

- 고정도강(HRc52~70), 프리하드강 계열의 고정밀 가공 엔드밀
- 고품질 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너 R 형상을 날부치평이 적도록 설계하였습니다.
- 다양한 코너R과 유효장으로 맞춤 가공이 가능합니다.
- 초미립자 초경합금(0.2µm)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.

#### Endmills for pre-hardened and hardened steel(HRc52~70)

- Good wear resistance by high quality Si-based PVD coating.
- High precise edge tolerance.
- Designed for minimizing edge chipping by corner R shape.
- Various corner R and flute length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2µm) WC grade.



| D Size    | D Tolerance       |
|-----------|-------------------|
| Ø 0.2 ~ 5 | +0 ~ -0.01mm      |
| Ø 6 ~ 12  | -0.005 ~ -0.015mm |
| Ø 16      | -0.01 ~ -0.02mm   |

단위: mm

| Order Number       | 날경<br>Diameter<br>D × R | 날장<br>Length of cut<br>L1 | 유효장<br>Effective Length<br>L2 | 전장<br>Overall Length<br>L | 샙크<br>Shank Dia<br>d | 비고 |
|--------------------|-------------------------|---------------------------|-------------------------------|---------------------------|----------------------|----|
| 2JJCR 002 0002 005 | 0.2 X R0.02             | 0.2                       | 0.5                           | 40                        | 4                    |    |
| 2JJCR 002 0002 010 | 0.2 X R0.02             | 0.2                       | 1                             | 40                        | 4                    |    |
| 2JJCR 002 0002 015 | 0.2 X R0.02             | 0.2                       | 1.5                           | 40                        | 4                    |    |
| 2JJCR 002 0005 005 | 0.2 X R0.05             | 0.2                       | 0.5                           | 40                        | 4                    |    |
| 2JJCR 002 0005 010 | 0.2 X R0.05             | 0.2                       | 1                             | 40                        | 4                    |    |
| 2JJCR 002 0005 015 | 0.2 X R0.05             | 0.2                       | 1.5                           | 40                        | 4                    |    |
| 2JJCR 003 0002 010 | 0.3 X R0.02             | 0.3                       | 1                             | 40                        | 4                    |    |
| 2JJCR 003 0002 020 | 0.3 X R0.02             | 0.3                       | 2                             | 40                        | 4                    |    |
| 2JJCR 003 0002 030 | 0.3 X R0.02             | 0.3                       | 3                             | 40                        | 4                    |    |
| 2JJCR 003 0005 010 | 0.3 X R0.05             | 0.3                       | 1                             | 40                        | 4                    |    |
| 2JJCR 003 0005 020 | 0.3 X R0.05             | 0.3                       | 2                             | 40                        | 4                    |    |
| 2JJCR 003 0005 030 | 0.3 X R0.05             | 0.3                       | 3                             | 40                        | 4                    |    |
| 2JJCR 004 0002 010 | 0.4 X R0.02             | 0.4                       | 1                             | 40                        | 4                    |    |
| 2JJCR 004 0002 020 | 0.4 X R0.02             | 0.4                       | 2                             | 40                        | 4                    |    |
| 2JJCR 004 0002 030 | 0.4 X R0.02             | 0.4                       | 3                             | 40                        | 4                    |    |
| 2JJCR 004 0002 040 | 0.4 X R0.02             | 0.4                       | 4                             | 40                        | 4                    |    |
| 2JJCR 004 0005 010 | 0.4 X R0.05             | 0.4                       | 1                             | 40                        | 4                    |    |
| 2JJCR 004 0005 020 | 0.4 X R0.05             | 0.4                       | 2                             | 40                        | 4                    |    |
| 2JJCR 004 0005 030 | 0.4 X R0.05             | 0.4                       | 3                             | 40                        | 4                    |    |
| 2JJCR 004 0005 040 | 0.4 X R0.05             | 0.4                       | 4                             | 40                        | 4                    |    |
| 2JJCR 004 001 010  | 0.4 X R0.1              | 0.4                       | 1                             | 40                        | 4                    |    |
| 2JJCR 004 001 015  | 0.4 X R0.1              | 0.4                       | 1.5                           | 40                        | 4                    |    |
| 2JJCR 004 001 020  | 0.4 X R0.1              | 0.4                       | 2                             | 40                        | 4                    |    |
| 2JJCR 004 001 030  | 0.4 X R0.1              | 0.4                       | 3                             | 40                        | 4                    |    |
| 2JJCR 004 001 040  | 0.4 X R0.1              | 0.4                       | 4                             | 40                        | 4                    |    |
| 2JJCR 005 0002 010 | 0.5 X R0.02             | 0.5                       | 1                             | 45                        | 4                    |    |
| 2JJCR 005 0002 015 | 0.5 X R0.02             | 0.5                       | 1.5                           | 45                        | 4                    |    |
| 2JJCR 005 0002 020 | 0.5 X R0.02             | 0.5                       | 2                             | 45                        | 4                    |    |
| 2JJCR 005 0002 025 | 0.5 X R0.02             | 0.5                       | 2.5                           | 45                        | 4                    |    |
| 2JJCR 005 0002 030 | 0.5 X R0.02             | 0.5                       | 3                             | 45                        | 4                    |    |
| 2JJCR 005 0002 040 | 0.5 X R0.02             | 0.5                       | 4                             | 45                        | 4                    |    |
| 2JJCR 005 0002 050 | 0.5 X R0.02             | 0.5                       | 5                             | 45                        | 4                    |    |
| 2JJCR 005 0002 060 | 0.5 X R0.02             | 0.5                       | 6                             | 45                        | 4                    |    |
| 2JJCR 005 0002 080 | 0.5 X R0.02             | 0.5                       | 8                             | 45                        | 4                    |    |
| 2JJCR 005 0002 100 | 0.5 X R0.02             | 0.5                       | 10                            | 45                        | 4                    |    |
| 2JJCR 005 0005 010 | 0.5 X R0.05             | 0.5                       | 1                             | 45                        | 4                    |    |
| 2JJCR 005 0005 015 | 0.5 X R0.05             | 0.5                       | 1.5                           | 45                        | 4                    |    |
| 2JJCR 005 0005 020 | 0.5 X R0.05             | 0.5                       | 2                             | 45                        | 4                    |    |
| 2JJCR 005 0005 025 | 0.5 X R0.05             | 0.5                       | 2.5                           | 45                        | 4                    |    |
| 2JJCR 005 0005 030 | 0.5 X R0.05             | 0.5                       | 3                             | 45                        | 4                    |    |
| 2JJCR 005 0005 040 | 0.5 X R0.05             | 0.5                       | 4                             | 45                        | 4                    |    |
| 2JJCR 005 0005 050 | 0.5 X R0.05             | 0.5                       | 5                             | 45                        | 4                    |    |
| 2JJCR 005 0005 060 | 0.5 X R0.05             | 0.5                       | 6                             | 45                        | 4                    |    |
| 2JJCR 005 0005 080 | 0.5 X R0.05             | 0.5                       | 8                             | 45                        | 4                    |    |
| 2JJCR 005 0005 100 | 0.5 X R0.05             | 0.5                       | 10                            | 45                        | 4                    |    |
| 2JJCR 005 001 010  | 0.5 X R0.1              | 0.5                       | 1                             | 45                        | 4                    |    |
| 2JJCR 005 001 015  | 0.5 X R0.1              | 0.5                       | 1.5                           | 45                        | 4                    |    |
| 2JJCR 005 001 020  | 0.5 X R0.1              | 0.5                       | 2                             | 45                        | 4                    |    |
| 2JJCR 005 001 025  | 0.5 X R0.1              | 0.5                       | 2.5                           | 45                        | 4                    |    |
| 2JJCR 005 001 030  | 0.5 X R0.1              | 0.5                       | 3                             | 45                        | 4                    |    |

| Order Number           | 날경<br>Diameter<br>D × R | 날장<br>Length of cut<br>L1 | 유효장<br>Effective Length<br>L2 | 전장<br>Overall Length<br>L | 샙크<br>Shank Dia<br>d | 비고 |
|------------------------|-------------------------|---------------------------|-------------------------------|---------------------------|----------------------|----|
| 2JJCR 005 001 040      | 0.5 X R0.1              | 0.5                       | 4                             | 45                        | 4                    |    |
| 2JJCR 005 001 050      | 0.5 X R0.1              | 0.5                       | 5                             | 45                        | 4                    |    |
| 2JJCR 005 001 060      | 0.5 X R0.1              | 0.5                       | 6                             | 45                        | 4                    |    |
| New 2JJCR 005 001 080  | 0.5 X R0.1              | 0.5                       | 8                             | 45                        | 4                    |    |
| New 2JJCR 005 001 100  | 0.5 X R0.1              | 0.5                       | 10                            | 45                        | 4                    |    |
| 2JJCR 006 0002 020     | 0.6 X R0.02             | 0.6                       | 2                             | 45                        | 4                    |    |
| 2JJCR 006 0002 030     | 0.6 X R0.02             | 0.6                       | 3                             | 45                        | 4                    |    |
| 2JJCR 006 0002 040     | 0.6 X R0.02             | 0.6                       | 4                             | 45                        | 4                    |    |
| 2JJCR 006 0002 060     | 0.6 X R0.02             | 0.6                       | 6                             | 45                        | 4                    |    |
| 2JJCR 006 0002 080     | 0.6 X R0.02             | 0.6                       | 8                             | 45                        | 4                    |    |
| 2JJCR 0060002 100      | 0.6 X R0.02             | 0.6                       | 10                            | 45                        | 4                    |    |
| New 2JJCR 0060002 120  | 0.6 X R0.02             | 0.6                       | 12                            | 50                        | 4                    |    |
| 2JJCR 006 0005 020     | 0.6 X R0.05             | 0.6                       | 2                             | 45                        | 4                    |    |
| 2JJCR 006 0005 030     | 0.6 X R0.05             | 0.6                       | 3                             | 45                        | 4                    |    |
| 2JJCR 006 0005 040     | 0.6 X R0.05             | 0.6                       | 4                             | 45                        | 4                    |    |
| 2JJCR 006 0005 060     | 0.6 X R0.05             | 0.6                       | 6                             | 45                        | 4                    |    |
| 2JJCR 006 0005 080     | 0.6 X R0.05             | 0.6                       | 8                             | 45                        | 4                    |    |
| 2JJCR 0060005 100      | 0.6 X R0.05             | 0.6                       | 10                            | 45                        | 4                    |    |
| New 2JJCR 0060005 120  | 0.6 X R0.05             | 0.6                       | 12                            | 50                        | 4                    |    |
| 2JJCR 006 001 020      | 0.6 X R0.1              | 0.6                       | 2                             | 45                        | 4                    |    |
| 2JJCR 006 001 030      | 0.6 X R0.1              | 0.6                       | 3                             | 45                        | 4                    |    |
| 2JJCR 006 001 040      | 0.6 X R0.1              | 0.6                       | 4                             | 45                        | 4                    |    |
| 2JJCR 006 001 060      | 0.6 X R0.1              | 0.6                       | 6                             | 45                        | 4                    |    |
| 2JJCR 006 001 080      | 0.6 X R0.1              | 0.6                       | 8                             | 45                        | 4                    |    |
| 2JJCR 006001 100       | 0.6 X R0.1              | 0.6                       | 10                            | 45                        | 4                    |    |
| New 2JJCR 006001 120   | 0.6 X R0.1              | 0.6                       | 12                            | 50                        | 4                    |    |
| 2JJCR 007 001 020      | 0.7 X R0.1              | 0.7                       | 2                             | 45                        | 4                    |    |
| 2JJCR 007 001 040      | 0.7 X R0.1              | 0.7                       | 4                             | 45                        | 4                    |    |
| 2JJCR 007 001 060      | 0.7 X R0.1              | 0.7                       | 6                             | 45                        | 4                    |    |
| New 2JJCR 007 001 080  | 0.7 X R0.1              | 0.7                       | 8                             | 45                        | 4                    |    |
| New 2JJCR 007 001 100  | 0.7 X R0.1              | 0.7                       | 10                            | 45                        | 4                    |    |
| 2JJCR 008 0002 020     | 0.8 X R0.02             | 0.8                       | 2                             | 45                        | 4                    |    |
| 2JJCR 008 0002 040     | 0.8 X R0.02             | 0.8                       | 4                             | 45                        | 4                    |    |
| 2JJCR 008 0002 060     | 0.8 X R0.02             | 0.8                       | 6                             | 45                        | 4                    |    |
| 2JJCR 008 0002 080     | 0.8 X R0.02             | 0.8                       | 8                             | 45                        | 4                    |    |
| 2JJCR 008 0002 100     | 0.8 X R0.02             | 0.8                       | 10                            | 45                        | 4                    |    |
| New 2JJCR 008 0002 120 | 0.8 X R0.02             | 0.8                       | 12                            | 50                        | 4                    |    |
| 2JJCR 008 0005 020     | 0.8 X R0.05             | 0.8                       | 2                             | 45                        | 4                    |    |
| 2JJCR 008 0005 040     | 0.8 X R0.05             | 0.8                       | 4                             | 45                        | 4                    |    |
| 2JJCR 008 0005 060     | 0.8 X R0.05             | 0.8                       | 6                             | 45                        | 4                    |    |
| 2JJCR 008 0005 080     | 0.8 X R0.05             | 0.8                       | 8                             | 45                        | 4                    |    |
| 2JJCR 008 0005 100     | 0.8 X R0.05             | 0.8                       | 10                            | 45                        | 4                    |    |
| New 2JJCR 008 0005 120 | 0.8 X R0.05             | 0.8                       | 12                            | 50                        | 4                    |    |
| 2JJCR 008 001 020      | 0.8 X R0.1              | 0.8                       | 2                             | 45                        | 4                    |    |
| 2JJCR 008 001 040      | 0.8 X R0.1              | 0.8                       | 4                             | 45                        | 4                    |    |
| 2JJCR 008 001 060      | 0.8 X R0.1              | 0.8                       | 6                             | 45                        | 4                    |    |
| 2JJCR 008 001 080      | 0.8 X R0.1              | 0.8                       | 8                             | 45                        | 4                    |    |
| 2JJCR 008 001 100      | 0.8 X R0.1              | 0.8                       | 10                            | 45                        | 4                    |    |
| New 2JJCR 008 001 120  | 0.8 X R0.1              | 0.8                       | 12                            | 50                        | 4                    |    |
| 2JJCR 008 002 020      | 0.8 X R0.2              | 0.8                       | 2                             | 45                        | 4                    |    |

단위: mm

| Order Number           | 날경<br>D × R | 날장<br>Length of cut<br>L1 | 유효장<br>Effective Length<br>L2 | 전장<br>Overall Length<br>L | 샙크<br>Shank Dia<br>d | 비고 | Order Number           | 날경<br>D × R | 날장<br>Length of cut<br>L1 | 유효장<br>Effective Length<br>L2 | 전장<br>Overall Length<br>L | 샙크<br>Shank Dia<br>d | 비고 |
|------------------------|-------------|---------------------------|-------------------------------|---------------------------|----------------------|----|------------------------|-------------|---------------------------|-------------------------------|---------------------------|----------------------|----|
| 2JJCR 008 002 040      | 0.8 X R0.2  | 0.8                       | 4                             | 45                        | 4                    |    | 2JJCR 012 001 100      | 1.2 X R0.1  | 1.2                       | 10                            | 50                        | 4                    |    |
| 2JJCR 008 002 060      | 0.8 X R0.2  | 0.8                       | 6                             | 45                        | 4                    |    | 2JJCR 012 001 120      | 1.2 X R0.1  | 1.2                       | 12                            | 50                        | 4                    |    |
| 2JJCR 008 002 080      | 0.8 X R0.2  | 0.8                       | 8                             | 45                        | 4                    |    | New 2JJCR 012 001 140  | 1.2 X R0.1  | 1.2                       | 14                            | 50                        | 4                    |    |
| 2JJCR 008 002 100      | 0.8 X R0.2  | 0.8                       | 10                            | 45                        | 4                    |    | 2JJCR 012 001 160      | 1.2 X R0.1  | 1.2                       | 16                            | 50                        | 4                    |    |
| New 2JJCR 008 002 120  | 0.8 X R0.2  | 0.8                       | 12                            | 50                        | 4                    |    | 2JJCR 012 001 200      | 1.2 X R0.1  | 1.2                       | 20                            | 50                        | 4                    |    |
| 2JJCR 010 0002 040     | 1 X R0.02   | 1                         | 4                             | 45                        | 4                    |    | 2JJCR 012 002 040      | 1.2 X R0.2  | 1.2                       | 4                             | 45                        | 4                    |    |
| 2JJCR 010 0002 060     | 1 X R0.02   | 1                         | 6                             | 45                        | 4                    |    | 2JJCR 012 002 060      | 1.2 X R0.2  | 1.2                       | 6                             | 45                        | 4                    |    |
| 2JJCR 010 0002 080     | 1 X R0.02   | 1                         | 8                             | 45                        | 4                    |    | 2JJCR 012 002 080      | 1.2 X R0.2  | 1.2                       | 8                             | 45                        | 4                    |    |
| 2JJCR 010 0002 100     | 1 X R0.02   | 1                         | 10                            | 50                        | 4                    |    | 2JJCR 012 002 100      | 1.2 X R0.2  | 1.2                       | 10                            | 50                        | 4                    |    |
| 2JJCR 010 0002 120     | 1 X R0.02   | 1                         | 12                            | 50                        | 4                    |    | 2JJCR 012 002 120      | 1.2 X R0.2  | 1.2                       | 12                            | 50                        | 4                    |    |
| New 2JJCR 010 0002 140 | 1 X R0.02   | 1                         | 14                            | 50                        | 4                    |    | New 2JJCR 012 002 140  | 1.2 X R0.2  | 1.2                       | 14                            | 50                        | 4                    |    |
| 2JJCR 010 0002 160     | 1 X R0.02   | 1                         | 16                            | 50                        | 4                    |    | 2JJCR 012 002 160      | 1.2 X R0.2  | 1.2                       | 16                            | 50                        | 4                    |    |
| 2JJCR 010 0002 200     | 1 X R0.02   | 1                         | 20                            | 50                        | 4                    |    | 2JJCR 012 002 200      | 1.2 X R0.2  | 1.2                       | 20                            | 50                        | 4                    |    |
| 2JJCR 010 0005 040     | 1 X R0.05   | 1                         | 4                             | 45                        | 4                    |    | 2JJCR 012 003 040      | 1.2 X R0.3  | 1.2                       | 4                             | 45                        | 4                    |    |
| 2JJCR 010 0005 060     | 1 X R0.05   | 1                         | 6                             | 45                        | 4                    |    | 2JJCR 012 003 060      | 1.2 X R0.3  | 1.2                       | 6                             | 45                        | 4                    |    |
| 2JJCR 010 0005 080     | 1 X R0.05   | 1                         | 8                             | 45                        | 4                    |    | 2JJCR 012 003 080      | 1.2 X R0.3  | 1.2                       | 8                             | 45                        | 4                    |    |
| 2JJCR 010 0005 100     | 1 X R0.05   | 1                         | 10                            | 50                        | 4                    |    | 2JJCR 012 003 100      | 1.2 X R0.3  | 1.2                       | 10                            | 50                        | 4                    |    |
| 2JJCR 010 0005 120     | 1 X R0.05   | 1                         | 12                            | 50                        | 4                    |    | 2JJCR 012 003 120      | 1.2 X R0.3  | 1.2                       | 12                            | 50                        | 4                    |    |
| New 2JJCR 010 0005 140 | 1 X R0.05   | 1                         | 14                            | 50                        | 4                    |    | New 2JJCR 012 003 140  | 1.2 X R0.3  | 1.2                       | 14                            | 50                        | 4                    |    |
| 2JJCR 010 0005 160     | 1 X R0.05   | 1                         | 16                            | 50                        | 4                    |    | 2JJCR 012 003 160      | 1.2 X R0.3  | 1.2                       | 16                            | 50                        | 4                    |    |
| 2JJCR 010 0005 200     | 1 X R0.05   | 1                         | 20                            | 50                        | 4                    |    | 2JJCR 012 003 200      | 1.2 X R0.3  | 1.2                       | 20                            | 50                        | 4                    |    |
| 2JJCR 010 001 040      | 1 X R0.1    | 1                         | 4                             | 45                        | 4                    |    | 2JJCR 015 0002 040     | 1.5 X R0.02 | 1.5                       | 4                             | 45                        | 4                    |    |
| 2JJCR 010 001 060      | 1 X R0.1    | 1                         | 6                             | 45                        | 4                    |    | 2JJCR 015 0002 060     | 1.5 X R0.02 | 1.5                       | 6                             | 45                        | 4                    |    |
| 2JJCR 010 001 080      | 1 X R0.1    | 1                         | 8                             | 45                        | 4                    |    | 2JJCR 015 0002 080     | 1.5 X R0.02 | 1.5                       | 8                             | 45                        | 4                    |    |
| 2JJCR 010 001 100      | 1 X R0.1    | 1                         | 10                            | 50                        | 4                    |    | 2JJCR 015 0002 100     | 1.5 X R0.02 | 1.5                       | 10                            | 50                        | 4                    |    |
| 2JJCR 010 001 120      | 1 X R0.1    | 1                         | 12                            | 50                        | 4                    |    | 2JJCR 015 0002 120     | 1.5 X R0.02 | 1.5                       | 12                            | 50                        | 4                    |    |
| New 2JJCR 010 001 140  | 1 X R0.1    | 1                         | 14                            | 50                        | 4                    |    | New 2JJCR 015 0002 140 | 1.5 X R0.02 | 1.5                       | 14                            | 50                        | 4                    |    |
| 2JJCR 010 001 160      | 1 X R0.1    | 1                         | 16                            | 50                        | 4                    |    | 2JJCR 015 0002 160     | 1.5 X R0.02 | 1.5                       | 16                            | 50                        | 4                    |    |
| 2JJCR 010 001 200      | 1 X R0.1    | 1                         | 20                            | 50                        | 4                    |    | 2JJCR 015 0002 200     | 1.5 X R0.02 | 1.5                       | 20                            | 50                        | 4                    |    |
| 2JJCR 010 002 040      | 1 X R0.2    | 1                         | 4                             | 45                        | 4                    |    | 2JJCR 015 0005 040     | 1.5 X R0.05 | 1.5                       | 4                             | 45                        | 4                    |    |
| 2JJCR 010 002 060      | 1 X R0.2    | 1                         | 6                             | 45                        | 4                    |    | 2JJCR 015 0005 060     | 1.5 X R0.05 | 1.5                       | 6                             | 45                        | 4                    |    |
| 2JJCR 010 002 080      | 1 X R0.2    | 1                         | 8                             | 45                        | 4                    |    | 2JJCR 015 0005 080     | 1.5 X R0.05 | 1.5                       | 8                             | 45                        | 4                    |    |
| 2JJCR 010 002 100      | 1 X R0.2    | 1                         | 10                            | 50                        | 4                    |    | 2JJCR 015 0005 100     | 1.5 X R0.05 | 1.5                       | 10                            | 50                        | 4                    |    |
| 2JJCR 010 002 120      | 1 X R0.2    | 1                         | 12                            | 50                        | 4                    |    | 2JJCR 015 0005 120     | 1.5 X R0.05 | 1.5                       | 12                            | 50                        | 4                    |    |
| New 2JJCR 010 002 140  | 1 X R0.2    | 1                         | 14                            | 50                        | 4                    |    | New 2JJCR 015 0005 140 | 1.5 X R0.05 | 1.5                       | 14                            | 50                        | 4                    |    |
| 2JJCR 010 002 160      | 1 X R0.2    | 1                         | 16                            | 50                        | 4                    |    | 2JJCR 015 0005 160     | 1.5 X R0.05 | 1.5                       | 16                            | 50                        | 4                    |    |
| 2JJCR 010 002 200      | 1 X R0.2    | 1                         | 20                            | 50                        | 4                    |    | 2JJCR 015 0005 200     | 1.5 X R0.05 | 1.5                       | 20                            | 50                        | 4                    |    |
| 2JJCR 010 003 040      | 1 X R0.3    | 1                         | 4                             | 45                        | 4                    |    | 2JJCR 015 001 040      | 1.5 X R0.1  | 1.5                       | 4                             | 45                        | 4                    |    |
| 2JJCR 010 003 060      | 1 X R0.3    | 1                         | 6                             | 45                        | 4                    |    | 2JJCR 015 001 060      | 1.5 X R0.1  | 1.5                       | 6                             | 45                        | 4                    |    |
| 2JJCR 010 003 080      | 1 X R0.3    | 1                         | 8                             | 45                        | 4                    |    | 2JJCR 015 001 080      | 1.5 X R0.1  | 1.5                       | 8                             | 45                        | 4                    |    |
| 2JJCR 010 003 100      | 1 X R0.3    | 1                         | 10                            | 50                        | 4                    |    | 2JJCR 015 001 100      | 1.5 X R0.1  | 1.5                       | 10                            | 50                        | 4                    |    |
| 2JJCR 010 003 120      | 1 X R0.3    | 1                         | 12                            | 50                        | 4                    |    | 2JJCR 015 001 120      | 1.5 X R0.1  | 1.5                       | 12                            | 50                        | 4                    |    |
| New 2JJCR 010 003 140  | 1 X R0.3    | 1                         | 14                            | 50                        | 4                    |    | New 2JJCR 015 001 140  | 1.5 X R0.1  | 1.5                       | 14                            | 50                        | 4                    |    |
| 2JJCR 010 003 160      | 1 X R0.3    | 1                         | 16                            | 50                        | 4                    |    | 2JJCR 015 001 160      | 1.5 X R0.1  | 1.5                       | 16                            | 50                        | 4                    |    |
| 2JJCR 010 003 200      | 1 X R0.3    | 1                         | 20                            | 50                        | 4                    |    | 2JJCR 015 001 200      | 1.5 X R0.1  | 1.5                       | 20                            | 50                        | 4                    |    |
| 2JJCR 012 0002 040     | 1.2 X R0.02 | 1.2                       | 4                             | 45                        | 4                    |    | 2JJCR 015 002 040      | 1.5 X R0.2  | 1.5                       | 4                             | 45                        | 4                    |    |
| 2JJCR 012 0002 060     | 1.2 X R0.02 | 1.2                       | 6                             | 45                        | 4                    |    | 2JJCR 015 002 060      | 1.5 X R0.2  | 1.5                       | 6                             | 45                        | 4                    |    |
| 2JJCR 012 0002 080     | 1.2 X R0.02 | 1.2                       | 8                             | 45                        | 4                    |    | 2JJCR 015 002 080      | 1.5 X R0.2  | 1.5                       | 8                             | 45                        | 4                    |    |
| 2JJCR 012 0002 100     | 1.2 X R0.02 | 1.2                       | 10                            | 50                        | 4                    |    | 2JJCR 015 002 100      | 1.5 X R0.2  | 1.5                       | 10                            | 50                        | 4                    |    |
| 2JJCR 012 0002 120     | 1.2 X R0.02 | 1.2                       | 12                            | 50                        | 4                    |    | 2JJCR 015 002 120      | 1.5 X R0.2  | 1.5                       | 12                            | 50                        | 4                    |    |
| New 2JJCR 012 0002 140 | 1.2 X R0.02 | 1.2                       | 14                            | 50                        | 4                    |    | New 2JJCR 015 002 140  | 1.5 X R0.2  | 1.5                       | 14                            | 50                        | 4                    |    |
| 2JJCR 012 0002 160     | 1.2 X R0.02 | 1.2                       | 16                            | 50                        | 4                    |    | 2JJCR 015 002 160      | 1.5 X R0.2  | 1.5                       | 16                            | 50                        | 4                    |    |
| 2JJCR 012 0002 200     | 1.2 X R0.02 | 1.2                       | 20                            | 50                        | 4                    |    | 2JJCR 015 002 200      | 1.5 X R0.2  | 1.5                       | 20                            | 50                        | 4                    |    |
| 2JJCR 012 0005 040     | 1.2 X R0.05 | 1.2                       | 4                             | 45                        | 4                    |    | 2JJCR 015 003 040      | 1.5 X R0.3  | 1.5                       | 4                             | 45                        | 4                    |    |
| 2JJCR 012 0005 060     | 1.2 X R0.05 | 1.2                       | 6                             | 45                        | 4                    |    | 2JJCR 015 003 060      | 1.5 X R0.3  | 1.5                       | 6                             | 45                        | 4                    |    |
| 2JJCR 012 0005 080     | 1.2 X R0.05 | 1.2                       | 8                             | 45                        | 4                    |    | 2JJCR 015 003 080      | 1.5 X R0.3  | 1.5                       | 8                             | 45                        | 4                    |    |
| 2JJCR 012 0005 100     | 1.2 X R0.05 | 1.2                       | 10                            | 50                        | 4                    |    | 2JJCR 015 003 100      | 1.5 X R0.3  | 1.5                       | 10                            | 50                        | 4                    |    |
| 2JJCR 012 0005 120     | 1.2 X R0.05 | 1.2                       | 12                            | 50                        | 4                    |    | 2JJCR 015 003 120      | 1.5 X R0.3  | 1.5                       | 12                            | 50                        | 4                    |    |
| New 2JJCR 012 0005 140 | 1.2 X R0.05 | 1.2                       | 14                            | 50                        | 4                    |    | New 2JJCR 015 003 140  | 1.5 X R0.3  | 1.5                       | 14                            | 50                        | 4                    |    |
| 2JJCR 012 0005 160     | 1.2 X R0.05 | 1.2                       | 16                            | 50                        | 4                    |    | 2JJCR 015 003 160      | 1.5 X R0.3  | 1.5                       | 16                            | 50                        | 4                    |    |
| 2JJCR 012 0005 200     | 1.2 X R0.05 | 1.2                       | 20                            | 50                        | 4                    |    | 2JJCR 015 003 200      | 1.5 X R0.3  | 1.5                       | 20                            | 50                        | 4                    |    |
| 2JJCR 012 001 040      | 1.2 X R0.1  | 1.2                       | 4                             | 45                        | 4                    |    | 2JJCR 015 005 040      | 1.5 X R0.5  | 1.5                       | 4                             | 45                        | 4                    |    |
| 2JJCR 012 001 060      | 1.2 X R0.1  | 1.2                       | 6                             | 45                        | 4                    |    | 2JJCR 015 005 060      | 1.5 X R0.5  | 1.5                       | 6                             | 45                        | 4                    |    |
| 2JJCR 012 001 080      | 1.2 X R0.1  | 1.2                       | 8                             | 45                        | 4                    |    | 2JJCR 015 005 080      | 1.5 X R0.5  | 1.5                       | 8                             | 45                        | 4                    |    |

단위: mm

| Order Number           | 날경<br>Diameter<br>D × R | 날장<br>Length<br>of cut<br>L1 | 유효장<br>Effective<br>Length<br>L2 | 전장<br>Overall<br>Length<br>L | 샙크<br>Dia<br>d | 비고 | Order Number      | 날경<br>Diameter<br>D × R | 날장<br>Length<br>of cut<br>L1 | 유효장<br>Effective<br>Length<br>L2 | 전장<br>Overall<br>Length<br>L | 샙크<br>Dia<br>d | 비고 |
|------------------------|-------------------------|------------------------------|----------------------------------|------------------------------|----------------|----|-------------------|-------------------------|------------------------------|----------------------------------|------------------------------|----------------|----|
| 2JJCR 015 005 100      | 1.5 X R0.5              | 1.5                          | 10                               | 50                           | 4              |    | 2JJCR 025 002 200 | 2.5 X R0.2              | 2.5                          | 20                               | 50                           | 4              |    |
| 2JJCR 015 005 120      | 1.5 X R0.5              | 1.5                          | 12                               | 50                           | 4              |    | 2JJCR 025 003 100 | 2.5 X R0.3              | 2.5                          | 10                               | 50                           | 4              |    |
| New 2JJCR 015 005 140  | 1.5 X R0.5              | 1.5                          | 14                               | 50                           | 4              |    | 2JJCR 025 003 160 | 2.5 X R0.3              | 2.5                          | 16                               | 50                           | 4              |    |
| 2JJCR 015 005 160      | 1.5 X R0.5              | 1.5                          | 16                               | 50                           | 4              |    | 2JJCR 025 003 200 | 2.5 X R0.3              | 2.5                          | 20                               | 50                           | 4              |    |
| 2JJCR 015 005 200      | 1.5 X R0.5              | 1.5                          | 20                               | 50                           | 4              |    | 2JJCR 025 005 100 | 2.5 X R0.5              | 2.5                          | 10                               | 50                           | 4              |    |
| 2JJCR 020 0002 060     | 2 X R0.02               | 2                            | 6                                | 45                           | 4              |    | 2JJCR 025 005 160 | 2.5 X R0.5              | 2.5                          | 16                               | 50                           | 4              |    |
| 2JJCR 020 0002 080     | 2 X R0.02               | 2                            | 8                                | 45                           | 4              |    | 2JJCR 025 005 200 | 2.5 X R0.5              | 2.5                          | 20                               | 50                           | 4              |    |
| 2JJCR 020 0002 100     | 2 X R0.02               | 2                            | 10                               | 50                           | 4              |    | 2JJCR 030 001 100 | 3 X R0.1                | 3                            | 10                               | 50                           | 6              |    |
| 2JJCR 020 0002 120     | 2 X R0.02               | 2                            | 12                               | 50                           | 4              |    | 2JJCR 030 001 120 | 3 X R0.1                | 3                            | 12                               | 50                           | 6              |    |
| New 2JJCR 020 0002 140 | 2 X R0.02               | 2                            | 14                               | 50                           | 4              |    | 2JJCR 030 001 160 | 3 X R0.1                | 3                            | 16                               | 55                           | 6              |    |
| 2JJCR 020 0002 160     | 2 X R0.02               | 2                            | 16                               | 50                           | 4              |    | 2JJCR 030 001 200 | 3 X R0.1                | 3                            | 20                               | 60                           | 6              |    |
| 2JJCR 020 0002 200     | 2 X R0.02               | 2                            | 20                               | 50                           | 4              |    | 2JJCR 030 001 250 | 3 X R0.1                | 3                            | 25                               | 65                           | 6              |    |
| 2JJCR 020 0002 250     | 2 X R0.02               | 2                            | 25                               | 60                           | 4              |    | 2JJCR 030 001 300 | 3 X R0.1                | 3                            | 30                               | 70                           | 6              |    |
| 2JJCR 020 0005 060     | 2 X R0.05               | 2                            | 6                                | 45                           | 4              |    | 2JJCR 030 001 350 | 3 X R0.1                | 3                            | 35                               | 75                           | 6              |    |
| 2JJCR 020 0005 080     | 2 X R0.05               | 2                            | 8                                | 45                           | 4              |    | 2JJCR 030 001 400 | 3 X R0.1                | 3                            | 40                               | 80                           | 6              |    |
| 2JJCR 020 0005 100     | 2 X R0.05               | 2                            | 10                               | 50                           | 4              |    | 2JJCR 030 002 100 | 3 X R0.2                | 3                            | 10                               | 50                           | 6              |    |
| 2JJCR 020 0005 120     | 2 X R0.05               | 2                            | 12                               | 50                           | 4              |    | 2JJCR 030 002 120 | 3 X R0.2                | 3                            | 12                               | 50                           | 6              |    |
| New 2JJCR 020 0005 140 | 2 X R0.05               | 2                            | 14                               | 50                           | 4              |    | 2JJCR 030 002 160 | 3 X R0.2                | 3                            | 16                               | 55                           | 6              |    |
| 2JJCR 020 0005 160     | 2 X R0.05               | 2                            | 16                               | 50                           | 4              |    | 2JJCR 030 002 200 | 3 X R0.2                | 3                            | 20                               | 60                           | 6              |    |
| 2JJCR 020 0005 200     | 2 X R0.05               | 2                            | 20                               | 50                           | 4              |    | 2JJCR 030 002 250 | 3 X R0.2                | 3                            | 25                               | 65                           | 6              |    |
| 2JJCR 020 0005 250     | 2 X R0.05               | 2                            | 25                               | 60                           | 4              |    | 2JJCR 030 002 300 | 3 X R0.2                | 3                            | 30                               | 70                           | 6              |    |
| 2JJCR 020 001 060      | 2 X R0.1                | 2                            | 6                                | 45                           | 4              |    | 2JJCR 030 002 350 | 3 X R0.2                | 3                            | 35                               | 75                           | 6              |    |
| 2JJCR 020 001 080      | 2 X R0.1                | 2                            | 8                                | 45                           | 4              |    | 2JJCR 030 002 400 | 3 X R0.2                | 3                            | 40                               | 80                           | 6              |    |
| 2JJCR 020 001 100      | 2 X R0.1                | 2                            | 10                               | 50                           | 4              |    | 2JJCR 030 003 100 | 3 X R0.3                | 3                            | 10                               | 50                           | 6              |    |
| 2JJCR 020 001 120      | 2 X R0.1                | 2                            | 12                               | 50                           | 4              |    | 2JJCR 030 003 120 | 3 X R0.3                | 3                            | 12                               | 50                           | 6              |    |
| New 2JJCR 020 001 140  | 2 X R0.1                | 2                            | 14                               | 50                           | 4              |    | 2JJCR 030 003 160 | 3 X R0.3                | 3                            | 16                               | 55                           | 6              |    |
| 2JJCR 020 001 160      | 2 X R0.1                | 2                            | 16                               | 50                           | 4              |    | 2JJCR 030 003 200 | 3 X R0.3                | 3                            | 20                               | 60                           | 6              |    |
| 2JJCR 020 001 200      | 2 X R0.1                | 2                            | 20                               | 50                           | 4              |    | 2JJCR 030 003 250 | 3 X R0.3                | 3                            | 25                               | 65                           | 6              |    |
| 2JJCR 020 001 250      | 2 X R0.1                | 2                            | 25                               | 60                           | 4              |    | 2JJCR 030 003 300 | 3 X R0.3                | 3                            | 30                               | 70                           | 6              |    |
| 2JJCR 020 001 300      | 2 X R0.1                | 2                            | 30                               | 70                           | 4              |    | 2JJCR 030 003 350 | 3 X R0.3                | 3                            | 35                               | 75                           | 6              |    |
| 2JJCR 020 002 060      | 2 X R0.2                | 2                            | 6                                | 45                           | 4              |    | 2JJCR 030 003 400 | 3 X R0.3                | 3                            | 40                               | 80                           | 6              |    |
| 2JJCR 020 002 080      | 2 X R0.2                | 2                            | 8                                | 45                           | 4              |    | 2JJCR 030 005 100 | 3 X R0.5                | 3                            | 10                               | 50                           | 6              |    |
| 2JJCR 020 002 100      | 2 X R0.2                | 2                            | 10                               | 50                           | 4              |    | 2JJCR 030 005 120 | 3 X R0.5                | 3                            | 12                               | 50                           | 6              |    |
| 2JJCR 020 002 120      | 2 X R0.2                | 2                            | 12                               | 50                           | 4              |    | 2JJCR 030 005 160 | 3 X R0.5                | 3                            | 16                               | 55                           | 6              |    |
| New 2JJCR 020 002 140  | 2 X R0.2                | 2                            | 14                               | 50                           | 4              |    | 2JJCR 030 005 200 | 3 X R0.5                | 3                            | 20                               | 60                           | 6              |    |
| 2JJCR 020 002 160      | 2 X R0.2                | 2                            | 16                               | 50                           | 4              |    | 2JJCR 030 005 250 | 3 X R0.5                | 3                            | 25                               | 65                           | 6              |    |
| 2JJCR 020 002 200      | 2 X R0.2                | 2                            | 20                               | 50                           | 4              |    | 2JJCR 030 005 300 | 3 X R0.5                | 3                            | 30                               | 70                           | 6              |    |
| 2JJCR 020 002 250      | 2 X R0.2                | 2                            | 25                               | 60                           | 4              |    | 2JJCR 030 005 350 | 3 X R0.5                | 3                            | 35                               | 75                           | 6              |    |
| 2JJCR 020 002 300      | 2 X R0.2                | 2                            | 30                               | 70                           | 4              |    | 2JJCR 030 005 400 | 3 X R0.5                | 3                            | 40                               | 80                           | 6              |    |
| 2JJCR 020 003 060      | 2 X R0.3                | 2                            | 6                                | 45                           | 4              |    | 2JJCR 030 010 100 | 3 X R1                  | 3                            | 10                               | 50                           | 6              |    |
| 2JJCR 020 003 080      | 2 X R0.3                | 2                            | 8                                | 45                           | 4              |    | 2JJCR 030 010 120 | 3 X R1                  | 3                            | 12                               | 50                           | 6              |    |
| 2JJCR 020 003 100      | 2 X R0.3                | 2                            | 10                               | 50                           | 4              |    | 2JJCR 030 010 160 | 3 X R1                  | 3                            | 16                               | 55                           | 6              |    |
| 2JJCR 020 003 120      | 2 X R0.3                | 2                            | 12                               | 50                           | 4              |    | 2JJCR 030 010 200 | 3 X R1                  | 3                            | 20                               | 60                           | 6              |    |
| New 2JJCR 020 003 140  | 2 X R0.3                | 2                            | 14                               | 50                           | 4              |    | 2JJCR 030 010 250 | 3 X R1                  | 3                            | 25                               | 65                           | 6              |    |
| 2JJCR 020 003 160      | 2 X R0.3                | 2                            | 16                               | 50                           | 4              |    | 2JJCR 030 010 300 | 3 X R1                  | 3                            | 30                               | 70                           | 6              |    |
| 2JJCR 020 003 200      | 2 X R0.3                | 2                            | 20                               | 50                           | 4              |    | 2JJCR 030 010 350 | 3 X R1                  | 3                            | 35                               | 75                           | 6              |    |
| 2JJCR 020 003 250      | 2 X R0.3                | 2                            | 25                               | 60                           | 4              |    | 2JJCR 030 010 400 | 3 X R1                  | 3                            | 40                               | 80                           | 6              |    |
| 2JJCR 020 003 300      | 2 X R0.3                | 2                            | 30                               | 70                           | 4              |    | 2JJCR 040 001 120 | 4 X R0.1                | 4                            | 12                               | 50                           | 6              |    |
| 2JJCR 020 005 060      | 2 X R0.5                | 2                            | 6                                | 45                           | 4              |    | 2JJCR 040 001 160 | 4 X R0.1                | 4                            | 16                               | 55                           | 6              |    |
| 2JJCR 020 005 080      | 2 X R0.5                | 2                            | 8                                | 45                           | 4              |    | 2JJCR 040 001 200 | 4 X R0.1                | 4                            | 20                               | 60                           | 6              |    |
| 2JJCR 020 005 100      | 2 X R0.5                | 2                            | 10                               | 50                           | 4              |    | 2JJCR 040 001 250 | 4 X R0.1                | 4                            | 25                               | 65                           | 6              |    |
| 2JJCR 020 005 120      | 2 X R0.5                | 2                            | 12                               | 50                           | 4              |    | 2JJCR 040 001 300 | 4 X R0.1                | 4                            | 30                               | 70                           | 6              |    |
| New 2JJCR 020 005 140  | 2 X R0.5                | 2                            | 14                               | 50                           | 4              |    | 2JJCR 040 001 350 | 4 X R0.1                | 4                            | 35                               | 75                           | 6              |    |
| 2JJCR 020 005 160      | 2 X R0.5                | 2                            | 16                               | 50                           | 4              |    | 2JJCR 040 001 400 | 4 X R0.1                | 4                            | 40                               | 80                           | 6              |    |
| 2JJCR 020 005 200      | 2 X R0.5                | 2                            | 20                               | 50                           | 4              |    | 2JJCR 040 002 120 | 4 X R0.2                | 4                            | 12                               | 50                           | 6              |    |
| 2JJCR 020 005 250      | 2 X R0.5                | 2                            | 25                               | 60                           | 4              |    | 2JJCR 040 002 160 | 4 X R0.2                | 4                            | 16                               | 55                           | 6              |    |
| 2JJCR 020 005 300      | 2 X R0.5                | 2                            | 30                               | 70                           | 4              |    | 2JJCR 040 002 200 | 4 X R0.2                | 4                            | 20                               | 60                           | 6              |    |
| 2JJCR 025 001 100      | 2.5 X R0.1              | 2.5                          | 10                               | 50                           | 4              |    | 2JJCR 040 002 250 | 4 X R0.2                | 4                            | 25                               | 65                           | 6              |    |
| 2JJCR 025 001 160      | 2.5 X R0.1              | 2.5                          | 16                               | 50                           | 4              |    | 2JJCR 040 002 300 | 4 X R0.2                | 4                            | 30                               | 70                           | 6              |    |
| 2JJCR 025 001 200      | 2.5 X R0.1              | 2.5                          | 20                               | 50                           | 4              |    | 2JJCR 040 002 350 | 4 X R0.2                | 4                            | 35                               | 75                           | 6              |    |
| 2JJCR 025 001 250      | 2.5 X R0.1              | 2.5                          | 25                               | 60                           | 4              |    | 2JJCR 040 002 400 | 4 X R0.2                | 4                            | 40                               | 80                           | 6              |    |
| 2JJCR 025 001 300      | 2.5 X R0.1              | 2.5                          | 30                               | 70                           | 4              |    | 2JJCR 040 003 120 | 4 X R0.3                | 4                            | 12                               | 50                           | 6              |    |
| 2JJCR 025 002 100      | 2.5 X R0.2              | 2.5                          | 10                               | 50                           | 4              |    | 2JJCR 040 003 160 | 4 X R0.3                | 4                            | 16                               | 55                           | 6              |    |
| 2JJCR 025 002 160      | 2.5 X R0.2              | 2.5                          | 16                               | 50                           | 4              |    | 2JJCR 040 003 200 | 4 X R0.3                | 4                            | 20                               | 60                           | 6              |    |

단위: mm

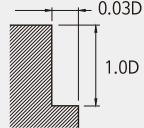
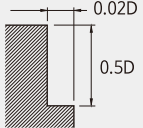
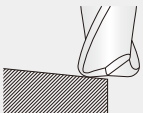
| Order Number      | 날경<br>D×R | 날장<br>Length of cut<br>L1 | 유효장<br>Effective Length<br>L2 | 전장<br>Overall Length<br>L | 샹크<br>Dia<br>d | 비고 | Order Number | 날경<br>D×R | 날장<br>Length of cut<br>L1 | 유효장<br>Effective Length<br>L2 | 전장<br>Overall Length<br>L | 샹크<br>Dia<br>d | 비고 |
|-------------------|-----------|---------------------------|-------------------------------|---------------------------|----------------|----|--------------|-----------|---------------------------|-------------------------------|---------------------------|----------------|----|
| 2JJCR 040 003 250 | 4 X R0.3  | 4                         | 25                            | 65                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 003 300 | 4 X R0.3  | 4                         | 30                            | 70                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 003 350 | 4 X R0.3  | 4                         | 35                            | 75                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 003 400 | 4 X R0.3  | 4                         | 40                            | 80                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 005 120 | 4 X R0.5  | 4                         | 12                            | 50                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 005 160 | 4 X R0.5  | 4                         | 16                            | 55                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 005 200 | 4 X R0.5  | 4                         | 20                            | 60                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 005 250 | 4 X R0.5  | 4                         | 25                            | 65                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 005 300 | 4 X R0.5  | 4                         | 30                            | 70                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 005 350 | 4 X R0.5  | 4                         | 35                            | 75                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 005 400 | 4 X R0.5  | 4                         | 40                            | 80                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 010 120 | 4 X R1    | 4                         | 12                            | 50                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 010 160 | 4 X R1    | 4                         | 16                            | 55                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 010 200 | 4 X R1    | 4                         | 20                            | 60                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 010 250 | 4 X R1    | 4                         | 25                            | 65                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 010 300 | 4 X R1    | 4                         | 30                            | 70                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 010 350 | 4 X R1    | 4                         | 35                            | 75                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 040 010 400 | 4 X R1    | 4                         | 40                            | 80                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 050 002 150 | 5 X R0.2  | 6                         | 15                            | 60                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 050 002 250 | 5 X R0.2  | 6                         | 25                            | 70                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 050 002 300 | 5 X R0.2  | 6                         | 30                            | 70                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 050 002 400 | 5 X R0.2  | 6                         | 40                            | 80                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 050 005 150 | 5 X R0.5  | 6                         | 15                            | 60                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 050 005 250 | 5 X R0.5  | 6                         | 25                            | 70                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 050 005 300 | 5 X R0.5  | 6                         | 30                            | 70                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 050 005 400 | 5 X R0.5  | 6                         | 40                            | 80                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 050 010 150 | 5 X R1    | 6                         | 15                            | 60                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 050 010 250 | 5 X R1    | 6                         | 25                            | 70                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 050 010 300 | 5 X R1    | 6                         | 30                            | 70                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 050 010 400 | 5 X R1    | 6                         | 40                            | 80                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 060 001 200 | 6 X R0.1  | 7                         | 20                            | 60                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 060 001 400 | 6 X R0.1  | 7                         | 40                            | 80                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 060 002 200 | 6 X R0.2  | 7                         | 20                            | 60                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 060 002 400 | 6 X R0.2  | 7                         | 40                            | 80                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 060 003 200 | 6 X R0.3  | 7                         | 20                            | 60                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 060 003 400 | 6 X R0.3  | 7                         | 40                            | 80                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 060 005 200 | 6 X R0.5  | 7                         | 20                            | 60                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 060 005 400 | 6 X R0.5  | 7                         | 40                            | 80                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 060 010 200 | 6 X R1    | 7                         | 20                            | 60                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 060 010 400 | 6 X R1    | 7                         | 40                            | 80                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 060 015 200 | 6 X R1.5  | 7                         | 20                            | 60                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 060 015 400 | 6 X R1.5  | 7                         | 40                            | 80                        | 6              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 080 002 220 | 8 X R0.2  | 9                         | 22                            | 65                        | 8              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 080 003 220 | 8 X R0.3  | 9                         | 22                            | 65                        | 8              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 080 005 220 | 8 X R0.5  | 9                         | 22                            | 65                        | 8              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 080 010 220 | 8 X R1    | 9                         | 22                            | 65                        | 8              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 080 015 220 | 8 X R1.5  | 9                         | 22                            | 65                        | 8              |    |              |           |                           |                               |                           |                |    |
| 2JJCR 100 002 240 | 10 X R0.2 | 11                        | 24                            | 70                        | 10             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 100 003 240 | 10 X R0.3 | 11                        | 24                            | 70                        | 10             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 100 005 240 | 10 X R0.5 | 11                        | 24                            | 70                        | 10             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 100 010 240 | 10 X R1   | 11                        | 24                            | 70                        | 10             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 100 015 240 | 10 X R1.5 | 11                        | 24                            | 70                        | 10             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 100 020 240 | 10 X R2   | 11                        | 24                            | 70                        | 10             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 120 002 260 | 12 X R0.2 | 13                        | 26                            | 80                        | 12             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 120 003 260 | 12 X R0.3 | 13                        | 26                            | 80                        | 12             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 120 005 260 | 12 X R0.5 | 13                        | 26                            | 80                        | 12             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 120 010 260 | 12 X R1   | 13                        | 26                            | 80                        | 12             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 120 015 260 | 12 X R1.5 | 13                        | 26                            | 80                        | 12             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 120 020 260 | 12 X R2   | 13                        | 26                            | 80                        | 12             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 120 030 260 | 12 X R3   | 13                        | 26                            | 80                        | 12             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 160 005 110 | 16 X R0.5 | 20                        | 35                            | 110                       | 16             |    |              |           |                           |                               |                           |                |    |
| 2JJCR 160 010 110 | 16 X R1   | 20                        | 35                            | 110                       | 16             |    |              |           |                           |                               |                           |                |    |
|                   |           |                           |                               |                           |                |    |              |           |                           |                               |                           |                |    |
|                   |           |                           |                               |                           |                |    |              |           |                           |                               |                           |                |    |

## 홈절삭 Slotting

| 피삭재<br>Material        |                     | 고경도강<br>Hardened Steels |      |                   |                    |            |      |                   |                    |            |      |                   |                    |
|------------------------|---------------------|-------------------------|------|-------------------|--------------------|------------|------|-------------------|--------------------|------------|------|-------------------|--------------------|
| 경도 Hardness            |                     | 55 ~ 60HRC              |      |                   |                    | 60 ~ 65HRC |      |                   |                    | 65 ~ 68HRC |      |                   |                    |
| 외경<br>Outside Diameter | 반경<br>Corner Radius | RPM                     | FEED | Ap<br>Axial Depth | Ae<br>Radial Depth | RPM        | FEED | Ap<br>Axial Depth | Ae<br>Radial Depth | RPM        | FEED | Ap<br>Axial Depth | Ae<br>Radial Depth |
| ø 0.4                  | R0.1                | 33,000                  | 105  | 0.01              | 0.01               | 25,000     | 60   | 0.005             | 0.008              | 25,000     | 60   | 0.005             | 0.008              |
| ø 0.5                  | R0.1                | 33,000                  | 110  | 0.015             | 0.02               | 25,000     | 65   | 0.007             | 0.010              | 20,000     | 40   | 0.007             | 0.010              |
| ø 0.8                  | R0.2                | 30,000                  | 125  | 0.02              | 0.10               | 25,000     | 85   | 0.01              | 0.075              | 20,000     | 50   | 0.01              | 0.075              |
| ø 1                    | R0.3                | 25,000                  | 145  | 0.04              | 0.15               | 19,000     | 90   | 0.02              | 0.12               | 16,000     | 55   | 0.02              | 0.12               |
| ø 1.5                  | R0.5                | 20,500                  | 172  | 0.10              | 0.30               | 16,000     | 108  | 0.05              | 0.20               | 12,500     | 70   | 0.05              | 0.20               |
| ø 2                    | R0.5                | 14,500                  | 208  | 0.15              | 0.50               | 11,000     | 128  | 0.1               | 0.25               | 9,500      | 92   | 0.10              | 0.30               |
| ø 2.5                  | R0.5                | 9,500                   | 208  | 0.20              | 0.50               | 7,500      | 128  | 0.12              | 0.35               | 6,400      | 92   | 0.12              | 0.40               |
| ø 3                    | R0.5                | 9,500                   | 208  | 0.20              | 0.50               | 7,500      | 128  | 0.12              | 0.35               | 6,400      | 92   | 0.12              | 0.40               |
| ø 4                    | R0.3                | 7,200                   | 216  | 0.25              | 0.30               | 5,600      | 136  | 0.15              | 0.20               | 4,750      | 94   | 0.15              | 0.30               |
| ø 5                    | R0.5                | 6,400                   | 228  | 0.25              | 0.50               | 5,100      | 144  | 0.15              | 0.50               | 4,450      | 105  | 0.15              | 0.40               |
| "                      | R1                  | 6,400                   | 228  | 0.40              | 1.05               | 5,100      | 144  | 0.35              | 0.80               | 4,450      | 105  | 0.30              | 0.70               |
| ø 6                    | R0.5                | 5,300                   | 224  | 0.20              | 0.70               | 4,200      | 144  | 0.2               | 0.60               | 3,700      | 104  | 0.20              | 0.50               |
| "                      | R1                  | 5,300                   | 224  | 0.30              | 1.00               | 4,200      | 144  | 0.3               | 0.80               | 3,700      | 104  | 0.20              | 0.65               |
| "                      | R1.5                | 5,300                   | 224  | 0.50              | 1.30               | 4,200      | 144  | 0.4               | 1.00               | 3,700      | 104  | 0.30              | 0.80               |
| ø 8                    | R0.5                | 4,000                   | 204  | 0.30              | 0.70               | 3,200      | 132  | 0.20              | 0.60               | 2,800      | 96   | 0.20              | 0.50               |
| "                      | R1                  | 4,000                   | 204  | 0.40              | 1.00               | 3,200      | 132  | 0.25              | 0.90               | 2,800      | 96   | 0.25              | 0.70               |
| "                      | R1.5                | 4,000                   | 204  | 0.40              | 1.30               | 3,200      | 132  | 0.25              | 1.20               | 2,800      | 96   | 0.25              | 0.80               |
| ø 10                   | R0.5                | 3,200                   | 192  | 0.40              | 0.80               | 2,550      | 124  | 0.2               | 0.60               | 2,200      | 90   | 0.20              | 0.50               |
| "                      | R1                  | 3,200                   | 192  | 0.50              | 1.00               | 2,550      | 124  | 0.3               | 0.80               | 2,200      | 90   | 0.30              | 0.80               |
| "                      | R2                  | 3,200                   | 192  | 0.50              | 1.70               | 2,550      | 124  | 0.3               | 1.50               | 2,200      | 90   | 0.30              | 1.30               |
| ø 12                   | R0.5                | 2,650                   | 192  | 0.50              | 1.00               | 2,100      | 124  | 0.35              | 0.80               | 1,860      | 90   | 0.20              | 0.60               |
| "                      | R1                  | 2,650                   | 192  | 0.60              | 1.30               | 2,100      | 124  | 0.35              | 1.20               | 1,860      | 90   | 0.30              | 1.00               |
| "                      | R2                  | 2,650                   | 192  | 0.60              | 1.80               | 2,100      | 124  | 0.35              | 1.70               | 1,860      | 90   | 0.30              | 1.40               |
| "                      | R3                  | 2,650                   | 192  | 0.60              | 2.50               | 2,100      | 124  | 0.40              | 2.00               | 1,860      | 90   | 0.30              | 1.80               |

## 측면절삭 Side Cutting

| 피삭재<br>Material        |  | 고경도강<br>Hardened Steels |      |                   |                    |            |      |                   |                    |            |      |                   |                    |
|------------------------|--|-------------------------|------|-------------------|--------------------|------------|------|-------------------|--------------------|------------|------|-------------------|--------------------|
| 경도 Hardness            |  | 55 ~ 60HRC              |      |                   |                    | 60 ~ 65HRC |      |                   |                    | 65 ~ 68HRC |      |                   |                    |
| 외경<br>Outside Diameter |  | RPM                     | FEED | Ap<br>Axial Depth | Ae<br>Radial Depth | RPM        | FEED | Ap<br>Axial Depth | Ae<br>Radial Depth | RPM        | FEED | Ap<br>Axial Depth | Ae<br>Radial Depth |
| ø 0.4                  |  | 33,000                  | 105  | 0.4               | 0.012              | 25,000     | 60   | 0.2               | 0.008              | 25,000     | 60   | 0.2               | 0.008              |
| ø 0.5                  |  | 33,000                  | 110  | 0.5               | 0.015              | 25,000     | 65   | 0.25              | 0.010              | 20,000     | 40   | 0.25              | 0.010              |
| ø 0.8                  |  | 30,000                  | 125  | 0.8               | 0.024              | 25,000     | 85   | 0.4               | 0.016              | 20,000     | 50   | 0.4               | 0.016              |
| ø 1                    |  | 25,000                  | 145  | 1                 | 0.030              | 19,000     | 90   | 0.5               | 0.02               | 16,000     | 55   | 0.5               | 0.02               |
| ø 2                    |  | 14,500                  | 208  | 2                 | 0.060              | 11,000     | 128  | 1                 | 0.04               | 9,500      | 92   | 1                 | 0.04               |
| ø 3                    |  | 9,500                   | 208  | 3                 | 0.090              | 7,500      | 128  | 1.5               | 0.06               | 6,400      | 92   | 1.5               | 0.06               |
| ø 4                    |  | 7,200                   | 216  | 4                 | 0.120              | 5,600      | 136  | 2                 | 0.08               | 4,750      | 94   | 2                 | 0.08               |
| ø 6                    |  | 5,300                   | 224  | 6                 | 0.180              | 4,200      | 144  | 3                 | 0.12               | 3,700      | 104  | 3                 | 0.12               |
| ø 8                    |  | 4,000                   | 204  | 8                 | 0.240              | 3,200      | 132  | 4                 | 0.16               | 2,800      | 96   | 4                 | 0.16               |
| ø 10                   |  | 3,200                   | 192  | 10                | 0.300              | 2,550      | 124  | 5                 | 0.20               | 2,200      | 90   | 5                 | 0.20               |
| ø 12                   |  | 2,650                   | 192  | 12                | 0.360              | 2,100      | 124  | 6                 | 0.24               | 1,860      | 90   | 6                 | 0.24               |

| 절입량<br>Depth of Cut | <div>    </div> |  |  |  |  |  |  |  |  |  |  |  |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|
|                     | <div> ~60HRC 60HRC ~ 경사진면절삭<br/>Inclined Cutting </div>                                                                                                                                                                                                                    |  |  |  |  |  |  |  |  |  |  |  |

- HRC55 이하 피삭재(합금강, 공구강) 가공시 같은 파이에 대비 상기 절삭조건외 20% UP 해주십시오.
- 유효장이 긴 경우에는 회전수와 이송속도를 최대30% 이하로 줄이십시오.
- 측면 절삭시 코너R 부분과 각도내용을 참고하여 절삭 하시기 바랍니다.
- 곡면 절삭시 날경의 코너R 보다 낮은 이동 PITCH를 설정 하십시오.
- 곡면 절삭시 안정적인 속도 내에서 피드를 최대 30%까지 UP 해주십시오.
- 이 절삭 조건표는 절삭조건외의 참고 수치입니다. 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건 변경 요망합니다.
- 에어브로, 절삭유, 오일미스트 쿨런트를 추천하며, 칩을 잘 제거하고 가공시의 발열과 발화에 주의 하십시오
- When milling workpiece, HRC below 55 (Alloy steel, tool steel), Raise up 20% RPM and feed compared to the same diameter.
- In case of long effective length, reduce the RPM and feed by 30% or less.
- For side milling, refer to the corner radius and
- For curved milling, set up the lower value of the pitch than the corner radius value of tool diameter.
- For curved milling, raise up the feed by 30% in stable condition.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- Air blow or mist coolants are recommended and note for chip emission, heat, or ignition.

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흡착현상을 최소화하여  
최종제품의 나노 다이아몬드 코팅을 적용하여  
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흡착현상을 최소화하여

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