FDR 018 077 S03	1.8	7.2	7.7	50	3		2FDR 068 292 S08	6.8	27.2	29.2	70	8	
2FDR 019 082 S03	1.9	7.6	8.2	50	3		2FDR 069 297 S08	6.9	27.6	29.7	70	8	
2FDR 020 086 S04	2	8	8.6	50	4		2FDR 070 301 S08	7	28	30.1	70	8	
2FDR 021 090 S04	2.1	8.4	9	50	4		2FDR 071 305 S08	7.1	28.4	30.5	70	8	
2FDR 022 095 S04	2.2	8.8	9.5	50	4		2FDR 072 310 S08	7.2	28.8	31	70	8	
2FDR 023 099 S04	2.3	9.2	9.9	50	4		2FDR 073 314 S08	7.3	29.2	31.4	70	8	
2FDR 024 103 S04	2.4	9.6	10.3	50	4		2FDR 074 318 S08	7.4	29.6	31.8	70	8	
2FDR 025 108 S04	2.5	10	10.8	50	4		2FDR 075 323 S08	7.5	30	32.3	70	8	
2FDR 026 112 S04	2.6	10.4	11.2	50	4		2FDR 076 327 S08	7.6	30.4	32.7	70	8	
2FDR 027 116 S04	2.7	10.8	11.6	50	4		2FDR 077 331 S08	7.7	30.8	33.1	70	8	
2FDR 028 120 S04	2.8	11.2	12	50	4		2FDR 078 335 S08	7.8	31.2	33.5	70	8	
2FDR 029 125 S04	2.9	11.6	12.5	50	4		2FDR 079 340 S08	7.9	31.6	34	70	8	
2FDR 030 129 S06	3	12	12.9	50	6		2FDR 080 344 S08	8	32	34.4	70	8	
2FDR 031 133 S06	3.1	12.4	13.3	50	6		2FDR 081 348 S10	8.1	32.4	34.8	80	10	
2FDR 032 138 S06	3.2	12.8	13.8	50	6		2FDR 082 353 S10	8.2	32.8	35.3	80	10	
2FDR 033 142 S06	3.3	13.2	14.2	50	6		2FDR 083 357 S10	8.3	33.2	35.7	80	10	
2FDR 034 146 S06	3.4	13.6	14.6	50	6		2FDR 084 361 S10	8.4	33.6	36.1	80	10	
2FDR 035 151 S06	3.5	14	15.1	50	6		2FDR 085 366 S10	8.5	34	36.6	80	10	
2FDR 036 155 S06	3.6	14.4	15.5	50	6		2FDR 086 370 S10	8.6	34.4	37	80	10	
2FDR 037 159 S06	3.7	14.8	15.9	50	6		2FDR 087 374 S10	8.7	34.8	37.4	80	10	
2FDR 038 163 S06	3.8	15.2	16.3	50	6		2FDR 088 378 S10	8.8	35.2	37.8	80	10	
2FDR 039 168 S06	3.9	15.6	16.8	50	6		2FDR 089 383 S10	8.9	35.6	38.3	80	10	
2FDR 040 172 S06	4	16	17.2	50	6		2FDR 090 387 S10	9	36	38.7	80	10	
2FDR 041 176 S06	4.1	16.4	17.6	60	6		2FDR 091 391 S10	9.1	36.4	39.1	80	10	
2FDR 042 181 S06	4.2	16.8	18.1	60	6		2FDR 092 396 S10	9.2	36.8	39.6	80	10	
2FDR 043 185 S06	4.3	17.2	18.5	60	6		2FDR 093 400 S10	9.3	37.2	40	80	10	

DRILL



단위 : mm

Order Number	날경 Diameter D	홈길이 Flute Length L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고	Order Number	날경 Diameter D	홈길이 Flute Length L1	유효장 Effective Length L2	전장 Overall Length L	샙크 Shank Dia d	비고
2FDR 094 404 S10	9.4	37.6	40.4	80	10		2FDR 144 619 S16	14.4	57.6	61.9	105	16	
2FDR 095 409 S10	9.5	38	40.9	80	10		2FDR 145 624 S16	14.5	58	62.4	105	16	
2FDR 096 413 S10	9.6	38.4	41.3	80	10		2FDR 146 628 S16	14.6	58.4	62.8	105	16	
2FDR 097 417 S10	9.7	38.8	41.7	80	10		2FDR 147 632 S16	14.7	58.8	63.2	105	16	
2FDR 098 421 S10	9.8	39.2	42.1	80	10		2FDR 148 636 S16	14.8	59.2	63.6	105	16	
2FDR 099 426 S10	9.9	39.6	42.6	80	10		2FDR 149 641 S16	14.9	59.6	64.1	105	16	
2FDR 100 430 S10	10	40	43	80	10		2FDR 150 645 S16	15	60	64.5	105	16	
2FDR 101 434 S12	10.1	40.4	43.4	90	12		2FDR 151 649 S16	15.1	60.4	64.9	115	16	
2FDR 102 439 S12	10.2	40.8	43.9	90	12		2FDR 152 654 S16	15.2	60.8	65.4	115	16	
2FDR 103 443 S12	10.3	41.2	44.3	90	12		2FDR 153 658 S16	15.3	61.2	65.8	115	16	
2FDR 104 447 S12	10.4	41.6	44.7	90	12		2FDR 154 662 S16	15.4	61.6	66.2	115	16	
2FDR 105 452 S12	10.5	42	45.2	90	12		2FDR 155 667 S16	15.5	62	66.7	115	16	
2FDR 106 456 S12	10.6	42.4	45.6	90	12		2FDR 156 671 S16	15.6	62.4	67.1	115	16	
2FDR 107 460 S12	10.7	42.8	46	90	12		2FDR 157 675 S16	15.7	62.8	67.5	115	16	
2FDR 108 464 S12	10.8	43.2	46.4	90	12		2FDR 158 679 S16	15.8	63.2	67.9	115	16	
2FDR 109 469 S12	10.9	43.6	46.9	90	12		2FDR 159 684 S16	15.9	63.6	68.4	115	16	
2FDR 110 473 S12	11	44	47.3	90	12		2FDR 160 688 S16	16	64	68.8	115	16	
2FDR 111 477 S12	11.1	44.4	47.7	90	12		2FDR 165 710 S18	16.5	66	71	125	18	
2FDR 112 482 S12	11.2	44.8	48.2	90	12		2FDR 170 731 S18	17	68	73.1	125	18	
2FDR 113 486 S12	11.3	45.2	48.6	90	12		2FDR 175 753 S18	17.5	70	75.3	125	18	
2FDR 114 490 S12	11.4	45.6	49	90	12		2FDR 180 774 S18	18	72	77.4	125	18	
2FDR 115 495 S12	11.5	46	49.5	90	12		2FDR 185 796 S20	18.5	74	79.6	135	20	
2FDR 116 499 S12	11.6	46.4	49.9	90	12		2FDR 190 817 S20	19	76	81.7	135	20	
2FDR 117 503 S12	11.7	46.8	50.3	90	12		2FDR 195 839 S20	19.5	78	83.9	145	20	
2FDR 118 507 S12	11.8	47.2	50.7	90	12		2FDR 200 860 S20	20	80	86	145	20	
2FDR 119 512 S12	11.9	47.6	51.2	90	12								
2FDR 120 516 S12	12	48	51.6	90	12								
2FDR 121 520 S14	12.1	48.4	52	100	14								
2FDR 122 525 S14	12.2	48.8	52.5	100	14								
2FDR 123 529 S14	12.3	49.2	52.9	100	14								
2FDR 124 533 S14	12.4	49.6	53.3	100	14								
2FDR 125 538 S14	12.5	50	53.8	100	14								
2FDR 126 542 S14	12.6	50.4	54.2	100	14								
2FDR 127 546 S14	12.7	50.8	54.6	100	14								
2FDR 128 550 S14	12.8	51.2	55	100	14								
2FDR 129 555 S14	12.9	51.6	55.5	100	14								
2FDR 130 559 S14	13	52	55.9	100	14								
2FDR 131 563 S14	13.1	52.4	56.3	100	14								
2FDR 132 568 S14	13.2	52.8	56.8	100	14								
2FDR 133 572 S14	13.3	53.2	57.2	100	14								
2FDR 134 576 S14	13.4	53.6	57.6	100	14								
2FDR 135 581 S14	13.5	54	58.1	100	14								
2FDR 136 585 S14	13.6	54.4	58.5	100	14								
2FDR 137 589 S14	13.7	54.8	58.9	100	14								
2FDR 138 593 S14	13.8	55.2	59.3	100	14								
2FDR 139 598 S14	13.9	55.6	59.8	100	14								
2FDR 140 602 S14	14	56	60.2	100	14								
2FDR 141 606 S16	14.1	56.4	60.6	105	16								
2FDR 142 611 S16	14.2	56.8	61.1	105	16								
2FDR 143 615 S16	14.3	57.2	61.5	105	16								

2FDR 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		합금강/프리하든강 Alloy Steels / Pre-hardened Steels NAK80/KP4M		덕타일 주철 Ductile cast irons FCD		스테인레스강 Stainless Steels SUS304/SUS316	
	경도Hardness	~200HB		~30HRc		30 ~ 40HRc		40 ~ 45HRc		-		-
외경 Diameter	회전수 RPM	이송속도 FEED	회전수 RPM	이송속도 FEED	회전수 RPM	이송속도 FEED	회전수 RPM	이송속도 FEED	회전수 RPM	이송속도 FEED	회전수 RPM	이송속도 FEED
Ø 0.2	33000	35	29500	40	16500	25	14000	15	29500	30	16200	15
Ø 0.3	31500	55	25000	40	15500	30	12500	15	26500	35	15300	15
Ø 0.4	27500	75	23800	50	14500	35	11500	20	23200	40	14500	20
Ø 0.5	25800	85	22000	60	13200	40	11000	25	21500	45	13200	20
Ø 0.6	24600	115	20500	85	12000	55	10000	25	20000	60	12000	25
Ø 0.7	22500	135	19500	115	11000	70	9000	30	18500	90	11500	30
Ø 0.8	21000	180	18000	150	10500	80	8000	35	17000	120	10000	35
Ø 0.9	20500	240	16800	190	9500	95	7500	35	16000	145	9850	40
Ø 1	19500	300	16000	230	9450	110	6800	35	15700	180	9600	50
Ø 2	12000	340	10000	290	5800	150	4100	60	10000	230	-	-
Ø 3	8000	410	7100	330	3800	165	2700	70	7100	280	-	-
Ø 4	6100	425	5200	380	2700	170	2100	80	5250	300	-	-
Ø 5	4900	425	4200	280	2350	175	1650	80	4250	300	-	-
Ø 6	4150	425	3550	330	1800	175	1350	80	3550	300	-	-
Ø 8	3100	430	2700	350	1500	175	1000	80	2700	300	-	-
Ø 10	2600	430	2200	360	1100	175	850	80	2000	300	-	-
Ø 12	2100	430	1750	360	950	175	630	80	1800	310	-	-
Ø 18	1600	430	1400	360	750	175	520	80	1350	310	-	-
Ø 20	1250	430	1100	360	600	175	430	80	1000	310	-	-

- 절삭 조건표 참조는 수용성 절삭유 사용이 전제입니다. 절삭유를 사용하지 않을 시, 회전과 속도를 20% 줄여 사용하십시오.
- 절삭하는 피삭재에 따라 드릴링의 최종깊이가 직경대비 2배 이상 시 펙 드릴링 방식을 권장합니다.
- 경사 드릴 가공시, 경사진 각도에 따라(절삭 조건을) 조절하십시오. 경사각이 30도 이하일 때, 피드를 50% 낮추십시오. 경사각이 30도 이상일 때, 회전을 70% 이하, 피드를 30% 이하로 줄이십시오.
- 측면 가공용으로는 사용하지 마십시오.
- 절삭 조건을 기계 강성이나 클램프 상태에 따라 조절하십시오.
- Use the water soluble cutting oil. In case if you do not use water soluble cutting oil, reduce the RPM and the feed by 20%.
- When the final depth of drilling exceeds twice the diameter relative to the cutting material, we recommend using peck drilling method.
- For stainless drilling, we recommend that the tool diameter is 1.9mm or less.
- If you use for inclined angle as slope drilling, reduce the feed by 50% for inclined angle less than 30°, and reduce below 70% of the RPM and 30% of the feed for inclined angle over 30°.
- Do not use for side milling.
- Change cutting conditions depending on work variables: rigidity of machine, work clamp or material shape.

2FDR 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		합금강/프리하든강 Alloy Steels / Pre-hardened Steels NAK80/KP4M		덕타일 주철 FCD	
	경도Hardness	~200HB		~30HRc		30 ~ 40HRc		40 ~ 45HRc		-
외경 Diameter	회전수 RPM	이송속도 FEED	회전수 RPM	이송속도 FEED	회전수 RPM	이송속도 FEED	회전수 RPM	이송속도 FEED	회전수 RPM	이송속도 FEED
Ø 3	11000	800	9500	580	7500	320	5000	220	9300	400
Ø 4	8000	800	7200	580	5600	320	4100	220	7300	400
Ø 5	6500	800	5550	580	4500	320	3300	220	6000	400
Ø 6	5500	810	4800	590	3550	320	2700	220	5000	400
Ø 8	4100	810	3600	590	2850	320	2000	220	3800	400
Ø 10	3300	810	3000	590	2350	320	1650	220	3000	410
Ø 12	2750	820	2450	600	2000	320	1480	220	2480	410
Ø 16	2100	820	1800	600	1550	330	1000	220	1850	410
Ø 20	1650	820	1550	600	1250	330	850	220	1550	410

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- 절삭하는 피삭재에 따라 드릴링의 최종깊이가 직경대비 2배 이상 시 펙 드릴링 방식을 권장합니다.
- 측면 가공용으로는 사용하지 마십시오.
- 절삭 조건을 기계 강성이나 클램프 상태에 따라 조절하십시오.
- Use the water soluble cutting oil. In case if you do not use water soluble cutting oil, reduce the RPM and the feed by 20%.
- When the final depth of drilling exceeds twice the diameter relative to the cutting material, we recommend using peck drilling method.
- Do not use for stainless material. We recommend using 2FDRW or 2FDRW for stainless material.
- Do not use for side milling.
- Change cutting conditions depending on work variables: rigidity of machine, work clamp or material shape.