

- 그래파이트(흑연), HRc48 이하의 고경도강, 프리하든강, 공구강, 주철등 다양한 피삭재 가공
- ALTIN 코팅을 적용하여 절삭저항이 적으며, 내마모성이 우수합니다.
- 긴날장으로 설계하여, 깊은 측벽가공이 많은 흑연 가공에 가장 적합합니다.
- 미립자 초경합금을 채택하여 다양한 비철합금 및 목업의 피삭재 영역에 적용이 가능합니다.

- Endmills for various work materials, graphite, hardened steels(HRc~48), pre-hardened steels, tool steels and cast irons
- Excellent performance with low cutting force by ALTIN coating.
- Long flute length optimized for deep-side wall machining of graphite.
- Applied fine WC grade optimized for various non-ferrous and non-metallic work materials.

2

WC  
미립자

ALTIN  
Coating

R  
±0.005

R  
±0.01

R  
±0.015

30°  
Helix Angle

CUTTING  
DATA

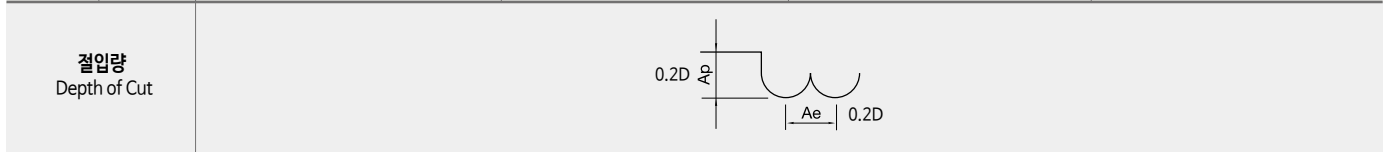
0.25 ~ 2.5R    3 ~ 6R    8 ~ 12.5R    469P

| Condition | D Size    | D Tolerance  | Condition | D Size   | D Tolerance       |
|-----------|-----------|--------------|-----------|----------|-------------------|
| øD ≠ ød   | ø0.5 ~ 25 | +0 ~ -0.01mm | øD = ød   | ø3 ~ 12  | -0.005 ~ -0.015mm |
|           |           |              |           | ø16 ~ 25 | -0.01 ~ -0.02mm   |

| Order Number     | 날경<br>Diameter<br>R × D | 날장<br>Length of cut<br>L1 | 유효장<br>Effective Length<br>L2 | 전장<br>Overall Length<br>L | 생크<br>Shank Dia<br>d | 비고 | Order Number      | 날경<br>Diameter<br>R × D | 날장<br>Length of cut<br>L1 | 유효장<br>Effective Length<br>L2 | 전장<br>Overall Length<br>L | 생크<br>Shank Dia<br>d | 비고 |
|------------------|-------------------------|---------------------------|-------------------------------|---------------------------|----------------------|----|-------------------|-------------------------|---------------------------|-------------------------------|---------------------------|----------------------|----|
| 2GBE 005 020 S04 | 0.25R X 0.5             | 2                         | -                             | 50                        | 4                    |    | 2GBE 050 250 S06  | 2.5R X 5                | 25                        | -                             | 90                        | 6                    |    |
| 2GBE 005 050 S04 | 0.25R X 0.5             | 2                         | 5                             | 50                        | 4                    |    | 2GBE 050 500 S06  | 2.5R X 5                | 25                        | 50                            | 110                       | 6                    |    |
| 2GBE 010 050 S04 | 0.5R X 1                | 5                         | -                             | 60                        | 4                    |    | 2GBE 060 250 110  | 3R X 6                  | 25                        | -                             | 110                       | 6                    |    |
| 2GBE 010 050 S06 | 0.5R X 1                | 5                         | -                             | 60                        | 6                    |    | 2GBE 060 300 150  | 3R X 6                  | 30                        | -                             | 150                       | 6                    |    |
| 2GBE 010 100 S04 | 0.5R X 1                | 5                         | 10                            | 60                        | 4                    |    | 2GBE 060 300 200  | 3R X 6                  | 30                        | -                             | 200                       | 6                    |    |
| 2GBE 010 100 S06 | 0.5R X 1                | 5                         | 10                            | 60                        | 6                    |    | 2GBE 060 300 220  | 3R X 6                  | 30                        | -                             | 220                       | 6                    |    |
| 2GBE 010 150 S04 | 0.5R X 1                | 5                         | 15                            | 60                        | 4                    |    | 2GBE 080 350 110  | 4R X 8                  | 35                        | -                             | 110                       | 8                    |    |
| 2GBE 010 200 S04 | 0.5R X 1                | 5                         | 20                            | 60                        | 4                    |    | 2GBE 080 400 150  | 4R X 8                  | 40                        | -                             | 150                       | 8                    |    |
| 2GBE 010 250 S04 | 0.5R X 1                | 5                         | 25                            | 70                        | 4                    |    | 2GBE 080 400 200  | 4R X 8                  | 40                        | -                             | 200                       | 8                    |    |
| 2GBE 010 300 S04 | 0.5R X 1                | 5                         | 30                            | 80                        | 4                    |    | 2GBE 080 400 220  | 4R X 8                  | 40                        | -                             | 220                       | 8                    |    |
| 2GBE 010 350 S04 | 0.5R X 1                | 5                         | 35                            | 80                        | 4                    |    | 2GBE 100 400 120  | 5R X 10                 | 40                        | -                             | 120                       | 10                   |    |
| 2GBE 010 400 S04 | 0.5R X 1                | 5                         | 40                            | 90                        | 4                    |    | 2GBE 100 450 150  | 5R X 10                 | 45                        | -                             | 150                       | 10                   |    |
| 2GBE 015 080 S06 | 0.75R X 1.5             | 8                         | -                             | 60                        | 6                    |    | 2GBE 100 450 200  | 5R X 10                 | 45                        | -                             | 200                       | 10                   |    |
| 2GBE 015 100 S04 | 0.75R X 1.5             | 8                         | 10                            | 60                        | 4                    |    | 2GBE 100 450 230  | 5R X 10                 | 45                        | -                             | 230                       | 10                   |    |
| 2GBE 015 150 S04 | 0.75R X 1.5             | 8                         | 15                            | 60                        | 4                    |    | 2GBE 120 500 130  | 6R X 12                 | 50                        | -                             | 130                       | 12                   |    |
| 2GBE 015 150 S06 | 0.75R X 1.5             | 8                         | 15                            | 60                        | 6                    |    | 2GBE 120 500 150  | 6R X 12                 | 50                        | -                             | 150                       | 12                   |    |
| 2GBE 015 200 S04 | 0.75R X 1.5             | 8                         | 20                            | 60                        | 4                    |    | 2GBE 120 550 200  | 6R X 12                 | 55                        | -                             | 200                       | 12                   |    |
| 2GBE 015 250 S04 | 0.75R X 1.5             | 8                         | 25                            | 70                        | 4                    |    | 2GBE 120 550 250  | 6R X 12                 | 55                        | -                             | 250                       | 12                   |    |
| 2GBE 015 300 S04 | 0.75R X 1.5             | 8                         | 30                            | 80                        | 4                    |    | 2GBE 160 600 160  | 8R X 16                 | 60                        | -                             | 160                       | 16                   |    |
| 2GBE 015 350 S04 | 0.75R X 1.5             | 8                         | 35                            | 80                        | 4                    |    | 2GBE 160 650 200  | 8R X 16                 | 65                        | -                             | 200                       | 16                   |    |
| 2GBE 015 400 S04 | 0.75R X 1.5             | 8                         | 40                            | 90                        | 4                    |    | 2GBE 160 650 250  | 8R X 16                 | 65                        | -                             | 250                       | 16                   |    |
| 2GBE 020 100 S04 | 1R X 2                  | 10                        | -                             | 60                        | 4                    |    | 2GBE 160 700 320  | 8R X 16                 | 70                        | -                             | 320                       | 16                   |    |
| 2GBE 020 100 S06 | 1R X 2                  | 10                        | -                             | 70                        | 6                    |    | 2GBE 200 700 160  | 10R X 20                | 70                        | -                             | 160                       | 20                   |    |
| 2GBE 020 150 S04 | 1R X 2                  | 10                        | 15                            | 60                        | 4                    |    | 2GBE 200 750 200  | 10R X 20                | 75                        | -                             | 200                       | 20                   |    |
| 2GBE 020 200 S04 | 1R X 2                  | 10                        | 20                            | 60                        | 4                    |    | 2GBE 200 750 250  | 10R X 20                | 75                        | -                             | 250                       | 20                   |    |
| 2GBE 020 200 S06 | 1R X 2                  | 10                        | 20                            | 70                        | 6                    |    | 2GBE 200 900 320  | 10R X 20                | 90                        | -                             | 320                       | 20                   |    |
| 2GBE 020 250 S04 | 1R X 2                  | 10                        | 25                            | 70                        | 4                    |    | 2GBE 250 1000 250 | 12.5R X 25              | 100                       | -                             | 250                       | 25                   |    |
| 2GBE 020 300 S04 | 1R X 2                  | 10                        | 30                            | 80                        | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 020 350 S04 | 1R X 2                  | 10                        | 35                            | 80                        | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 020 400 S04 | 1R X 2                  | 10                        | 40                            | 90                        | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 020 500 S04 | 1R X 2                  | 10                        | 50                            | 100                       | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 020 600 S04 | 1R X 2                  | 10                        | 60                            | 100                       | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 025 200 S04 | 1.25R X 2.5             | 10                        | 20                            | 70                        | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 030 150 100 | 1.5R X 3                | 15                        | -                             | 100                       | 3                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 030 150 S06 | 1.5R X 3                | 15                        | -                             | 70                        | 6                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 030 200 S04 | 1.5R X 3                | 15                        | 20                            | 70                        | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 030 300 S04 | 1.5R X 3                | 15                        | 30                            | 80                        | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 030 300 S06 | 1.5R X 3                | 15                        | 30                            | 75                        | 6                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 030 400 S04 | 1.5R X 3                | 15                        | 40                            | 90                        | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 030 400 S06 | 1.5R X 3                | 15                        | 40                            | 90                        | 6                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 030 500 S04 | 1.5R X 3                | 15                        | 50                            | 100                       | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 030 600 S04 | 1.5R X 3                | 15                        | 60                            | 100                       | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 040 200 080 | 2R X 4                  | 20                        | -                             | 80                        | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 040 200 100 | 2R X 4                  | 20                        | -                             | 100                       | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 040 200 130 | 2R X 4                  | 20                        | -                             | 130                       | 4                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 040 200 S06 | 2R X 4                  | 20                        | -                             | 75                        | 6                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 040 350 S06 | 2R X 4                  | 20                        | 35                            | 90                        | 6                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 040 450 S06 | 2R X 4                  | 20                        | 45                            | 100                       | 6                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 050 250 100 | 2.5R X 5                | 25                        | -                             | 100                       | 5                    |    |                   |                         |                           |                               |                           |                      |    |
| 2GBE 050 250 130 | 2.5R X 5                | 25                        | -                             | 130                       | 5                    |    |                   |                         |                           |                               |                           |                      |    |

FOR GRAPHITE

| 피삭재 Material |                      | 흑연 Graphite |       |                |                 |
|--------------|----------------------|-------------|-------|----------------|-----------------|
| 반경 Radius    | 유효장 Effective Length | RPM         | FEED  | Ap Axial Depth | Ae Radial Depth |
| R 0.25       | 5                    | 25,000      | 320   | 0.10           | 0.10            |
| R 0.5        | 10                   | 21,850      | 380   | 0.20           | 0.20            |
| "            | 20                   | 19,665      | 342   | 0.18           | 0.18            |
| "            | 30                   | 18,682      | 325   | 0.15           | 0.15            |
| R 0.75       | 10                   | 21,850      | 646   | 0.30           | 0.30            |
| "            | 20                   | 19,665      | 630   | 0.27           | 0.27            |
| "            | 30                   | 18,682      | 580   | 0.23           | 0.23            |
| R 1          | 15                   | 19,950      | 760   | 0.40           | 0.40            |
| "            | 20                   | 17,955      | 684   | 0.36           | 0.36            |
| "            | 30                   | 16,160      | 616   | 0.32           | 0.32            |
| "            | 40                   | 13,736      | 523   | 0.26           | 0.26            |
| "            | 50                   | 10,988      | 419   | 0.21           | 0.21            |
| R 1.5        | 20                   | 17,575      | 1,378 | 0.60           | 0.60            |
| "            | 30                   | 15,818      | 1,240 | 0.54           | 0.54            |
| "            | 40                   | 14,236      | 1,116 | 0.49           | 0.49            |
| "            | 50                   | 12,100      | 948   | 0.44           | 0.44            |
| R 2          | 20                   | 15,200      | 1,995 | 0.80           | 0.80            |
| "            | 35                   | 13,680      | 1,796 | 0.72           | 0.72            |
| "            | 45                   | 12,312      | 1,616 | 0.61           | 0.61            |
| R 2.5        | 25                   | 14,725      | 2,423 | 1.00           | 1.00            |
| "            | 50                   | 11,780      | 1,938 | 0.80           | 0.80            |
| R 3          | 25                   | 14,250      | 2,803 | 1.20           | 1.20            |
| R 4          | 30                   | 12,350      | 2,850 | 1.60           | 1.60            |
| R 5          | -                    | 10,925      | 2,898 | 2.00           | 2.00            |
| R 6          | -                    | 9,975       | 2,993 | 2.40           | 2.40            |
| R 8          | -                    | 7,600       | 2,375 | 3.20           | 3.20            |
| R 10         | -                    | 6,175       | 1,900 | 4.00           | 4.00            |



- 유효장이 긴 경우에는 회전수와 이송속도를 최대20% 이하로 줄이십시오.
- 절삭 조건표에 없는 유효장은 같은 직경과 비례하여 DOWN 시켜주십시오.
- 상기 절삭조건은 참고 수치이므로 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망 합니다.
- 공작기계와 가공물의 강성이 없는 경우, 진동이 발생할시 조건표에 회전속도와 이송속도를 같은 비율로 줄여서 적용 합니다.
- In case of long effective length, reduce the RPM and feed by 20% or less.
- If the effective length of your tool does not show above the table, use the shorten effevtive length of parameter and reduce the parameters in the same proportion.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- In case of workpiece and machine do not have enough rigidity and make vibration, reduce the RPM and feed in same proportion.