

## Recommended Cutting Conditions - External Turning (Positive Insert)

| ISO Classification | Workpiece Material                                   | Hardness  | Cutting Range                                    | Application             | Recommended Chipbreaker | Recommended Grade | Corner-R (r <sub>e</sub> ) | Lower Limit - Recommendation - Upper Limit |                  |                    |
|--------------------|------------------------------------------------------|-----------|--------------------------------------------------|-------------------------|-------------------------|-------------------|----------------------------|--------------------------------------------|------------------|--------------------|
|                    |                                                      |           |                                                  |                         |                         |                   |                            | Vc (m/min)                                 | ap (mm)          | f (mm/rev)         |
| <b>M</b>           | Stainless Steel                                      | HB ≤ 220  | Finishing                                        | Continuous Interruption | MQ                      | PR1125            | 0.2                        | 80 - 100 - 120                             | 0.1 - 0.3 - 0.5  | 0.03 - 0.05 - 0.1  |
|                    |                                                      |           | Medium cutting                                   | Continuous Interruption | GK                      | PR1025            | 0.4                        | 60 - 80 - 100                              | 0.3 - 0.5 - 1.0  | 0.05 - 0.1 - 0.15  |
|                    | Stainless Steel                                      | HB ≤ 300  | Finishing                                        | Continuous Interruption | MQ                      | PR1125            | 0.2                        | 40 - 60 - 80                               | 0.1 - 0.3 - 0.5  | 0.03 - 0.05 - 0.1  |
|                    |                                                      |           | Medium cutting                                   | Continuous Interruption | GK                      | PR1025            | 0.4                        | 30 - 50 - 70                               | 0.3 - 0.5 - 1.0  | 0.05 - 0.1 - 0.15  |
|                    |                                                      |           | Finishing                                        | Continuous Interruption | MQ                      | PR1125            | 0.2                        | 40 - 60 - 80                               | 0.5 - 1.0 - 2.0  | 0.07 - 0.12 - 0.15 |
|                    |                                                      |           | Medium cutting                                   | Continuous Interruption | GK                      | PR1025            | 0.4                        | 30 - 50 - 70                               | 0.5 - 1.0 - 1.5  | 0.05 - 0.1 - 0.15  |
| <b>K</b>           | Gray Cast Iron                                       | HB ≤ 250  | Finishing                                        | Continuous Interruption | Standard                | CA4010            | 0.4                        | 100 - 120 - 150                            | 0.2 - 0.5 - 1.0  | 0.1 - 0.15 - 0.2   |
|                    |                                                      |           | Medium cutting                                   | Continuous Interruption | Standard                | CA4010            | 0.4                        | 80 - 100 - 120                             | 0.2 - 0.5 - 1.0  | 0.05 - 0.1 - 0.15  |
|                    | Nodular Cast Iron                                    | HB ≤ 270  | Finishing                                        | Continuous Interruption | Standard                | CA4115            | 0.4                        | 100 - 120 - 150                            | 0.5 - 1.0 - 2.0  | 0.1 - 0.15 - 0.2   |
|                    |                                                      |           | Medium cutting                                   | Continuous Interruption | Standard                | CA4120            | 0.4                        | 80 - 100 - 120                             | 0.2 - 0.5 - 1.0  | 0.05 - 0.1 - 0.15  |
|                    |                                                      |           | Finishing                                        | Continuous Interruption | Standard                | CA4115            | 0.4                        | 60 - 80 - 100                              | 0.2 - 0.5 - 1.0  | 0.1 - 0.15 - 0.2   |
|                    |                                                      |           | Medium cutting                                   | Continuous Interruption | Standard                | CA4120            | 0.8                        | 60 - 80 - 100                              | 0.5 - 1.0 - 2.0  | 0.05 - 0.1 - 0.15  |
| <b>N</b>           | Non-ferrous Metals<br>Copper Alloy<br>Aluminum Alloy | HB ≤ 100  | High Speed Finishing<br>(Rainbow-colored finish) | Continuous              | Without Chipbreaker     | KPD001            | 0.2                        | 150 - 250 - 350                            | 0.05 - 0.1 - 0.3 | 0.05 - 0.1 - 0.15  |
|                    |                                                      |           | Finishing                                        | Continuous Interruption | F, FSF                  | KW10              | 0.2                        | 100 - 150 - 200                            | 0.05 - 0.3 - 0.5 | 0.02 - 0.07 - 0.1  |
|                    |                                                      |           | Medium cutting                                   | Continuous Interruption | U, USF                  | KW10              | 0.2                        | 100 - 150 - 200                            | 0.2 - 0.5 - 1.5  | 0.03 - 0.1 - 0.2   |
|                    |                                                      |           | Medium cutting                                   | Continuous Interruption | U, USF                  | KW10              | 0.4                        | 100 - 150 - 200                            | 0.2 - 0.5 - 1.5  | 0.03 - 0.1 - 0.2   |
|                    | Titanium Alloy                                       | HB ≤ 400  | Precision Finishing<br>(Rainbow-colored finish)  | Continuous Interruption | Without Chipbreaker     | KPD001            | 0.2                        | 100 - 120 - 150                            | 0.05 - 0.1 - 0.3 | 0.03 - 0.07 - 0.1  |
|                    |                                                      |           | Medium cutting                                   | Continuous Interruption | FSF, USF                | KW10              | 0.4                        | 70 - 100 - 120                             | 0.05 - 0.1 - 0.3 | 0.03 - 0.07 - 0.1  |
| <b>S</b>           | Heat-resistant Alloy                                 | HB ≤ 350  | Finishing                                        | Continuous Interruption | F, U                    | KW10              | 0.4                        | 30 - 50 - 70                               | 0.1 - 0.5 - 1.0  | 0.03 - 0.1 - 0.2   |
|                    |                                                      |           | Finishing                                        | Continuous Interruption | Without Chipbreaker     | KW10              | 0.8                        | 30 - 50 - 70                               | 0.1 - 0.5 - 1.0  | 0.03 - 0.1 - 0.2   |
|                    |                                                      |           | Finishing                                        | Continuous Interruption | MQ                      | PR1125            | 0.4                        | 10 - 30 - 50                               | 0.1 - 0.3 - 0.5  | 0.03 - 0.05 - 0.1  |
|                    |                                                      |           | Finishing                                        | Continuous Interruption | MQ                      | PR1125            | 0.8                        | 10 - 30 - 50                               | 0.1 - 0.3 - 0.5  | 0.03 - 0.05 - 0.1  |
|                    | Hard Materials                                       | 40~50 HRC | Finishing                                        | Continuous Interruption | GK                      | PR1025            | 0.2                        | 40 - 60 - 80                               | 0.1 - 0.3 - 0.5  | 0.02 - 0.07 - 0.1  |
|                    |                                                      |           | Finishing                                        | Continuous Interruption | GK                      | PR1025            | 0.4                        | 40 - 60 - 80                               | 0.1 - 0.3 - 0.5  | 0.02 - 0.07 - 0.1  |
| <b>H</b>           | Hard Materials                                       | 50~68 HRC | Finishing                                        | Continuous Interruption | SE                      | KBN25M            | 0.2                        | 80 - 120 - 150                             | 0.1 - 0.3 - 0.5  | 0.02 - 0.07 - 0.1  |
|                    |                                                      |           | Finishing                                        | Continuous Interruption | SET, MET                | KBN25M            | 0.4                        | 60 - 100 - 120                             | 0.1 - 0.3 - 0.5  | 0.02 - 0.07 - 0.1  |

E



Small Tools