

#### 고경도강(HRC52~70), 프리하드강 계열의 고정밀 가공 엔드밀

- 고함량 실리콘계 코팅(Si) 처리하여 내마모성이 우수합니다.
- 고정밀 공차 적용으로 초정밀 가공에 적합합니다.
- 코너R 형상을 날부치평이 적도록 설계하였습니다.
- 다양한 코너R과 전장으로 맞춤 가공이 가능합니다.
- 초미립자 초경합금(0.2µm)을 채택, 고속절삭시 뛰어난 성능을 발휘합니다.

#### Endmills for pre-hardened and hardened steel

- 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 overall length for wide range application.
- Outstanding performance at high speed machining by ultra fine (0.2µm) WC grade.



| D Size   | D Tolerance       |
|----------|-------------------|
| Ø0.5 ~ 5 | +0 ~ -0.01mm      |
| Ø6 ~ 12  | -0.005 ~ -0.015mm |
| Ø14 ~ 16 | -0.01 ~ -0.02mm   |

단위: mm

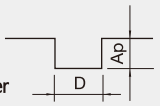
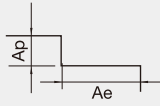
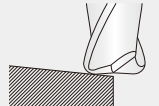
| Order Number         | 날경<br>Diameter<br>D×R | 날장<br>Length of cut<br>L1 | 전장<br>Overall Length<br>L | 샙크<br>Shank Dia<br>d | 비고 |
|----------------------|-----------------------|---------------------------|---------------------------|----------------------|----|
| 4JJC 005 0005 S04    | 0.5 X R0.05           | 1                         | 45                        | 4                    |    |
| 4JJC 005 001 S04     | 0.5 X R0.1            | 1                         | 45                        | 4                    |    |
| 4JJC 006 0005 S04    | 0.6 X R0.05           | 1.2                       | 45                        | 4                    |    |
| 4JJC 006 001 S04     | 0.6 X R0.1            | 1.2                       | 45                        | 4                    |    |
| 4JJC 007 0005 S04    | 0.7 X R0.05           | 1.4                       | 45                        | 4                    |    |
| 4JJC 007 001 S04     | 0.7 X R0.1            | 1.4                       | 45                        | 4                    |    |
| 4JJC 008 0005 S04    | 0.8 X R0.05           | 1.6                       | 45                        | 4                    |    |
| 4JJC 008 001 S04     | 0.8 X R0.1            | 1.6                       | 45                        | 4                    |    |
| 4JJC 009 0005 S04    | 0.9 X R0.05           | 1.8                       | 45                        | 4                    |    |
| 4JJC 009 001 S04     | 0.9 X R0.1            | 1.8                       | 45                        | 4                    |    |
| 4JJC 010 0005 S04    | 1 X R0.05             | 2.5                       | 45                        | 4                    |    |
| 4JJC 010 001 S04     | 1 X R0.1              | 2.5                       | 45                        | 4                    |    |
| 4JJC 010 002 S04     | 1 X R0.2              | 2.5                       | 45                        | 4                    |    |
| 4JJC 010 003 S04     | 1 X R0.3              | 2.5                       | 45                        | 4                    |    |
| 4JJC 015 0005 S04    | 1.5 X R0.05           | 4                         | 45                        | 4                    |    |
| 4JJC 015 001 S04     | 1.5 X R0.1            | 4                         | 45                        | 4                    |    |
| 4JJC 015 002 S04     | 1.5 X R0.2            | 4                         | 45                        | 4                    |    |
| 4JJC 015 003 S04     | 1.5 X R0.3            | 4                         | 45                        | 4                    |    |
| 4JJC 015 005 S04     | 1.5 X R0.5            | 4                         | 45                        | 4                    |    |
| 4JJC 020 0005 S04    | 2 X R0.05             | 6                         | 45                        | 4                    |    |
| 4JJC 020 001 S04     | 2 X R0.1              | 6                         | 45                        | 4                    |    |
| 4JJC 020 002 S04     | 2 X R0.2              | 6                         | 45                        | 4                    |    |
| 4JJC 020 003 S04     | 2 X R0.3              | 6                         | 45                        | 4                    |    |
| 4JJC 020 005 S04     | 2 X R0.5              | 6                         | 45                        | 4                    |    |
| 4JJC 025 001 S04     | 2.5 X R0.1            | 6                         | 50                        | 4                    |    |
| 4JJC 025 002 S04     | 2.5 X R0.2            | 6                         | 50                        | 4                    |    |
| 4JJC 025 003 S04     | 2.5 X R0.3            | 6                         | 50                        | 4                    |    |
| 4JJC 025 005 S04     | 2.5 X R0.5            | 6                         | 50                        | 4                    |    |
| New 4JJC 030 001 S03 | 3 X R0.1              | 8                         | 60                        | 3                    |    |
| New 4JJC 030 002 S03 | 3 X R0.2              | 8                         | 60                        | 3                    |    |
| New 4JJC 030 003 S03 | 3 X R0.3              | 8                         | 60                        | 3                    |    |
| New 4JJC 030 005 S03 | 3 X R0.5              | 8                         | 60                        | 3                    |    |
| New 4JJC 030 010 S03 | 3 X R1                | 8                         | 60                        | 3                    |    |
| 4JJC 030 001 S06     | 3 X R0.1              | 8                         | 60                        | 6                    |    |
| 4JJC 030 002 S06     | 3 X R0.2              | 8                         | 60                        | 6                    |    |
| 4JJC 030 003 S06     | 3 X R0.3              | 8                         | 60                        | 6                    |    |
| 4JJC 030 005 S06     | 3 X R0.5              | 8                         | 60                        | 6                    |    |
| 4JJC 030 010 S06     | 3 X R1                | 8                         | 60                        | 6                    |    |
| 4JJC 035 001 S06     | 3.5 X R0.1            | 9                         | 70                        | 6                    |    |
| 4JJC 035 002 S06     | 3.5 X R0.2            | 9                         | 70                        | 6                    |    |
| 4JJC 035 003 S06     | 3.5 X R0.3            | 9                         | 70                        | 6                    |    |
| 4JJC 035 005 S06     | 3.5 X R0.5            | 9                         | 70                        | 6                    |    |
| New 4JJC 035 010 S06 | 3.5 X R1              | 9                         | 70                        | 6                    |    |
| 4JJC 040 001 S04     | 4 X R0.1              | 9                         | 60                        | 4                    |    |
| 4JJC 040 001 S06     | 4 X R0.1              | 10                        | 70                        | 6                    |    |
| 4JJC 040 002 S04     | 4 X R0.2              | 9                         | 60                        | 4                    |    |
| 4JJC 040 002 S06     | 4 X R0.2              | 10                        | 70                        | 6                    |    |
| 4JJC 040 003 S04     | 4 X R0.3              | 9                         | 60                        | 4                    |    |
| 4JJC 040 003 S06     | 4 X R0.3              | 10                        | 70                        | 6                    |    |
| 4JJC 040 005 S04     | 4 X R0.5              | 9                         | 60                        | 4                    |    |

| Order Number         | 날경<br>Diameter<br>D×R | 날장<br>Length of cut<br>L1 | 전장<br>Overall Length<br>L | 샙크<br>Shank Dia<br>d | 비고 |
|----------------------|-----------------------|---------------------------|---------------------------|----------------------|----|
| 4JJC 040 005 S06     | 4 X R0.5              | 10                        | 70                        | 6                    |    |
| 4JJC 040 010 S04     | 4 X R1                | 9                         | 60                        | 4                    |    |
| 4JJC 040 010 S06     | 4 X R1                | 10                        | 70                        | 6                    |    |
| 4JJC 045 002 S06     | 4.5 X R0.2            | 11                        | 75                        | 6                    |    |
| New 4JJC 045 003 S06 | 4.5 X R0.3            | 11                        | 75                        | 6                    |    |
| 4JJC 045 005 S06     | 4.5 X R0.5            | 11                        | 75                        | 6                    |    |
| New 4JJC 045 010 S06 | 4.5 X R1              | 11                        | 75                        | 6                    |    |
| 4JJC 050 001 S06     | 5 X R0.1              | 13                        | 75                        | 6                    |    |
| 4JJC 050 002 S06     | 5 X R0.2              | 13                        | 75                        | 6                    |    |
| 4JJC 050 003 S06     | 5 X R0.3              | 13                        | 75                        | 6                    |    |
| 4JJC 050 005 S06     | 5 X R0.5              | 13                        | 75                        | 6                    |    |
| 4JJC 050 010 S06     | 5 X R1                | 13                        | 75                        | 6                    |    |
| 4JJC 060 0005 055    | 6 X R0.05             | 11                        | 55                        | 6                    |    |
| 4JJC 060 0005 080    | 6 X R0.05             | 13                        | 80                        | 6                    |    |
| 4JJC 060 001 055     | 6 X R0.1              | 11                        | 55                        | 6                    |    |
| 4JJC 060 001 080     | 6 X R0.1              | 13                        | 80                        | 6                    |    |
| 4JJC 060 002 055     | 6 X R0.2              | 11                        | 55                        | 6                    |    |
| 4JJC 060 002 080     | 6 X R0.2              | 13                        | 80                        | 6                    |    |
| 4JJC 060 002 100     | 6 X R0.2              | 13                        | 100                       | 6                    |    |
| 4JJC 060 002 120     | 6 X R0.2              | 13                        | 120                       | 6                    |    |
| 4JJC 060 003 055     | 6 X R0.3              | 11                        | 55                        | 6                    |    |
| 4JJC 060 003 080     | 6 X R0.3              | 13                        | 80                        | 6                    |    |
| 4JJC 060 003 100     | 6 X R0.3              | 13                        | 100                       | 6                    |    |
| 4JJC 060 003 120     | 6 X R0.3              | 13                        | 120                       | 6                    |    |
| 4JJC 060 005 055     | 6 X R0.5              | 11                        | 55                        | 6                    |    |
| 4JJC 060 005 080     | 6 X R0.5              | 13                        | 80                        | 6                    |    |
| 4JJC 060 005 100     | 6 X R0.5              | 13                        | 100                       | 6                    |    |
| 4JJC 060 005 120     | 6 X R0.5              | 13                        | 120                       | 6                    |    |
| 4JJC 060 010 055     | 6 X R1                | 11                        | 55                        | 6                    |    |
| 4JJC 060 010 080     | 6 X R1                | 13                        | 80                        | 6                    |    |
| 4JJC 060 010 100     | 6 X R1                | 13                        | 100                       | 6                    |    |
| 4JJC 060 010 120     | 6 X R1                | 13                        | 120                       | 6                    |    |
| 4JJC 060 015 055     | 6 X R1.5              | 11                        | 55                        | 6                    |    |
| 4JJC 060 015 080     | 6 X R1.5              | 13                        | 80                        | 6                    |    |
| 4JJC 060 020 055     | 6 X R2                | 11                        | 55                        | 6                    |    |
| 4JJC 060 020 080     | 6 X R2                | 13                        | 80                        | 6                    |    |
| New 4JJC 070 002 S08 | 7 X R0.2              | 16                        | 80                        | 8                    |    |
| New 4JJC 070 003 S08 | 7 X R0.3              | 16                        | 80                        | 8                    |    |
| New 4JJC 070 005 S08 | 7 X R0.5              | 16                        | 80                        | 8                    |    |
| New 4JJC 070 010 S08 | 7 X R1                | 16                        | 80                        | 8                    |    |
| New 4JJC 080 001 060 | 8 X R0.1              | 16                        | 60                        | 8                    |    |
| New 4JJC 080 001 090 | 8 X R0.1              | 19                        | 90                        | 8                    |    |
| 4JJC 080 002 060     | 8 X R0.2              | 16                        | 60                        | 8                    |    |
| 4JJC 080 002 090     | 8 X R0.2              | 19                        | 90                        | 8                    |    |
| 4JJC 080 003 060     | 8 X R0.3              | 16                        | 60                        | 8                    |    |
| 4JJC 080 003 090     | 8 X R0.3              | 19                        | 90                        | 8                    |    |
| 4JJC 080 005 060     | 8 X R0.5              | 16                        | 60                        | 8                    |    |
| 4JJC 080 005 090     | 8 X R0.5              | 19                        | 90                        | 8                    |    |
| 4JJC 080 005 110     | 8 X R0.5              | 19                        | 110                       | 8                    |    |
| 4JJC 080 005 150     | 8 X R0.5              | 19                        | 150                       | 8                    |    |



단위: mm

| Order Number         | 날경<br>Diameter<br>D × R | 날장<br>Length<br>of cut<br>L1 | 전장<br>Overall<br>Length<br>L | 샙크<br>Shank<br>Dia<br>d | 비고 | Order Number         | 날경<br>Diameter<br>D × R | 날장<br>Length<br>of cut<br>L1 | 전장<br>Overall<br>Length<br>L | 샙크<br>Shank<br>Dia<br>d | 비고 |
|----------------------|-------------------------|------------------------------|------------------------------|-------------------------|----|----------------------|-------------------------|------------------------------|------------------------------|-------------------------|----|
| 4JJC 080 010 060     | 8 X R1                  | 16                           | 60                           | 8                       |    | 4JJC 120 010 160     | 12 X R1                 | 26                           | 160                          | 12                      |    |
| 4JJC 080 010 090     | 8 X R1                  | 19                           | 90                           | 8                       |    | 4JJC 120 015 075     | 12 X R1.5               | 22                           | 75                           | 12                      |    |
| 4JJC 080 010 110     | 8 X R1                  | 19                           | 110                          | 8                       |    | 4JJC 120 015 110     | 12 X R1.5               | 26                           | 110                          | 12                      |    |
| 4JJC 080 010 150     | 8 X R1                  | 19                           | 150                          | 8                       |    | 4JJC 120 020 075     | 12 X R2                 | 22                           | 75                           | 12                      |    |
| 4JJC 080 015 060     | 8 X R1.5                | 16                           | 60                           | 8                       |    | 4JJC 120 020 110     | 12 X R2                 | 26                           | 110                          | 12                      |    |
| 4JJC 080 015 090     | 8 X R1.5                | 19                           | 90                           | 8                       |    | 4JJC 120 020 130     | 12 X R2                 | 26                           | 130                          | 12                      |    |
| 4JJC 080 020 060     | 8 X R2                  | 16                           | 60                           | 8                       |    | 4JJC 120 020 160     | 12 X R2                 | 26                           | 160                          | 12                      |    |
| 4JJC 080 020 090     | 8 X R2                  | 19                           | 90                           | 8                       |    | 4JJC 120 025 075     | 12 X R2.5               | 22                           | 75                           | 12                      |    |
| New 4JJC 090 002 S10 | 9 X R0.2                | 20                           | 90                           | 10                      |    | 4JJC 120 025 110     | 12 X R2.5               | 26                           | 110                          | 12                      |    |
| New 4JJC 090 003 S10 | 9 X R0.3                | 20                           | 90                           | 10                      |    | 4JJC 120 030 075     | 12 X R3                 | 22                           | 75                           | 12                      |    |
| New 4JJC 090 005 S10 | 9 X R0.5                | 20                           | 90                           | 10                      |    | 4JJC 120 030 110     | 12 X R3                 | 26                           | 110                          | 12                      |    |
| New 4JJC 090 010 S10 | 9 X R1                  | 20                           | 90                           | 10                      |    | New 4JJC 140 005 110 | 14 X R0.5               | 30                           | 110                          | 14                      |    |
| New 4JJC 100 001 070 | 10 X R0.1               | 19                           | 70                           | 10                      |    | New 4JJC 140 010 110 | 14 X R1                 | 30                           | 110                          | 14                      |    |
| New 4JJC 100 001 100 | 10 X R0.1               | 22                           | 100                          | 10                      |    | New 4JJC 140 020 110 | 14 X R2                 | 30                           | 110                          | 14                      |    |
| 4JJC 100 002 070     | 10 X R0.2               | 19                           | 70                           | 10                      |    | 4JJC 160 005 110     | 16 X R0.5               | 32                           | 110                          | 16                      |    |
| 4JJC 100 002 100     | 10 X R0.2               | 22                           | 100                          | 10                      |    | New 4JJC 160 005 160 | 16 X R0.5               | 32                           | 160                          | 16                      |    |
| 4JJC 100 003 070     | 10 X R0.3               | 19                           | 70                           | 10                      |    | 4JJC 160 010 110     | 16 X R1                 | 32                           | 110                          | 16                      |    |
| 4JJC 100 003 100     | 10 X R0.3               | 22                           | 100                          | 10                      |    | New 4JJC 160 010 160 | 16 X R1                 | 32                           | 160                          | 16                      |    |
| 4JJC 100 005 070     | 10 X R0.5               | 19                           | 70                           | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 005 100     | 10 X R0.5               | 22                           | 100                          | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 005 120     | 10 X R0.5               | 22                           | 120                          | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 005 150     | 10 X R0.5               | 22                           | 150                          | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 010 070     | 10 X R1                 | 19                           | 70                           | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 010 100     | 10 X R1                 | 22                           | 100                          | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 010 120     | 10 X R1                 | 22                           | 120                          | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 010 150     | 10 X R1                 | 22                           | 150                          | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 015 070     | 10 X R1.5               | 19                           | 70                           | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 015 100     | 10 X R1.5               | 22                           | 100                          | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 020 070     | 10 X R2                 | 19                           | 70                           | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 020 100     | 10 X R2                 | 22                           | 100                          | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 020 120     | 10 X R2                 | 22                           | 120                          | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 020 150     | 10 X R2                 | 22                           | 150                          | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 025 070     | 10 X R2.5               | 19                           | 70                           | 10                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 100 025 100     | 10 X R2.5               | 22                           | 100                          | 10                      |    |                      |                         |                              |                              |                         |    |
| New 4JJC 110 003 S12 | 11 X R0.3               | 24                           | 100                          | 12                      |    |                      |                         |                              |                              |                         |    |
| New 4JJC 110 005 S12 | 11 X R0.5               | 24                           | 100                          | 12                      |    |                      |                         |                              |                              |                         |    |
| New 4JJC 110 010 S12 | 11 X R1                 | 24                           | 100                          | 12                      |    |                      |                         |                              |                              |                         |    |
| New 4JJC 120 001 075 | 12 X R0.1               | 22                           | 75                           | 12                      |    |                      |                         |                              |                              |                         |    |
| New 4JJC 120 001 110 | 12 X R0.1               | 26                           | 110                          | 12                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 120 002 075     | 12 X R0.2               | 22                           | 75                           | 12                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 120 002 110     | 12 X R0.2               | 26                           | 110                          | 12                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 120 003 075     | 12 X R0.3               | 22                           | 75                           | 12                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 120 003 110     | 12 X R0.3               | 26                           | 110                          | 12                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 120 005 075     | 12 X R0.5               | 22                           | 75                           | 12                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 120 005 110     | 12 X R0.5               | 26                           | 110                          | 12                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 120 005 130     | 12 X R0.5               | 26                           | 130                          | 12                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 120 005 160     | 12 X R0.5               | 26                           | 160                          | 12                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 120 010 075     | 12 X R1                 | 22                           | 75                           | 12                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 120 010 110     | 12 X R1                 | 26                           | 110                          | 12                      |    |                      |                         |                              |                              |                         |    |
| 4JJC 120 010 130     | 12 X R1                 | 26                           | 130                          | 12                      |    |                      |                         |                              |                              |                         |    |

| 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 0.5                  | R 0.1               | 33,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 85   | 0.01              | 0.01               | 25,000     | 55   | 0.01              | 0.01               | 25,000     | 45   | 0.01              | 0.01               |
| ø 0.6                  | R 0.1               | 33,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 95   | 0.02              | 0.02               | 25,000     | 60   | 0.01              | 0.01               | 20,000     | 50   | 0.01              | 0.01               |
| ø 0.7                  | R 0.1               | 30,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 115  | 0.02              | 0.10               | 25,000     | 75   | 0.01              | 0.08               | 20,000     | 55   | 0.01              | 0.08               |
| ø 0.8                  | R 0.1               | 25,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 120  | 0.04              | 0.15               | 19,000     | 85   | 0.02              | 0.12               | 16,000     | 60   | 0.02              | 0.12               |
| ø 0.9                  | R 0.1               | 23,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 160  | 0.06              | 0.18               | 17,500     | 110  | 0.03              | 0.15               | 14,500     | 95   | 0.03              | 0.14               |
| ø 1                    | R 0.3               | 20,500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 344  | 0.10              | 0.30               | 16,000     | 216  | 0.05              | 0.20               | 12,500     | 140  | 0.05              | 0.20               |
| ø 1.5                  | R 0.1               | 18,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 388  | 0.10              | 0.30               | 13,000     | 235  | 0.07              | 0.30               | 10,500     | 160  | 0.08              | 0.25               |
| "                      | R 0.5               | 18,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 388  | 0.13              | 0.40               | 13,000     | 235  | 0.07              | 0.30               | 10,500     | 160  | 0.08              | 0.25               |
| ø 2                    | R 0.1               | 14,500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 416  | 0.15              | 0.50               | 11,000     | 256  | 0.10              | 0.45               | 9,500      | 184  | 0.10              | 0.45               |
| "                      | R 0.5               | 14,500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 416  | 0.15              | 0.50               | 11,000     | 256  | 0.10              | 0.45               | 9,500      | 184  | 0.10              | 0.45               |
| ø 2.5                  | R 0.1               | 9,500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 416  | 0.20              | 0.70               | 7,500      | 256  | 0.12              | 0.55               | 6,400      | 184  | 0.12              | 0.55               |
| "                      | R 0.5               | 9,500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 416  | 0.20              | 0.70               | 7,500      | 256  | 0.12              | 0.55               | 6,400      | 184  | 0.12              | 0.55               |
| ø 3                    | R 0.5               | 8,300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 424  | 0.23              | 0.80               | 6,400      | 268  | 0.13              | 0.60               | 5,600      | 192  | 0.13              | 0.60               |
| "                      | R 1                 | 8,300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 424  | 0.23              | 0.80               | 6,400      | 268  | 0.13              | 0.60               | 5,600      | 192  | 0.13              | 0.60               |
| ø 3.5                  | R 0.5               | 7,800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 432  | 0.25              | 0.90               | 6,000      | 268  | 0.13              | 0.70               | 5,200      | 192  | 0.14              | 0.70               |
| ø 4                    | R 0.5               | 7,200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 432  | 0.25              | 0.95               | 5,600      | 268  | 0.15              | 0.75               | 4,750      | 192  | 0.15              | 0.75               |
| "                      | R 1                 | 7,200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 432  | 0.25              | 1.00               | 5,600      | 268  | 0.15              | 0.80               | 4,750      | 192  | 0.15              | 0.80               |
| ø 4.5                  | R 0.5               | 6,400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 464  | 0.25              | 1.05               | 5,100      | 296  | 0.15              | 0.85               | 4,450      | 216  | 0.15              | 0.85               |
| ø 5                    | R 0.5               | 6,400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 464  | 0.25              | 1.05               | 5,100      | 296  | 0.15              | 0.85               | 4,450      | 216  | 0.15              | 0.85               |
| "                      | R 1                 | 6,400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 464  | 0.30              | 1.20               | 5,100      | 296  | 0.17              | 0.90               | 4,450      | 216  | 0.17              | 0.85               |
| ø 6                    | R 0.5               | 5,300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 448  | 0.30              | 1.30               | 4,200      | 280  | 0.20              | 1.00               | 3,700      | 208  | 0.20              | 0.90               |
| "                      | R 1                 | 5,300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 448  | 0.30              | 1.40               | 4,200      | 296  | 0.20              | 1.00               | 3,700      | 216  | 0.20              | 0.90               |
| "                      | R 1.5               | 5,300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 448  | 0.35              | 1.50               | 4,200      | 280  | 0.23              | 1.20               | 3,700      | 208  | 0.22              | 1.20               |
| "                      | R 2                 | 5,300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 448  | 0.35              | 1.60               | 4,200      | 296  | 0.23              | 1.20               | 3,700      | 216  | 0.22              | 1.20               |
| ø 8                    | R 0.5               | 4,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 416  | 0.40              | 1.70               | 3,200      | 264  | 0.25              | 1.35               | 2,800      | 192  | 0.25              | 1.30               |
| "                      | R 1                 | 4,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 416  | 0.40              | 1.70               | 3,200      | 264  | 0.25              | 1.35               | 2,800      | 192  | 0.25              | 1.30               |
| "                      | R 1.5               | 4,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 416  | 0.45              | 2.00               | 3,200      | 264  | 0.28              | 1.50               | 2,800      | 192  | 0.27              | 1.40               |
| "                      | R 2                 | 4,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 416  | 0.45              | 2.00               | 3,200      | 264  | 0.28              | 1.50               | 2,800      | 192  | 0.27              | 1.40               |
| ø 10                   | R 0.5               | 3,200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 384  | 0.50              | 2.10               | 2,550      | 248  | 0.30              | 1.70               | 2,200      | 176  | 0.30              | 1.70               |
| "                      | R 1                 | 3,200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 384  | 0.50              | 2.10               | 2,550      | 248  | 0.30              | 1.70               | 2,200      | 176  | 0.30              | 1.70               |
| "                      | R 1.5               | 3,200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 384  | 0.55              | 2.30               | 2,550      | 248  | 0.35              | 1.80               | 2,200      | 176  | 0.35              | 1.80               |
| "                      | R 2                 | 3,200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 384  | 0.55              | 2.30               | 2,550      | 248  | 0.35              | 1.90               | 2,200      | 176  | 0.35              | 1.90               |
| "                      | R 2.5               | 3,200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 384  | 0.60              | 2.30               | 2,550      | 248  | 0.35              | 1.90               | 2,200      | 176  | 0.35              | 1.90               |
| ø 12                   | R 0.5               | 2,650                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 384  | 0.60              | 2.60               | 2,100      | 240  | 0.35              | 2.00               | 1,860      | 176  | 0.35              | 2.00               |
| "                      | R 1                 | 2,650                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 384  | 0.60              | 2.60               | 2,100      | 240  | 0.35              | 2.00               | 1,860      | 176  | 0.35              | 2.00               |
| "                      | R 1.5               | 2,650                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 384  | 0.60              | 2.60               | 2,100      | 240  | 0.35              | 2.00               | 1,860      | 176  | 0.35              | 2.00               |
| "                      | R 2                 | 2,650                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 384  | 0.60              | 2.60               | 2,100      | 240  | 0.35              | 2.00               | 1,860      | 176  | 0.35              | 2.00               |
| "                      | R 2.5               | 2,650                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 384  | 0.80              | 3.00               | 2,100      | 240  | 0.50              | 2.20               | 1,860      | 176  | 0.45              | 2.30               |
| "                      | R 3                 | 2,650                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 384  | 1.00              | 3.00               | 2,100      | 240  | 0.65              | 2.40               | 1,860      | 176  | 0.55              | 2.50               |
| 절입량<br>Depth of Cut    |                     | <div> <div>Slotting</div> <div>                     • Ap : Axial Depth<br/>                     • D : Outside Diameter                 </div>  </div> <div> <div>Side Milling</div> <div>                     • Ap : Axial Depth<br/>                     • Ae : Radial Depth                 </div>  </div> <div>  <div>경사진면절삭<br/>Inclined Cutting</div> </div> |      |                   |                    |            |      |                   |                    |            |      |                   |                    |

- 상기 조건표는 홈 절삭 조건표이며, 실 가공시 가공 형상, 가공 목적, 적용 기계에 따라 조건변경 요망 합니다.
- 곡면 절삭시 날경의 코너R 보다 낮은 이동 PITCH를 설정 하십시오.
- 곡면 절삭시 안정적인 속도 내에서 피드를 최대30%까지 UP 해주십시오.
- 적용 기계의 회전속도가 부족한 경우에는 회전 속도와 이송 속도를 같은 비율로 줄여서 적용합니다.
- 에어브로 혹은 미스트 쿨런트를 추천하며 칩 제거 주의 및 가공시 발열, 발화에 주의 하십시오.
- Above the table is a reference for groove milling, and adjust parameters depending on material shape, milling purpose, and CNC machine.
- For curved milling, set up the pitch value lower than corner radius value.
- For curved milling, raise up the feed up to 30% in stable condition.
- If the table over the maximum RPM and feed of your machine, adjust RPM and feed in the same proportion.
- Air blow or mist coolant is recommended and note for chip emission, heat, or ignition.

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