























































































































## **Indexable Inserts**





































**Cemented Carbide Indexable Inserts** With the state-of-the-art indexable inserts production line and the advanced manufacturing process in the world, the company provides customers with coated or uncoated indexable inserts for turning, milling, boring, grooving and threading in finishing, semi-finishing or roughing application






















**Indexable Cutting Inserts**

|  |  |   |   |   |   |   |   |
|--|--|---|---|---|---|---|---|
| <b>S</b><br><br>Square (90°)    | SNUN   | SPUN  | SFUN  | SPMR-T  | SPMR-M  | SNMA  | SNMM-A  |
|  |                                 |    |    |    |    |    |    |
|  | SNMM-ZR53  | SNMG-V  | SNMG-ZM   | SNMG-ZF   | SNMG-ZF1  | SNMG-ZF3  | SNMG-ZG   |
|  |                                 |    |    |    |    |    |    |
|  | SCMT-ZPR   | SNMG-ZPM  | SNMT-ZPF  | SNMM-ZMR  | SCMT-HMR  | SNMG-ZMM  | SNMG-ZMF  |
|  |                                 |    |    |    |    |    |    |
|  | <b>T</b><br><br>Triangle (60°) | TNUN  | TPUN  | TNMA  | TPGA  | TPUR-T  | TNMM-V  |
|                                |  |   |   |   |   |   |   |
|  | TCMT-ZF3   | TCMT-V  | TNMG-ZPF  | TNMG-ZPS  | TNMG-ZKM  | TNMG-ZKF  |   |
|  |                               |  |  |  |  |  |   |
| <b>C</b><br><br>Rhombic (80°) | CNMA   | CNMM-V  | CNMM-M  | CNMM-H  | CNMM-ZR   | CNMM-ZR51   | CNMM-ZM   |
|  |                               |  |  |  |  |  |  |
|  | CCMT   | CNMT-V  | CCMT-V  | CPGT-ZM   | CCMT-ZF   | CCMT-ZF3  | CNMG-ZPR  |
|  |                               |  |  |  |  |  |  |
|  | CCMT-HMR   | CCMT-HMM  | CNMG-ZMM  | CNMG-ZMF  | CCMT-HMF  | CNMG-ZKR  | CCMT-HKR  |
|  |                               |  |  |  |  |  |  |
|  | <b>D</b><br><br>Rhombic (55°) | DNMA  | DNMM-V  | DNMM-M  | DNMG-V  | DNMG-M  | DNMM-ZF   |
|                               |  |  |  |  |  |  |  |

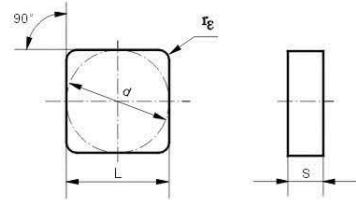
|   |   |   |   |   |  |   |   |
|---|---|---|---|---|--|---|---|
| SNMM-H  | SNMM-Y  | SNMM-M  | SNMM-V  | SNMM-ZM24   | SNMG-ZM24  | SNMM-ZR   | SNMM-ZR51   |
|    |    |    |    |    |    |    |    |
| SCMT-V  | SCMT-ZM   | SCMT-ZF3  | SCGH-ZR54   | SCUW  | SPGB   | SPMW  | *SNMG-ZV1   |
|    |    |    |    |    |    |    |    |
| SNMG-ZKR  | SCMT-HKR  | SNMG-ZKM  | SCMT-HKF  |   |  |   |   |
|    |    |    |    |   |  |   |   |
| TNMG-V  | TNMG-ZM   | TNMG-ZM54   | TNMG-ZG   | TNUW  | TCGW   | TCUW  | TCMT-ZM   |
|   |   |   |   |   |   |   |   |
|   |   |   |   |   |  |   |   |
|   |   |   |   |   |  |   |   |
| CNMG-V  | CNMG-ZG   | CNMG-ZM   | CNMG-ZF   | CNMG-ZF2  | CNMG-ZR54  | CNMG-ZR53   | CCCW/CCMW   |
|  |  |  |  |  |  |  |  |
| CNMM-ZPQ  | CNMG-ZPM  | CCMT-HPM  | CNMG-ZPF  | CCMT-HPF  | CNMG-ZPS   | CNMM-ZMQ  | CNMG-ZMR  |
|  |  |  |  |  |  |  |  |
| CCMT-HKM  |   |   |   |   |  |   |   |
|  |   |   |   |   |  |   |   |
| DNMG-ZF3  | DNMG-ZM   | DNMG-V  | DCMT  | DCMT-ZF3  | DCMT-V   | DCMW  | DCMT-HPR  |
|  |  |  |  |  |  |  |  |

|  |   |   |   |   |
|--|---|---|---|---|
|  | DCMT-HPM  | DCMT-HMM  | DCMT-HKM  |   |
|  |    |    |    |   |
| <b>K</b>   | KOUX-L11  | KOUX-R11  | KNUX-L11  | KNUX-R11  |
|                             |    |    |    |    |
| <b>V</b>   | VNMA  | VNMM-V  | VNMG-V  | VAGT-ZF   |
| <br>Rhombic (35°)           |    |    |    |    |
| <b>W</b>   | WNMM-C  | WNMM-V  | WNMM-ZM   | WNMG-ZM   |
| <br>Non-equilateral hexagon |    |    |    |    |
| <b>R</b>   | RNMN  | RNMA  | RNMM-V  | RCMM-ZR51   |
| <br>round                 |  |  |  |  |
| Inserts for cutting -off ,grooving   |   |   |   |   |
| <b>Q</b>   | QC14  | QC07  |   |   |
|                           |  |  |   |   |
| Milling inserts  |   |   |   |   |
| <b>S</b>   | SNA(C/K)N-ANN   | SNA(C/K)N-ENN   | SPMW-ANN  | SPFN-T  |
|                           |  |  |  |  |
| <b>L</b>   | LPEX-EDR(L)   | LPEN  |   |   |
|                           |  |  |   |   |
| <b>F</b>   | FPCN  |   |   |   |
|                           |  |   |   |   |

|   |   |   |   |   |
|---|---|---|---|---|
|   |   |   |   |   |
|   |   |   |   |   |
|   |   |   |   |   |
|   |   |   |   |   |
| VBMT-V  | VBMT-ZF3  | VBMT-ZM   |   |   |
|    |    |    |   |   |
| WNMG-V  | WCMT-V  | WCMT-ZF3  |   |   |
|    |    |    |   |   |
| RCMM-V  | RCUT  | RPMW  | RCMT-V  | *RCMX-ZV  |
|  |  |  |  |  |
|   |   |   |   |   |
|   |   |   |   |   |
|   |   |   |   |   |
| SPA(C/K)N-EDR(L)  | SECN-EER/(L)  | SFAN-EER(L)   | SPMW-EDR(L)   |   |
|  |  |  |  |   |
|   |   |   |   |   |
|   |   |   |   |   |
| <b>T</b>  | TEC(K)N-PER(L)  | TPA(C/K)N-PDR(L)  | TPA(C/K)N-PPN   |   |
|  |  |  |  |   |

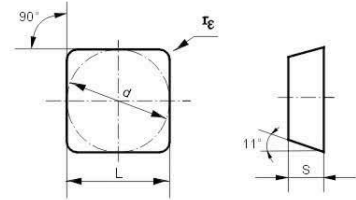
# SNUN

S



| Type   | Dimension (mm) |                              |                          | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|--|----------------|------------------------------|--------------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|  | L=d            | S                            | r <sub>e</sub>           | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SNUN090304<br>SNUN090308                             | 9.525          | 3.18                         | 0.4<br>0.8               |       |       |       |       | •    |      |      |      |      |      |      |        | •    |        |      |        |  |
| SNUN120408<br>SNUN120412                             | 12.70          | 4.76                         | 0.8<br>1.2               |       |       |       |       | •    |      |      |      |      |      |      |        | •    |        |      |        |  |
| SNUN150408<br>SNUN150412<br>SNUN150416               | 15.875         | 4.76                         | 0.8<br>1.2<br>1.6        |       |       |       |       | •    |      |      |      |      |      |      |        | •    |        |      |        |  |
| SNUN190412<br>SNUN190416<br>SNUN190608<br>SNUN190720 | 19.05          | 4.76<br>4.76<br>6.35<br>7.97 | 1.2<br>1.6<br>0.8<br>2.0 |       |       |       |       | •    |      |      |      |      |      |      |        | •    |        |      |        |  |

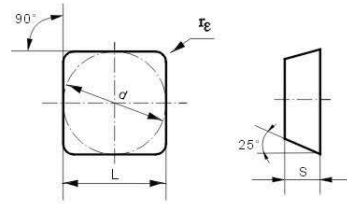
# SPUN



| Type                                   | Dimension (mm) |                      |                   | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|--|----------------|----------------------|-------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|  | L=d            | S                    | r <sub>e</sub>    | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SPUN090304<br>SPUN090308               | 9.525          | 3.18                 | 0.4<br>0.8        |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      |        |  |
| SPUN120304<br>SPUN120308<br>SPUN120312 | 12.70          | 3.18                 | 0.4<br>0.8<br>1.2 |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      |        |  |
| SPUN120404                             | 12.70          | 4.76                 | 0.4               |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      |        |  |
| SPUN150408<br>SPUN150412               | 15.875         | 4.76                 | 0.8<br>1.2        |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      |        |  |
| SPUN190412<br>SPUN190416<br>SPUN190720 | 19.05          | 4.76<br>4.76<br>7.94 | 1.2<br>1.6<br>2.0 |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      |        |  |

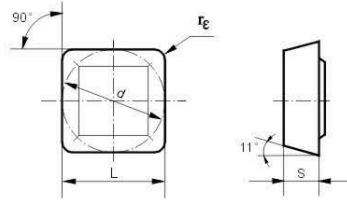
The range of groove and the choice of grade are for reference.

# SFUN



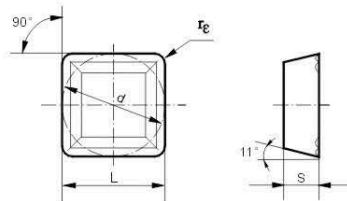
| Type       | Dimension (mm) |      |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |
|------------|----------------|------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|
|            | L=d            | S    | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |
| SFUN120304 | 12.70          | 3.18 | 0.4            |       |       |       |       |      |      | •    | •    |      |      |      |        |      |        | •    |        |

# SPMR-T Semi-finishing



| Type         | Dimension (mm) |      |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
|--------------|----------------|------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|
|              | L=d            | S    | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |
| SPMR120304-T | 12.70          | 3.18 | 0.4            |       | •     |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
| SPMR120308-T |                |      | 0.8            |       | •     |       |       |      |      | •    |      |      |      |      |        |      |        |      |        |  |  |
| SPMR120312-T |                |      | 1.2            |       | •     |       |       |      |      | •    |      |      |      |      | •      |      |        |      |        |  |  |

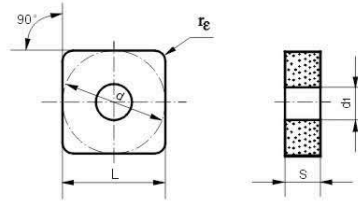
# SPMR-M Semi-finishing



| Type           | Dimension (mm) |      |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
|----------------|----------------|------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|
|                | L=d            | S    | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |
| SPMR090304-M15 | 9.525          | 3.18 | 0.4            |       | •     |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
| SPMR090308-M15 |                |      | 0.8            |       | •     |       |       |      |      |      | •    |      |      |      |        |      |        |      |        |  |  |
| SPMR090312-M15 |                |      | 1.2            |       | •     |       |       |      |      |      | •    |      |      |      |        |      |        |      |        |  |  |

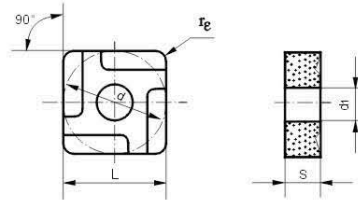
# SNMA

S



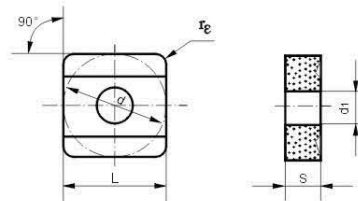
| Type       | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |   |   |
|------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|---|---|
|            | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |   |   |
| SNMA090408 | 9.525          | 4.76 | 3.81           | 0.8            |       | •     |       | •     |      |      |      |      |      |      |      | •      | •    |        |      | •      |  |   |   |
| SNMA120404 | 12.70          | 4.76 | 5.16           | 0.4            |       | •     |       | •     |      |      |      |      |      |      |      | •      | •    |        |      | •      |  |   |   |
| SNMA120408 |                |      |                | 0.8            |       | •     |       | •     |      |      |      |      |      |      |      |        |      | •      | •    |        |  | • |   |
| SNMA120412 |                |      |                | 1.2            |       | •     |       | •     |      |      |      |      |      |      |      |        |      |        | •    | •      |  |   | • |
| SNMA150608 | 15.875         | 6.35 | 6.35           | 0.8            |       | •     |       | •     |      |      |      |      |      |      |      | •      | •    |        |      | •      |  |   |   |
| SNMA150612 |                |      |                | 1.2            |       | •     |       | •     |      |      |      |      |      |      |      |        |      | •      | •    |        |  | • |   |
| SNMA190612 | 19.05          | 6.35 | 7.94           | 1.2            |       | •     |       | •     |      |      |      |      |      |      |      | •      | •    |        |      | •      |  |   |   |
| SNMA190616 |                |      |                | 1.6            |       | •     |       | •     |      |      |      |      |      |      |      |        |      | •      | •    |        |  | • |   |

# SNMM-A Semi-finishing



| Type              | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|-------------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                   | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SNMM120408R(L)-A  | 12.70          | 4.76 | 5.16           | 1.2            |       | •     |       | •     |      |      |      |      |      |      |      |        | •    | •      |      |        |  |
| SNMM120412R(L)-A  |                |      |                | 1.6            |       | •     |       | •     |      |      |      |      |      |      |      |        |      |        | •    | •      |  |
| SNMM150608R(L)-A3 | 15.875         | 6.35 | 6.35           | 0.8            |       | •     |       | •     |      |      |      |      |      |      |      |        | •    | •      |      |        |  |
| SNMM190612R(L)-A  | 19.05          | 6.35 | 7.93           | 1.2            |       | •     |       | •     |      |      |      |      |      |      |      |        | •    | •      |      |        |  |
| SNMM190616R(L)-A  |                |      |                | 1.6            |       | •     |       | •     |      |      |      |      |      |      |      |        |      |        | •    | •      |  |

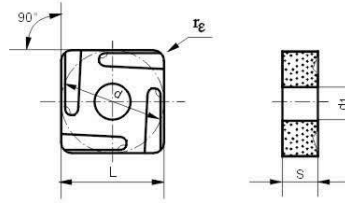
# SNMM-H Roughing



| Type          | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |
|---------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|
|               | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |
| SNMM120408-H3 | 12.70          | 4.76 | 5.16           | 0.8            |       |       |       | •     |      |      |      | •    | •    |      |      |        |      |        |      |        | • |
| SNMM150608-H5 | 15.875         | 6.35 | 6.35           |                |       |       |       | •     |      |      |      |      | •    | •    |      |        |      |        |      |        |   |

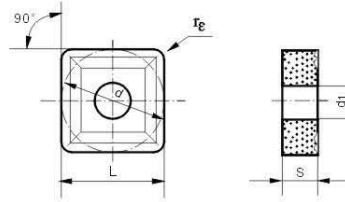


## SNMM-Y Roughing-semi-finishing



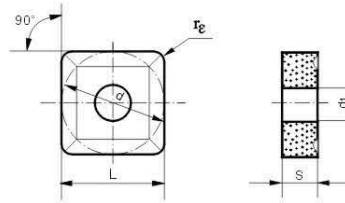
| Type              | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
|-------------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|
|                   | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |
| SNMM120408R-Y5    | 12.70          | 4.76 | 5.16           | 0.8            |       |       |       | •     |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
| SNMM120412L-Y3    |                |      |                | 1.2            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
| SNMM150608R(L)-Y6 | 15.875         | 6.35 | 6.35           | 0.8            |       |       |       | •     |      |      |      |      |      |      |      |        |      |        |      |        |  |  |

## SNMM-M Roughing



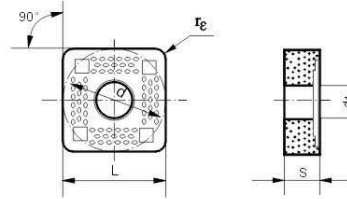
| Type          | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
|---------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|
|               | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |
| SNMM190612-M3 | 19.05          | 6.35 | 7.94           | 1.2            |       |       | •     | •     |      |      |      | •    | •    |      |      |        |      |        |      |        |  |  |
| SNMM190616-M2 |                |      |                | 1.6            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |

## SNMM-V Roughing-semi-finishing



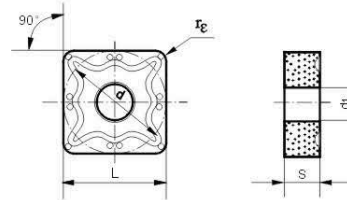
| Type          | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
|---------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|--|--|
|               | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |  |  |
| SNMM120408-V2 | 12.70          | 4.76 | 5.16           | 0.8            |       | •     |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| SNMM120408-V3 |                |      |                | 0.8            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| SNMM120416-V3 |                |      |                | 1.6            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| SNMM150408-V4 | 15.875         | 4.76 | 6.35           | 0.8            |       | •     |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| SNMM150612-V4 |                |      |                | 1.2            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| SNMM190612-V3 | 19.05          | 6.35 | 7.94           | 1.2            |       | •     |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| SNMM190616-V4 |                |      |                | 1.6            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |

**SNMM-ZR51** Roughing



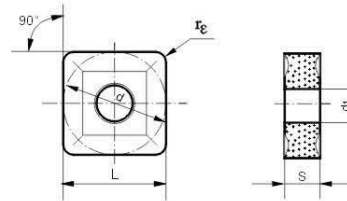
| Type            | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|-----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                 | L=d            | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SNMM120412-ZR51 | 12.70          | 4.76 | 5.16           | 1.2            |       | *     | *     | *     |      |      |      | *    | *    |      |      |        |      |        | *    |        |  |

**SNMM-ZR53** Roughing



| Type            | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|-----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                 | L=d            | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SNMM190625-ZR53 | 19.05          | 6.35 | 7.94           | 2.5            |       | *     | *     | *     |      |      |      | *    | *    |      |      |        |      |        | *    |        |  |

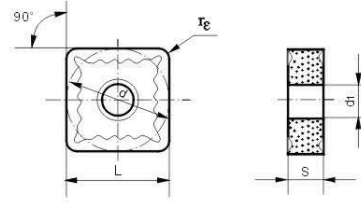
**SNMG-V** Semi-finishing



| Type          | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |   |  |
|---------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|---|--|
|               | L=d            | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |   |  |
| SNMG090304-V1 | 9.525          | 3.18 | 3.81           | 0.4            |       |       | *     | *     |      |      |      | *    | *    |      |      |        |      |        | *    |        |   |   |  |
| SNMG090308-V1 |                |      |                | 0.8            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        | * |   |  |
| SNMG120404-V2 | 12.70          | 4.76 | 5.16           | 0.4            |       |       | *     | *     |      |      |      | *    | *    |      |      |        |      |        | *    |        |   |   |  |
| SNMG120408-V2 |                |      |                | 0.8            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        | * |   |  |
| SNMG120412-V2 |                |      |                | 1.2            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   | * |  |
| SNMG150404-V1 | 15.875         | 6.35 | 6.35           | 0.4            |       |       | *     | *     |      |      |      | *    | *    |      |      |        |      |        | *    |        |   |   |  |
| SNMG150608-V2 |                |      |                | 0.8            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        | * |   |  |
| SNMG150612-V2 |                |      |                | 1.2            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   | * |  |
| SNMG190608-V3 | 19.05          | 6.35 | 7.94           | 0.8            |       |       | *     | *     |      |      |      | *    | *    |      |      |        |      |        | *    |        |   |   |  |
| SNMG190612-V2 |                |      |                | 1.2            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        | * |   |  |

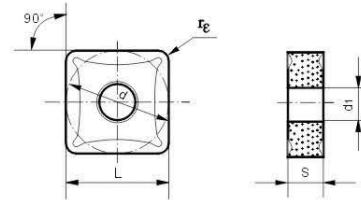
S

**SNMG-ZM** Semi-finishing



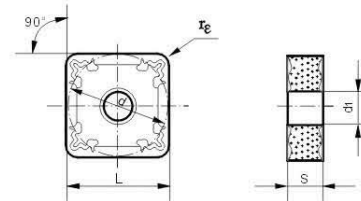
| Type          | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L=d            | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SNMG120408-ZM | 12.70          | 4.76 | 5.16           | 0.8            |       | •     |       |       | •    | •    |      |      |      |      |      |        |      |        |      |        |  |
| SNMG120412-ZM |                |      |                | 1.2            |       | •     |       |       | •    | •    |      |      |      |      |      |        |      |        |      |        |  |
| SNMG150608-ZM | 15.875         | 6.35 | 6.35           | 0.8            |       | •     |       |       | •    | •    |      |      |      |      |      |        |      |        |      |        |  |
| SNMG190620-ZM | 19.05          | 6.35 | 7.94           | 2.0            |       | •     |       |       | •    | •    |      |      |      |      |      |        |      |        |      |        |  |

**SNMG-ZF** Finishing



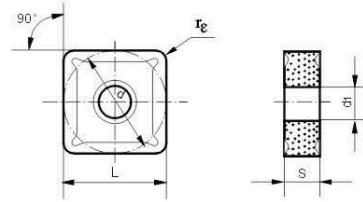
| Type          | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L=d            | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SNMG120404-ZF | 12.70          | 4.76 | 5.16           | 0.4            |       | •     |       |       | •    |      | •    |      |      |      |      |        | •    |        |      |        |  |

**SNMG-ZF1** Super-Finishing



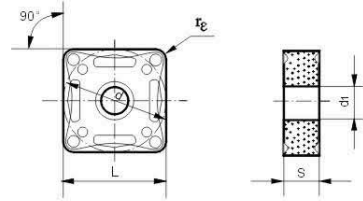
| Type           | Dimension (mm) |      |                |                | Grade |       |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |
|----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|
|                | L=d            | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZC422 | ZC424 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |
| SNMG120404-ZF1 | 12.70          | 4.76 | 5.16           | 0.4            |       | •     |       |       |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |

**SNMG-ZF3** Semi-finishing



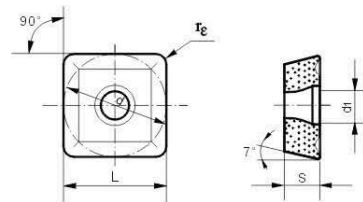
| Type           | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SNMG120408-ZF3 | 12.70          | 4.76 | 5.16           | 0.8            |       | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |
| SNMG120412-ZF3 |                |      |                | 1.2            | •     |       |       | •     |      |      |      |      |      |      |      | •      |      |        |      |        |  |

**SNMG-ZG** Roughing-semi-finishing



| Type          | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SNMG120412-ZG | 12.70          | 4.76 | 5.16           | 1.2            |       |       |       | •     |      |      |      | •    | •    |      |      |        |      |        |      | •      |  |

**SCMT-V** Semi-finishing

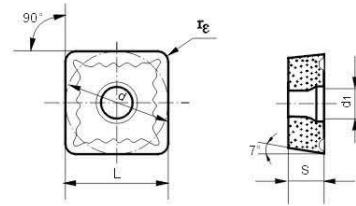
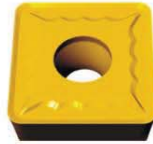


| Type          | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SCMT060202-V0 | 6.40           | 2.78 | 2.80           | 0.2            |       | •     |       | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| SCMT120404-V0 | 12.70          | 4.76 | 5.50           | 0.4            | •     |       |       | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| SCMT120408-V2 |                |      |                | 0.8            | •     |       |       | •     | •    |      |      |      |      |      |      |        |      | •      |      |        |  |

**S**

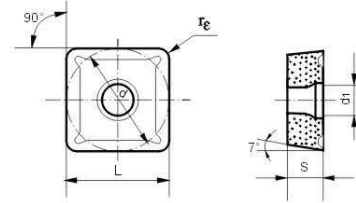
S

**SCMT-ZM** Semi-finishing



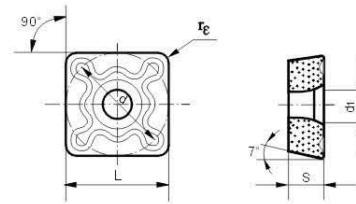
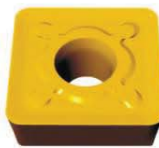
| Type          | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L=d            | S    | d <sub>1</sub> | r <sub>e</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SCMT120408-ZM | 12.70          | 4.76 | 5.50           | 0.8            |       | •     |       | •     | •    |      | •    |      |      |      |      | •      | •    |        |      |        |  |
| SCMT120412-ZM |                |      |                | 1.2            |       | •     |       | •     | •    |      | •    |      |      |      |      | •      | •    |        |      |        |  |

**SCMT-ZF3** Semi-finishing



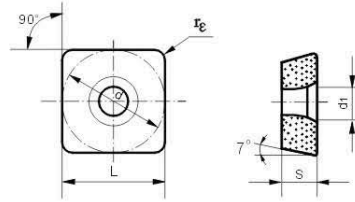
| Type           | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L=d            | S    | d <sub>1</sub> | r <sub>e</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SCMT09T304-ZF3 | 9.525          | 3.97 | 4.40           | 0.4            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
| SCMT120404-ZF3 |                |      |                | 0.4            |       | •     |       |       |      |      |      |      |      |      |      | •      | •    |        |      |        |  |
| SCMT120408-ZF3 | 12.70          | 4.76 | 5.50           | 0.8            |       | •     |       |       |      |      |      |      |      |      |      | •      | •    |        |      |        |  |
| SCMT120412-ZF3 |                |      |                | 1.2            |       | •     |       |       |      |      |      |      |      |      |      | •      | •    |        |      |        |  |

**SCGH-ZR54** Roughing



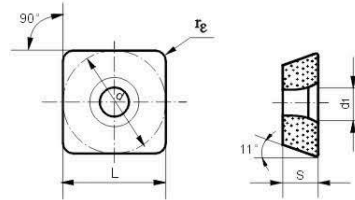
| Type            | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |
|-----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|
|                 | L=d            | S    | d <sub>1</sub> | r <sub>e</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |
| SCGH120308-ZR54 | 12.70          | 3.18 | 5.50           | 0.8            |       |       | •     | •     |      |      |      | •    | •    |      |      |        |      | •      |      |        | • |

# SCUW



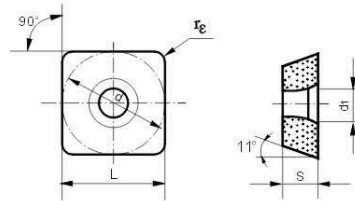
| Type       | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |
|------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|
|            | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |
| SCUW090302 | 9.525          | 3.18 | 4.40           | 0.2            |       |       |       |       |      |      |      |      |      | •    |      |        |      |        |      |        | • |
| SCUW120404 | 12.70          | 4.76 | 5.50           | 0.4            |       |       |       |       |      |      |      |      | •    |      |      |        |      |        |      |        | • |

# SPGB



| Type       | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |
|------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|--|
|            | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |  |
| SPGB090304 | 9.525          | 3.18 | 4.40           | 0.4            |       | •     |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |
| SPGB090308 |                |      |                | 0.8            |       | •     |       |       |      |      |      |      |      |      |      |        |      | •      |      |        |  |  |  |
| SPGB090312 |                |      |                | 1.2            |       | •     |       |       |      |      |      |      |      |      |      |        |      | •      |      |        |  |  |  |

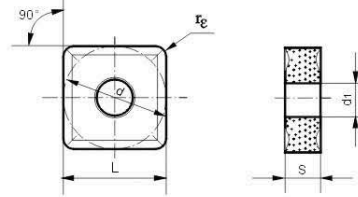
# SPMW



| Type       | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |
|------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|
|            | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |
| SPMW150408 | 15.875         | 4.76 | 5.50           | 0.8            |       |       |       |       |      |      |      |      | •    |      |      |        |      |        |      |        | • |

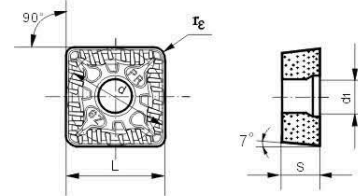
S

**SNMG-ZV** Semi-finishing



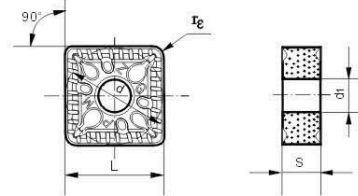
| Type            | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|-----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                 | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| *SNMG150616-ZV1 | 15.875         | 6.35 | 6.35           | 1.6            |       |       | *     | *     |      |      |      | *    |      |      |      |        |      |        |      | *      |  |

**SCMT-ZPR** Roughing



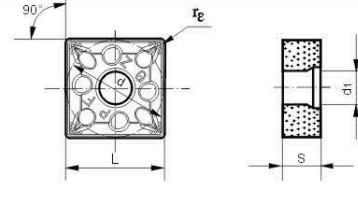
| Type           | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SCMT120412-ZPR | 12.70          | 4.76 | 5.5            | 1.2            |       |       |       | *     |      |      |      | *    | *    |      | *    |        |      |        |      |        |  |

**SNMG-ZPM** Semi-finishing



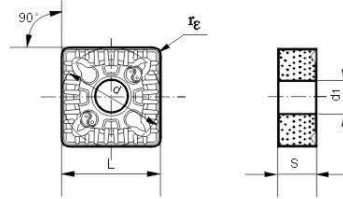
| Type           | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SNMG120412-ZPM | 12.70          | 4.76 | 5.16           | 1.2            |       |       |       | *     |      |      | *    |      |      | *    |      |        |      |        |      |        |  |
| SNMG120408-ZPM | 12.70          | 4.76 | 5.16           | 0.8            |       |       |       | *     |      |      | *    |      |      | *    |      |        |      |        |      |        |  |

**SNMT-ZPF** Finishing



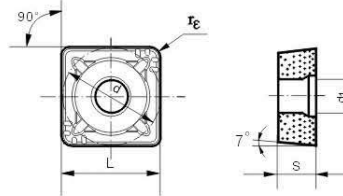
| Type           | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SNMT090304-ZPF | 9.70           | 3.18 | 4.40           | 0.4            | *     | *     |       |       | *    |      | *    |      |      |      |      |        |      |        |      |        |  |

## SNMM-ZMR Roughing



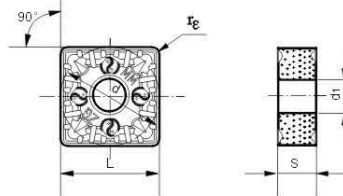
| Type           | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZMM5 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SNMM150616-ZMR | 15.875         | 6.35 | 6.35           | 1.6            |       |       |       | *     |      |      |      | *    | *    |      | *    |        |      |        |      |        |  |

## SCMT-HMR Roughing



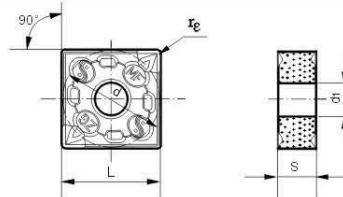
| Type           | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZMM5 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SCMT120412-HMR | 12.70          | 4.76 | 5.5            | 1.2            |       |       |       | *     |      |      |      | *    | *    |      | *    |        |      |        |      |        |  |

## SNMG-ZMM Semi-finishing



| Type           | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZMM5 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SNMG120408-ZMM | 12.70          | 4.76 | 5.5            | 0.8            |       |       |       | *     |      |      | *    |      |      | *    |      |        |      |        |      |        |  |

## SNMG-ZMF Finishing

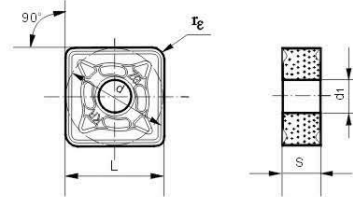


| Type           | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZMM5 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| SNMG090304-ZMF | 9.525          | 3.18 | 4.4            | 0.4            | *     | *     |       |       | *    |      | *    |      |      |      |      |        |      |        |      |        |  |



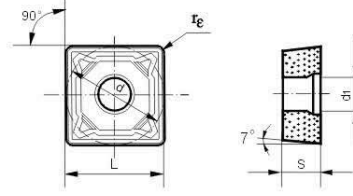
S

## SNMG-ZKR Roughing



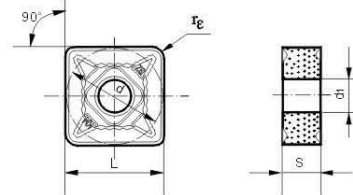
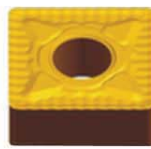
| Type           | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK100K | ZK20 | ZK200K | ZK30 | ZK300K |  |
| SNMG150616-ZKR | 15.875         | 6.35 | 6.35           | 1.6            |       |       |       | *     |      |      |      | *    | *    |      | *    |        |      |        |      |        |  |

## SCMT-HKR Roughing



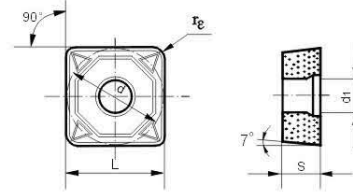
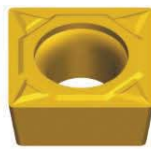
| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK100K | ZK20 | ZK200K | ZK30 | ZK300K |   |
| SCMT120412-HKR | 12.90          | 12.70 | 4.76 | 5.16           | 1.2            |       |       |       |       |      |      |      |      |      |      | *    |        |      |        |      | *      | * |

## SNMG-ZKM Semi-finishing



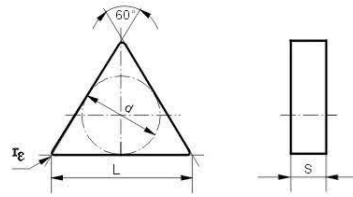
| Type           | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK100F | ZK20 | ZK200F | ZK30 | ZK300F |  |
| SNMG120408-ZKM | 12.70          | 4.76 | 5.16           | 0.8            |       |       |       |       |      |      |      |      |      |      |      |        | *    | *      |      |        |  |

## SCMT-HKF Finishing



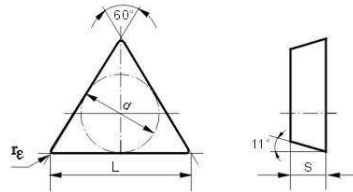
| Type           | Dimension (mm) |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L=d            | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK100F | ZK20 | ZK200F | ZK30 | ZK300F |  |
| SCMT090304-HKF | 9.525          | 3.18 | 0.4            | 0.4            |       |       |       |       |      |      |      |      |      |      |      | *      |      |        |      |        |  |

# TNUN



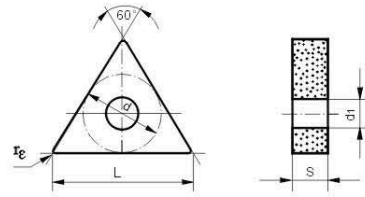
| Type       | Dimension (mm) |       |      |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |   |   |
|------------|----------------|-------|------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|---|---|
|            | L              | d     | S    | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |   |   |
| TNUN090204 | 9.6            | 5.56  | 2.38 | 0.4            |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      | •      |  |   |   |
| TNUN110304 | 11.0           | 6.35  | 3.18 | 0.4            |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      | •      |  |   |   |
| TNUN110308 |                |       |      | 0.8            |       |       |       |       |      |      |      | •    | •    |      |      |        |      |        |      |        |  | • |   |
| TNUN160412 | 16.5           | 9.525 | 4.76 | 1.2            |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      | •      |  |   |   |
| TNUN220408 | 22.0           | 12.70 | 4.76 | 0.8            |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      | •      |  |   |   |
| TNUN220412 |                |       |      | 1.2            |       |       |       |       |      |      |      | •    | •    |      |      |        |      |        |      |        |  | • |   |
| TNUN220416 |                |       |      | 1.6            |       |       |       |       |      |      |      |      | •    | •    |      |        |      |        |      |        |  |   | • |

# TPUN



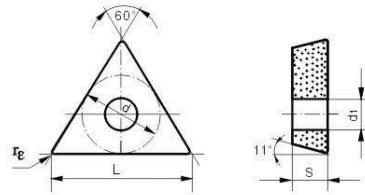
| Type       | Dimension (mm) |       |      |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |   |   |  |
|------------|----------------|-------|------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|---|---|--|
|            | L              | d     | S    | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |   |   |  |
| TPUN090204 | 9.60           | 5.56  | 2.38 | 0.4            |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      | •      |   |   |   |  |
| TPUN090308 |                |       | 3.18 | 0.8            |       |       |       |       |      |      | •    | •    |      |      |      |        |      |        |      |        | • |   |   |  |
| TPUN110304 | 11.0           | 6.35  | 3.18 | 0.4            |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      | •      |   |   |   |  |
| TPUN110308 |                |       | 3.18 | 0.8            |       |       |       |       |      |      | •    | •    |      |      |      |        |      |        |      |        | • |   |   |  |
| TPUN160304 | 16.5           | 9.525 | 3.18 | 0.4            |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      | •      |   |   |   |  |
| TPUN160308 |                |       | 3.18 | 0.8            |       |       |       |       |      |      | •    | •    |      |      |      |        |      |        |      |        | • |   |   |  |
| TPUN160312 |                |       | 3.18 | 1.2            |       |       |       |       |      |      |      | •    | •    |      |      |        |      |        |      |        |   | • |   |  |
| TPUN160408 | 16.5           | 9.525 | 4.76 | 0.8            |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      | •      |   |   |   |  |
| TPUN220404 | 22.0           | 12.70 | 4.76 | 0.4            |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      | •      |   |   |   |  |
| TPUN220408 |                |       |      | 0.8            |       |       |       |       |      |      |      | •    | •    |      |      |        |      |        |      |        |   | • |   |  |
| TPUN220412 |                |       |      | 1.2            |       |       |       |       |      |      |      |      | •    | •    |      |        |      |        |      |        |   |   | • |  |
| TPUN220416 |                |       |      | 1.6            |       |       |       |       |      |      |      |      | •    | •    |      |        |      |        |      |        |   |   | • |  |

# TNMA



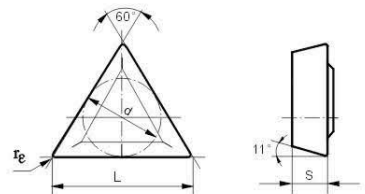
| Type       | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |   |   |
|------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|---|---|
|            | L              | d      | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |   |   |
| TNMA110304 | 11.0           | 6.35   | 3.18 | 2.80           | 0.4            |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      | •      |  |   |   |
| TNMA160404 | 16.5           | 9.525  | 4.76 | 3.81           | 0.4            |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      | •      |  |   |   |
| TNMA160408 |                |        |      |                | 0.8            |       |       |       |       |      |      |      | •    | •    |      |      |        |      |        |      |        |  | • |   |
| TNMA160412 |                |        |      |                | 1.2            |       |       |       |       |      |      |      |      | •    | •    |      |        |      |        |      |        |  |   | • |
| TNMA220408 | 22.0           | 12.70  | 4.76 | 5.16           | 0.8            |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      | •      |  |   |   |
| TNMA220412 |                |        |      |                | 1.2            |       |       |       |       |      |      |      | •    | •    |      |      |        |      |        |      |        |  | • |   |
| TNMA220432 |                |        |      |                | 3.2            |       |       |       |       |      |      |      |      | •    | •    |      |        |      |        |      |        |  |   | • |
| TNMA270608 | 27.5           | 15.875 | 6.35 | 6.35           | 0.8            |       |       |       |       |      | •    | •    |      |      |      |      |        |      |        |      | •      |  |   |   |
| TNMA270612 |                |        |      |                | 1.2            |       |       |       |       |      |      |      | •    | •    |      |      |        |      |        |      |        |  | • |   |

# TPGA



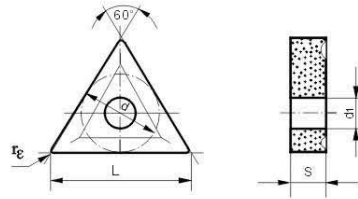
| Type       | Dimension (mm) |      |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|------------|----------------|------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|            | L              | d    | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| TPGA090204 | 9.6            | 5.56 | 2.38 | 2.50           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |

# TPUR-T



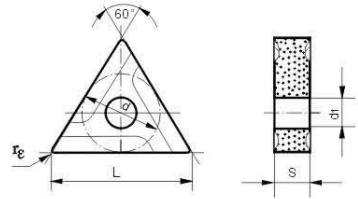
| Type         | Dimension (mm) |      |      |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |  |
|--------------|----------------|------|------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|--|
|              | L              | d    | S    | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |  |
| TPUR110304-T | 11.0           | 6.35 | 3.18 | 0.4            |       |       |       |       |      | •    |      |      |      |      |      |        |      |        |      |        | • |  |
| TPUR110308-T |                |      |      | 0.8            |       |       |       |       |      |      |      | •    |      |      |      |        |      |        |      |        |   |  |

## TNMM-V Roughing-semi-finishing



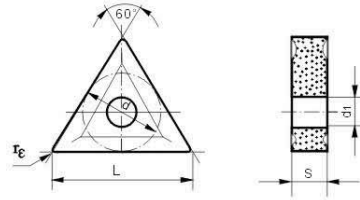
| Type              | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |
|-------------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|
|                   | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |
| TNMM160408-V2     | 16.5           | 9.525 | 4.76 | 3.81           | 0.8            | *     | *     |       | *     |      |      | *    | *    | *    |      |      | *      |      | *      |      | *      | * |
| TNMM220412-V2(V3) | 22.0           | 12.70 | 4.76 | 5.16           | 1.2            | *     | *     |       | *     |      |      | *    | *    | *    |      |      | *      |      | *      |      | *      | * |

## TNMG-A Finishing



| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| TNMG110304-A1 | 11.0           | 6.35  | 3.18 | 2.80           | 0.4            | *     | *     |       |       | *    |      |      |      |      |      |      | *      |      |        |      |        |  |
| TNMG160404-A2 | 16.5           | 9.525 | 4.76 | 5.50           | 0.4            | *     | *     |       |       | *    |      |      |      |      |      |      | *      |      |        |      |        |  |
| TNMG160408-A2 |                |       |      |                | 0.8            | *     | *     |       |       | *    |      |      |      |      |      |      |        |      |        | *    |        |  |
| TNMG220404-A2 | 22.0           | 12.70 | 4.76 | 5.50           | 0.4            | *     | *     |       |       | *    |      |      |      |      |      |      | *      |      |        |      |        |  |
| TNMG220408-A2 |                |       |      |                | 0.8            | *     | *     |       |       | *    |      |      |      |      |      |      |        |      |        | *    |        |  |

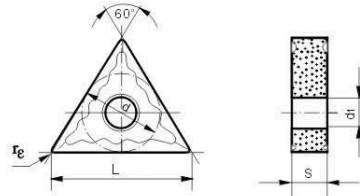
# TNMG-V Semi-finishing



T

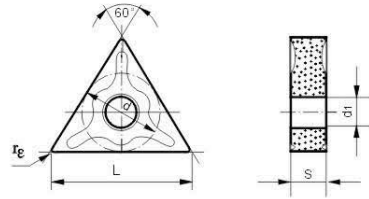
| Type   | Dimension (mm) |        |                      |                |                          | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|--|----------------|--------|----------------------|----------------|--------------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|  | L              | d      | S                    | d <sub>1</sub> | r <sub>ε</sub>           | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| TNMG110304-V0<br>TNMG110308-V0                                   | 11.0           | 6.35   | 3.18                 | 2.80           | 0.4<br>0.8               | •     | •     |       | •     | •    |      | •    |      |      |      |      | •      |      |        |      |        |  |
| TNMG160304-V2<br>TNMG160308-V2<br>TNMG160312-V2<br>TNMG160316-V2 | 16.5           | 9.525  | 3.18                 | 3.81           | 0.4<br>0.8<br>1.2<br>1.6 | •     | •     |       | •     | •    |      | •    |      |      |      |      | •      |      |        |      |        |  |
| TNMG160404-V2<br>TNMG160408-V2<br>TNMG160412-V2                  | 16.5           | 9.525  | 4.76                 | 3.81           | 0.4<br>0.8<br>1.2        | •     | •     |       | •     | •    |      | •    |      |      |      |      | •      |      |        |      |        |  |
| TNMG220404-V2<br>TNMG220408-V2<br>TNMG220412-V2                  | 22.0           | 12.70  | 4.76                 | 5.16           | 0.4<br>0.8<br>1.2        | •     | •     |       | •     | •    |      | •    |      |      |      |      | •      |      |        |      |        |  |
| TNMG270408-V4<br>TNMG270608-V2<br>TNMG270612-V2                  | 27.5           | 15.875 | 4.76<br>6.35<br>6.35 | 6.35           | 0.8<br>0.8<br>1.2        | •     | •     |       | •     | •    |      | •    |      |      |      |      | •      |      |        |      |        |  |

# TNMG-ZM Semi-finishing



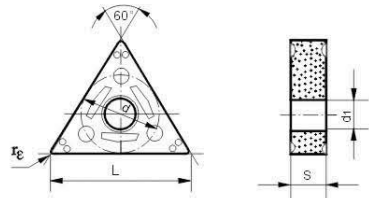
| Type                           | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|--------------------------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                                | L              | d      | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| TNMG160404-ZM<br>TNMG160408-ZM | 16.5           | 9.525  | 4.76 | 3.81           | 0.4<br>0.8     | •     | •     |       | •     | •    |      |      |      |      |      |      | •      |      |        |      |        |  |
| TNMG270616-ZM                  | 27.5           | 15.875 | 6.35 | 6.35           | 1.6            | •     | •     |       | •     | •    |      |      |      |      |      |      | •      |      |        |      |        |  |

**TNMG-ZM54** Roughing



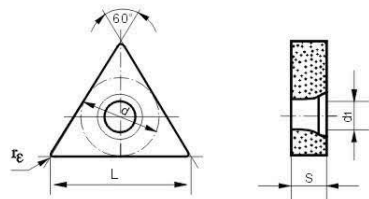
| Type            | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |
|-----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|
|                 | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |
| TNMG160408-ZM54 | 16.5           | 9.525 | 4.76 | 3.81           | 0.8            | •     | •     |       |       |      |      | •    | •    | •    |      |      |        |      |        |      | •      | • |

**TNMG-ZG** Roughing



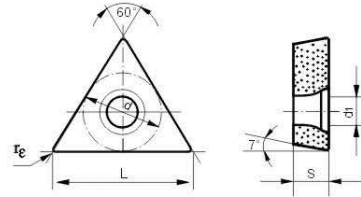
| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |
| TNMG220416-ZG | 22.0           | 12.70 | 4.76 | 5.16           | 1.6            |       |       | •     | •     |      |      |      | •    | •    |      |      |        |      |        |      | •      | • |

**TNUW**



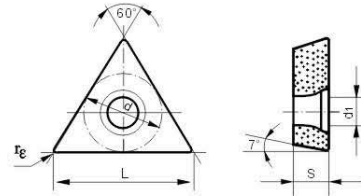
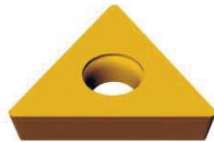
| Type       | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|            | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| TNUW090202 | 9.6            | 5.56  | 2.38 | 2.50           | 0.2            |       |       |       |       | •    |      |      |      |      |      |      |        |      |        |      | •      |  |
| TNUW090204 |                |       |      |                | 0.4            |       |       |       |       |      |      | •    |      |      |      |      |        |      |        |      |        |  |
| TNUW160304 | 16.5           | 9.525 | 3.18 | 4.40           | 0.4            |       |       |       |       | •    |      |      |      |      |      |      |        |      |        |      | •      |  |
| TNUW160408 |                |       | 4.76 |                | 0.8            |       |       |       |       |      | •    |      |      |      |      |      |        |      |        |      |        |  |
| TNUW220404 | 22.0           | 12.70 | 4.76 | 5.50           | 0.4            |       |       |       |       | •    |      |      |      |      |      |      |        |      |        |      | •      |  |
| TNUW220408 |                |       |      |                | 0.8            |       |       |       |       |      |      | •    |      |      |      |      |        |      |        |      |        |  |

# TCGW



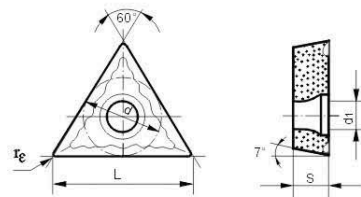
| Type       | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|            | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| TCGW110204 | 11.0           | 6.35  | 2.38 | 2.80           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |
| TCGW16T304 | 16.5           | 9.525 | 3.97 | 4.40           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |

# TCUW



| Type       | Dimension (mm) |      |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|------------|----------------|------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|            | L              | d    | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| TCUW110304 | 11.0           | 6.35 | 3.18 | 2.80           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |

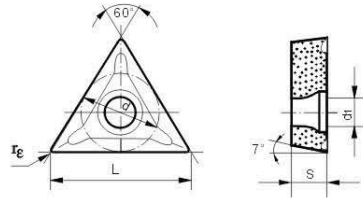
# TCMT-ZM Semi-finishing



| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| TCMT16T312-ZM | 16.5           | 9.525 | 3.97 | 4.40           | 1.2            | •     | •     |       | •     | •    |      |      |      |      |      |      | •      |      |        |      |        |  |

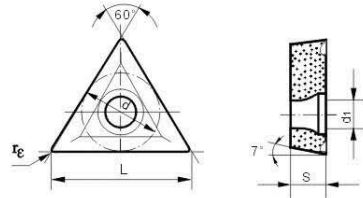
T

## TCMT-ZF3 Finishing



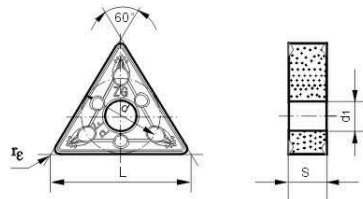
| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>e</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| TCMT16T308-ZF3 | 16.5           | 9.525 | 3.97 | 4.40           | 0.8            | •     | •     |       |       | •    |      |      |      |      | •    |      | •      |      |        |      |        |  |
| TCMT16T312-ZF3 |                |       |      |                | 1.2            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
| TCMT220412-ZF3 | 22.0           | 12.70 | 4.76 | 5.50           | 1.2            | •     | •     |       |       | •    |      |      |      |      | •    |      | •      |      |        |      |        |  |

## TCMT-V Roughing-semi-finishing



| Type              | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
|-------------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|--|--|
|                   | L              | d     | S    | d <sub>1</sub> | r <sub>e</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |  |  |
| TCMT090202-V0     | 9.6            | 5.56  | 2.38 | 2.50           | 0.2            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| TCMT090204-V0     |                |       |      |                | 0.4            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| TCMT090208-V0     |                |       |      |                | 0.8            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| TCMT110202-V0     | 11.0           | 6.35  | 2.38 | 2.80           | 0.2            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| TCMT110208-V0     |                |       |      |                | 0.8            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| TCMT16T304-V1     | 16.5           | 9.525 | 3.97 | 4.40           | 0.4            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| TCMT16T308-V1     |                |       |      |                | 0.4            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| TCMT220408-V1(V2) | 22.0           | 12.70 | 4.76 | 5.50           | 0.8            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |

## TNMG-ZPF Finishing

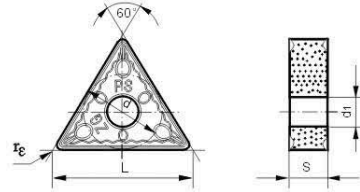


| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>e</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| TNMG160404-ZPF | 16.1           | 9.525 | 4.76 | 3.81           | 0.4            | •     | •     |       |       | •    |      | •    |      |      |      |      |        |      |        |      |        |  |



# TNMG-ZPS

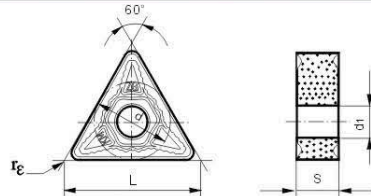
Super-Finishing



| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| TNMG160404-ZPS | 16.1           | 9.525 | 4.76 | 3.81           | 0.4            |       | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |

# TNMG-ZKM

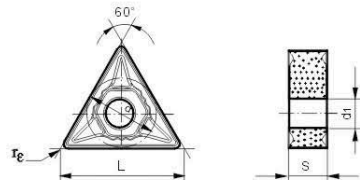
Semi-finishing



| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| TNMG220412-ZKM | 22.0           | 12.70 | 4.76 | 5.16           | 1.2            |       |       |       |       |      |      |      |      |      |      |      |        | •    | •      |      |        |  |

# TNMG-ZKF

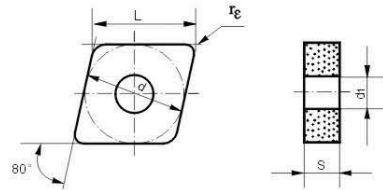
Finishing



| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| TNMG220408-ZKF | 22.0           | 12.70 | 4.76 | 5.16           | 0.8            |       |       |       |       |      |      |      |      |      |      |      | •      |      |        |      |        |  |
| TNMG160408-ZKF | 16.5           | 9.525 | 4.76 | 3.18           | 0.8            |       |       |       |       |      |      |      |      |      |      |      | •      |      |        |      |        |  |

T

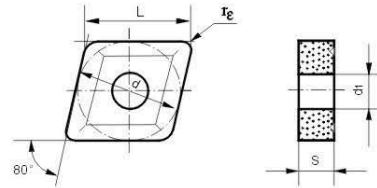
# CNMA



| Type                                   | Dimension (mm) |        |      |                |                   | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|--|----------------|--------|------|----------------|-------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|  | L              | d      | S    | d <sub>1</sub> | r <sub>E</sub>    | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMA120404<br>CNMA120408<br>CNMA120412 | 12.9           | 12.70  | 4.76 | 5.16           | 0.4<br>0.8<br>1.2 |       |       | •     | •     |      |      | •    |      |      |      |      | •      | •    |        |      |        |  |
| CNMA160404<br>CNMA160408               | 16.1           | 15.875 | 4.76 | 6.35           | 0.4<br>0.8        |       |       | •     | •     |      |      | •    |      |      |      |      | •      | •    |        |      |        |  |
| CNMA190608<br>CNMA190612               | 19.3           | 19.05  | 6.35 | 7.93           | 0.8<br>1.2        |       |       | •     | •     |      |      | •    |      |      |      |      | •      | •    |        |      |        |  |

# CNMM-V

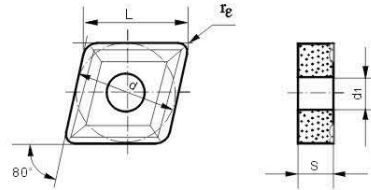
Roughing



| Type  | Dimension (mm) |        |      |                |                   | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---|----------------|--------|------|----------------|-------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|   | L              | d      | S    | d <sub>1</sub> | r <sub>E</sub>    | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMM120404-V2(V3)                                   | 12.9           | 12.70  | 4.76 | 5.16           | 0.4               | •     | •     | •     | •     |      |      | •    |      |      |      |      |        |      |        |      |        |  |
| CNMM160608-V3<br>CNMM160612-V4                      | 16.1           | 15.875 | 6.35 | 6.35           | 0.8<br>1.2        | •     | •     | •     | •     |      |      | •    |      |      |      |      |        |      |        |      |        |  |
| CNMM190608-V4<br>CNMM190612-V4<br>CNMM190616-V3(V5) | 19.3           | 19.05  | 6.35 | 7.93           | 0.8<br>1.2<br>1.6 | •     | •     | •     | •     |      |      | •    |      |      |      |      |        |      |        |      |        |  |

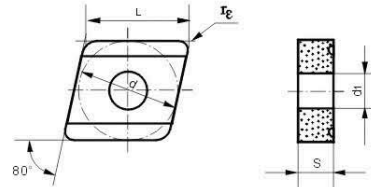
C

## CNMM-M Semi-finishing



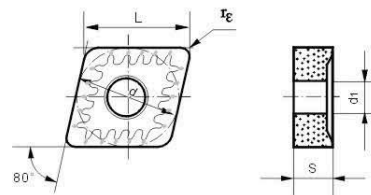
| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMM120408-M2 | 12.9           | 12.70 | 4.76 | 5.16           | 0.8            |       |       | •     | •     |      |      | •    |      |      |      |      |        |      |        |      |        |  |
| CNMM190616-M3 | 19.3           | 19.05 | 6.35 | 7.93           | 1.6            |       |       | •     | •     |      |      | •    |      |      |      |      |        |      |        |      |        |  |

## CNMM-H Roughing



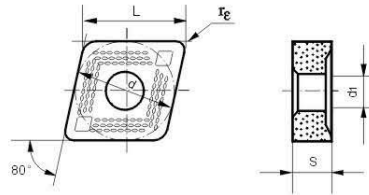
| Type              | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|-------------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                   | L              | d      | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMM120408R-H3    | 12.9           | 12.70  | 4.76 | 5.16           | 0.8            |       |       | •     | •     |      | •    |      |      | •    |      |      |        |      |        |      | •      |  |
| CNMM160608R(L)-H3 | 16.1           | 15.875 | 6.35 | 6.35           | 0.8            |       |       | •     | •     |      | •    |      |      | •    |      |      |        |      |        |      | •      |  |

## CNMM-ZR Roughing



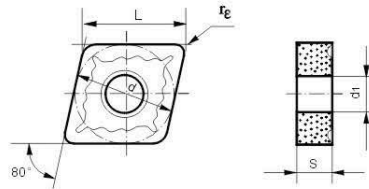
| Type          | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |
|---------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|
|               | L              | d      | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |
| CNMM160612-ZR | 16.1           | 15.875 | 6.35 | 6.35           | 1.2            | •     |       | •     | •     |      |      |      | •    | •    |      |      |        |      |        |      | •      | • |

**CNMM-ZR51** Roughing



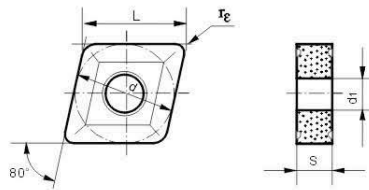
| Type            | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|-----------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                 | L              | d      | S    | d <sub>1</sub> | r <sub>e</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMM160608-ZR51 | 16.1           | 15.875 | 6.35 | 6.35           | 0.8            |       |       | *     | *     |      |      |      | *    | *    |      |      |        |      |        | *    | *      |  |

**CNMM-ZM** Semi-finishing



| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>e</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMM120408-ZM | 12.9           | 12.70 | 4.76 | 5.16           | 0.8            | *     | *     | *     | *     | *    |      |      |      |      |      |      | *      |      |        |      |        |  |
| CNMM120412-ZM |                |       |      |                | 1.2            | *     | *     | *     | *     | *    |      |      |      |      |      |      | *      |      |        |      |        |  |

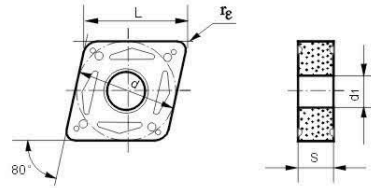
**CNMG-V** Semi-finishing



| Type          | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d      | S    | d <sub>1</sub> | r <sub>e</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMG090304-V1 | 9.7            | 9.525  | 3.18 | 3.81           | 0.4            | *     | *     | *     | *     |      |      | *    |      |      |      | *    |        | *    |        | *    | *      |  |
| CNMG120404-V2 |                |        |      |                | 0.4            | *     | *     | *     | *     |      |      | *    |      |      |      | *    |        | *    |        | *    | *      |  |
| CNMG120408-V2 | 12.9           | 12.70  | 4.76 | 5.16           | 0.8            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
| CNMG120412-V2 |                |        |      |                | 1.2            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
| CNMG160404-V2 |                |        |      |                | 0.4            | *     | *     | *     | *     |      |      | *    |      |      |      | *    |        | *    |        | *    | *      |  |
| CNMG160606-V3 |                |        |      |                | 0.6            | *     | *     | *     | *     |      |      | *    |      |      |      | *    |        | *    |        | *    | *      |  |
| CNMG160608-V3 | 16.1           | 15.875 | 6.35 | 6.35           | 0.8            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
| CNMG160612-V3 |                |        |      |                | 1.2            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
| CNMG190608-V2 |                |        |      |                | 0.8            | *     | *     | *     | *     |      |      | *    |      |      |      | *    |        | *    |        | *    | *      |  |
| CNMG190612-V2 | 19.3           | 19.05  | 6.35 | 7.93           | 1.2            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
| CNMG190616-V3 |                |        |      |                | 1.6            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |

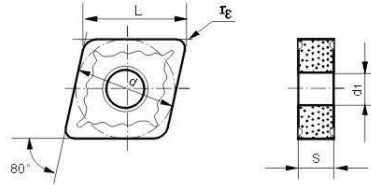
C

## CNMG-ZG Finishing



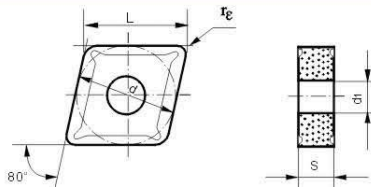
| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |  |
| CNMG120408-ZG | 12.9           | 12.70 | 4.76 | 5.16           | 1.2            | •     | •     | •     | •     |      |      | •    |      |      |      | •    |        | •    |        | •    |        | • |  |

## CNMG-ZM Semi-finishing



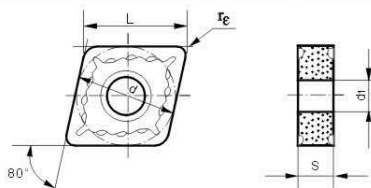
| Type          | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |  |
|---------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|--|
|               | L              | d      | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |  |
| CNMG120408-ZM | 12.9           | 12.70  | 4.76 | 5.16           | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      | •      |      |        |   |  |
| CNMG120412-ZM |                |        |      |                | 1.2            | •     | •     | •     | •     | •    | •    | •    |      |      |      |      |        |      |        |      |        | • |  |
| CNMG160608-ZM | 16.1           | 15.875 | 6.35 | 6.35           | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      | •      |      |        |   |  |

## CNMG-ZF Finishing



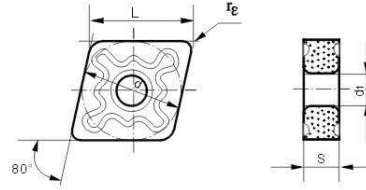
| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |
| CNMG120408-ZF | 12.9           | 12.70 | 4.76 | 5.16           | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      | •      |      |        |      |        |  |  |

## CNMG-ZF2 Finishing



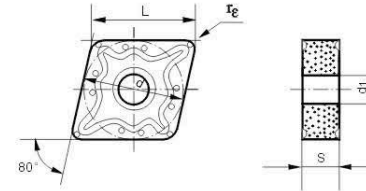
| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |
| CNMG120404-ZF2 | 12.9           | 12.70 | 4.76 | 5.16           | 0.4            | •     | •     | •     | •     | •    |      |      |      |      |      |      | •      |      |        |      |        |  |  |

## CNMG-ZR54 Roughing



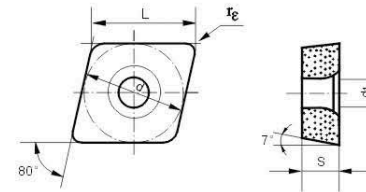
| Type            | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|-----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                 | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMG190612-ZR54 | 19.3           | 19.05 | 6.35 | 7.93           | 1.2            |       |       | •     | •     |      |      |      | •    | •    |      |      |        |      |        |      |        |  |

## CNMG-ZR53 Roughing



| Type            | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|-----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                 | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMG190612-ZR53 | 19.3           | 19.05 | 6.35 | 7.93           | 1.2            |       |       | •     | •     |      |      |      | •    | •    |      |      |        |      |        |      |        |  |

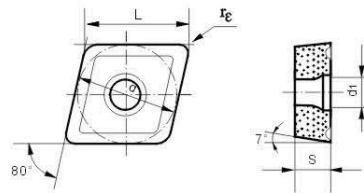
## CCCW/CCMW



| Type       | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
|------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|
|            | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |
| CCCW090304 | 9.7            | 9.525 | 3.18 | 3.81           | 0.4            | •     | •     | •     | •     |      |      |      |      |      |      |      | •      |      |        |      |        |  |  |
| CCCW090504 |                |       | 5.56 | 3.81           | 0.4            | •     | •     | •     | •     |      |      |      |      |      |      |      |        | •    |        |      |        |  |  |
| CCMW09T302 |                |       | 3.97 | 4.40           | 0.2            | •     | •     | •     | •     |      |      |      |      |      |      |      |        |      | •      |      |        |  |  |
| CCMW120404 | 12.9           | 12.70 | 4.76 | 5.50           | 0.4            | •     | •     | •     | •     |      |      |      |      |      |      |      | •      |      |        |      |        |  |  |
| CCMW120406 |                |       |      |                | 0.8            | •     | •     | •     | •     |      |      |      |      |      |      |      |        |      |        | •    |        |  |  |

C

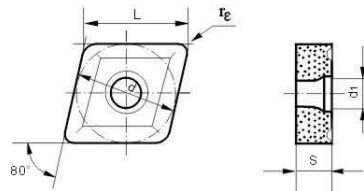
# CCMT



| Type       | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|            | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CCMT09T304 | 9.7            | 9.525 | 3.97 | 4.40           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |

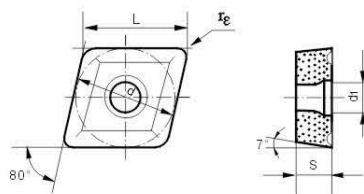
C

# CNMT-V Finishing



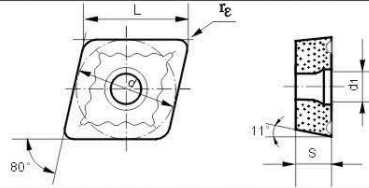
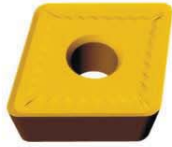
| Type         | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|--------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|              | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMT060202-V | 6.4            | 6.35  | 2.38 | 2.80           | 0.2            |       |       | •     | •     |      |      | •    |      |      |      |      |        | •    |        |      |        |  |
| CNMT09T304-V | 9.7            | 9.525 | 3.97 | 4.40           | 0.4            |       |       | •     | •     |      |      | •    |      |      |      |      |        | •    |        |      |        |  |

# CCMT-V Finishing-Semi-finishing



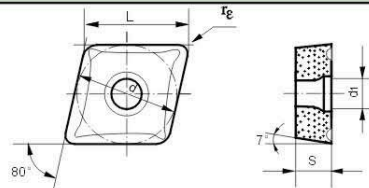
| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|--|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |  |  |
| CCMT060202-V0 | 6.4            | 6.35  | 2.38 | 2.80           | 0.2            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |  |  |  |
| CCMT060204-V0 |                |       |      |                | 0.4            | •     | •     |       |       |      |      | •    |      |      |      |      |        |      |        | •    |        |  |  |  |  |
| CCMT060208-V0 |                |       |      |                | 0.8            | •     | •     |       |       |      |      |      | •    |      |      |      |        |      |        |      | •      |  |  |  |  |
| CCMT09T304-V1 | 9.7            | 9.525 | 3.97 | 4.40           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |  |  |  |
| CCMT120404-V2 | 12.9           | 12.70 | 4.76 | 5.50           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |  |  |  |

## CPGT-ZM Semi-finishing



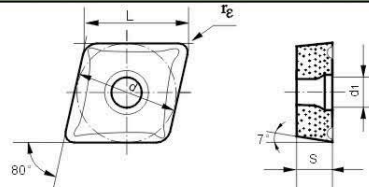
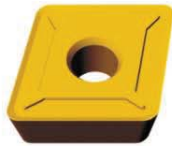
| Type          | Dimension (mm) |      |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d    | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UK | ZK20 | ZK20UK | ZK30 | ZK30UK |  |
| CPGT060204-ZM | 6.4            | 6.35 | 2.38 | 2.80           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |

## CCMT-ZF Finishing



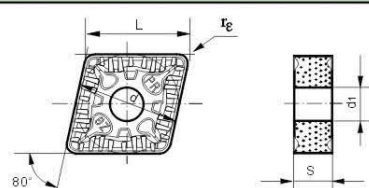
| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CCMT09T304-ZF | 9.7            | 9.525 | 3.97 | 4.40           | 0.4            | •     | •     | •     | •     | •    |      |      |      |      |      | •    |        |      |        |      |        |  |
| CCMT09T308-ZF |                |       |      |                | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        | •    |        |      |        |  |

## CCMT-ZF3 Semi-finishing



| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|--|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |  |  |
| CCMT09T302-ZF3 | 9.7            | 9.525 | 3.97 | 4.40           | 0.2            | •     | •     | •     | •     | •    |      |      |      |      |      |      | •      |      |        |      |        |  |  |  |  |
| CCMT09T308-ZF3 |                |       |      |                | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        | •    |        |  |  |  |  |
| CCMT120404-ZF3 | 12.9           | 12.70 | 4.76 | 5.50           | 0.4            | •     | •     | •     | •     | •    |      |      |      |      |      |      | •      |      |        |      |        |  |  |  |  |
| CCMT120408-ZF3 |                |       |      |                | 0.8            | •     | •     | •     | •     |      |      |      |      |      |      |      |        |      |        | •    |        |  |  |  |  |
| CCMT120412-ZF3 |                |       |      |                | 1.2            | •     | •     | •     | •     |      |      |      |      |      |      |      |        |      |        |      | •      |  |  |  |  |

## CNMG-ZPR Roughing

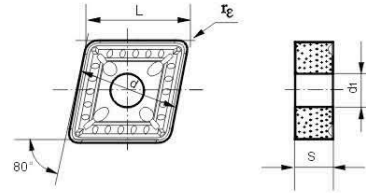


| Type           | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d      | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMG160616-ZPR | 16.1           | 15.875 | 6.35 | 6.35           | 1.6            |       |       |       | •     |      |      |      | •    | •    |      | •    |        |      |        |      |        |  |

C

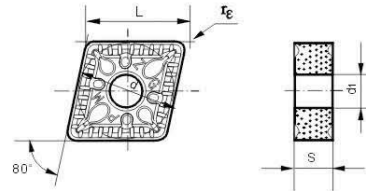
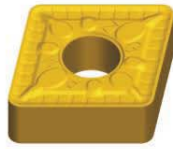


## CNMM-ZPQ Roughing



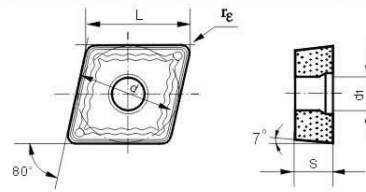
| Type           | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d      | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMM160616-ZPQ | 16.1           | 15.875 | 6.35 | 6.35           | 1.6            |       |       |       | *     |      |      |      | *    | *    |      | *    |        |      |        |      |        |  |

## CNMG-ZPM Semi-finishing



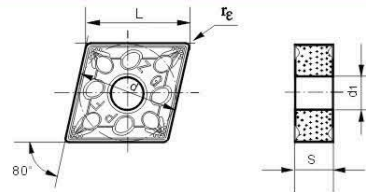
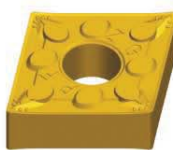
| Type           | Dimension (mm) |      |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d    | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMG120412-ZPM | 12.9           | 12.7 | 4.76 | 5.16           | 1.2            |       |       |       | *     |      |      | *    |      |      | *    |      |        |      |        |      |        |  |
| CNMG120408-ZPM | 12.9           | 12.7 | 4.76 | 5.16           | 0.8            |       |       |       | *     |      |      | *    |      |      | *    |      |        |      |        |      |        |  |

## CCMT-HPM Semi-finishing



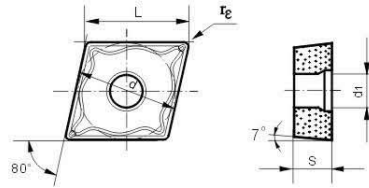
| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CCMT090308-HPM | 9.70           | 9.525 | 3.18 | 4.4            | 0.8            |       |       |       | *     |      |      | *    |      |      | *    |      |        |      |        |      |        |  |

## CNMG-ZPF Finishing



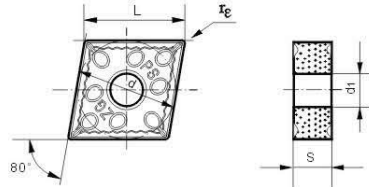
| Type           | Dimension (mm) |      |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d    | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMG120404-ZPF | 12.9           | 12.7 | 4.76 | 5.16           | 0.4            | *     | *     |       | *     | *    | *    |      |      |      |      |      |        |      |        |      |        |  |

## CCMT-HPF Finishing



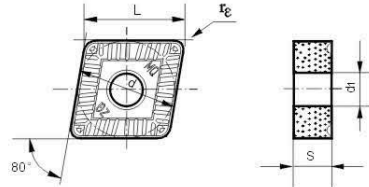
| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CCMT090304-HPF | 9.70           | 9.525 | 3.18 | 4.40           | 0.4            | •     | •     |       |       | •    |      | •    |      |      |      |      |        |      |        |      |        |  |

## CNMG-ZPS Super-Finishing



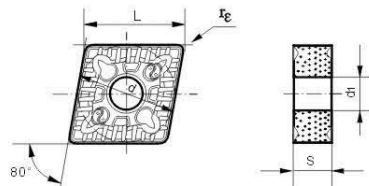
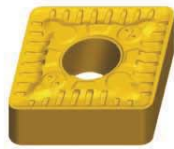
| Type           | Dimension (mm) |      |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d    | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMG120404-ZPS | 12.9           | 12.7 | 4.76 | 5.16           | 0.4            |       | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |

## CNMM-ZMQ Roughing



| Type           | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d      | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMM160616-ZMQ | 16.1           | 15.875 | 6.35 | 6.35           | 1.6            |       |       |       |       |      |      |      |      |      |      | •    |        |      |        |      | •      |  |

## CNMG-ZMR Roughing

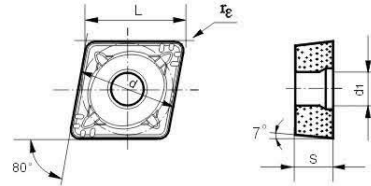


| Type           | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d      | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMG160616-ZMR | 16.1           | 15.875 | 6.35 | 6.35           | 1.6            |       |       |       | •     |      |      |      | •    | •    |      | •    |        |      |        |      |        |  |

C

# CCMT-HMR

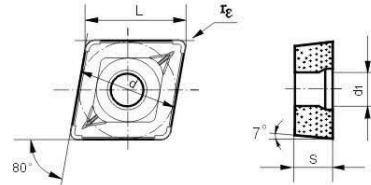
Roughing



| Type           | Dimension (mm) |      |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d    | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CCMT120412-HMR | 12.90          | 12.7 | 4.76 | 5.5            | 1.2            |       |       |       | *     |      |      |      | *    | *    | *    |      |        |      |        |      |        |  |

# CCMT-HMM

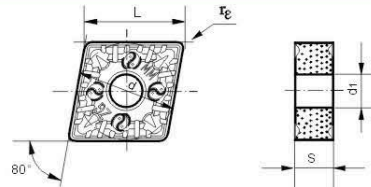
Semi-finishing



| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CCMT090308-HMM | 9.7            | 9.525 | 3.18 | 4.4            | 0.8            |       |       |       | *     |      |      | *    |      |      | *    |      |        |      |        |      |        |  |
| CCMT120404-HMM | 12.90          | 12.7  | 4.76 | 5.5            | 0.4            |       |       |       | *     |      |      | *    |      |      | *    |      |        |      |        |      |        |  |

# CNMG-ZMM

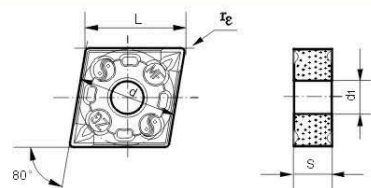
Semi-finishing



| Type           | Dimension (mm) |      |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d    | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMG120408-ZMM | 12.90          | 12.7 | 4.76 | 5.5            | 0.8            |       |       |       | *     |      |      | *    |      |      | *    |      |        |      |        |      |        |  |

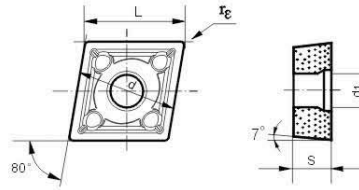
# CNMG-ZMF

Finishing



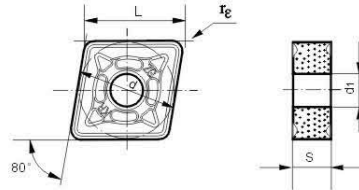
| Type           | Dimension (mm) |      |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d    | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| CNMG120404-ZMF | 12.90          | 12.7 | 4.76 | 5.5            | 0.4            | *     | *     |       | *     | *    | *    | *    |      |      |      |      |        |      |        |      |        |  |

## CCMT-HMF Finishing



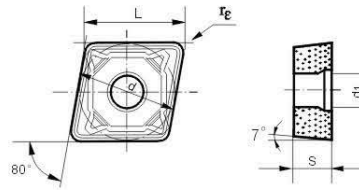
| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |
| CCMT090304-HMF | 9.70           | 9.525 | 3.18 | 4.4            | 0.4            | *     | *     |       |       | *    |      | *    |      |      |      |      |        |      |        |      |        |  |  |

## CNMG-ZKR Roughing



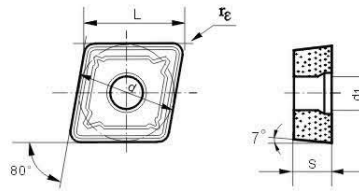
| Type           | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
|----------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|
|                | L              | d      | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |
| CNMG160616-ZKR | 16.1           | 15.875 | 6.35 | 6.35           | 1.6            |       |       |       | *     |      |      |      | *    | *    |      | *    |        |      |        |      |        |  |  |

## CCMT-HKR Roughing



| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |
| CCMT120412-HKR | 12.9           | 12.70 | 4.76 | 5.5            | 1.2            |       |       |       | *     |      |      |      | *    | *    |      | *    |        |      |        |      |        |  |  |

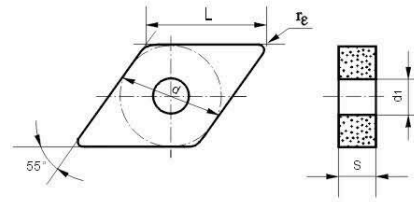
## CCMT-HKM Semi-finishing



| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |
| CCMT090308-HKM | 9.7            | 9.525 | 3.18 | 4.40           | 0.8            |       |       |       |       |      |      |      |      |      |      |      |        | *    | *      |      |        |  |  |

C

# DNMA

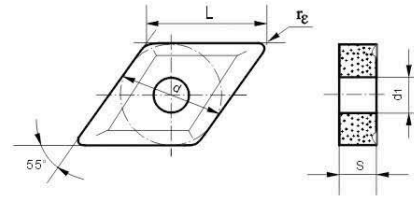
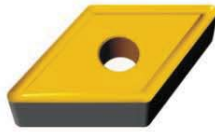


| Type       | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
|------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|--|--|
|            | L              | d      | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |  |  |
| DNMA110404 | 11.6           | 9.525  | 4.76 | 3.81           | 0.4            | •     | •     | •     | •     | •    |      |      |      |      |      |      | •      | •    |        |      |        |  |  |  |  |
| DNMA150404 | 15.5           | 12.70  | 4.76 | 5.16           | 0.4            | •     | •     | •     | •     | •    |      |      |      |      |      |      | •      | •    |        |      |        |  |  |  |  |
| DNMA150408 |                |        | 4.76 |                | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      | •      | •    |        |  |  |  |  |
| DNMA150604 |                |        | 6.35 |                | 0.4            | •     | •     | •     | •     | •    | •    |      |      |      |      |      |        |      |        | •    | •      |  |  |  |  |
| DNMA150612 |                |        | 6.35 |                | 1.2            | •     | •     | •     | •     | •    | •    |      |      |      |      |      |        |      |        | •    | •      |  |  |  |  |
| DNMA190612 | 19.3           | 15.875 | 6.35 | 6.35           | 1.2            | •     | •     | •     | •     | •    |      |      |      |      |      |      | •      | •    |        |      |        |  |  |  |  |

D

# DNMM-V

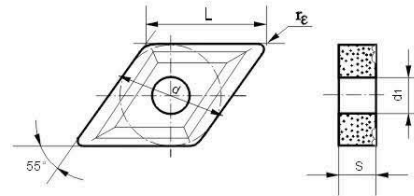
Roughing-semi-finishing



| Type          | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |  |
|---------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|--|--|--|
|               | L              | d      | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |  |  |  |
| DNMM150404-V2 | 15.5           | 12.70  | 6.35 | 5.16           | 0.4            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |  |
| DNMM150608-V2 |                |        |      |                | 0.8            | •     | •     | •     | •     | •    | •    |      |      |      |      |      |        |      |        |      |        |  |  |  |  |  |
| DNMM150612-V3 |                |        |      |                | 1.2            | •     | •     | •     | •     | •    | •    | •    |      |      |      |      |        |      |        |      |        |  |  |  |  |  |
| DNMM150616-V3 |                |        |      |                | 1.6            | •     | •     | •     | •     | •    | •    | •    |      |      |      |      |        |      |        |      |        |  |  |  |  |  |
| DNMM190608-V2 | 19.3           | 15.875 | 6.35 | 6.35           | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |  |

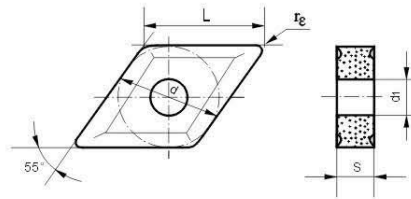
# DNMM-M

Roughing



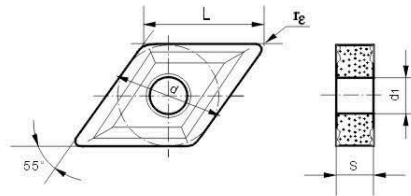
| Type          | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d      | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| DNMM190612-M4 | 19.3           | 15.875 | 6.35 | 6.35           | 1.2            |       |       | •     | •     |      |      |      | •    | •    |      |      |        |      |        |      |        |  |

**DNMG-V** Semi-finishing



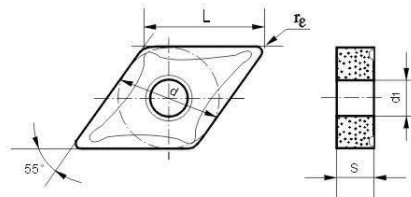
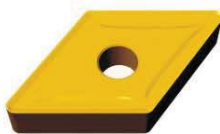
| Type          | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d      | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| DNMG150608-V2 | 15.5           | 12.70  | 6.35 | 5.16           | 0.8            | •     | •     | •     | •     | •    |      | •    |      |      |      |      |        |      |        |      |        |  |
| DNMG190608-V2 | 19.3           | 15.875 | 6.35 | 6.35           | 0.8            | •     | •     | •     | •     | •    |      | •    |      |      |      |      |        |      |        |      |        |  |

**DNMG-M** Semi-finishing



| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| DNMG150608-M1 | 15.5           | 12.70 | 6.35 | 5.16           | 0.8            |       |       | •     | •     |      |      | •    |      |      |      |      |        |      |        |      |        |  |

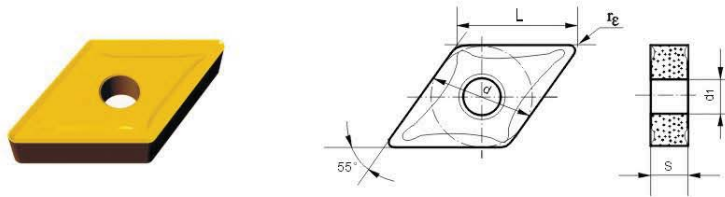
**DNMM-ZF** Finishing



| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| DNMM150604-ZF | 15.5           | 12.70 | 6.35 | 5.16           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      |        |      |        | •    |        |  |

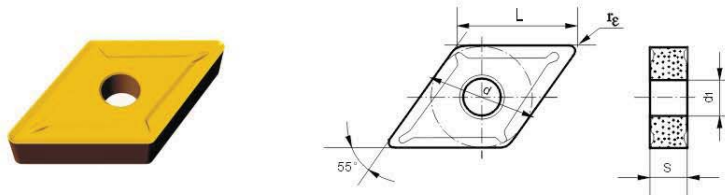
D

## DNMG-ZF Finishing



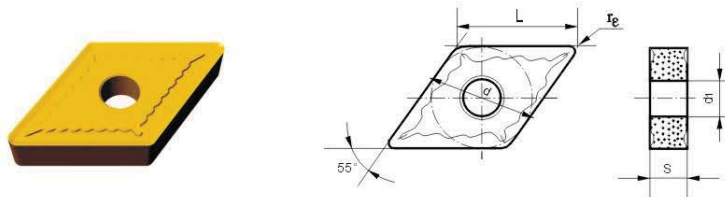
| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| DNMG110304-ZF | 11.6           | 9.525 | 3.18 | 3.81           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| DNMG110404-ZF |                |       | 4.76 |                |                | •     |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
| DNMG150404-ZF | 15.5           | 12.70 | 4.76 | 5.16           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      |        |      |        |      |        |  |

## DNMG-ZF3 Finishing



| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| DNMG110308-ZF3 | 11.6           | 9.525 | 3.18 | 3.81           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| DNMG150616-ZF3 |                |       | 6.35 |                |                | •     |       |       | •     |      |      |      |      |      |      |      |        |      |        | •    |        |  |

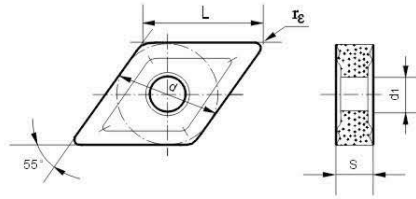
## DNMG-ZM Semi-finishing



| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|--|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |  |  |
| DNMG150308-ZM | 15.5           | 12.70 | 3.18 | 5.16           | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| DNMG150408-ZM |                |       | 4.76 |                | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| DNMG150608-ZM |                |       | 6.35 |                | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| DNMG150608-ZM |                |       | 6.35 |                | 1.2            | •     | •     | •     | •     | •    | •    |      |      |      |      |      |        |      |        |      |        |  |  |  |  |

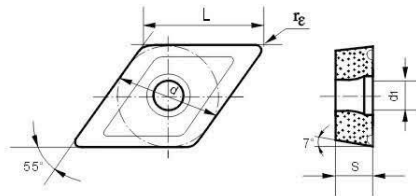
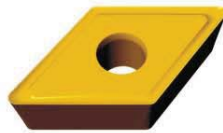
D

## DNMG-V Semi-finishing



| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |
| DNMG150408-V2 | 15.5           | 12.70 | 4.76 | 5.16           | 0.8            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
| DNMG150412-V2 |                |       | 4.76 |                | 1.2            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |
| DNMG150612-V2 |                |       | 6.35 |                | 1.2            |       |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |

## DCMT

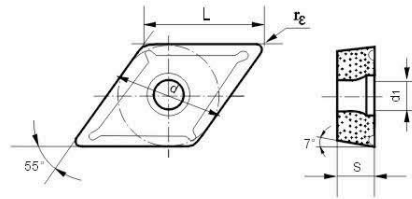
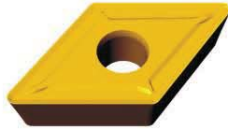


| Type       | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|            | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| DCMT070204 | 7.75           | 6.35  | 2.88 | 2.80           | 0.4            | •     | •     | •     | •     |      |      |      |      |      |      |      |        |      |        |      |        |  |
| DCMT11T308 | 11.6           | 9.525 | 3.97 | 4.40           | 0.8            | •     | •     | •     | •     |      |      |      |      |      |      |      |        |      |        |      |        |  |

D

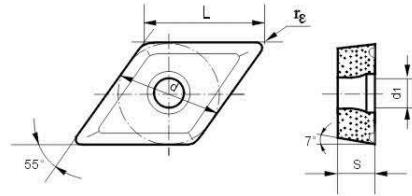
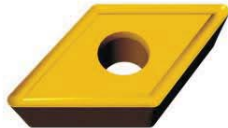


**DCMT-ZF3** Finishing



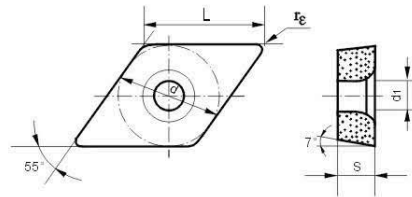
| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| DCMT11T304-ZF3 | 11.6           | 9.525 | 3.97 | 4.40           | 0.4            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| DCMT11T312-ZF3 |                |       |      |                | 1.2            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |

**DCMT-V** Semi-finishing



| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|--|--|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |  |  |  |
| DCMT070202-V0 | 7.75           | 6.35  | 2.38 | 2.80           | 0.2            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| DCMT070204-V0 |                |       |      |                | 0.4            | •     | •     | •     | •     | •    | •    | •    |      |      |      |      |        |      |        |      |        |  |  |  |  |
| DCMT11T302-V1 | 11.6           | 9.525 | 3.97 | 4.40           | 0.2            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |
| DCMT11T304-V1 |                |       |      |                | 0.4            | •     | •     | •     | •     | •    | •    | •    |      |      |      |      |        |      |        |      |        |  |  |  |  |
| DCMT11T308-V1 |                |       |      |                | 0.8            | •     | •     | •     | •     | •    | •    | •    | •    |      |      |      |        |      |        |      |        |  |  |  |  |
| DCMT150404-V2 | 15.5           | 12.70 | 4.76 | 5.50           | 0.4            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |  |  |  |

**DCMW**

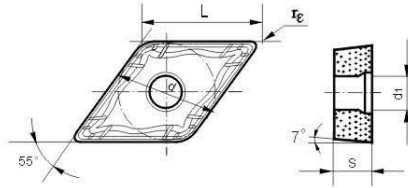


| Type       | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|            | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| DCMW070202 | 7.75           | 6.35  | 2.38 | 2.80           | 0.2            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |
| DCMW11T302 | 11.6           | 9.525 | 3.97 | 4.40           | 0.2            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |

D

# DCMT-HPR

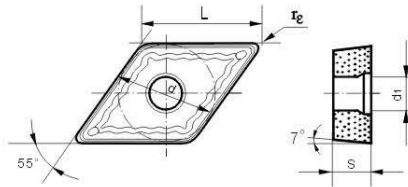
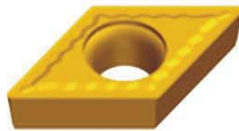
Roughing



| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |
| DCMT11T312-HPR | 11.6           | 9.525 | 3.97 | 4.4            | 1.2            |       |       |       |       |      |      |      |      |      | *    |      |        |      |        |      |        | * |

# DCMT-HPM

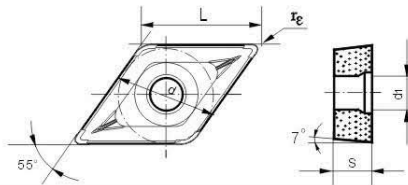
Semi-finishing



| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |
| DCMT11T308-HPM | 11.6           | 9.525 | 3.97 | 4.4            | 0.8            |       |       |       |       |      |      |      |      |      | *    |      |        |      |        |      |        | * |

# DCMT-HMM

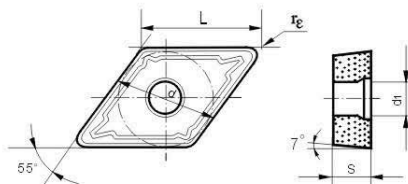
Semi-finishing



| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |   |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|---|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |   |
| DCMT11T308-HMM | 11.6           | 9.525 | 3.97 | 3.81           | 0.8            |       |       |       |       |      |      |      |      |      | *    |      |        |      |        |      |        | * |

# DCMT-HKM

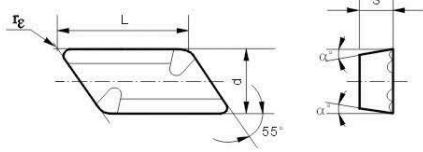
Semi-finishing



| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| DCMT11T308-HKM | 11.6           | 9.525 | 3.97 | 3.81           | 0.8            |       |       |       |       |      |      |      |      |      | *    |      |        | *    |        |      |        |  |

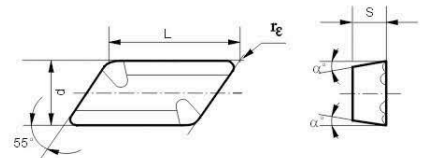
D

## KOUX-L11



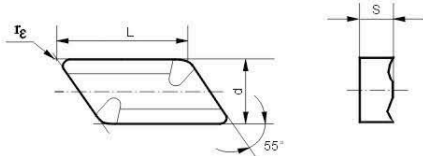
| Type           | Dimension (mm) |       |      |              | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|--------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | $r_\epsilon$ | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| KOUX160405-L11 | 16.0           | 9.525 | 4.76 | 0.5          | •     | •     | •     | •     | •    |      |      | •    | •    |      |      |        |      |        |      |        |  |

## KOUX-R11



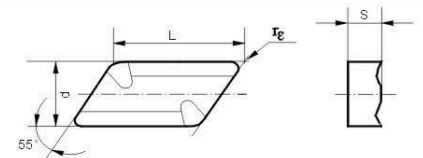
| Type           | Dimension (mm) |       |      |              | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|--------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | $r_\epsilon$ | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| KOUX160405-R11 | 16.0           | 9.525 | 4.76 | 0.5          | •     | •     | •     | •     | •    |      |      | •    | •    |      |      |        |      |        |      |        |  |

## KNUX-L11



| Type           | Dimension (mm) |       |      |              | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|--------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | $r_\epsilon$ | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| KNUX160405-L11 | 16.0           | 9.525 | 4.76 | 0.5          | •     | •     | •     | •     | •    |      |      | •    | •    |      |      |        |      |        |      |        |  |

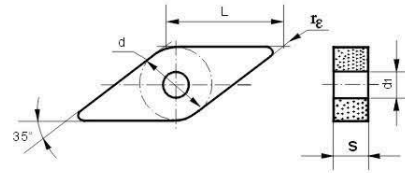
## KNUX-R11



| Type           | Dimension (mm) |       |      |              | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|--------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | $r_\epsilon$ | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| KNUX160405-R11 | 16.0           | 9.525 | 4.76 | 0.5          | •     | •     | •     | •     | •    |      |      | •    | •    |      |      |        |      |        |      |        |  |

K

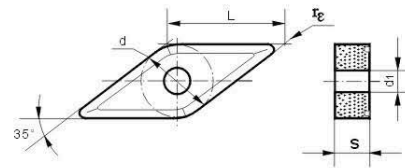
## VNMA



| Type       | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|            | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| VNMA110304 | 11.0           | 6.35  | 3.18 | 3.40           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |
| VNMA160404 | 16.6           | 9.525 | 4.76 | 3.81           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |
| VNMA160412 |                |       |      |                | 1.2            | •     | •     |       |       |      |      | •    |      |      |      |      |        |      |        | •    |        |  |
| VNMA220408 | 22.1           | 12.70 | 4.76 | 5.16           | 0.8            | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |  |
| VNMA220612 |                |       |      |                | 1.2            | •     | •     |       |       |      |      | •    |      |      |      |      |        |      |        | •    |        |  |

## VNMM-V

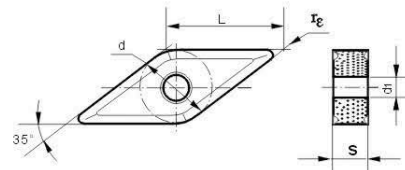
Semi-finishing



| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| VNMM160504-V1 | 16.6           | 9.525 | 5.18 | 3.81           | 0.4            | •     | •     | •     | •     | •    |      | •    |      |      |      |      |        |      |        |      |        |  |

## VNMG-V

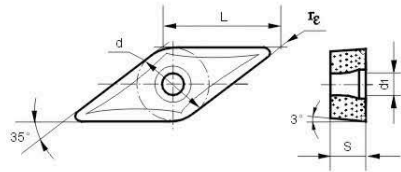
Semi-finishing



| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| VNMG160404-V1 | 16.6           | 9.525 | 4.76 | 3.81           | 0.4            | •     | •     | •     | •     | •    |      | •    |      |      |      |      |        |      |        |      |        |  |
| VNMG160408-V1 |                |       |      |                | 0.8            | •     | •     | •     | •     |      |      | •    |      |      |      |      |        |      |        |      |        |  |

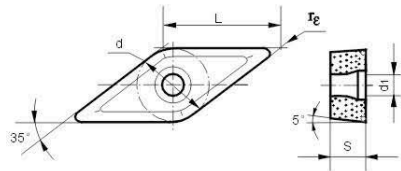
V

## VAGT-ZF Finishing



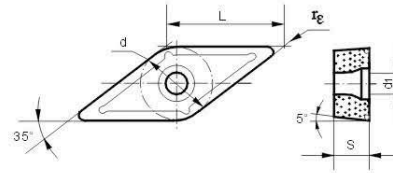
| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| VAGT160408-ZF | 16.6           | 9.525 | 4.76 | 4.40           | 0.8            | •     | •     |       |       | •    |      |      |      |      |      |      |        |      |        |      |        |  |

## VBMT-V Semi-finishing



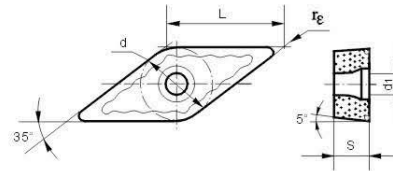
| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| VBMT160404-V1 | 16.6           | 9.525 | 4.76 | 4.40           | 0.4            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |

## VBMT-ZF3 Finishing



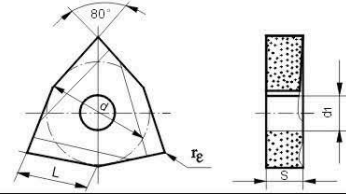
| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| VBMT160404-ZF3 | 16.6           | 9.525 | 4.76 | 4.40           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      |        |      |        |      |        |  |

## VBMT-ZM Semi-finishing



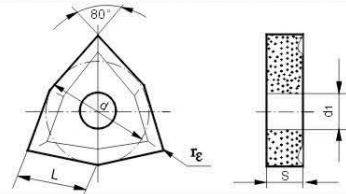
| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| VBMT160412-ZM | 16.6           | 9.525 | 4.76 | 4.40           | 1.2            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |

## WNMM-C Semi-finishing



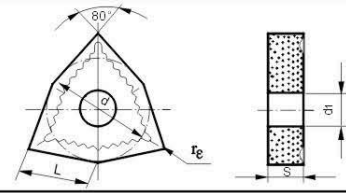
| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| WNMM080404-C3 | 8.68           | 12.70 | 4.76 | 5.16           | 0.4            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| WNMM080408-C3 |                |       |      |                | 0.8            | •     | •     | •     | •     | •    | •    | •    | •    |      |      |      |        |      |        |      |        |  |

## WNMM-V Semi-finishing



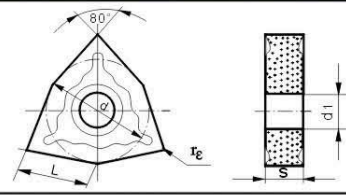
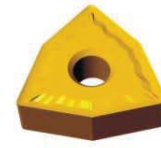
| Type          | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d      | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| WNMM080408-V2 | 8.68           | 12.70  | 4.76 | 5.16           | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| WNMM100612-V4 | 10.86          | 15.875 | 6.35 | 6.35           | 1.2            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| WNMM160404-V1 | 16.1           | 23.54  | 4.76 | 9.12           | 0.4            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| WNMM160408-V1 |                |        |      |                | 0.8            | •     | •     | •     | •     | •    | •    | •    | •    |      |      |      |        |      |        |      |        |  |

## WNMM-ZM Semi-finishing



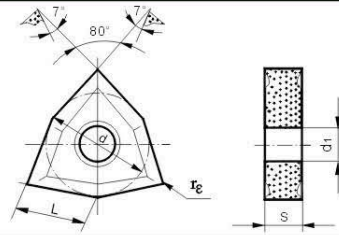
| Type          | Dimension (mm) |        |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|--------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d      | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| WNMM100608-ZM | 10.86          | 15.875 | 6.35 | 6.35           | 0.8            | •     | •     | •     | •     | •    |      |      |      | •    |      |      |        |      |        |      |        |  |

## WNMG-ZM Semi-finishing



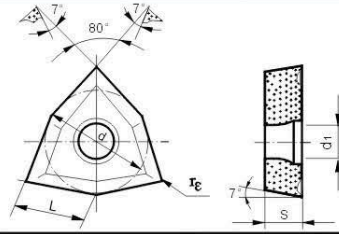
| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>E</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| WNMG060408-ZM | 6.5            | 9.525 | 4.76 | 3.81           | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| WNMG080408-ZM | 8.68           | 12.70 | 4.76 | 5.16           | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| WNMG080412-ZM |                |       |      | 1.40           | 1.2            | •     | •     | •     | •     | •    | •    | •    |      |      |      |      |        |      |        |      |        |  |

**WNMG-V** Semi-finishing



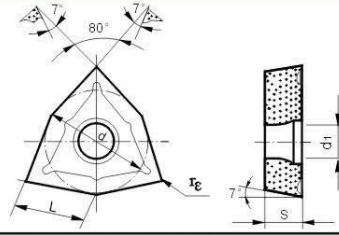
| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| WNMG060404-V2 | 6.5            | 9.525 | 4.76 | 3.81           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| WNMG080404-V2 | 8.68           | 12.70 | 4.76 | 5.16           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| WNMG080408-V2 |                |       |      |                | 0.8            | •     | •     |       |       | •    |      |      |      |      |      |      |        |      |        |      |        |  |

**WCMT-V** Semi-finishing



| Type          | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| WCMT050308-V1 | 4.4            | 7.94  | 3.18 | 3.40           | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| WCMT06T308-V1 | 6.5            | 9.525 | 3.97 | 4.40           | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| WCMT080408-V2 | 8.68           | 12.70 | 4.76 | 5.16           | 0.8            | •     | •     | •     | •     | •    |      |      |      |      |      |      |        |      |        |      |        |  |

**WCMT-ZF3** Finishing

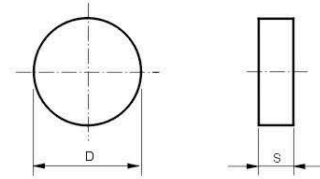


| Type           | Dimension (mm) |       |      |                |                | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|----------------|----------------|-------|------|----------------|----------------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                | L              | d     | S    | d <sub>1</sub> | r <sub>ε</sub> | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| WCMT050304-ZF3 | 5.4            | 7.94  | 3.18 | 3.40           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      |        |      |        |      |        |  |
| WCMT06T304-ZF3 | 6.5            | 9.525 | 3.97 | 4.40           | 0.4            | •     | •     |       |       | •    |      |      |      |      |      |      |        |      |        |      |        |  |

W

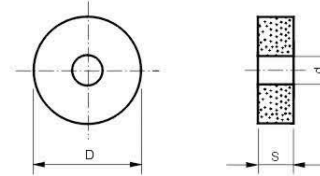


**RNMN** Semi-finishing



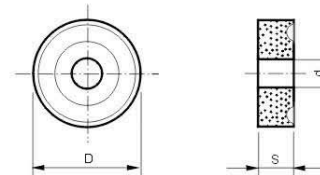
| Type       | Dimension (mm) |      | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |
|------------|----------------|------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|
|            | D              | S    | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |
| RNMN090300 | 9.525          | 3.18 | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |
| RNMN120400 | 12.70          | 4.76 | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |
| RNMN160400 | 16.00          | 4.76 | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |
| RNMN160500 |                | 5.56 | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |
| RNMN190300 | 19.05          | 3.18 | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |
| RNMN200600 | 20.00          | 6.35 | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |

**RNMA**



| Type       | Dimension (mm) |      |      | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |
|------------|----------------|------|------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|
|            | D              | S    | d    | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |
| RNMA100300 | 10.00          | 3.18 | 3.81 | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |
| RNMA120400 | 12.00          | 4.76 | 5.16 | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |
| RNMA160500 | 16.00          | 5.58 | 6.35 | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |
| RNMA200600 | 20.00          | 6.35 | 7.93 | •     | •     |       |       | •    |      |      |      |      |      |      | •      |      |        |      |        |

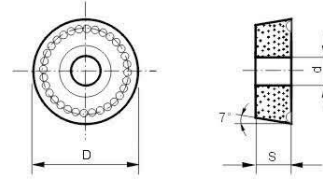
**RNMM-V** Semi-finishing



| Type          | Dimension (mm) |      |      | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |
|---------------|----------------|------|------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|
|               | D              | S    | d    | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |
| RNMM120400-V2 | 12.00          | 4.76 | 5.16 | •     | •     | •     | •     | •    |      | •    |      |      |      |      |        |      |        |      |        |
| RNMM160500-V3 | 10.00          | 5.58 | 6.35 | •     | •     | •     | •     | •    |      | •    |      |      |      |      |        |      |        |      |        |
| RNMM160600-V2 | 16.00          | 3.18 | 6.35 | •     | •     | •     | •     | •    |      | •    |      |      |      |      |        |      |        |      |        |
| RNMM200600-V4 | 20.00          | 6.35 | 7.93 | •     | •     | •     | •     | •    |      | •    |      |      |      |      |        |      |        |      |        |

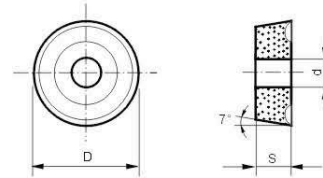
R

# RCMM-ZR51 Roughing



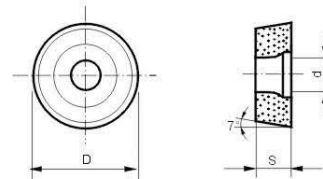
| Type            | Dimension (mm) |      |      | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|-----------------|----------------|------|------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                 | D              | S    | d    | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| RCMM160500-ZR51 | 16.00          | 5.56 | 6.35 | •     |       |       | •     |      |      | •    | •    | •    |      |      |        |      |        |      |        |  |

# RCMM-V Roughing



| Type          | Dimension (mm) |       |       | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|-------|-------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | D              | S     | d     | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| RCMM281000-V3 | 28.00          | 10.00 | 12.00 | •     | •     | •     | •     | •    |      | •    |      |      |      |      |        |      |        |      |        |  |
| RCMM321000-V3 | 32.00          | 10.00 | 12.00 | •     | •     | •     | •     | •    |      | •    |      |      |      |      |        |      |        |      |        |  |

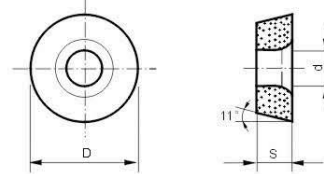
# RCUT



| Type       | Dimension (mm) |      |      | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|------------|----------------|------|------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|            | D              | S    | d    | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| RCUT080300 | 8.00           | 3.18 | 3.40 | •     | •     | •     | •     | •    |      | •    |      |      |      |      | •      |      |        |      |        |  |
| RCUT10T300 | 10.00          | 3.97 | 4.40 | •     | •     | •     | •     | •    |      | •    |      |      |      |      | •      |      |        |      |        |  |

**R**

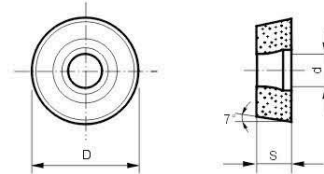
## RPMW



| Type       | Dimension (mm) |      |      | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|------------|----------------|------|------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|            | D              | S    | d    | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| RPMW100300 | 10.00          | 3.18 | 4.40 |       | *     |       | *     | *    |      |      |      |      |      |      | *      |      |        |      |        |  |

## RCMT-V

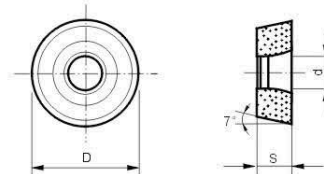
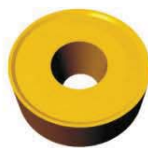
Roughing-semi-finishing



| Type          | Dimension (mm) |      |      | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|---------------|----------------|------|------|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|               | D              | S    | d    | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| RCMT060200-V0 | 6.00           | 2.38 | 2.80 | *     | *     | *     | *     |      |      |      | *    | *    |      |      |        |      |        |      |        |  |
| RCMT080300-V1 | 8.00           | 3.18 | 3.40 | *     | *     | *     | *     |      |      |      | *    | *    |      |      |        |      |        |      |        |  |
| RCMT10T300-V1 | 10.00          | 3.97 | 4.40 | *     | *     | *     | *     |      |      |      | *    | *    |      |      |        |      |        |      |        |  |
| RCMT120400-V2 | 12.00          | 4.76 | 4.40 | *     | *     | *     | *     |      |      |      | *    | *    |      |      |        |      |        |      |        |  |
| RCMT160500-V3 | 16.00          | 3.18 | 6.35 | *     | *     | *     | *     |      |      |      | *    | *    |      |      |        |      |        |      |        |  |

## RCMX-ZV

Roughing-semi-finishing

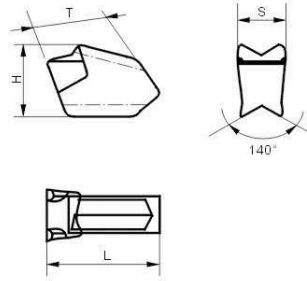


| Type            | Dimension (mm) |      |     | Grade |       |       |       |      |      |      |      |      |      |      |        |      |        |      |        |  |
|-----------------|----------------|------|-----|-------|-------|-------|-------|------|------|------|------|------|------|------|--------|------|--------|------|--------|--|
|                 | D              | S    | d   | ZC302 | ZC312 | ZC304 | ZC314 | ZP10 | ZP20 | ZP25 | ZP35 | ZP40 | ZM15 | ZM30 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF |  |
| *RCMX100300-ZV1 | 10.00          | 3.18 | 3.6 | *     | *     | *     | *     |      |      |      | *    |      |      |      |        |      |        |      |        |  |
| *RCMX120400-ZV1 | 12.00          | 4.76 | 4.2 | *     | *     | *     | *     |      |      |      | *    |      |      |      |        |      |        |      |        |  |
| *RCMX160600-ZV2 | 16.00          | 6.36 | 5.2 | *     | *     | *     | *     |      |      |      | *    |      |      |      |        |      |        |      |        |  |

\* Special chipbreaker

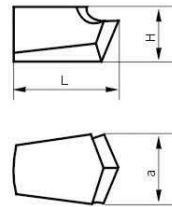
R

# QC14



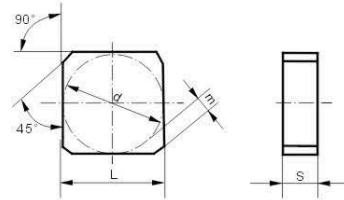
| Type   | Dimension (mm) |       |       |      | Grade |      |      |      |  |  |  |  |  |  |
|--------|----------------|-------|-------|------|-------|------|------|------|--|--|--|--|--|--|
|        | L              | T     | H     | S    | ZP20  | ZP25 | ZP35 | ZJ30 |  |  |  |  |  |  |
| QC1403 | 14.00          | 10.85 | 7.40  | 3.00 | •     | •    | •    | •    |  |  |  |  |  |  |
| QC1404 | 14.00          | 10.85 | 7.40  | 4.00 | •     | •    | •    | •    |  |  |  |  |  |  |
| QC1405 | 13.85          | 11.00 | 7.80  | 5.00 | •     | •    | •    | •    |  |  |  |  |  |  |
| QC1406 | 13.70          | 11.00 | 8.45  | 6.40 | •     | •    | •    | •    |  |  |  |  |  |  |
| QC1408 | 18.00          | 14.00 | 11.60 | 8.00 | •     | •    | •    | •    |  |  |  |  |  |  |
| QC14T3 | 14.00          | 10.80 | 7.40  | 3.50 | •     | •    | •    | •    |  |  |  |  |  |  |

# QC07



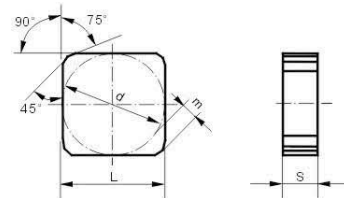
| Type   | Dimension (mm) |      |          | Grade |      |  |  |  |  |  |  |  |
|--------|----------------|------|----------|-------|------|--|--|--|--|--|--|--|
|        | L              | H    | $\alpha$ | ZP35  | ZJ30 |  |  |  |  |  |  |  |
| QC0707 | 7.85           | 7.20 | 7.50     | •     | •    |  |  |  |  |  |  |  |

# SNA(C/K)N-ANN



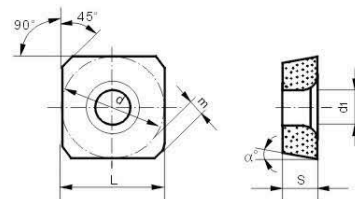
| Type             | Dimension (mm) |      |      | Grade |       |      |      |        |      |      |        |       |       |  |  |  |  |
|------------------|----------------|------|------|-------|-------|------|------|--------|------|------|--------|-------|-------|--|--|--|--|
|                  | L=d            | S    | m    | ZC302 | ZC304 | ZP20 | ZP25 | ZK10UF | ZK20 | ZK30 | ZK30UF | YT798 | YT535 |  |  |  |  |
| SNA(C/K)N1204ANN | 12.70          | 4.76 | 1.63 | •     | •     | •    | •    | •      | •    | •    | •      | •     | •     |  |  |  |  |
| SNA(C/K)N1504ANN | 15.875         | 4.76 | 2.04 | •     | •     | •    | •    | •      | •    | •    | •      | •     | •     |  |  |  |  |
| SNA(C/K)N1904ANN | 19.05          | 4.76 | 2.45 | •     | •     | •    | •    | •      | •    | •    | •      | •     | •     |  |  |  |  |

# SNA(C/K)N-ENN



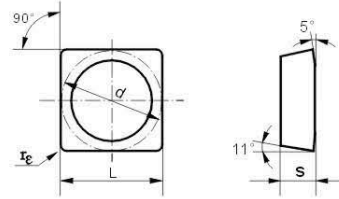
| Type             | Dimension (mm) |      |       | Grade |       |      |      |        |      |      |        |       |       |       |  |  |  |  |
|------------------|----------------|------|-------|-------|-------|------|------|--------|------|------|--------|-------|-------|-------|--|--|--|--|
|                  | L=d            | S    | m     | ZC302 | ZC304 | ZP20 | ZP25 | ZK10UF | ZK20 | ZK30 | ZK30UF | YT798 | YT535 | YT726 |  |  |  |  |
| SNA(C/K)N1204ENN | 12.70          | 4.76 | 0.80  | •     | •     | •    | •    | •      | •    | •    | •      | •     | •     | •     |  |  |  |  |
| SNA(C/K)N1504ENN | 15.875         | 4.76 | 1.50  | •     | •     | •    | •    | •      | •    | •    | •      | •     | •     | •     |  |  |  |  |
| SNA(C/K)N1904ENN | 19.05          | 4.76 | 1.324 | •     | •     | •    | •    | •      | •    | •    | •      | •     | •     | •     |  |  |  |  |

# SPMW-ANN



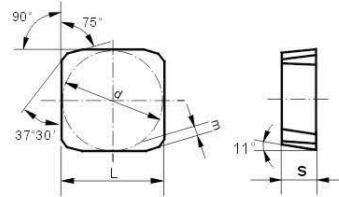
| Type        | Dimension (mm) |      |      |                | Grade |       |      |      |        |      |        |      |        |       |       |   |   |  |  |
|-------------|----------------|------|------|----------------|-------|-------|------|------|--------|------|--------|------|--------|-------|-------|---|---|--|--|
|             | L=d            | S    | m    | $\alpha^\circ$ | ZC302 | ZC304 | ZP20 | ZP25 | ZK10UF | ZK20 | ZK30UF | ZK30 | ZK30UF | YT798 | YT726 |   |   |  |  |
| SPMW1204ANN | 12.70          | 4.76 | 1.63 | 11°            | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     |   |   |  |  |
| SPMW1204ANN |                |      |      | 20°            | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | • | • |  |  |
| SPMW1504ANN | 15.875         | 4.76 | 2.04 | 11°            | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     |   |   |  |  |

# SPFN-T



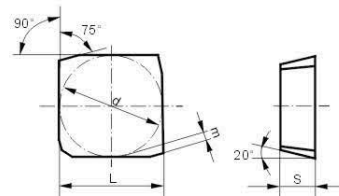
| Type        | Dimension (mm) |      |                | Grade |       |      |      |        |      |        |      |        |       |       |       |
|-------------|----------------|------|----------------|-------|-------|------|------|--------|------|--------|------|--------|-------|-------|-------|
|             | L=d            | S    | r <sub>e</sub> | ZC302 | ZC304 | ZP20 | ZP25 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF | YT798 | YT535 | YT726 |
| SPFN120308T | 12.70          | 3.18 | 0.8            | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | •     |
| SPFN120312T |                |      | 1.2            | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | •     |
| SPFN120320T |                |      | 2.0            | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | •     |
| SPFN150412T | 15.875         | 4.76 | 1.2            | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | •     |
| SPFN150416T |                |      | 1.6            | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | •     |
| SPFN150420T |                |      | 2.0            | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | •     |
| SPFN190424T | 19.05          | 4.76 | 2.4            | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | •     |

# SPA(C/K)N-EDR/(L)



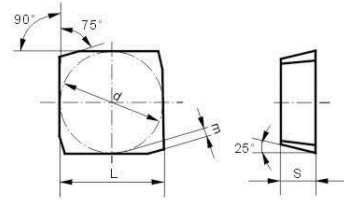
| Type             | Dimension (mm) |       |       | Grade |       |      |      |        |      |        |      |        |       |       |       |
|------------------|----------------|-------|-------|-------|-------|------|------|--------|------|--------|------|--------|-------|-------|-------|
|                  | L=d            | S     | m     | ZC302 | ZC304 | ZP20 | ZP25 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF | YT798 | YT535 | YG813 |
| SPA(C/K)N1203EDR | 12.70          | 3.175 | 0.90  | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | •     |
| SPA(C/K)N1203EDL |                |       |       | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | •     |
| SPA(C/K)N1504EDR | 15.875         | 4.76  | 1.25  | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | •     |
| SPA(C/K)N1504EDL |                |       |       | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | •     |
| SPAN1904EDR      | 19.05          | 4.76  | 1.308 | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | •     |
| SPAN1904EDL      |                |       |       | •     | •     | •    | •    | •      | •    | •      | •    | •      | •     | •     | •     |

# SECN-EER(L)



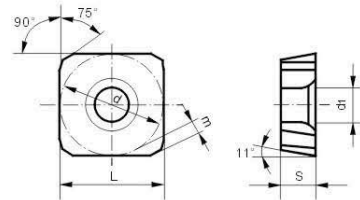
| Type           | Dimension (mm) |       |       | Grade |        |        |        |        |       |       |
|----------------|----------------|-------|-------|-------|--------|--------|--------|--------|-------|-------|
|                | L=d            | S     | m     | ZP20  | ZK10UF | ZK20UF | ZK20UF | ZK20UF | YT798 | YG813 |
| SECN1203EER(L) | 12.70          | 3.175 | 0.80  | •     | •      | •      | •      | •      | •     | •     |
| SECN1504EER(L) | 15.875         | 4.76  | 1.034 | •     | •      | •      | •      | •      | •     | •     |

# SFAN-EER(L)



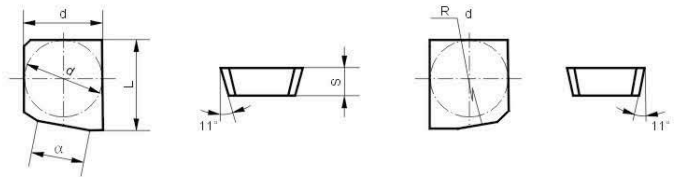
| Type           | Dimension (mm) |       |       | Grade |        |        |        |        |      |        |       |       |       |  |  |  |  |  |  |
|----------------|----------------|-------|-------|-------|--------|--------|--------|--------|------|--------|-------|-------|-------|--|--|--|--|--|--|
|                | L=d            | S     | m     | ZP20  | ZK20UF | ZK20UF | ZK20UF | ZK20UF | ZK30 | ZK30UF | YT798 | YT535 | YG813 |  |  |  |  |  |  |
| SFAN1203EER(L) | 12.70          | 3.175 | 0.80  | •     | •      | •      | •      | •      | •    | •      | •     | •     | •     |  |  |  |  |  |  |
| SFAN1504EER(L) | 15.875         | 4.76  | 1.034 | •     | •      | •      | •      | •      | •    | •      | •     | •     | •     |  |  |  |  |  |  |

# SPMW-EDR(L)



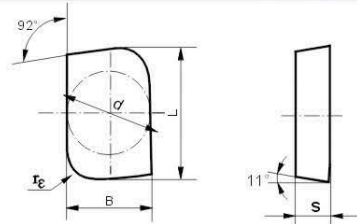
| Type           | Dimension (mm) |      |      | Grade |      |        |      |        |      |        |       |       |       |  |  |  |  |  |  |
|----------------|----------------|------|------|-------|------|--------|------|--------|------|--------|-------|-------|-------|--|--|--|--|--|--|
|                | d              | S    | m    | ZP20  | ZP25 | ZK20UF | ZK20 | ZK20UF | ZK30 | ZK30UF | YT798 | YT535 | YG813 |  |  |  |  |  |  |
| SPMW1204EDR(L) | 12.70          | 4.76 | 0.90 | •     | •    | •      | •    | •      | •    | •      | •     | •     | •     |  |  |  |  |  |  |
| SPMW1504EDR(L) | 15.875         | 4.76 | 1.25 | •     | •    | •      | •    | •      | •    | •      | •     | •     | •     |  |  |  |  |  |  |

# LPEX-EDR(L)



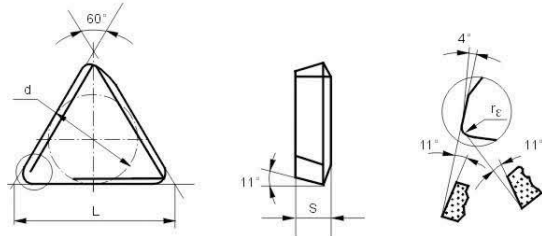
| Type                           | Dimension (mm) |        |      |    | Grade |      |        |        |        |      |        |       |       |  |  |  |  |  |  |
|--------------------------------|----------------|--------|------|----|-------|------|--------|--------|--------|------|--------|-------|-------|--|--|--|--|--|--|
|                                | L              | d      | S    | m  | ZP20  | ZK25 | ZK20UF | ZK20UF | ZK20UF | ZK30 | ZK30UF | YT798 | YT813 |  |  |  |  |  |  |
| LPEX1403EDR-1<br>LPEX1403EDL-1 | 14.70          | 12.70  | 3.18 | 8  | •     | •    | •      | •      | •      | •    | •      | •     | •     |  |  |  |  |  |  |
| LPEX1404EDR-1<br>LPEX1404EDL-1 | 14.70          | 12.70  | 4.76 | 8  | •     | •    | •      | •      | •      | •    | •      | •     | •     |  |  |  |  |  |  |
| LPEX1804EDR-1<br>LPEX1804EDL-1 | 18.20          | 15.875 | 4.76 | 10 | •     | •    | •      | •      | •      | •    | •      | •     | •     |  |  |  |  |  |  |

# LPEN



| Type         | Dimension (mm) |       |      |                | Grade |      |      |        |      |        |      |        |       |
|--------------|----------------|-------|------|----------------|-------|------|------|--------|------|--------|------|--------|-------|
|              | L              | B=d   | S    | r <sub>ε</sub> | ZCK23 | ZP20 | ZP25 | ZK10UF | ZK20 | ZK20UF | ZK30 | ZK30UF | YT535 |
| LPEN2505R(L) | 25.40          | 14.28 | 5.50 | 3.5            | •     | •    | •    | •      | •    | •      | •    | •      | •     |

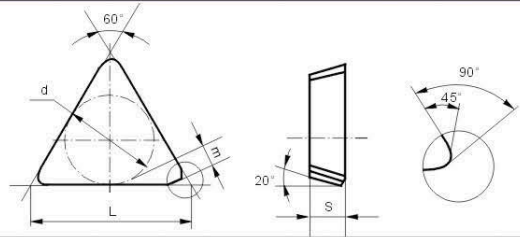
# FPCN



| Type           | Dimension (mm) |        |       |                | Grade |        |      |      |       |       |   |
|----------------|----------------|--------|-------|----------------|-------|--------|------|------|-------|-------|---|
|                | L=d            | d      | S     | r <sub>ε</sub> | ZP20  | ZK10UF | ZK20 | ZK30 | YT726 | YT798 |   |
| FPCN110305R(L) | 11.0           | 6.35   | 3.175 | 0.5            | •     | •      | •    | •    | •     | •     |   |
| FPCN110310R(L) |                |        |       | 1.0            | •     | •      | •    | •    | •     | •     | • |
| FPCN160305R(L) | 16.5           | 9.525  | 3.175 | 0.5            | •     | •      | •    | •    | •     | •     |   |
| FPCN160310R(L) |                |        |       | 1.0            | •     | •      | •    | •    | •     | •     |   |
| FPCN160315R(L) |                |        |       | 1.5            | •     | •      | •    | •    | •     | •     |   |
| FPCN160320R(L) |                |        |       | 2.0            | •     | •      | •    | •    | •     | •     |   |
| FPCN220405R(L) |                |        |       | 0.5            | •     | •      | •    | •    | •     | •     | • |
| FPCN220410R(L) | 22.0           | 12.70  | 4.76  | 1.0            | •     | •      | •    | •    | •     | •     |   |
| FPCN220415R(L) |                |        |       | 1.5            | •     | •      | •    | •    | •     | •     |   |
| FPCN220420R(L) |                |        |       | 2.0            | •     | •      | •    | •    | •     | •     |   |
| FPCN220425R(L) |                |        |       | 2.5            | •     | •      | •    | •    | •     | •     |   |
| FPCN270605R(L) | 27.5           | 15.875 | 6.35  | 0.5            | •     | •      | •    | •    | •     | •     |   |
| FPCN270610R(L) |                |        |       | 1.0            | •     | •      | •    | •    | •     | •     |   |
| FPCN270620R(L) |                |        |       | 2.0            | •     | •      | •    | •    | •     | •     |   |
| FPCN270630R(L) |                |        |       | 3.0            | •     | •      | •    | •    | •     | •     |   |

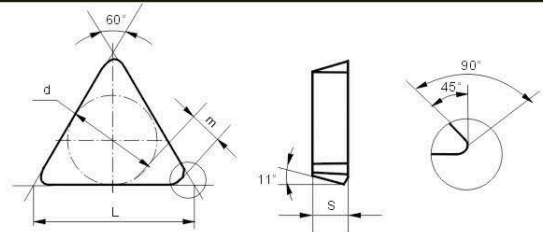


## TEC(K)N-PER(L)



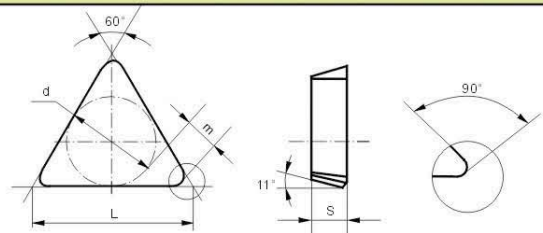
| Type   | Dimension (mm) |       |       |      | Grade |      |        |      |        |        |        |       |  |  |  |  |  |
|--|----------------|-------|-------|------|-------|------|--------|------|--------|--------|--------|-------|--|--|--|--|--|
|  | L=d            | d     | S     | m    | ZP20  | ZP25 | ZK10UF | ZK20 | ZK20UF | ZK30UF | ZK30UF | YT798 |  |  |  |  |  |
| TECN1603PER<br>TECN1603PEL<br>TEKN1603PER<br>TEKN1603PEL | 16.5           | 9.525 | 3.175 | 2.19 | *     | *    | *      | *    | *      | *      | *      | *     |  |  |  |  |  |

## TPA(C/K)N-PDR(L)



| Type                         | Dimension (mm) |       |       |      | Grade |        |        |      |        |       |  |  |  |  |  |
|------------------------------|----------------|-------|-------|------|-------|--------|--------|------|--------|-------|--|--|--|--|--|
|                              | L              | d     | S     | m    | ZP20  | ZK10UF | ZK20UF | ZK30 | ZK30UF | YT798 |  |  |  |  |  |
| TPACN1603PDR<br>TPAKN1603PDL | 16.5           | 6.525 | 3.175 | 2.45 | *     | *      | *      | *    | *      | *     |  |  |  |  |  |
| TPACN2204PDR<br>TPAKN2204PDL | 22.0           | 12.70 | 4.76  | 3.55 | *     | *      | *      | *    | *      | *     |  |  |  |  |  |

## TPA(C/K)N-PPN



| Type                                      | Dimension (mm) |       |       |      | Grade |      |        |      |      |        |       |       |  |  |  |  |  |
|---|----------------|-------|-------|------|-------|------|--------|------|------|--------|-------|-------|--|--|--|--|--|
|   | L              | d     | S     | m    | ZP20  | ZP25 | ZK10UF | ZK20 | ZK30 | ZK30UF | YT798 | YG813 |  |  |  |  |  |
| TPAN1103PPN<br>TPCN1103PPN<br>TPKN1103PPN | 11.0           | 6.35  | 3.175 | 1.72 | *     | *    | *      | *    | *    | *      | *     | *     |  |  |  |  |  |
| TPAN1603PPN<br>TPCN1603PPN<br>TPKN1603PPN | 16.5           | 9.525 | 3.175 | 2.45 | *     | *    | *      | *    | *    | *      | *     | *     |  |  |  |  |  |
| TPAN2204PPN<br>TPCN2204PPN<br>TPKN2204PPN | 22.0           | 12.70 | 4.76  | 3.55 | *     | *    | *      | *    | *    | *      | *     | *     |  |  |  |  |  |