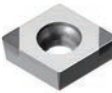
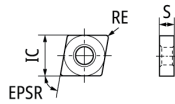
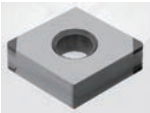


| Steel                 |  |   |   |   |   |   |   |   |   |
|-----------------------|--|---|---|---|---|---|---|---|---|
| Stainless Steel       |  |   |   |   |   |   |   |   |   |
| Cast Iron             |  | ● | ● | ● | ● |   |   | ○ | ○ |
| Non-Ferrous Material  |  |   |   |   |   |   |   |   |   |
| Heat Resistant Alloy  |  |   |   |   |   |   |   |   |   |
| Hardened Material     |  |   |   | ● | ● | ● | ● | ● | ● |
| Others (non-metallic) |  |   |   |   |   |   |   |   |   |

| Shape                                                                             | Item Number        | CECC          | EPSR | IC    | S    | AN  | RE  | D2  | Length | No. of edge | S1  | CBN |     |     |     |     |     |     |     |     |     |
|-----------------------------------------------------------------------------------|--------------------|---------------|------|-------|------|-----|-----|-----|--------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                                                                                   | (ISO)              |               | °    | mm    | mm   | °   | mm  | mm  | mm     |             | mm  | mm  | B16 | B22 | B23 | B30 | B36 | PVD | B40 | B52 | B5K |
|                                                                                   |                    |               | PVD  | PVD   | PVD  | PVD | PVD | PVD | PVD    |             | PVD | PVD | PVD | PVD | PVD | PVD | PVD | PVD | PVD | PVD | PVD |
|  | CCGW060202PDFNX    | Up-sharp edge | 80   | 6.35  | 2.38 | 7   | 0.2 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW060202PDS01015 | S01015        | 80   | 6.35  | 2.38 | 7   | 0.2 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW060202PDS01325 | S01325        | 80   | 6.35  | 2.38 | 7   | 0.2 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW060202PDS01535 | S01535        | 80   | 6.35  | 2.38 | 7   | 0.2 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW060204PDFNX    | Up-sharp edge | 80   | 6.35  | 2.38 | 7   | 0.4 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW060204PDS01015 | S01015        | 80   | 6.35  | 2.38 | 7   | 0.4 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW060204PDS01325 | S01325        | 80   | 6.35  | 2.38 | 7   | 0.4 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW060204PDS01535 | S01535        | 80   | 6.35  | 2.38 | 7   | 0.4 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW060208PDFNX    | Up-sharp edge | 80   | 6.35  | 2.38 | 7   | 0.8 | -   | 2.2    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW060208PDS01015 | S01015        | 80   | 6.35  | 2.38 | 7   | 0.8 | -   | 2.2    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW060208PDS01325 | S01325        | 80   | 6.35  | 2.38 | 7   | 0.8 | -   | 2.2    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW060208PDS01535 | S01535        | 80   | 6.35  | 2.38 | 7   | 0.8 | -   | 2.2    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW060208PDT01520 | T01520        | 80   | 6.35  | 2.38 | 7   | 0.8 | -   | 2.2    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T302PDFNX    | Up-sharp edge | 80   | 9.525 | 3.97 | 7   | 0.2 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T302PDS01015 | S01015        | 80   | 9.525 | 3.97 | 7   | 0.2 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T302PDS01325 | S01325        | 80   | 9.525 | 3.97 | 7   | 0.2 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T302PDS01535 | S01535        | 80   | 9.525 | 3.97 | 7   | 0.2 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T304PDFNX    | Up-sharp edge | 80   | 9.525 | 3.97 | 7   | 0.4 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T304PDS01015 | S01015        | 80   | 9.525 | 3.97 | 7   | 0.4 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T304PDS01325 | S01325        | 80   | 9.525 | 3.97 | 7   | 0.4 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T304PDS01535 | S01535        | 80   | 9.525 | 3.97 | 7   | 0.4 | -   | 2.3    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T308PDFNX    | Up-sharp edge | 80   | 9.525 | 3.97 | 7   | 0.8 | -   | 2.2    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T308PDS01015 | S01015        | 80   | 9.525 | 3.97 | 7   | 0.8 | -   | 2.2    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T308PDS01535 | S01535        | 80   | 9.525 | 3.97 | 7   | 0.8 | -   | 2.2    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T308PTS01325 | S01325        | 80   | 9.525 | 3.97 | 7   | 0.8 | -   | 2.2    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T312PDFNX    | Up-sharp edge | 80   | 9.525 | 3.97 | 7   | 1.2 | -   | 2.7    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T312PDS01015 | S01015        | 80   | 9.525 | 3.97 | 7   | 1.2 | -   | 2.7    | 2           | -   |     |     |     |     |     |     |     |     |     |     |
|                                                                                   | CCGW09T312PTS01325 | S01325        | 80   | 9.525 | 3.97 | 7   | 1.2 | -   | 2.7    | 2           | -   |     |     |     |     |     |     |     |     |     |     |



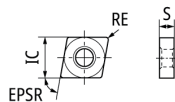
| Steel                 |  |  |  |  |  |  |  |  |  |  |
|-----------------------|--|--|--|--|--|--|--|--|--|--|
| Stainless Steel       |  |  |  |  |  |  |  |  |  |  |
| Cast Iron             |  |  |  |  |  |  |  |  |  |  |
| Non-Ferrous Material  |  |  |  |  |  |  |  |  |  |  |
| Heat Resistant Alloy  |  |  |  |  |  |  |  |  |  |  |
| Hardened Material     |  |  |  |  |  |  |  |  |  |  |
| Others (non-metallic) |  |  |  |  |  |  |  |  |  |  |

| Shape                                                                              | Item Number        | CECC          | EPSR | IC   | S    | AN | RE  | D2 | Length | No. of edge | S1 | CBN |         |     |     |     |     |         |     |     |         |
|------------------------------------------------------------------------------------|--------------------|---------------|------|------|------|----|-----|----|--------|-------------|----|-----|---------|-----|-----|-----|-----|---------|-----|-----|---------|
|                                                                                    | (ISO)              |               | °    | mm   | mm   | °  | mm  | mm | mm     |             | mm | mm  | B16 PVD | B22 | B23 | B30 | B36 | B6K PVD | B40 | B52 | B5K PVD |
|                                                                                    |                    |               |      |      |      |    |     |    |        |             |    |     |         |     |     |     |     |         |     |     |         |
|  | CNGA120402PQS01015 | S01015        | 80   | 12.7 | 4.76 | -  | 0.2 | -  | 2.3    | 4           | -  |     |         |     |     | ●   |     | ●       | ●   |     |         |
|                                                                                    | CNGA120402PQS01325 | S01325        | 80   | 12.7 | 4.76 | -  | 0.2 | -  | 2.3    | 4           | -  |     |         |     |     | ●   |     | ●       | ●   |     |         |
|                                                                                    | CNGA120402PQS01535 | S01535        | 80   | 12.7 | 4.76 | -  | 0.2 | -  | 2.3    | 4           | -  |     |         |     |     | ●   |     | ●       | ●   |     |         |
|                                                                                    | CNGA120402PQT01020 | T01020        | 80   | 12.7 | 4.76 | -  | 0.2 | -  | 2.3    | 4           | -  |     |         |     | ●   |     |     |         |     |     |         |
|                                                                                    | CNGA120404PDFNX    | Up-sharp edge | 80   | 12.7 | 4.76 | -  | 0.4 | -  | 2.3    | 2           | -  |     |         |     | ●   |     |     |         |     | ●   |         |
|                                                                                    | CNGA120404PQFNX    | Up-sharp edge | 80   | 12.7 | 4.76 | -  | 0.4 | -  | 2.3    | 4           | -  |     |         |     | ●   |     |     |         |     | ●   |         |
|                                                                                    | CNGA120404PQS01015 | S01015        | 80   | 12.7 | 4.76 | -  | 0.4 | -  | 2.3    | 4           | -  |     |         |     |     | ●   | ●   | ●       | ●   | ●   |         |
|                                                                                    | CNGA120404PQS01020 | S01020        | 80   | 12.7 | 4.76 | -  | 0.4 | -  | 2.3    | 4           | -  |     |         | ●   |     |     |     |         |     |     |         |
|                                                                                    | CNGA120404PQS01325 | S01325        | 80   | 12.7 | 4.76 | -  | 0.4 | -  | 2.3    | 4           | -  |     |         |     |     |     | ●   | ●       | ●   | ●   | ●       |
|                                                                                    | CNGA120404PQS01535 | S01535        | 80   | 12.7 | 4.76 | -  | 0.4 | -  | 2.3    | 4           | -  |     |         |     |     |     | ●   | ●       | ●   | ●   | ●       |
|                                                                                    | CNGA120404PQT01020 | T01020        | 80   | 12.7 | 4.76 | -  | 0.4 | -  | 2.3    | 4           | -  |     |         |     | ●   |     |     |         |     |     |         |
|                                                                                    | CNGA120408PDFNX    | Up-sharp edge | 80   | 12.7 | 4.76 | -  | 0.8 | -  | 2.2    | 2           | -  |     |         |     | ●   |     |     |         |     |     |         |
|                                                                                    | CNGA120408PQFNX    | Up-sharp edge | 80   | 12.7 | 4.76 | -  | 0.8 | -  | 2.2    | 4           | -  |     |         |     | ●   |     |     |         |     | ●   |         |
|                                                                                    | CNGA120408PQS01015 | S01015        | 80   | 12.7 | 4.76 | -  | 0.8 | -  | 2.2    | 4           | -  |     |         |     |     | ●   | ●   | ●       | ●   | ●   | ●       |
|                                                                                    | CNGA120408PQS01020 | S01020        | 80   | 12.7 | 4.76 | -  | 0.8 | -  | 2.2    | 4           | -  |     |         | ●   |     |     |     |         |     |     |         |
|                                                                                    | CNGA120408PQS01325 | S01325        | 80   | 12.7 | 4.76 | -  | 0.8 | -  | 2.2    | 4           | -  |     |         |     |     | ●   | ●   | ●       | ●   | ●   | ●       |
|                                                                                    | CNGA120408PQS01535 | S01535        | 80   | 12.7 | 4.76 | -  | 0.8 | -  | 2.2    | 4           | -  |     |         |     |     | ●   | ●   | ●       | ●   | ●   | ●       |
|                                                                                    | CNGA120408PQT00515 | T00515        | 80   | 12.7 | 4.76 | -  | 0.8 | -  | 2.2    | 4           | -  |     |         |     |     | ●   |     |         |     |     |         |
|                                                                                    | CNGA120408PQT01020 | T01020        | 80   | 12.7 | 4.76 | -  | 0.8 | -  | 2.2    | 4           | -  |     |         |     | ●   |     |     |         |     |     |         |
|                                                                                    | CNGA120412PDFNX    | Up-sharp edge | 80   | 12.7 | 4.76 | -  | 1.2 | -  | 2.7    | 2           | -  |     |         |     | ●   |     |     |         |     |     |         |
|                                                                                    | CNGA120412PQFNX    | Up-sharp edge | 80   | 12.7 | 4.76 | -  | 1.2 | -  | 2.7    | 4           | -  |     |         |     | ●   |     |     |         |     | ●   |         |
|                                                                                    | CNGA120412PQS01015 | S01015        | 80   | 12.7 | 4.76 | -  | 1.2 | -  | 2.7    | 4           | -  |     |         |     |     | ●   | ●   | ●       | ●   | ●   | ●       |
|                                                                                    | CNGA120412PQS01020 | S01020        | 80   | 12.7 | 4.76 | -  | 1.2 | -  | 2.7    | 4           | -  |     |         | ●   |     |     |     |         |     |     |         |
|                                                                                    | CNGA120412PQS01325 | S01325        | 80   | 12.7 | 4.76 | -  | 1.2 | -  | 2.7    | 4           | -  |     |         |     |     | ●   | ●   | ●       | ●   | ●   | ●       |
|                                                                                    | CNGA120412PQS01535 | S01535        | 80   | 12.7 | 4.76 | -  | 1.2 | -  | 2.7    | 4           | -  |     |         |     |     | ●   | ●   | ●       | ●   | ●   | ●       |
|                                                                                    | CNGA120412PQT00515 | T00515        | 80   | 12.7 | 4.76 | -  | 1.2 | -  | 2.7    | 4           | -  |     |         |     |     | ●   |     |         |     |     |         |
|                                                                                    | CNGA120412PQT01020 | T01020        | 80   | 12.7 | 4.76 | -  | 1.2 | -  | 2.7    | 4           | -  |     |         |     | ●   |     |     |         |     |     |         |
|                                                                                    | CNGA120416PQS01015 | S01015        | 80   | 12.7 | 4.76 | -  | 1.6 | -  | 2.6    | 4           | -  |     |         |     |     | ●   |     | ●       | ●   |     |         |
|                                                                                    | CNGA120416PQS01020 | S01020        | 80   | 12.7 | 4.76 | -  | 1.6 | -  | 2.6    | 4           | -  |     |         | ●   |     |     |     |         |     |     |         |
|                                                                                    | CNGA120416PQS01325 | S01325        | 80   | 12.7 | 4.76 | -  | 1.6 | -  | 2.6    | 4           | -  |     |         |     |     | ●   | ●   | ●       | ●   |     |         |
|                                                                                    | CNGA120416PQS01535 | S01535        | 80   | 12.7 | 4.76 | -  | 1.6 | -  | 2.6    | 4           | -  |     |         |     |     | ●   |     | ●       | ●   |     |         |
|                                                                                    | CNGA120416PQT01020 | T01020        | 80   | 12.7 | 4.76 | -  | 1.6 | -  | 2.6    | 4           | -  |     |         |     | ●   |     |     |         |     |     |         |
|                                                                                    | CNGA120420PQS01015 | S01015        | 80   | 12.7 | 4.76 | -  | 2   | -  | 2.6    | 4           | -  |     |         |     |     | ●   |     | ●       | ●   |     |         |
|                                                                                    | CNGA120420PQS01020 | S01020        | 80   | 12.7 | 4.76 | -  | 2   | -  | 2.6    | 4           | -  |     |         | ●   |     |     |     |         |     |     |         |
|                                                                                    | CNGA120420PQS01325 | S01325        | 80   | 12.7 | 4.76 | -  | 2   | -  | 2.6    | 4           | -  |     |         |     |     | ●   | ●   | ●       | ●   |     |         |
|                                                                                    | CNGA120420PQS01535 | S01535        | 80   | 12.7 | 4.76 | -  | 2   | -  | 2.6    | 4           | -  |     |         |     |     | ●   |     | ●       | ●   |     |         |
|                                                                                    | CNGA120420PQT01020 | T01020        | 80   | 12.7 | 4.76 | -  | 2   | -  | 2.6    | 4           | -  |     |         |     | ●   |     |     |         |     |     |         |

Turning Insert

D

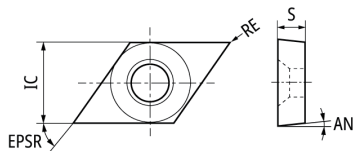
## CNGA-W with wiper for higher feed



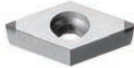
| Steel                 |  |  |  |  |  |  |  |  |  |  |
|-----------------------|--|--|--|--|--|--|--|--|--|--|
| Stainless Steel       |  |  |  |  |  |  |  |  |  |  |
| Cast Iron             |  |  |  |  |  |  |  |  |  |  |
| Non-Ferrous Material  |  |  |  |  |  |  |  |  |  |  |
| Heat Resistant Alloy  |  |  |  |  |  |  |  |  |  |  |
| Hardened Material     |  |  |  |  |  |  |  |  |  |  |
| Others (non-metallic) |  |  |  |  |  |  |  |  |  |  |

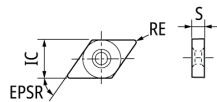
| Shape                                                                               | Item Number         | CECC   | EPSR | IC   | S    | AN | RE  | D2 | Length  | No. of edge | S1 | CBN     |     |     |     |         |     |     |     |         |
|-------------------------------------------------------------------------------------|---------------------|--------|------|------|------|----|-----|----|---------|-------------|----|---------|-----|-----|-----|---------|-----|-----|-----|---------|
|                                                                                     | (ISO)               |        | °    | mm   | mm   | °  | mm  | mm | of edge |             | mm | B16 PVD | B22 | B23 | B30 | B36 PVD | B6K | B40 | B52 | B5K PVD |
|  | CNGA120404PQWS01015 | S01015 | 80   | 12.7 | 4.76 | -  | 0.4 | -  | 2.3     | 4           | -  |         |     |     | ●   |         | ●   | ●   |     |         |
|                                                                                     | CNGA120404PQWS01535 | S01535 | 80   | 12.7 | 4.76 | -  | 0.4 | -  | 2.3     | 4           | -  |         |     |     | ●   |         | ●   | ●   |     |         |
|                                                                                     | CNGA120408PQWS01015 | S01015 | 80   | 12.7 | 4.76 | -  | 0.8 | -  | 2.2     | 4           | -  |         |     |     | ●   |         | ●   | ●   |     |         |
|                                                                                     | CNGA120408PQWS01535 | S01535 | 80   | 12.7 | 4.76 | -  | 0.8 | -  | 2.2     | 4           | -  |         |     |     | ●   |         | ●   | ●   |     |         |
|                                                                                     | CNGA120412PQWS01015 | S01015 | 80   | 12.7 | 4.76 | -  | 1.2 | -  | 2.7     | 4           | -  |         |     |     | ●   |         | ●   | ●   |     |         |
|                                                                                     | CNGA120412PQWS01535 | S01535 | 80   | 12.7 | 4.76 | -  | 1.2 | -  | 2.7     | 4           | -  |         |     |     | ●   |         | ●   | ●   |     |         |

Wiper Width: 0.25mm  
Applicable holders: 95°cutting edge angle (C31, CCLN).



| Steel                 |  |   |   |   |   |  |  |   |   |
|-----------------------|--|---|---|---|---|--|--|---|---|
| Stainless Steel       |  |   |   |   |   |  |  |   |   |
| Cast Iron             |  | ● | ● | ● | ● |  |  | ○ | ○ |
| Non-Ferrous Material  |  |   |   |   |   |  |  |   |   |
| Heat Resistant Alloy  |  |   |   |   |   |  |  |   |   |
| Hardened Material     |  |   |   |   |   |  |  |   |   |
| Others (non-metallic) |  |   |   |   |   |  |  |   |   |

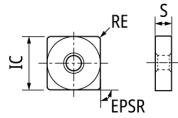
| Shape                                                                             | Item Number<br>(ISO) | CECC          | EPSR | IC    | S    | AN | RE  | D2 | Length<br>of<br>edge | No. of edge | S1 | CBN     |     |     |     |     |         |     |     |         |   |
|-----------------------------------------------------------------------------------|----------------------|---------------|------|-------|------|----|-----|----|----------------------|-------------|----|---------|-----|-----|-----|-----|---------|-----|-----|---------|---|
|                                                                                   |                      |               | °    | mm    | mm   | °  | mm  | mm |                      |             | mm | B16 PVD | B22 | B23 | B30 | B36 | B6K PVD | B40 | B52 | B5K PVD |   |
|  | DCGW070202PDFNX      | Up-sharp edge | 55   | 6.35  | 2.38 | 7  | 0.2 | -  | 2.4                  | 2           | -  |         |     |     |     |     |         |     |     | ●       |   |
|                                                                                   | DCGW070202PDS01015   | S01015        | 55   | 6.35  | 2.38 | 7  | 0.2 | -  | 2.4                  | 2           | -  |         |     |     |     |     |         |     |     | ●       |   |
|                                                                                   | DCGW070202PDS01535   | S01535        | 55   | 6.35  | 2.38 | 7  | 0.2 | -  | 2.4                  | 2           | -  |         |     |     |     |     |         |     |     | ●       |   |
|                                                                                   | DCGW070204PDFNX      | Up-sharp edge | 55   | 6.35  | 2.38 | 7  | 0.4 | -  | 2.2                  | 2           | -  |         |     |     | ●   |     |         |     |     | ●       |   |
|                                                                                   | DCGW070204PDS01015   | S01015        | 55   | 6.35  | 2.38 | 7  | 0.4 | -  | 2.2                  | 2           | -  |         |     |     |     |     |         |     |     | ●       |   |
|                                                                                   | DCGW070204PDS01535   | S01535        | 55   | 6.35  | 2.38 | 7  | 0.4 | -  | 2.2                  | 2           | -  |         |     |     |     |     |         |     |     | ●       |   |
|                                                                                   | DCGW070208PDFNX      | Up-sharp edge | 55   | 6.35  | 2.38 | 7  | 0.8 | -  | 1.9                  | 2           | -  |         |     |     |     |     |         |     |     | ●       |   |
|                                                                                   | DCGW070208PDS01015   | S01015        | 55   | 6.35  | 2.38 | 7  | 0.8 | -  | 1.9                  | 2           | -  |         |     |     |     |     |         |     |     | ●       | ● |
|                                                                                   | DCGW070208PDS01535   | S01535        | 55   | 6.35  | 2.38 | 7  | 0.8 | -  | 1.9                  | 2           | -  |         |     |     |     |     |         |     |     | ●       |   |
|                                                                                   | DCGW070208PTS01325   | S01325        | 55   | 6.35  | 2.38 | 7  | 0.8 | -  | 1.9                  | 2           | -  |         |     |     |     |     |         |     |     | ●       |   |
|                                                                                   | DCGW11T301PDS01015   | S01015        | 55   | 9.525 | 3.97 | 7  | 0.1 | -  | 2.3                  | 2           | -  |         |     |     |     |     |         |     |     | ●       |   |
|                                                                                   | DCGW11T302PDFNX      | Up-sharp edge | 55   | 9.525 | 3.97 | 7  | 0.2 | -  | 2.4                  | 2           | -  |         |     |     | ●   |     |         |     |     | ●       |   |
|                                                                                   | DCGW11T302PDS01015   | S01015        | 55   | 9.525 | 3.97 | 7  | 0.2 | -  | 2.4                  | 2           | -  |         |     |     |     | ●   |         |     |     | ●       | ● |
|                                                                                   | DCGW11T302PTS01325   | S01325        | 55   | 9.525 | 3.97 | 7  | 0.2 | -  | 2.4                  | 2           | -  |         |     |     |     | ●   |         |     |     | ●       | ● |
|                                                                                   | DCGW11T302PDS01535   | S01535        | 55   | 9.525 | 3.97 | 7  | 0.2 | -  | 2.4                  | 2           | -  |         |     |     |     | ●   |         |     |     | ●       | ● |
|                                                                                   | DCGW11T304PDFNX      | Up-sharp edge | 55   | 9.525 | 3.97 | 7  | 0.4 | -  | 2.2                  | 2           | -  |         |     |     | ●   |     |         |     |     | ●       |   |
|                                                                                   | DCGW11T304PDS01015   | S01015        | 55   | 9.525 | 3.97 | 7  | 0.4 | -  | 2.2                  | 2           | -  |         |     |     |     | ●   |         |     |     | ●       | ● |
|                                                                                   | DCGW11T304PDS01535   | S01535        | 55   | 9.525 | 3.97 | 7  | 0.4 | -  | 2.2                  | 2           | -  |         |     |     |     | ●   |         |     |     | ●       | ● |
|                                                                                   | DCGW11T304PDT01015   | T01015        | 55   | 9.525 | 3.97 | 7  | 0.4 | -  | 2.2                  | 2           | -  |         |     |     |     | ●   |         |     |     |         |   |
|                                                                                   | DCGW11T304PTS01325   | S01325        | 55   | 9.525 | 3.97 | 7  | 0.4 | -  | 2.2                  | 2           | -  |         |     |     |     | ●   |         |     |     | ●       | ● |
|                                                                                   | DCGW11T308PDFNX      | Up-sharp edge | 55   | 9.525 | 3.97 | 7  | 0.8 | -  | 1.9                  | 2           | -  |         |     |     |     |     |         |     |     | ●       |   |
|                                                                                   | DCGW11T308PDS01015   | S01015        | 55   | 9.525 | 3.97 | 7  | 0.8 | -  | 1.9                  | 2           | -  |         |     |     |     |     |         |     |     | ●       | ● |
|                                                                                   | DCGW11T308PTS01325   | S01325        | 55   | 9.525 | 3.97 | 7  | 0.8 | -  | 1.9                  | 2           | -  |         |     |     |     |     |         |     |     | ●       | ● |
|                                                                                   | DCGW11T308PDS01535   | S01535        | 55   | 9.525 | 3.97 | 7  | 0.8 | -  | 1.9                  | 2           | -  |         |     |     |     |     |         |     |     | ●       | ● |
|                                                                                   | DCGW11T312PDS01015   | S01015        | 55   | 9.525 | 3.97 | 7  | 1.2 | -  | 2.6                  | 2           | -  |         |     |     |     |     |         |     |     | ●       |   |



|                       |
|-----------------------|
| Steel                 |
| Stainless Steel       |
| Cast Iron             |
| Non-Ferrous Material  |
| Heat Resistant Alloy  |
| Hardened Material     |
| Others (non-metallic) |

| Shape                                                                               | Item Number        | CECC          | EPSR | IC   | S    | AN | RE  | D2 | Length | No. of edge | S1  | CBN |     |     |     |     |     |     |     |     |     |     |
|-------------------------------------------------------------------------------------|--------------------|---------------|------|------|------|----|-----|----|--------|-------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                                                                                     | (ISO)              |               | °    | mm   | mm   | °  | mm  | mm | mm     |             | PVD | B16 | B22 | B23 | B30 | B36 | PVD | B6K | B40 | B52 | PVD | B5K |
|                                                                                     |                    |               |      |      |      |    |     |    |        |             |     |     |     |     |     |     |     |     |     |     |     |     |
|  | DNGA150402PQS01015 | S01015        | 55   | 12.7 | 4.76 | –  | 0.2 | –  | 2.4    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150402PQS01325 | S01325        | 55   | 12.7 | 4.76 | –  | 0.2 | –  | 2.4    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150402PQS01535 | S01535        | 55   | 12.7 | 4.76 | –  | 0.2 | –  | 2.4    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150402PQT01020 | T01020        | 55   | 12.7 | 4.76 | –  | 0.2 | –  | 2.4    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150404PDFNX    | Up-sharp edge | 55   | 12.7 | 4.76 | –  | 0.4 | –  | 2.2    | 2           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150404PQFNX    | Up-sharp edge | 55   | 12.7 | 4.76 | –  | 0.4 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150404PQS01015 | S01015        | 55   | 12.7 | 4.76 | –  | 0.4 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150404PQS01020 | S01020        | 55   | 12.7 | 4.76 | –  | 0.4 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150404PQS01325 | S01325        | 55   | 12.7 | 4.76 | –  | 0.4 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150404PQS01535 | S01535        | 55   | 12.7 | 4.76 | –  | 0.4 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150404PQT01020 | T01020        | 55   | 12.7 | 4.76 | –  | 0.4 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150408PDFNX    | Up-sharp edge | 55   | 12.7 | 4.76 | –  | 0.8 | –  | 1.9    | 2           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150408PQFNX    | Up-sharp edge | 55   | 12.7 | 4.76 | –  | 0.8 | –  | 1.9    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150408PQS01015 | S01015        | 55   | 12.7 | 4.76 | –  | 0.8 | –  | 1.9    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150408PQS01020 | S01020        | 55   | 12.7 | 4.76 | –  | 0.8 | –  | 1.9    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150408PQS01325 | S01325        | 55   | 12.7 | 4.76 | –  | 0.8 | –  | 1.9    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150408PQS01535 | S01535        | 55   | 12.7 | 4.76 | –  | 0.8 | –  | 1.9    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150408PQT01020 | T01020        | 55   | 12.7 | 4.76 | –  | 0.8 | –  | 1.9    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150412PDFNX    | Up-sharp edge | 55   | 12.7 | 4.76 | –  | 1.2 | –  | 2.6    | 2           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150412PQFNX    | Up-sharp edge | 55   | 12.7 | 4.76 | –  | 1.2 | –  | 2.6    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150412PQS01015 | S01015        | 55   | 12.7 | 4.76 | –  | 1.2 | –  | 2.6    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150412PQS01020 | S01020        | 55   | 12.7 | 4.76 | –  | 1.2 | –  | 2.6    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150412PQS01325 | S01325        | 55   | 12.7 | 4.76 | –  | 1.2 | –  | 2.6    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150412PQS01535 | S01535        | 55   | 12.7 | 4.76 | –  | 1.2 | –  | 2.6    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150412PQT01020 | T01020        | 55   | 12.7 | 4.76 | –  | 1.2 | –  | 2.6    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150416PQS01015 | S01015        | 55   | 12.7 | 4.76 | –  | 1.6 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150416PQS01020 | S01020        | 55   | 12.7 | 4.76 | –  | 1.6 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150416PQS01325 | S01325        | 55   | 12.7 | 4.76 | –  | 1.6 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150416PQS01535 | S01535        | 55   | 12.7 | 4.76 | –  | 1.6 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150416PQT01020 | T01020        | 55   | 12.7 | 4.76 | –  | 1.6 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150420PQS01015 | S01015        | 55   | 12.7 | 4.76 | –  | 2   | –  | 2.4    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150420PQS01325 | S01325        | 55   | 12.7 | 4.76 | –  | 2   | –  | 2.4    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150420PQS01535 | S01535        | 55   | 12.7 | 4.76 | –  | 2   | –  | 2.4    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150602PQS01015 | S01015        | 55   | 12.7 | 6.35 | –  | 0.2 | –  | 2.4    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150604PQS01015 | S01015        | 55   | 12.7 | 6.35 | –  | 0.4 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150604PQS01325 | S01325        | 55   | 12.7 | 6.35 | –  | 0.4 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150604PQT01020 | T01020        | 55   | 12.7 | 6.35 | –  | 0.4 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150608PQS01015 | S01015        | 55   | 12.7 | 6.35 | –  | 0.8 | –  | 1.9    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150608PQS01325 | S01325        | 55   | 12.7 | 6.35 | –  | 0.8 | –  | 1.9    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150608PQT01020 | T01020        | 55   | 12.7 | 6.35 | –  | 0.8 | –  | 1.9    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150612PQS01015 | S01015        | 55   | 12.7 | 6.35 | –  | 1.2 | –  | 2.6    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150612PQS01325 | S01325        | 55   | 12.7 | 6.35 | –  | 1.2 | –  | 2.6    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150612PQT01020 | T01020        | 55   | 12.7 | 6.35 | –  | 1.2 | –  | 2.6    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150616PQS01015 | S01015        | 55   | 12.7 | 6.35 | –  | 1.6 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150616PQS01325 | S01325        | 55   | 12.7 | 6.35 | –  | 1.6 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |
|                                                                                     | DNGA150616PQT01020 | T01020        | 55   | 12.7 | 6.35 | –  | 1.6 | –  | 2.2    | 4           | –   |     |     |     |     |     |     |     |     |     |     |     |

## SNGA



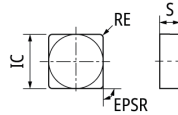
|                       |
|-----------------------|
| Steel                 |
| Stainless Steel       |
| Cast Iron             |
| Non-Ferrous Material  |
| Heat Resistant Alloy  |
| Hardened Material     |
| Others (non-metallic) |

| Shape | Item Number<br>(ISO) | CECC   | EPSR<br>° | IC<br>mm | S<br>mm | AN<br>° | RE<br>mm | D2<br>mm | Length<br>of<br>edge | No. of edge | S1<br>mm | B16<br>PVD | B22<br>PVD | B23<br>PVD | B30<br>PVD | B36<br>PVD | B6K<br>PVD | B40<br>PVD | B52<br>PVD | B5K<br>PVD |
|-------|----------------------|--------|-----------|----------|---------|---------|----------|----------|----------------------|-------------|----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|       | SNGA120402PES01325   | S01325 | 90        | 12.7     | 4.76    | -       | 0.2      | -        | 2.3                  | 8           | -        |            |            |            |            | ●          |            | ●          | ●          |            |
|       | SNGA120404PES01015   | S01015 | 90        | 12.7     | 4.76    | -       | 0.4      | -        | 2.3                  | 8           | -        |            |            |            |            |            |            | ●          | ●          |            |
|       | SNGA120404PES01020   | S01020 | 90        | 12.7     | 4.76    | -       | 0.4      | -        | 2.3                  | 8           | -        |            |            | ●          |            |            |            |            |            |            |
|       | SNGA120404PES01325   | S01325 | 90        | 12.7     | 4.76    | -       | 0.4      | -        | 2.3                  | 8           | -        |            |            |            |            | ●          |            |            |            |            |
|       | SNGA120404PES01535   | S01535 | 90        | 12.7     | 4.76    | -       | 0.4      | -        | 2.3                  | 8           | -        |            |            |            |            |            |            | ●          | ●          |            |
|       | SNGA120404PET01020   | T01020 | 90        | 12.7     | 4.76    | -       | 0.4      | -        | 2.3                  | 8           | -        |            |            |            | ●          |            |            |            |            |            |
|       | SNGA120408PES01015   | S01015 | 90        | 12.7     | 4.76    | -       | 0.8      | -        | 2.3                  | 8           | -        |            |            |            |            |            |            | ●          | ●          |            |
|       | SNGA120408PES01020   | S01020 | 90        | 12.7     | 4.76    | -       | 0.8      | -        | 2.3                  | 8           | -        |            |            | ●          |            |            |            |            |            |            |
|       | SNGA120408PES01325   | S01325 | 90        | 12.7     | 4.76    | -       | 0.8      | -        | 2.3                  | 8           | -        |            |            |            |            | ●          |            |            |            |            |
|       | SNGA120408PES01535   | S01535 | 90        | 12.7     | 4.76    | -       | 0.8      | -        | 2.3                  | 8           | -        |            |            |            |            |            |            | ●          | ●          |            |
|       | SNGA120408PET01020   | T01020 | 90        | 12.7     | 4.76    | -       | 0.8      | -        | 2.3                  | 8           | -        |            |            |            | ●          |            |            |            |            |            |
|       | SNGA120412PES01015   | S01015 | 90        | 12.7     | 4.76    | -       | 1.2      | -        | 2.8                  | 8           | -        |            |            |            | ●          |            |            | ●          | ●          |            |
|       | SNGA120412PES01020   | S01020 | 90        | 12.7     | 4.76    | -       | 1.2      | -        | 2.8                  | 8           | -        |            |            | ●          |            |            |            |            |            |            |
|       | SNGA120412PES01325   | S01325 | 90        | 12.7     | 4.76    | -       | 1.2      | -        | 2.8                  | 8           | -        |            |            |            |            | ●          |            |            |            |            |
|       | SNGA120412PES01535   | S01535 | 90        | 12.7     | 4.76    | -       | 1.2      | -        | 2.8                  | 8           | -        |            |            |            |            |            |            | ●          | ●          |            |
|       | SNGA120412PET01020   | T01020 | 90        | 12.7     | 4.76    | -       | 1.2      | -        | 2.8                  | 8           | -        |            |            |            | ●          |            |            |            |            |            |
|       | SNGA120416PES01015   | S01015 | 90        | 12.7     | 4.76    | -       | 1.6      | -        | 2.8                  | 8           | -        |            |            |            |            |            |            |            | ●          |            |
|       | SNGA120416PES01325   | S01325 | 90        | 12.7     | 4.76    | -       | 1.6      | -        | 2.8                  | 8           | -        |            |            |            |            | ●          |            |            |            |            |
|       | SNGA120416PET01020   | T01020 | 90        | 12.7     | 4.76    | -       | 1.6      | -        | 2.8                  | 8           | -        |            |            |            | ●          |            |            |            |            |            |

Turning Insert

D

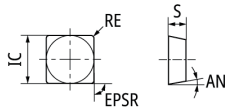
## SNMN



|                       |
|-----------------------|
| Steel                 |
| Stainless Steel       |
| Cast Iron             |
| Non-Ferrous Material  |
| Heat Resistant Alloy  |
| Hardened Material     |
| Others (non-metallic) |

| Shape | Item Number<br>(ISO) | CECC   | EPSR<br>° | IC<br>mm | S<br>mm | AN<br>° | RE<br>mm | D2<br>mm | Length<br>of<br>edge | No. of edge | S1<br>mm | B16<br>PVD | B22<br>PVD | B23<br>PVD | B30<br>PVD | B36<br>PVD | B6K<br>PVD | B40<br>PVD | B52<br>PVD | B5K<br>PVD |
|-------|----------------------|--------|-----------|----------|---------|---------|----------|----------|----------------------|-------------|----------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|       | SNMN090308ST00525    | T00525 | 90        | 9.525    | 3.18    | -       | 0.8      | -        | -                    | 8           | -        | ●          |            |            |            |            |            |            |            |            |
|       | SNMN090312ST01025    | T01025 | 90        | 9.525    | 3.18    | -       | 1.2      | -        | -                    | 8           | -        | ●          |            |            |            |            |            |            |            |            |
|       | SNMN120308ST01025    | T01025 | 90        | 12.7     | 3.18    | -       | 0.8      | -        | -                    | 8           | -        | ●          |            |            |            |            |            |            |            |            |
|       | SNMN120312ST01025    | T01025 | 90        | 12.7     | 3.18    | -       | 1.2      | -        | -                    | 8           | -        | ●          |            |            |            |            |            |            |            |            |
|       | SNMN120408ST01025    | T01025 | 90        | 12.7     | 4.76    | -       | 0.8      | -        | -                    | 8           | -        | ●          |            |            |            |            |            |            |            |            |
|       | SNMN120412ST02025    | T02025 | 90        | 12.7     | 4.76    | -       | 1.2      | -        | -                    | 8           | -        | ●          |            |            |            |            |            |            |            |            |
|       | SNMN120416ST02025    | T02025 | 90        | 12.7     | 4.76    | -       | 1.6      | -        | -                    | 8           | -        | ●          |            |            |            |            |            |            |            |            |

## SPGN



### Steel

#### Stainless Steel

#### Cast Iron

#### Non-Ferrous Material

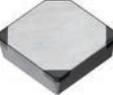
#### Heat Resistant Alloy

#### Hardened Material

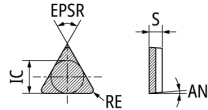
#### Others (non-metallic)

● ● ● ● ○ ○

● ● ● ● ●

| Shape                                                                             | Item Number        | CECC   | EPSR | IC    | S    | AN | RE  | D2 | Length | No. of edge | S1      | CBN |     |     |     |     |     |     |     |     |     |     |
|-----------------------------------------------------------------------------------|--------------------|--------|------|-------|------|----|-----|----|--------|-------------|---------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|                                                                                   | (ISO)              |        | °    | mm    | mm   | °  | mm  | mm | mm     |             | of edge | mm  | B16 | PVD | B22 | B23 | B30 | B36 | PVD | B40 | B52 | PVD |
|                                                                                   |                    |        |      |       |      |    |     |    |        |             |         |     |     |     |     |     |     |     |     |     |     |     |
|  | SPGN090304PQS01015 | S01015 | 90   | 9.525 | 3.18 | 11 | 0.4 | -  | 2.3    | 4           | -       |     |     |     |     |     |     |     | ●   | ●   |     |     |
|                                                                                   | SPGN090304PQS01020 | S01020 | 90   | 9.525 | 3.18 | 11 | 0.4 | -  | 2.3    | 4           | -       |     |     | ●   |     |     |     |     |     |     |     |     |
|                                                                                   | SPGN090304PQS01535 | S01535 | 90   | 9.525 | 3.18 | 11 | 0.4 | -  | 2.3    | 4           | -       |     |     |     |     |     |     |     | ●   | ●   |     |     |
|                                                                                   | SPGN090304PQT01020 | T01020 | 90   | 9.525 | 3.18 | 11 | 0.4 | -  | 2.3    | 4           | -       |     |     |     | ●   |     |     |     |     |     |     |     |
|                                                                                   | SPGN090308PQS01015 | S01015 | 90   | 9.525 | 3.18 | 11 | 0.8 | -  | 2.3    | 4           | -       |     |     |     |     |     |     |     | ●   | ●   |     |     |
|                                                                                   | SPGN090308PQS01020 | S01020 | 90   | 9.525 | 3.18 | 11 | 0.8 | -  | 2.3    | 4           | -       |     |     | ●   |     |     |     |     |     |     |     |     |
|                                                                                   | SPGN090308PQS01535 | S01535 | 90   | 9.525 | 3.18 | 11 | 0.8 | -  | 2.3    | 4           | -       |     |     |     |     |     |     |     | ●   | ●   |     |     |
|                                                                                   | SPGN090308PQT01020 | T01020 | 90   | 9.525 | 3.18 | 11 | 0.8 | -  | 2.3    | 4           | -       |     |     |     | ●   |     |     |     |     |     |     |     |
|                                                                                   | SPGN090312PQS01015 | S01015 | 90   | 9.525 | 3.18 | 11 | 1.2 | -  | 2.8    | 4           | -       |     |     |     |     |     |     |     | ●   | ●   |     |     |
|                                                                                   | SPGN090312PQS01020 | S01020 | 90   | 9.525 | 3.18 | 11 | 1.2 | -  | 2.8    | 4           | -       |     |     | ●   |     |     |     |     |     |     |     |     |
|                                                                                   | SPGN090312PQS01535 | S01535 | 90   | 9.525 | 3.18 | 11 | 1.2 | -  | 2.8    | 4           | -       |     |     |     |     |     |     |     | ●   | ●   |     |     |
|                                                                                   | SPGN090312PQT01020 | T01020 | 90   | 9.525 | 3.18 | 11 | 1.2 | -  | 2.8    | 4           | -       |     |     |     | ●   |     |     |     |     |     |     |     |

## TBGN



### Steel

#### Stainless Steel

#### Cast Iron

#### Non-Ferrous Material

#### Heat Resistant Alloy

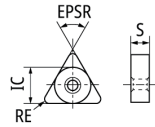
#### Hardened Material

#### Others (non-metallic)

● ● ● ● ○ ○

● ● ● ● ●

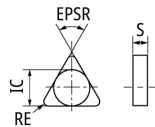
| Shape                                                                               | Item Number       | CECC   | EPSR | IC   | S    | AN | RE  | D2 | Length | No. of edge | S1      | CBN |         |     |     |     |     |         |     |     |         |
|-------------------------------------------------------------------------------------|-------------------|--------|------|------|------|----|-----|----|--------|-------------|---------|-----|---------|-----|-----|-----|-----|---------|-----|-----|---------|
|                                                                                     | (ISO)             |        | °    | mm   | mm   | °  | mm  | mm | mm     |             | of edge | mm  | B16 PVD | B22 | B23 | B30 | B36 | B6K PVD | B40 | B52 | B5K PVD |
|  | TBGN060102SS01015 | S01015 | 60   | 3.97 | 1.59 | 5  | 0.2 | -  | 6.5    | 3           | -       |     |         |     |     |     |     |         |     | ●   |         |
|                                                                                     | TBGN060104SS01015 | S01015 | 60   | 3.97 | 1.59 | 5  | 0.4 | -  | 6.3    | 3           | -       |     |         |     |     |     |     |         |     | ●   |         |
|                                                                                     | TBGN060108SS01015 | S01015 | 60   | 3.97 | 1.59 | 5  | 0.8 | -  | 5.7    | 3           | -       |     |         |     |     |     |     |         |     | ●   |         |



|                       |
|-----------------------|
| Steel                 |
| Stainless Steel       |
| Cast Iron             |
| Non-Ferrous Material  |
| Heat Resistant Alloy  |
| Hardened Material     |
| Others (non-metallic) |

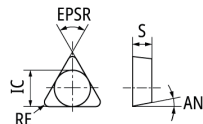
| Shape | Item Number        | CECC          | EPSR | IC    | S    | AN | RE  | D2 | Length of edge | No. of edge | S1 | B16 PVD | B22 | B23 | B30 | B36 | B6K PVD | B40 | B52 | B5K PVD | CBN |
|-------|--------------------|---------------|------|-------|------|----|-----|----|----------------|-------------|----|---------|-----|-----|-----|-----|---------|-----|-----|---------|-----|
|       | (ISO)              |               | °    | mm    | mm   | °  | mm  | mm |                |             | mm |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160401PHFNX    | Up-sharp edge | 60   | 9.525 | 4.76 | -  | 0.1 | -  | 2.1            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160401PHS01015 | S01015        | 60   | 9.525 | 4.76 | -  | 0.1 | -  | 2.1            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160401PHS01325 | S01325        | 60   | 9.525 | 4.76 | -  | 0.1 | -  | 2.1            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160401PHS01535 | S01535        | 60   | 9.525 | 4.76 | -  | 0.1 | -  | 2.1            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160402PHFNX    | Up-sharp edge | 60   | 9.525 | 4.76 | -  | 0.2 | -  | 2.2            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160402PHS01015 | S01015        | 60   | 9.525 | 4.76 | -  | 0.2 | -  | 2.2            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160402PHS01325 | S01325        | 60   | 9.525 | 4.76 | -  | 0.2 | -  | 2.2            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160402PHS01535 | S01535        | 60   | 9.525 | 4.76 | -  | 0.2 | -  | 2.2            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160402PTFNX    | Up-sharp edge | 60   | 9.525 | 4.76 | -  | 0.2 | -  | 2.2            | 3           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160404PHFNX    | Up-sharp edge | 60   | 9.525 | 4.76 | -  | 0.4 | -  | 2              | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160404PHS01015 | S01015        | 60   | 9.525 | 4.76 | -  | 0.4 | -  | 2              | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160404PHS01020 | S01020        | 60   | 9.525 | 4.76 | -  | 0.4 | -  | 2              | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160404PHS01325 | S01325        | 60   | 9.525 | 4.76 | -  | 0.4 | -  | 2              | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160404PHS01535 | S01535        | 60   | 9.525 | 4.76 | -  | 0.4 | -  | 2              | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160404PHT01020 | T01020        | 60   | 9.525 | 4.76 | -  | 0.4 | -  | 2              | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160404PTFNX    | Up-sharp edge | 60   | 9.525 | 4.76 | -  | 0.4 | -  | 2              | 3           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160408PHFNX    | Up-sharp edge | 60   | 9.525 | 4.76 | -  | 0.8 | -  | 1.7            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160408PHS01015 | S01015        | 60   | 9.525 | 4.76 | -  | 0.8 | -  | 1.7            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160408PHS01020 | S01020        | 60   | 9.525 | 4.76 | -  | 0.8 | -  | 1.7            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160408PHS01325 | S01325        | 60   | 9.525 | 4.76 | -  | 0.8 | -  | 1.7            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160408PHS01535 | S01535        | 60   | 9.525 | 4.76 | -  | 0.8 | -  | 1.7            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160408PHT01020 | T01020        | 60   | 9.525 | 4.76 | -  | 0.8 | -  | 1.7            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160408PTFNX    | Up-sharp edge | 60   | 9.525 | 4.76 | -  | 0.8 | -  | 1.7            | 3           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160412PHFNX    | Up-sharp edge | 60   | 9.525 | 4.76 | -  | 1.2 | -  | 2.3            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160412PHS01015 | S01015        | 60   | 9.525 | 4.76 | -  | 1.2 | -  | 2.3            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160412PHS01020 | S01020        | 60   | 9.525 | 4.76 | -  | 1.2 | -  | 2.3            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160412PHS01325 | S01325        | 60   | 9.525 | 4.76 | -  | 1.2 | -  | 2.3            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160412PHS01535 | S01535        | 60   | 9.525 | 4.76 | -  | 1.2 | -  | 2.3            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160412PHT01020 | T01020        | 60   | 9.525 | 4.76 | -  | 1.2 | -  | 2.3            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160412PTFNX    | Up-sharp edge | 60   | 9.525 | 4.76 | -  | 1.2 | -  | 2.3            | 3           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160416PHS01015 | S01015        | 60   | 9.525 | 4.76 | -  | 1.6 | -  | 2.1            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160416PHS01325 | S01325        | 60   | 9.525 | 4.76 | -  | 1.6 | -  | 2.1            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160416PHS01535 | S01535        | 60   | 9.525 | 4.76 | -  | 1.6 | -  | 2.1            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA160416PHT01020 | T01020        | 60   | 9.525 | 4.76 | -  | 1.6 | -  | 2.1            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA220412PHS01015 | S01015        | 60   | 12.7  | 4.76 | -  | 1.2 | -  | 2.3            | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNGA220412PHS01535 | S01535        | 60   | 12.7  | 4.76 | -  | 1.2 | -  | 2.3            | 6           | -  |         |     |     |     |     |         |     |     |         |     |

Turning Insert  
D



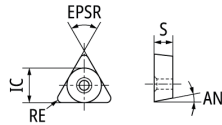
|                       |
|-----------------------|
| Steel                 |
| Stainless Steel       |
| Cast Iron             |
| Non-Ferrous Material  |
| Heat Resistant Alloy  |
| Hardened Material     |
| Others (non-metallic) |

| Shape | Item Number       | CECC   | EPSR | IC    | S    | AN | RE  | D2 | Length of edge | No. of edge | S1 | B16 PVD | B22 | B23 | B30 | B36 | B6K PVD | B40 | B52 | B5K PVD | CBN |
|-------|-------------------|--------|------|-------|------|----|-----|----|----------------|-------------|----|---------|-----|-----|-----|-----|---------|-----|-----|---------|-----|
|       | (ISO)             |        | °    | mm    | mm   | °  | mm  | mm |                |             | mm |         |     |     |     |     |         |     |     |         |     |
|       | TNMN110312ST01025 | T01025 | 60   | 6.35  | 3.18 | -  | 1.2 | -  | -              | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNMN160408ST01025 | T01025 | 60   | 9.525 | 4.76 | -  | 0.8 | -  | -              | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNMN160412ST01025 | T01025 | 60   | 9.525 | 4.76 | -  | 1.2 | -  | -              | 6           | -  |         |     |     |     |     |         |     |     |         |     |
|       | TNMN160412ST02025 | T02025 | 60   | 9.525 | 4.76 | -  | 1.2 | -  | -              | 6           | -  |         |     |     |     |     |         |     |     |         |     |

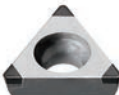


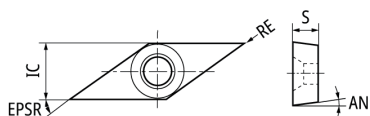
| Steel                 |  |  |  |  |  |  |  |  |  |  |
|-----------------------|--|--|--|--|--|--|--|--|--|--|
| Stainless Steel       |  |  |  |  |  |  |  |  |  |  |
| Cast Iron             |  |  |  |  |  |  |  |  |  |  |
| Non-Ferrous Material  |  |  |  |  |  |  |  |  |  |  |
| Heat Resistant Alloy  |  |  |  |  |  |  |  |  |  |  |
| Hardened Material     |  |  |  |  |  |  |  |  |  |  |
| Others (non-metallic) |  |  |  |  |  |  |  |  |  |  |

| Shape | Item Number<br>(ISO) | CECC   | EPSR | IC    | S    | AN | RE  | D2 | Length<br>of<br>edge | No. of edge | S1 | CBN     |     |     |     |     |         |     |     |         |   |
|-------|----------------------|--------|------|-------|------|----|-----|----|----------------------|-------------|----|---------|-----|-----|-----|-----|---------|-----|-----|---------|---|
|       |                      |        | °    | mm    | mm   | °  | mm  | mm |                      |             | mm | B16 PVD | B22 | B23 | B30 | B36 | B6K PVD | B40 | B52 | B5K PVD |   |
|       | TPGN110302PTS01015   | S01015 | 60   | 6.35  | 3.18 | 11 | 0.2 | -  | 2.2                  | 3           | -  |         |     |     |     |     |         |     |     |         | ● |
|       | TPGN110302PTS01020   | S01020 | 60   | 6.35  | 3.18 | 11 | 0.2 | -  | 2.2                  | 3           | -  |         |     |     |     |     |         | ●   |     |         |   |
|       | TPGN110302PTS01325   | S01325 | 60   | 6.35  | 3.18 | 11 | 0.2 | -  | 2.2                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN110302PTS01535   | S01535 | 60   | 6.35  | 3.18 | 11 | 0.2 | -  | 2.2                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN110304PTS01015   | S01015 | 60   | 6.35  | 3.18 | 11 | 0.4 | -  | 2                    | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN110304PTS01020   | S01020 | 60   | 6.35  | 3.18 | 11 | 0.4 | -  | 2                    | 3           | -  |         |     |     |     |     |         | ●   |     |         |   |
|       | TPGN110304PTS01325   | S01325 | 60   | 6.35  | 3.18 | 11 | 0.4 | -  | 2                    | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN110304PTS01535   | S01535 | 60   | 6.35  | 3.18 | 11 | 0.4 | -  | 2                    | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN110304PTT01020   | T01020 | 60   | 6.35  | 3.18 | 11 | 0.4 | -  | 2                    | 3           | -  |         |     |     | ●   |     |         |     |     |         |   |
|       | TPGN110308PTS01015   | S01015 | 60   | 6.35  | 3.18 | 11 | 0.8 | -  | 1.7                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN110308PTS01020   | S01020 | 60   | 6.35  | 3.18 | 11 | 0.8 | -  | 1.7                  | 3           | -  |         |     |     |     |     |         | ●   |     |         |   |
|       | TPGN110308PTS01325   | S01325 | 60   | 6.35  | 3.18 | 11 | 0.8 | -  | 1.7                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN110308PTS01535   | S01535 | 60   | 6.35  | 3.18 | 11 | 0.8 | -  | 1.7                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN110308PTT01020   | T01020 | 60   | 6.35  | 3.18 | 11 | 0.8 | -  | 1.7                  | 3           | -  |         |     |     | ●   |     |         |     |     |         |   |
|       | TPGN110312PTS01015   | S01015 | 60   | 6.35  | 3.18 | 11 | 1.2 | -  | 2.3                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN110312PTS01020   | S01020 | 60   | 6.35  | 3.18 | 11 | 1.2 | -  | 2.3                  | 3           | -  |         |     |     |     |     |         | ●   |     |         |   |
|       | TPGN110312PTS01325   | S01325 | 60   | 6.35  | 3.18 | 11 | 1.2 | -  | 2.3                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN110312PTS01535   | S01535 | 60   | 6.35  | 3.18 | 11 | 1.2 | -  | 2.3                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN110312PTT01020   | T01020 | 60   | 6.35  | 3.18 | 11 | 1.2 | -  | 2.3                  | 3           | -  |         |     |     | ●   |     |         |     |     |         |   |
|       | TPGN160302PTS01015   | S01015 | 60   | 9.525 | 3.18 | 11 | 0.2 | -  | 2.2                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN160302PTS01325   | S01325 | 60   | 9.525 | 3.18 | 11 | 0.2 | -  | 2.2                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN160302PTS01535   | S01535 | 60   | 9.525 | 3.18 | 11 | 0.2 | -  | 2.2                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN160304PTS01015   | S01015 | 60   | 9.525 | 3.18 | 11 | 0.4 | -  | 2                    | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN160304PTS01020   | S01020 | 60   | 9.525 | 3.18 | 11 | 0.4 | -  | 2                    | 3           | -  |         |     |     |     |     |         | ●   |     |         |   |
|       | TPGN160304PTS01325   | S01325 | 60   | 9.525 | 3.18 | 11 | 0.4 | -  | 2                    | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN160304PTS01535   | S01535 | 60   | 9.525 | 3.18 | 11 | 0.4 | -  | 2                    | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN160304PTT01020   | T01020 | 60   | 9.525 | 3.18 | 11 | 0.4 | -  | 2                    | 3           | -  |         |     |     | ●   |     |         |     |     |         |   |
|       | TPGN160308PTS01015   | S01015 | 60   | 9.525 | 3.18 | 11 | 0.8 | -  | 1.7                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN160308PTS01020   | S01020 | 60   | 9.525 | 3.18 | 11 | 0.8 | -  | 1.7                  | 3           | -  |         |     |     |     |     |         | ●   |     |         |   |
|       | TPGN160308PTS01325   | S01325 | 60   | 9.525 | 3.18 | 11 | 0.8 | -  | 1.7                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN160308PTS01535   | S01535 | 60   | 9.525 | 3.18 | 11 | 0.8 | -  | 1.7                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN160308PTT01020   | T01020 | 60   | 9.525 | 3.18 | 11 | 0.8 | -  | 1.7                  | 3           | -  |         |     |     | ●   |     |         |     |     |         |   |
|       | TPGN160312PTS01015   | S01015 | 60   | 9.525 | 3.18 | 11 | 1.2 | -  | 2.3                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN160312PTS01020   | S01020 | 60   | 9.525 | 3.18 | 11 | 1.2 | -  | 2.3                  | 3           | -  |         |     |     |     |     |         | ●   |     |         |   |
|       | TPGN160312PTS01325   | S01325 | 60   | 9.525 | 3.18 | 11 | 1.2 | -  | 2.3                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN160312PTS01535   | S01535 | 60   | 9.525 | 3.18 | 11 | 1.2 | -  | 2.3                  | 3           | -  |         |     |     |     |     |         | ●   | ●   |         |   |
|       | TPGN160312PTT01020   | T01020 | 60   | 9.525 | 3.18 | 11 | 1.2 | -  | 2.3                  | 3           | -  |         |     |     | ●   |     |         |     |     |         |   |

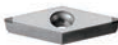


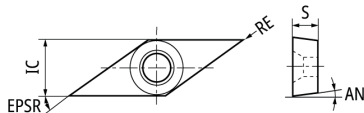
|                       |
|-----------------------|
| Steel                 |
| Stainless Steel       |
| Cast Iron             |
| Non-Ferrous Material  |
| Heat Resistant Alloy  |
| Hardened Material     |
| Others (non-metallic) |

| Shape                                                                             | Item Number        | CECC   | EPSR | IC   | S    | AN | RE  | D2 | Length | No. of edge | S1 | CBN |            |            |            |            |            |            |            |            |            |
|-----------------------------------------------------------------------------------|--------------------|--------|------|------|------|----|-----|----|--------|-------------|----|-----|------------|------------|------------|------------|------------|------------|------------|------------|------------|
|                                                                                   | (ISO)              |        | °    | mm   | mm   | °  | mm  | mm | mm     |             | mm | mm  | B16<br>PVD | B22<br>PVD | B23<br>PVD | B30<br>PVD | B36<br>PVD | B6K<br>PVD | B40<br>PVD | B52<br>PVD | B5K<br>PVD |
|                                                                                   |                    |        |      |      |      |    |     |    |        |             |    |     |            |            |            |            |            |            |            |            |            |
|  | TPGW090202PTS01015 | S01015 | 60   | 5.56 | 2.38 | 11 | 0.2 | -  | 2.2    | 3           | -  |     |            |            |            |            | ●          |            |            | ●          |            |
|                                                                                   | TPGW090202PTS01325 | S01325 | 60   | 5.56 | 2.38 | 11 | 0.2 | -  | 2.2    | 3           | -  |     |            |            |            |            | ●          |            |            | ●          |            |
|                                                                                   | TPGW090202PTS01535 | S01535 | 60   | 5.56 | 2.38 | 11 | 0.2 | -  | 2.2    | 3           | -  |     |            |            |            |            | ●          |            |            | ●          |            |
|                                                                                   | TPGW090204PTS01015 | S01015 | 60   | 5.56 | 2.38 | 11 | 0.4 | -  | 2      | 3           | -  |     |            |            |            |            | ●          |            |            | ●          |            |
|                                                                                   | TPGW090204PTS01325 | S01325 | 60   | 5.56 | 2.38 | 11 | 0.4 | -  | 2      | 3           | -  |     |            |            |            |            | ●          |            |            | ●          |            |
|                                                                                   | TPGW090204PTS01535 | S01535 | 60   | 5.56 | 2.38 | 11 | 0.4 | -  | 2      | 3           | -  |     |            |            |            |            | ●          |            |            | ●          |            |
|                                                                                   | TPGW090208PTS01015 | S01015 | 60   | 5.56 | 2.38 | 11 | 0.8 | -  | 1.7    | 3           | -  |     |            |            |            |            | ●          |            |            | ●          |            |
|                                                                                   | TPGW090208PTS01325 | S01325 | 60   | 5.56 | 2.38 | 11 | 0.8 | -  | 1.7    | 3           | -  |     |            |            |            |            | ●          |            |            | ●          |            |
|                                                                                   | TPGW090208PTS01535 | S01535 | 60   | 5.56 | 2.38 | 11 | 0.8 | -  | 1.7    | 3           | -  |     |            |            |            |            | ●          |            |            | ●          |            |
|                                                                                   | TPGW090312PTS01015 | S01015 | 60   | 5.56 | 3.18 | 11 | 1.2 | -  | 2.3    | 3           | -  |     |            |            |            |            | ●          |            |            | ●          |            |
|                                                                                   | TPGW090312PTS01325 | S01325 | 60   | 5.56 | 3.18 | 11 | 1.2 | -  | 2.3    | 3           | -  |     |            |            |            |            | ●          |            |            | ●          |            |
|                                                                                   | TPGW090312PTS01535 | S01535 | 60   | 5.56 | 3.18 | 11 | 1.2 | -  | 2.3    | 3           | -  |     |            |            |            |            | ●          |            |            | ●          |            |
|                                                                                   | TPGW110302PTS01015 | S01015 | 60   | 6.35 | 3.18 | 11 | 0.2 | -  | 2.2    | 3           | -  |     |            |            |            |            | ●          |            | ●          | ●          |            |
|                                                                                   | TPGW110302PTS01325 | S01325 | 60   | 6.35 | 3.18 | 11 | 0.2 | -  | 2.2    | 3           | -  |     |            |            |            |            | ●          |            |            | ●          |            |
|                                                                                   | TPGW110302PTS01535 | S01535 | 60   | 6.35 | 3.18 | 11 | 0.2 | -  | 2.2    | 3           | -  |     |            |            |            |            | ●          |            | ●          | ●          |            |
|                                                                                   | TPGW110302PTT01020 | T01020 | 60   | 6.35 | 3.18 | 11 | 0.2 | -  | 2.2    | 3           | -  |     |            |            |            | ●          |            |            |            |            |            |
|                                                                                   | TPGW110304PTS01015 | S01015 | 60   | 6.35 | 3.18 | 11 | 0.4 | -  | 2      | 3           | -  |     |            |            |            |            | ●          |            | ●          | ●          |            |
|                                                                                   | TPGW110304PTS01325 | S01325 | 60   | 6.35 | 3.18 | 11 | 0.4 | -  | 2      | 3           | -  |     |            |            |            |            | ●          |            | ●          | ●          |            |
|                                                                                   | TPGW110304PTS01535 | S01535 | 60   | 6.35 | 3.18 | 11 | 0.4 | -  | 2      | 3           | -  |     |            |            |            |            | ●          |            | ●          | ●          |            |
|                                                                                   | TPGW110304PTT01020 | T01020 | 60   | 6.35 | 3.18 | 11 | 0.4 | -  | 2      | 3           | -  |     |            |            |            | ●          |            |            |            |            |            |
|                                                                                   | TPGW110304PTT01515 | T01515 | 60   | 6.35 | 3.18 | 11 | 0.4 | -  | 2      | 3           | -  |     |            |            | ●          | ●          |            |            |            |            |            |
|                                                                                   | TPGW110308PTS01015 | S01015 | 60   | 6.35 | 3.18 | 11 | 0.8 | -  | 1.7    | 3           | -  |     |            |            |            |            | ●          |            | ●          | ●          |            |
|                                                                                   | TPGW110308PTS01325 | S01325 | 60   | 6.35 | 3.18 | 11 | 0.8 | -  | 1.7    | 3           | -  |     |            |            |            |            | ●          |            | ●          | ●          |            |
|                                                                                   | TPGW110308PTS01535 | S01535 | 60   | 6.35 | 3.18 | 11 | 0.8 | -  | 1.7    | 3           | -  |     |            |            |            |            | ●          |            | ●          | ●          |            |
|                                                                                   | TPGW110308PTT01020 | T01020 | 60   | 6.35 | 3.18 | 11 | 0.8 | -  | 1.7    | 3           | -  |     |            |            |            | ●          |            |            |            |            |            |
|                                                                                   | TPGW110308PTT01515 | T01515 | 60   | 6.35 | 3.18 | 11 | 0.8 | -  | 1.7    | 3           | -  |     |            |            | ●          |            |            |            |            |            |            |
|                                                                                   | TPGW110312PTS01015 | S01015 | 60   | 6.35 | 3.18 | 11 | 1.2 | -  | 2.3    | 3           | -  |     |            |            |            |            |            |            | ●          | ●          |            |
|                                                                                   | TPGW110312PTS01325 | S01325 | 60   | 6.35 | 3.18 | 11 | 1.2 | -  | 2.3    | 3           | -  |     |            |            |            |            |            |            | ●          | ●          |            |
|                                                                                   | TPGW110312PTS01535 | S01535 | 60   | 6.35 | 3.18 | 11 | 1.2 | -  | 2.3    | 3           | -  |     |            |            |            |            |            |            | ●          | ●          |            |
|                                                                                   | TPGW110312PTT01020 | T01020 | 60   | 6.35 | 3.18 | 11 | 1.2 | -  | 2.3    | 3           | -  |     |            |            |            | ●          |            |            |            |            |            |
|                                                                                   | TPGW110312PTT01515 | T01515 | 60   | 6.35 | 3.18 | 11 | 1.2 | -  | 2.3    | 3           | -  |     |            |            | ●          |            |            |            |            |            |            |



| Steel                 |  |  |  |  |  |  |  |  |  |  |
|-----------------------|--|--|--|--|--|--|--|--|--|--|
| Stainless Steel       |  |  |  |  |  |  |  |  |  |  |
| Cast Iron             |  |  |  |  |  |  |  |  |  |  |
| Non-Ferrous Material  |  |  |  |  |  |  |  |  |  |  |
| Heat Resistant Alloy  |  |  |  |  |  |  |  |  |  |  |
| Hardened Material     |  |  |  |  |  |  |  |  |  |  |
| Others (non-metallic) |  |  |  |  |  |  |  |  |  |  |

| Shape                                                                             | Item Number        | CECC          | EPSR | IC    | S    | AN | RE  | D2 | Length | No. of edge | S1      | CBN |         |     |     |     |     |         |     |     |         |
|-----------------------------------------------------------------------------------|--------------------|---------------|------|-------|------|----|-----|----|--------|-------------|---------|-----|---------|-----|-----|-----|-----|---------|-----|-----|---------|
|                                                                                   | (ISO)              |               | °    | mm    | mm   | °  | mm  | mm | mm     |             | of edge | mm  | B16 PVD | B22 | B23 | B30 | B36 | B6K PVD | B40 | B52 | B5K PVD |
|                                                                                   |                    |               |      |       |      |    |     |    |        |             |         |     |         |     |     |     |     |         |     |     |         |
|  | VBGW110302PDFNX    | Up-sharp edge | 35   | 6.35  | 3.18 | 5  | 0.2 | -  | 2.6    | 2           | -       |     |         |     | ●   |     |     |         |     |     |         |
|                                                                                   | VBGW110302PDS01015 | S01015        | 35   | 6.35  | 3.18 | 5  | 0.2 | -  | 2.6    | 2           | -       |     |         |     |     | ●   |     |         | ●   |     |         |
|                                                                                   | VBGW110302PDS01535 | S01535        | 35   | 6.35  | 3.18 | 5  | 0.2 | -  | 2.6    | 2           | -       |     |         |     |     | ●   |     |         | ●   |     |         |
|                                                                                   | VBGW110302PDS01325 | S01325        | 35   | 6.35  | 3.18 | 5  | 0.2 | -  | 2.6    | 2           | -       |     |         |     |     | ●   |     |         | ●   |     |         |
|                                                                                   | VBGW110304PDFNX    | Up-sharp edge | 35   | 6.35  | 3.18 | 5  | 0.4 | -  | 2.5    | 2           | -       |     |         |     | ●   |     |     |         |     |     |         |
|                                                                                   | VBGW110304PDS01015 | S01015        | 35   | 6.35  | 3.18 | 5  | 0.4 | -  | 2.5    | 2           | -       |     |         |     |     | ●   |     |         | ●   |     |         |
|                                                                                   | VBGW110304PDS01535 | S01535        | 35   | 6.35  | 3.18 | 5  | 0.4 | -  | 2.5    | 2           | -       |     |         |     |     | ●   |     |         | ●   |     |         |
|                                                                                   | VBGW110304PDT01020 | T01020        | 35   | 6.35  | 3.18 | 5  | 0.4 | -  | 2.5    | 2           | -       |     |         |     | ●   |     |     |         |     |     |         |
|                                                                                   | VBGW110304PDS01325 | S01325        | 35   | 6.35  | 3.18 | 5  | 0.4 | -  | 2.5    | 2           | -       |     |         |     |     | ●   |     |         | ●   |     |         |
|                                                                                   | VBGW110308PDS01015 | S01015        | 35   | 6.35  | 3.18 | 5  | 0.8 | -  | 1.6    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW110308PDS01535 | S01535        | 35   | 6.35  | 3.18 | 5  | 0.8 | -  | 1.6    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW110308PDT01020 | T01020        | 35   | 6.35  | 3.18 | 5  | 0.8 | -  | 1.6    | 2           | -       |     |         |     | ●   |     |     |         |     |     |         |
|                                                                                   | VBGW110308PDS01325 | S01325        | 35   | 6.35  | 3.18 | 5  | 0.8 | -  | 1.6    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW110312PDS01015 | S01015        | 35   | 6.35  | 3.18 | 5  | 1.2 | -  | 2.7    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW110312PDS01535 | S01535        | 35   | 6.35  | 3.18 | 5  | 1.2 | -  | 2.7    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW110312PDT01020 | T01020        | 35   | 6.35  | 3.18 | 5  | 1.2 | -  | 2.7    | 2           | -       |     |         |     | ●   |     |     |         |     |     |         |
|                                                                                   | VBGW110312PDS01325 | S01325        | 35   | 6.35  | 3.18 | 5  | 1.2 | -  | 2.7    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW160402PDS01015 | S01015        | 35   | 9.525 | 4.76 | 5  | 0.2 | -  | 2.6    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW160402PDS01535 | S01535        | 35   | 9.525 | 4.76 | 5  | 0.2 | -  | 2.6    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW160402PDS01325 | S01325        | 35   | 9.525 | 4.76 | 5  | 0.2 | -  | 2.6    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW160404PDS01015 | S01015        | 35   | 9.525 | 4.76 | 5  | 0.4 | -  | 2.5    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW160404PDS01535 | S01535        | 35   | 9.525 | 4.76 | 5  | 0.4 | -  | 2.5    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW160404PDS01325 | S01325        | 35   | 9.525 | 4.76 | 5  | 0.4 | -  | 2.5    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW160408PDS01015 | S01015        | 35   | 9.525 | 4.76 | 5  | 0.8 | -  | 1.6    | 2           | -       |     |         |     |     | ●   |     |         | ●   |     |         |
|                                                                                   | VBGW160408PDS01535 | S01535        | 35   | 9.525 | 4.76 | 5  | 0.8 | -  | 1.6    | 2           | -       |     |         |     |     | ●   |     |         | ●   |     |         |
|                                                                                   | VBGW160408PDS01325 | S01325        | 35   | 9.525 | 4.76 | 5  | 0.8 | -  | 1.6    | 2           | -       |     |         |     |     | ●   |     |         | ●   |     |         |
|                                                                                   | VBGW160412PDS01015 | S01015        | 35   | 9.525 | 4.76 | 5  | 1.2 | -  | 2.7    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW160412PDS01535 | S01535        | 35   | 9.525 | 4.76 | 5  | 1.2 | -  | 2.7    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |
|                                                                                   | VBGW160412PDS01325 | S01325        | 35   | 9.525 | 4.76 | 5  | 1.2 | -  | 2.7    | 2           | -       |     |         |     |     |     |     |         | ●   |     |         |

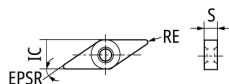


|                       |
|-----------------------|
| Steel                 |
| Stainless Steel       |
| Cast Iron             |
| Non-Ferrous Material  |
| Heat Resistant Alloy  |
| Hardened Material     |
| Others (non-metallic) |

| Shape | Item Number<br>(ISO) | CECC   | EPSR<br>° | IC<br>mm | S<br>mm | AN<br>° | RE<br>mm | D2<br>mm | Length<br>of<br>edge | No. of edge | S1<br>mm | B16<br>PVD | B22 | B23 | B30 | B36<br>PVD | B40 | B52 | B5K<br>PVD |
|-------|----------------------|--------|-----------|----------|---------|---------|----------|----------|----------------------|-------------|----------|------------|-----|-----|-----|------------|-----|-----|------------|
|       | VCGW080202PDS01015   | S01015 | 35        | 4.76     | 2.38    | 7       | 0.2      | -        | 2.6                  | 2           | -        |            |     |     |     |            |     |     | ●          |
|       | VCGW080204PDS01015   | S01015 | 35        | 4.76     | 2.38    | 7       | 0.4      | -        | 2.5                  | 2           | -        |            |     |     |     |            |     |     | ●          |
|       | VCGW080208PDS01015   | S01015 | 35        | 4.76     | 2.38    | 7       | 0.8      | -        | 1.6                  | 2           | -        |            |     |     |     |            |     |     | ●          |
|       | VCGW110302PDS01015   | S01015 | 35        | 6.35     | 3.18    | 7       | 0.2      | -        | 2.6                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW110302PDS01535   | S01535 | 35        | 6.35     | 3.18    | 7       | 0.2      | -        | 2.6                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW110304PDS01015   | S01015 | 35        | 6.35     | 3.18    | 7       | 0.4      | -        | 2.5                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW110304PDS01535   | S01535 | 35        | 6.35     | 3.18    | 7       | 0.4      | -        | 2.5                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW110308PDS01015   | S01015 | 35        | 6.35     | 3.18    | 7       | 0.8      | -        | 1.6                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW110308PDS01535   | S01535 | 35        | 6.35     | 3.18    | 7       | 0.8      | -        | 1.6                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW110312PDS01015   | S01015 | 35        | 6.35     | 3.18    | 7       | 1.2      | -        | 2.7                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW110312PDS01535   | S01535 | 35        | 6.35     | 3.18    | 7       | 1.2      | -        | 2.7                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW160402PDS01015   | S01015 | 35        | 9.525    | 4.76    | 7       | 0.2      | -        | 2.6                  | 2           | -        |            |     |     |     |            |     | ●   |            |
|       | VCGW160402PDS01535   | S01535 | 35        | 9.525    | 4.76    | 7       | 0.2      | -        | 2.6                  | 2           | -        |            |     |     |     |            |     | ●   |            |
|       | VCGW160404PDS01015   | S01015 | 35        | 9.525    | 4.76    | 7       | 0.4      | -        | 2.5                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW160404PDS01535   | S01535 | 35        | 9.525    | 4.76    | 7       | 0.4      | -        | 2.5                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW160404PDT01020   | T01020 | 35        | 9.525    | 4.76    | 7       | 0.4      | -        | 2.5                  | 2           | -        |            |     |     | ●   |            |     |     |            |
|       | VCGW160408PDS01015   | S01015 | 35        | 9.525    | 4.76    | 7       | 0.8      | -        | 1.6                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW160408PDS01535   | S01535 | 35        | 9.525    | 4.76    | 7       | 0.8      | -        | 1.6                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW160408PDT01020   | T01020 | 35        | 9.525    | 4.76    | 7       | 0.8      | -        | 1.6                  | 2           | -        |            |     |     | ●   |            |     |     |            |
|       | VCGW160412PDS01015   | S01015 | 35        | 9.525    | 4.76    | 7       | 1.2      | -        | 2.7                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW160412PDS01535   | S01535 | 35        | 9.525    | 4.76    | 7       | 1.2      | -        | 2.7                  | 2           | -        |            |     |     |     |            |     | ●   | ●          |
|       | VCGW160412PDT01020   | T01020 | 35        | 9.525    | 4.76    | 7       | 1.2      | -        | 2.7                  | 2           | -        |            |     |     | ●   |            |     |     |            |

Turning Insert

D



|                       |
|-----------------------|
| Steel                 |
| Stainless Steel       |
| Cast Iron             |
| Non-Ferrous Material  |
| Heat Resistant Alloy  |
| Hardened Material     |
| Others (non-metallic) |

| Shape | Item Number<br>(ISO) | CECC          | EPSR<br>° | IC<br>mm | S<br>mm | AN<br>° | RE<br>mm | D2<br>mm | Length<br>of<br>edge | No. of edge | S1<br>mm | B16<br>PVD | B22 | B23 | B30 | B36<br>PVD | B40 | B52 | B5K<br>PVD |
|-------|----------------------|---------------|-----------|----------|---------|---------|----------|----------|----------------------|-------------|----------|------------|-----|-----|-----|------------|-----|-----|------------|
|       | VNGA160401PQS01015   | S01015        | 35        | 9.525    | 4.76    | -       | 0.1      | -        | 2.7                  | 4           | -        |            |     |     |     |            |     |     | ●          |
|       | VNGA160401PQS01535   | S01535        | 35        | 9.525    | 4.76    | -       | 0.1      | -        | 2.7                  | 4           | -        |            |     |     |     |            |     | ●   |            |
|       | VNGA160402PDFNX      | Up-sharp edge | 35        | 9.525    | 4.76    | -       | 0.2      | -        | 2.6                  | 2           | -        |            |     |     | ●   |            |     |     |            |
|       | VNGA160402PQFNX      | Up-sharp edge | 35        | 9.525    | 4.76    | -       | 0.2      | -        | 2.6                  | 4           | -        |            |     |     | ●   |            |     |     |            |
|       | VNGA160402PQS01015   | S01015        | 35        | 9.525    | 4.76    | -       | 0.2      | -        | 2.6                  | 4           | -        |            |     |     |     | ●          |     | ●   | ●          |
|       | VNGA160402PQS01325   | S01325        | 35        | 9.525    | 4.76    | -       | 0.2      | -        | 2.6                  | 4           | -        |            |     |     |     | ●          |     | ●   | ●          |
|       | VNGA160402PQS01535   | S01535        | 35        | 9.525    | 4.76    | -       | 0.2      | -        | 2.6                  | 4           | -        |            |     |     |     | ●          |     | ●   | ●          |
|       | VNGA160402PQT01020   | T01020        | 35        | 9.525    | 4.76    | -       | 0.2      | -        | 2.6                  | 4           | -        |            |     |     | ●   |            |     |     |            |
|       | VNGA160404PDFNX      | Up-sharp edge | 35        | 9.525    | 4.76    | -       | 0.4      | -        | 2.5                  | 2           | -        |            |     |     | ●   |            |     |     |            |
|       | VNGA160404PQFNX      | Up-sharp edge | 35        | 9.525    | 4.76    | -       | 0.4      | -        | 2.5                  | 4           | -        |            |     |     | ●   |            |     | ●   |            |
|       | VNGA160404PQS01015   | S01015        | 35        | 9.525    | 4.76    | -       | 0.4      | -        | 2.5                  | 4           | -        |            |     |     |     | ●          | ●   | ●   | ●          |
|       | VNGA160404PQS01325   | S01325        | 35        | 9.525    | 4.76    | -       | 0.4      | -        | 2.5                  | 4           | -        |            |     |     |     | ●          | ●   | ●   | ●          |
|       | VNGA160404PQS01535   | S01535        | 35        | 9.525    | 4.76    | -       | 0.4      | -        | 2.5                  | 4           | -        |            |     |     |     | ●          | ●   | ●   | ●          |
|       | VNGA160404PQT01020   | T01020        | 35        | 9.525    | 4.76    | -       | 0.4      | -        | 2.5                  | 4           | -        |            |     |     | ●   |            |     |     |            |
|       | VNGA160408PDFNX      | Up-sharp edge | 35        | 9.525    | 4.76    | -       | 0.8      | -        | 1.6                  | 2           | -        |            |     |     | ●   |            |     |     |            |
|       | VNGA160408PQFNX      | Up-sharp edge | 35        | 9.525    | 4.76    | -       | 0.8      | -        | 1.6                  | 4           | -        |            |     |     | ●   |            |     | ●   |            |
|       | VNGA160408PQS01015   | S01015        | 35        | 9.525    | 4.76    | -       | 0.8      | -        | 1.6                  | 4           | -        |            |     |     |     | ●          | ●   | ●   | ●          |
|       | VNGA160408PQS01325   | S01325        | 35        | 9.525    | 4.76    | -       | 0.8      | -        | 1.6                  | 4           | -        |            |     |     |     | ●          | ●   | ●   | ●          |
|       | VNGA160408PQS01535   | S01535        | 35        | 9.525    | 4.76    | -       | 0.8      | -        | 1.6                  | 4           | -        |            |     |     |     | ●          | ●   | ●   | ●          |
|       | VNGA160408PQT01020   | T01020        | 35        | 9.525    | 4.76    | -       | 0.8      | -        | 1.6                  | 4           | -        |            |     |     | ●   |            |     |     |            |
|       | VNGA160412PDFNX      | Up-sharp edge | 35        | 9.525    | 4.76    | -       | 1.2      | -        | 2.7                  | 2           | -        |            |     |     | ●   |            |     |     |            |
|       | VNGA160412PQS01015   | S01015        | 35        | 9.525    | 4.76    | -       | 1.2      | -        | 2.7                  | 4           | -        |            |     |     |     | ●          | ●   | ●   | ●          |
|       | VNGA160412PQS01325   | S01325        | 35        | 9.525    | 4.76    | -       | 1.2      | -        | 2.7                  | 4           | -        |            |     |     |     | ●          | ●   | ●   | ●          |
|       | VNGA160412PQS01535   | S01535        | 35        | 9.525    | 4.76    | -       | 1.2      | -        | 2.7                  | 4           | -        |            |     |     |     | ●          | ●   | ●   | ●          |
|       | VNGA160412PQT01020   | T01020        | 35        | 9.525    | 4.76    | -       | 1.2      | -        | 2.7                  | 4           | -        |            |     |     | ●   |            |     |     |            |