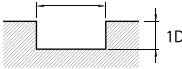
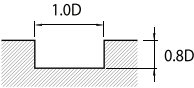


| 3EROUG/4EROUG |                                          |                                                                                                                                                                                                                                                                 |                      |                       |                                                               |      |                      |                       | Cutting Conditions                  |      |                      |                       |                                                 |      |                      |                       |
|---------------|------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------|---------------------------------------------------------------|------|----------------------|-----------------------|-------------------------------------|------|----------------------|-----------------------|-------------------------------------------------|------|----------------------|-----------------------|
| Slotting      |                                          |                                                                                                                                                                                                                                                                 |                      |                       |                                                               |      |                      |                       |                                     |      |                      |                       |                                                 |      |                      |                       |
| Material      | Mild Steels/Free Cutting Steels<br>HP/SM |                                                                                                                                                                                                                                                                 |                      |                       | Structural Steels/Carbon Steels/Gray<br>Cast Iron<br>SS/SC/FC |      |                      |                       | Tool Steels/Mould Steels<br>SCM/HPM |      |                      |                       | Alloy Steels / Prehardened Steels<br>NAK80/KP4M |      |                      |                       |
| Hardness      | ~ 200HB                                  |                                                                                                                                                                                                                                                                 |                      |                       | ~ 30HRC                                                       |      |                      |                       | 30 ~40HRC                           |      |                      |                       | 40 ~ 45HRC                                      |      |                      |                       |
| Outside Dia   | RPM                                      | FEED                                                                                                                                                                                                                                                            | Ap<br>Axial<br>Depth | Ae<br>Radial<br>Depth | RPM                                                           | FEED | Ap<br>Axial<br>Depth | Ae<br>Radial<br>Depth | RPM                                 | FEED | Ap<br>Axial<br>Depth | Ae<br>Radial<br>Depth | RPM                                             | FEED | Ap<br>Axial<br>Depth | Ae<br>Radial<br>Depth |
| Ø 4           | 3,870                                    | 395                                                                                                                                                                                                                                                             | 4.0                  | 4.0                   | 3,251                                                         | 191  | 4.0                  | 4.0                   | 2,786                               | 170  | 4.0                  | 4.0                   | 2,167                                           | 111  | 3.2                  | 4.0                   |
| Ø 5           | 3,870                                    | 395                                                                                                                                                                                                                                                             | 5.0                  | 5.0                   | 3,251                                                         | 218  | 5.0                  | 5.0                   | 2,477                               | 195  | 5.0                  | 5.0                   | 1,858                                           | 127  | 4.0                  | 5.0                   |
| Ø 6           | 3,251                                    | 395                                                                                                                                                                                                                                                             | 6.0                  | 6.0                   | 2,786                                                         | 254  | 6.0                  | 6.0                   | 2,167                               | 227  | 6.0                  | 6.0                   | 1,625                                           | 148  | 4.8                  | 6.0                   |
| Ø 8           | 2,477                                    | 395                                                                                                                                                                                                                                                             | 8.0                  | 8.0                   | 2,090                                                         | 305  | 8.0                  | 8.0                   | 1,625                               | 273  | 8.0                  | 8.0                   | 1,238                                           | 177  | 6.4                  | 8.0                   |
| Ø 10          | 2,012                                    | 395                                                                                                                                                                                                                                                             | 10.0                 | 10.0                  | 1,703                                                         | 343  | 10.0                 | 10.0                  | 1,238                               | 307  | 10.0                 | 10.0                  | 1,006                                           | 199  | 8.0                  | 10.0                  |
| Ø 12          | 1,625                                    | 395                                                                                                                                                                                                                                                             | 12.0                 | 12.0                  | 1,393                                                         | 300  | 12.0                 | 12.0                  | 1,084                               | 268  | 12.0                 | 12.0                  | 851                                             | 174  | 9.6                  | 12.0                  |
| Ø 16          | 1,238                                    | 395                                                                                                                                                                                                                                                             | 16.0                 | 16.0                  | 1,084                                                         | 276  | 16.0                 | 16.0                  | 774                                 | 246  | 16.0                 | 16.0                  | 619                                             | 160  | 12.8                 | 16.0                  |
| Ø 20          | 1,006                                    | 372                                                                                                                                                                                                                                                             | 20.0                 | 20.0                  | 851                                                           | 254  | 20.0                 | 20.0                  | 619                                 | 227  | 20.0                 | 20.0                  | 495                                             | 148  | 16.0                 | 20.0                  |
| Depth of cut  |                                          | <div><div><div>~ 38HRC</div><div></div></div><div><div>38HRC ~</div><div></div></div></div> |                      |                       |                                                               |      |                      |                       |                                     |      |                      |                       |                                                 |      |                      |                       |

| Side Cutting |                                          |                                                                                      |                      |                       |                                                               |      |                      |                       |                                     |      |                      |                       |                                                 |      |                      |                       |
|--------------|------------------------------------------|--------------------------------------------------------------------------------------|----------------------|-----------------------|---------------------------------------------------------------|------|----------------------|-----------------------|-------------------------------------|------|----------------------|-----------------------|-------------------------------------------------|------|----------------------|-----------------------|
| Material     | Mild Steels/Free Cutting Steels<br>HP/SM |                                                                                      |                      |                       | Structural Steels/Carbon Steels/Gray<br>Cast Iron<br>SS/SC/FC |      |                      |                       | Tool Steels/Mould Steels<br>SCM/HPM |      |                      |                       | Alloy Steels / Prehardened Steels<br>NAK80/KP4M |      |                      |                       |
| Hardness     | ~ 200HB                                  |                                                                                      |                      |                       | ~ 30HRC                                                       |      |                      |                       | 30 ~40HRC                           |      |                      |                       | 40 ~ 45HRC                                      |      |                      |                       |
| Outside Dia  | RPM                                      | FEED                                                                                 | Ap<br>Axial<br>Depth | Ae<br>Radial<br>Depth | RPM                                                           | FEED | Ap<br>Axial<br>Depth | Ae<br>Radial<br>Depth | RPM                                 | FEED | Ap<br>Axial<br>Depth | Ae<br>Radial<br>Depth | RPM                                             | FEED | Ap<br>Axial<br>Depth | Ae<br>Radial<br>Depth |
| Ø 4          | 4,300                                    | 439                                                                                  | 6.0                  | 2.0                   | 3,612                                                         | 280  | 6.0                  | 2.0                   | 3,096                               | 194  | 6.0                  | 2.0                   | 2,408                                           | 140  | 4.0                  | 1.2                   |
| Ø 5          | 4,300                                    | 439                                                                                  | 7.5                  | 2.5                   | 3,612                                                         | 290  | 7.5                  | 2.5                   | 2,752                               | 215  | 7.5                  | 2.5                   | 2,064                                           | 161  | 5.0                  | 1.5                   |
| Ø 6          | 3,612                                    | 439                                                                                  | 9.0                  | 3.0                   | 3,096                                                         | 312  | 9.0                  | 3.0                   | 2,408                               | 237  | 9.0                  | 3.0                   | 1,806                                           | 183  | 6.0                  | 1.8                   |
| Ø 8          | 2,752                                    | 439                                                                                  | 12.0                 | 4.0                   | 2,322                                                         | 355  | 12.0                 | 4.0                   | 1,806                               | 269  | 12.0                 | 4.0                   | 1,376                                           | 204  | 8.0                  | 2.4                   |
| Ø 10         | 2,236                                    | 439                                                                                  | 15.0                 | 5.0                   | 1,892                                                         | 371  | 15.0                 | 5.0                   | 1,376                               | 280  | 15.0                 | 5.0                   | 1,118                                           | 226  | 10.0                 | 3.0                   |
| Ø 12         | 1,806                                    | 439                                                                                  | 18.0                 | 6.0                   | 1,548                                                         | 387  | 18.0                 | 6.0                   | 1,204                               | 290  | 18.0                 | 6.0                   | 946                                             | 231  | 12.0                 | 3.6                   |
| Ø 16         | 1,376                                    | 439                                                                                  | 24.0                 | 8.0                   | 1,204                                                         | 414  | 24.0                 | 8.0                   | 860                                 | 312  | 24.0                 | 8.0                   | 688                                             | 237  | 16.0                 | 4.8                   |
| Ø 20         | 1,118                                    | 413                                                                                  | 30.0                 | 10.0                  | 946                                                           | 403  | 30.0                 | 10.0                  | 688                                 | 301  | 30.0                 | 10.0                  | 550                                             | 226  | 20.0                 | 6.0                   |
| Depth of cut |                                          |  |                      |                       |                                                               |      |                      |                       |                                     |      |                      |                       |                                                 |      |                      |                       |

- Use a rigid precise machine and holder.
- Ap(mm): Axial Depth of cut.
- Ae(mm): Radial Depth of cut.
- Use this table for your reference. Adjust the parameters depending on your machining geometry, machining purpose and CNC.
- Depending on the workpiece and shape, use adequate coolant.
- For stainless and Heat resistance alloy, water soluble oil is the most effective.
- In case of workpiece and machine do not have enough rigidity and make vibration reduce the RPM and feed in the same proportion
- Air blow or oil mist is recommended for smooth chip emission and wet coolant milling is recommended for copper material.
- The Above condition are only reference. In actual machining conditions adjust these parameters according to the milling shape, machine ability and the operation environment.