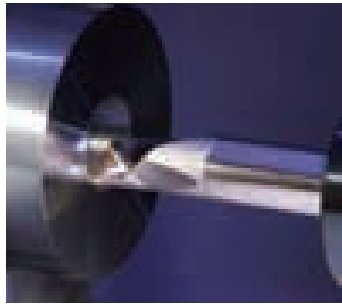


2007

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# Cutting Tools



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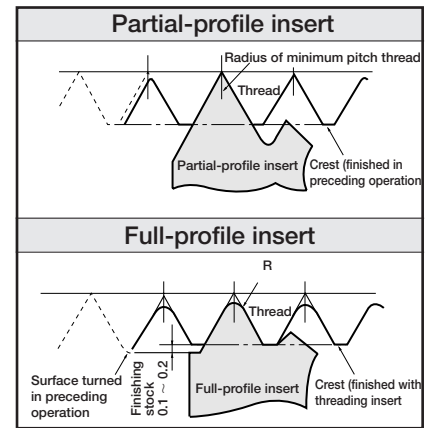
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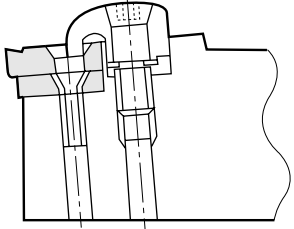
## Applications (ST-type)

| Thread type                   | External threading tools | Internal threading tools |
|-------------------------------|--------------------------|--------------------------|
|                               | <b>ST</b>                | <b>ST</b>                |
| Metric                        | 0.5 ~ 6.0 mm             | 0.5 ~ 6.0 mm             |
| Unified                       | 24 ~ 8 TPI               | 24 ~ 8 TPI               |
| Whitworth                     | 28 ~ 8 TPI               | 19 ~ 8 TPI               |
| Parallel pipe                 | 28 ~ 8 TPI               | 19 ~ 8 TPI               |
| Taper pipe                    | 28, 19, 14, 11 TPI       | 19, 14, 11 TPI           |
| 30° trapezoidal               | 2.0 ~ 6.0 mm             | 2.0 ~ 5.0 mm             |
| 29° trapezoidal, ACME         | 8, 6, 5 TPI              | 8, 6, 5 TPI              |
| American National pipe thread | 18, 14, 11.5 TPI         | 14, 11.5, 8 TPI          |
| Oil well pipe thread          | Round                    |                          |
|                               | Buttress                 |                          |

Note: mm: pitch, TPI: Threads per inch.

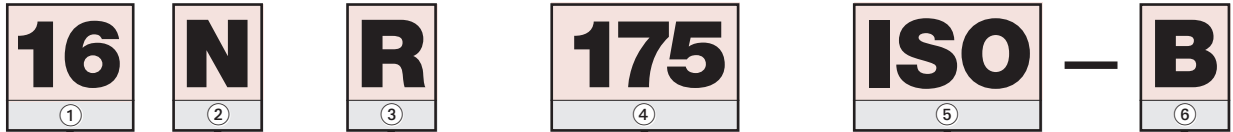


## Outline of TAC threading tools

| Type                           | Appearance                                                                          | Clamping mechanism                                                                  | Features                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Page            |
|--------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>ST</b>                      |  |  | <ul style="list-style-type: none"> <li>● With the unique combination of the clamp and the mouth shape of the insert hole, the insert is positively held with precision accuracy.</li> <li>● Specially designed chipbreaker are formed on the insert, achieving free-flowing chip-control for internal and external threading.</li> <li>● A variety of insert shapes and sizes are available from stock.</li> <li>● Minimum machinable diameter for internal threading is <math>\varnothing 8</math> mm.</li> </ul> | 230<br>~<br>264 |
| Clamp-on type<br>Screw-on type |                                                                                     |                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                 |

# Nomenclature for ST-type TAC Inserts

(Example)



**① Insert size**

| Symbol | I.C. dia. (mm) |
|--------|----------------|
| 06     | —              |
| 11     | 6.35           |
| 16     | 9.525          |
| 22     | 12.70          |
| 27     | 15.875         |

**② External or internal**

| Symbol | Use      |
|--------|----------|
| E      | External |
| N      | Internal |

**③ Hand of insert**

| Symbol | Hand       |
|--------|------------|
| R      | Right hand |
| L      | Left hand  |

**④ Pitch (No. of threads)**

- For full-profile inserts  
Metric thread : Pitch (mm)×10 or 100  
Inch thread : No. of threads per inch ( 25.4mm)  
(Examples)  
05 : 0.5 mm pitch×10  
175 : 1.75 mm pitch×100  
14 : 14 threads per 25.4 mm
- For partial-profile inserts  
A : 0.5 to 1.5 mm pitch  
48 to 16 TPI  
AG : 0.5 to 3.0 mm pitch  
48 to 8 TPI  
G : 1.75 to 3.0 mm pitch  
14 to 8 TPI  
N : 3.5 to 5.0 mm pitch  
7 to 5 TPI  
Z : 4.0 to 6.0 mm pitch  
6 to 4 TPI

**⑤ Thread type**

- For full-profile inserts

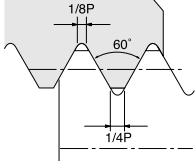




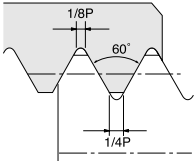






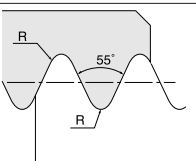




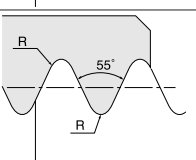


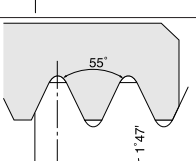


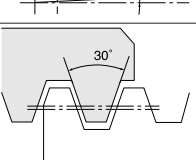


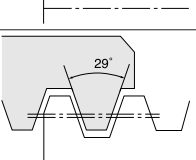


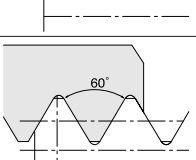


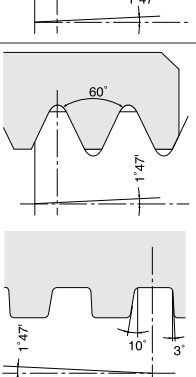




|      |                 |
|------|-----------------|
| ISO  | Metric          |
| UN   | Unified         |
| W    | Whitworth       |
| PT   | JIS taper pipe  |
| TR   | 30° trapezoidal |
| ACME | 29° trapezoidal |
| NPT  | National pipe   |
| RAPI | API round       |
| BAPI | API buttress    |

- For partial-profile inserts

|    |                  |
|----|------------------|
| 55 | 55° thread angle |
| 60 | 60° thread angle |

**⑥ Chipbreaker**

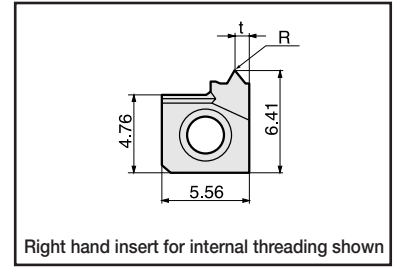
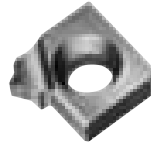
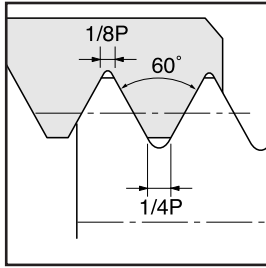
## Thread Types and Applicable Inserts

| Thread type                                                                         |                               |                 | Symbol                 |                            | Applicable inserts                                                                                         |                                                                                                             |                                                                                                             |
|-------------------------------------------------------------------------------------|-------------------------------|-----------------|------------------------|----------------------------|------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
|                                                                                     |                               |                 | Symbol                 | Example                    | External thread                                                                                            | Internal thread                                                                                             |                                                                                                             |
|    | <b>Metric</b>                 | Coarse          | <b>M</b>               | <b>M8</b>                  |  □□ER/L□□ISO (P. 234)    |  □□NR/L□□ISO (P. 234)    |                                                                                                             |
|                                                                                     |                               | Fine            |                        | <b>M8X1</b>                |  □□ER/L□□60* (P. 232)    |  □□ER/L□□60* (P. 232)    |                                                                                                             |
|    | <b>Unified</b>                | Coarse          | <b>UNC</b>             | <b>3/8-16UNC</b>           |  □□ER/L□□UN (P. 235)     |  □□NR/L□□UN (P. 235)     |                                                                                                             |
|                                                                                     |                               | Fine            |                        | <b>UNF</b>                 | <b>No.8-36UNF</b>                                                                                          |  □□ER/L□□60* (P. 232)     |  □□ER/L□□60* (P. 232)    |
|                                                                                     |                               | Extra Fine      |                        | <b>UNEF</b>                | <b>1/4-32UNEF</b>                                                                                          |  □□ER/L□□60* (P. 232)     |  □□ER/L□□60* (P. 232)    |
|    | <b>Whitworth</b>              | Coarse          | <b>W</b>               | <b>W3/4</b>                |  □□ER/L□□W (P. 237)      |  □□NR/L□□W (P. 237)      |                                                                                                             |
|                                                                                     |                               | Fine            |                        | <b>W50/7</b>               |  □□ER/L□□55* (P. 233)    |  □□ER/L□□55* (P. 233)    |                                                                                                             |
|   | <b>Parallel pipe</b>          | Internal thread | <b>G</b>               | <b>G1/2</b>                |  □□ER/L□□W (P. 237)      |  □□NR/L□□W (P. 237)      |                                                                                                             |
|                                                                                     |                               |                 | <b>PF</b>              | <b>PF7</b>                 | —                                                                                                          | —                                                                                                           |                                                                                                             |
|                                                                                     |                               |                 | <b>Rp</b><br><b>PS</b> | <b>Rp3/4</b><br><b>PS7</b> | —                                                                                                          | —                                                                                                           |                                                                                                             |
|  | <b>JIS taper pipe</b>         | External thread | <b>R</b>               | <b>R3/4</b>                |  □□ER/L□□PT (P. 240)   | —                                                                                                           |                                                                                                             |
|                                                                                     |                               | Internal thread | <b>PT</b>              | <b>PT7</b>                 | —                                                                                                          |  □□NR/L□□PT (P. 240)   |                                                                                                             |
|                                                                                     |                               |                 | <b>Rc</b>              | <b>Rc3/4</b>               | —                                                                                                          | —                                                                                                           |                                                                                                             |
|  | <b>30° trapezoidal</b>        |                 | <b>Tr</b>              | <b>Tr10X2</b>              |  □□ER/L□□TR (P. 241)   |  □□NR/L□□TR (P. 241)   |                                                                                                             |
|                                                                                     |                               |                 | <b>TM</b>              | <b>TM10</b>                | —                                                                                                          | —                                                                                                           |                                                                                                             |
|  | <b>29° trapezoidal</b>        |                 | <b>TW</b>              | <b>TW20</b>                |  □□ER/L□□ACME (P. 241) |  □□NR/L□□ACME (P. 241) |                                                                                                             |
|                                                                                     |                               |                 | <b>ACME</b>            | <b>3/8-12ACME</b>          | —                                                                                                          | —                                                                                                           |                                                                                                             |
|  | <b>American National pipe</b> |                 | <b>NPT</b>             | <b>3/8-18NPT</b>           |  □□ER/L□□NPT (P. 240)  |  □□NR/L□□NPT (P. 240)  |                                                                                                             |
|  | <b>Oil well</b>               | Round           | —                      | —                          |  □□ER/L□□RAPI (P. 242) |  □□NR/L□□RAPI (P. 242) |                                                                                                             |
|                                                                                     |                               | Buttress        | —                      | —                          | —                                                                                                          |  □□ER/L□□BAPI (P. 242)  |  □□NR/L□□BAPI (P. 242) |

Note : \*marked items are partial-profile inserts.

# ST-Mini-type Inserts

## ISO metric full-profile inserts for ST-Mini-type tools

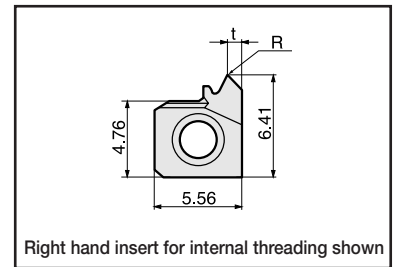
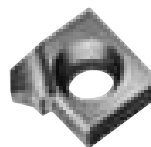
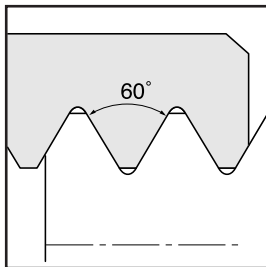


Right hand insert for internal threading shown

### For internal threading

| Insert size | Pitch | Number of threads | Hand of cut | Cat. No.  | Grades   |      |        | Dimensions (mm) |   |                |                | Applicable toolholder |
|-------------|-------|-------------------|-------------|-----------|----------|------|--------|-----------------|---|----------------|----------------|-----------------------|
|             |       |                   |             |           | Uncoated |      | Cermet | d               | t | ℓ <sub>3</sub> | R              |                       |
|             |       |                   |             |           | UX30     | TH10 |        |                 |   |                |                |                       |
| 6           | 0.5   |                   | R           | 6NR05ISO  | ●        | ○    |        |                 |   |                | 0.04           | SNR/L0006K06SC-2      |
|             |       |                   | L           | 6NL05ISO  |          |      |        |                 |   |                |                |                       |
|             | 0.75  |                   | R           | 6NR075ISO | ●        | ○    |        |                 |   |                | 0.05           | SNR/L0006K06SC-3      |
|             |       |                   | L           | 6NL075ISO |          |      |        |                 |   |                |                |                       |
|             | 1.0   |                   | R           | 6NR10ISO  | ●        | ○    |        |                 |   |                | 0.07           | SNR/L0008K06SC-2      |
|             |       |                   | L           | 6NL10ISO  |          |      |        |                 |   |                |                |                       |
|             | 1.25  |                   | R           | 6NR125ISO | ●        | ○    |        |                 |   |                | 0.09           | SNR/L0008K06SC-3      |
|             |       |                   | L           | 6NL125ISO |          |      |        |                 |   |                |                |                       |
| 1.5         |       | R                 | 6NR15ISO    | ●         | ○        |      |        |                 |   | 0.11           | SNR/L0006H06-2 |                       |
|             |       | L                 | 6NL15ISO    |           |          |      |        |                 |   |                |                |                       |
| 1.75        |       | R                 | 6NR175ISO   | ●         | ○        |      |        |                 |   | 0.12           | SNR/L0008H06-2 |                       |
|             |       | L                 | 6NL175ISO   |           |          |      |        |                 |   |                |                |                       |
| 2.0         |       | R                 | 6NR20ISO    | ●         | ○        |      |        |                 |   | 0.14           | SNR/L0008H06-3 |                       |
|             |       | L                 | 6NL20ISO    |           |          |      |        |                 |   |                |                |                       |

## 60° Partial-profile insert for ST-Mini-type tools



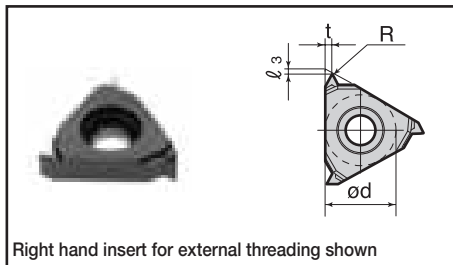
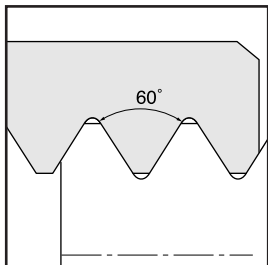
Right hand insert for internal threading shown

### For internal threading

| Insert size | Pitch       | Number of threads | Hand of cut | Cat. No. | Grades   |      |        | Dimensions (mm) |   |                |   | Applicable toolholder |                                                                              |
|-------------|-------------|-------------------|-------------|----------|----------|------|--------|-----------------|---|----------------|---|-----------------------|------------------------------------------------------------------------------|
|             |             |                   |             |          | Uncoated |      | Cermet | d               | t | ℓ <sub>3</sub> | R |                       |                                                                              |
|             |             |                   |             |          | UX30     | TH10 |        |                 |   |                |   |                       |                                                                              |
| 6           | 0.5<br>~1.5 | 48<br>~16         | R           | 6NRA60   | ●        | ○    |        |                 |   |                |   |                       | SNR/L0006K06SC-2<br>SNR/L0006K06SC-3<br>SNR/L0008K06SC-2<br>SNR/L0008K06SC-3 |
|             |             |                   | L           | 6NLA60   |          |      |        |                 |   |                |   |                       |                                                                              |

## ST-type Inserts

### ■ 60° Partial-profile inserts with chipbreaker

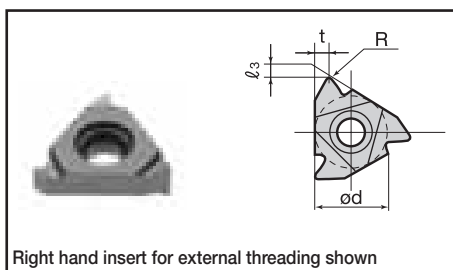
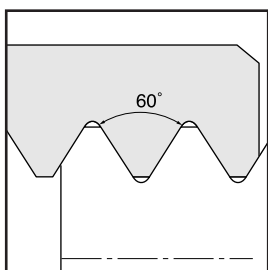


Right hand insert for external threading shown

| Insert Size | Applicable toolholder |            |
|-------------|-----------------------|------------|
|             | External              | Internal   |
| 16          | CER□□□□16□□           | SNR□□□□16□ |
|             | B-SER□□□□16           | CNR□□□□16□ |
|             | B-CER□□□□16           |            |
|             | BC-SER□□□□16          |            |

| Insert size | Pitch       | Number of threads | Hand of cut | External threading |          |        |        | Internal threading |     |                |      |           |           |   |                |                 |     |     |     |
|-------------|-------------|-------------------|-------------|--------------------|----------|--------|--------|--------------------|-----|----------------|------|-----------|-----------|---|----------------|-----------------|-----|-----|-----|
|             |             |                   |             | Cat. No.           | Grades   |        |        | Dimensions (mm)    |     |                |      | Cat. No.  | Grades    |   |                | Dimensions (mm) |     |     |     |
|             |             |                   |             |                    | Uncoated | Cermet | Coated | ød                 | t   | l <sub>3</sub> | R    |           | ød        | t | l <sub>3</sub> | R               |     |     |     |
| 16          | 0.5<br>~1.5 | 48<br>~16         | R           | 16ERA60-B          |          |        | AH740  | 9.525              | 0.9 | 0.7            | 0.06 | 16NRA60-B |           |   |                | 9.525           | 1.6 | 1.1 | -   |
|             | 1.75<br>~3  | 14<br>~8          | R           | 16ERG60-B          |          |        |        |                    | 1.6 | 1.2            | 0.22 |           | 16NRG60-B |   |                |                 |     | 1.6 | 1.2 |

### ■ 60° Partial-profile inserts



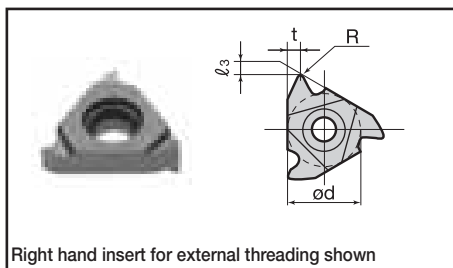
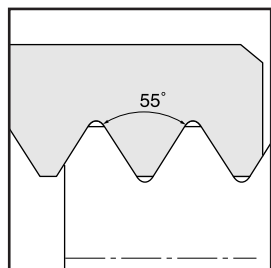
Right hand insert for external threading shown

| Insert Size | Applicable toolholder |               |
|-------------|-----------------------|---------------|
|             | External              | Internal      |
| 11          |                       | SNR/L□□□□□11□ |
| 16          | CER/L□□□□□16□         | SNR/L□□□□□16□ |
|             | B-SER/L□□□□16         | CNR/L□□□□□16□ |
|             | B-CER/L□□□□16         |               |
|             | BC-SER/L□□□□16        |               |
| 22          | CER/L□□□□□22□         | SNR/L□□□□□22□ |
|             |                       | CNR/L□□□□□22□ |
| 27          | CER/L□□□□□27□         | CNR/L□□□□□27□ |

| Insert size | Pitch        | Number of threads | Hand of cut | External threading |          |        |        | Internal threading |                 |       |         |         |          |        |                |   |          |                 |        |      |      |       |       |   |   |                |   |  |
|-------------|--------------|-------------------|-------------|--------------------|----------|--------|--------|--------------------|-----------------|-------|---------|---------|----------|--------|----------------|---|----------|-----------------|--------|------|------|-------|-------|---|---|----------------|---|--|
|             |              |                   |             | Cat. No.           | Grades   |        |        |                    | Dimensions (mm) |       |         |         | Cat. No. | Grades |                |   |          | Dimensions (mm) |        |      |      |       |       |   |   |                |   |  |
|             |              |                   |             |                    | Uncoated | Cermet | Coated | TH10               | UX30            | NS530 | T313V   | d       |          | t      | l <sub>3</sub> | R | Uncoated | Cermet          | Coated | TH10 | UX30 | NS530 | T313V | d | t | l <sub>3</sub> | R |  |
| 11          | 0.5<br>~1.5  | 48<br>~16         | R           |                    |          |        |        |                    |                 |       |         | 11NRA60 | ○        | ○      | ●              | ● | 6.35     | 0.9             | 0.7    | 0.04 |      |       |       |   |   |                |   |  |
|             |              |                   | L           |                    |          |        |        |                    |                 |       | 11NLA60 | ○       | ○        | ○      | ○              |   |          |                 |        |      |      |       |       |   |   |                |   |  |
| 16          | 0.5<br>~1.5  | 48<br>~16         | R           | 16ERA60            | ○        | ●      | ●      | ●                  | 9.525           | 1.6   | 1.1     | 0.06    | 16NRA60  | ○      | ○              | ● | ●        | 9.525           | 1.6    | 1.1  | 0.12 |       |       |   |   |                |   |  |
|             |              |                   | L           | 16ELA60            |          |        | ○      | ○                  |                 |       |         |         | 16NLA60  | ○      | ○              | ○ | ○        |                 |        |      |      |       |       |   |   |                |   |  |
|             |              |                   | R           | 16ERAG60           |          | ●      | ●      | ●                  |                 |       |         |         | 16NRAG60 |        | ●              | ● | ●        |                 |        |      |      |       |       |   |   |                |   |  |
|             |              |                   | L           | 16ELAG60           |          |        |        |                    |                 |       |         |         | 16NLAG60 |        |                |   |          |                 |        |      |      |       |       |   |   |                |   |  |
| 16          | 1.75<br>~3.0 | 14<br>~8          | R           | 16ERG60            | ○        | ●      | ●      | ●                  | 1.6             | 1.2   | 0.22    | 16NRG60 | ○        | ●      | ●              | ● | 1.6      | 1.2             | 0.12   |      |      |       |       |   |   |                |   |  |
|             |              |                   | L           | 16ELG60            |          |        |        |                    |                 |       |         | 16NLG60 | ○        | ○      | ○              | ○ |          |                 |        |      |      |       |       |   |   |                |   |  |
| 22          | 3.5<br>~5.0  | 7~5               | R           | 22ERN60            | ○        | ●      | ●      | ●                  | 12.70           | 2.5   | 1.7     | 0.44    | 22NRN60  | ○      | ●              | ● | ●        | 12.70           | 2.5    | 1.7  | 0.25 |       |       |   |   |                |   |  |
|             |              |                   | L           | 22ELN60            |          |        |        |                    |                 |       |         |         | 22NLN60  | ○      | ○              | ○ | ○        |                 |        |      |      |       |       |   |   |                |   |  |
| 27          | 4~6          | 6~4               | R           | 27ERZ60            |          |        |        |                    | 15.875          | 3.2   | 2.2     | 0.28    | 27NRZ60  |        |                |   |          | 15.875          | 3.2    | 2.2  | 0.28 |       |       |   |   |                |   |  |
|             |              |                   | L           | 27ELZ60            |          |        |        |                    |                 |       |         |         | 27NLZ60  |        |                |   |          |                 |        |      |      |       |       |   |   |                |   |  |

TAC Threading Tools

■ 55° Partial-profile inserts



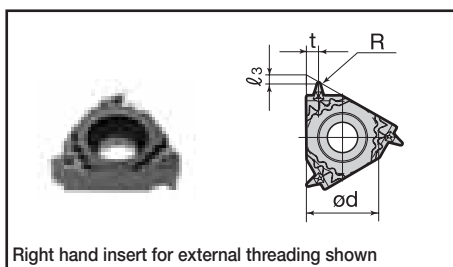
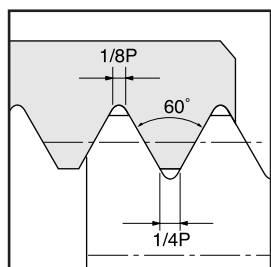
Right hand insert for external threading shown

| Insert Size | Applicable toolholder |                            |
|-------------|-----------------------|----------------------------|
|             | External              | Internal                   |
| 11          |                       | SNR/L□□□□□11□              |
| 16          | CER/L□□□□□16□         | SNR/L□□□□□16□              |
|             | B-SER/L□□□□16         | CNR/L□□□□□16□              |
|             | B-CER/L□□□□16         | TSNR□□□□□16                |
|             | BC-SER/L□□□□16        | TCNR□□□□□16                |
| 22          | CER/L□□□□□22□         | CNR/L□□□□□22□              |
|             |                       | TCNR□□□□□22<br>TSNR□□□□□22 |

| Insert size | Pitch | Number of threads | Hand of cut | External threading |          |        |        |      |                 |       |          | Internal threading |          |          |        |        |  |                 |   |          |   |  |  |  |  |  |
|-------------|-------|-------------------|-------------|--------------------|----------|--------|--------|------|-----------------|-------|----------|--------------------|----------|----------|--------|--------|--|-----------------|---|----------|---|--|--|--|--|--|
|             |       |                   |             | Cat. No.           | Grades   |        |        |      | Dimensions (mm) |       |          |                    | Cat. No. | Grades   |        |        |  | Dimensions (mm) |   |          |   |  |  |  |  |  |
|             |       |                   |             |                    | Uncoated | Cermet | Coated |      | d               | t     | $\ell_3$ | R                  |          | Uncoated | Cermet | Coated |  | d               | t | $\ell_3$ | R |  |  |  |  |  |
| TH10        | UX30  | NS530             | T313V       |                    |          |        |        | TH10 | UX30            | NS530 | T313V    |                    |          |          |        |        |  |                 |   |          |   |  |  |  |  |  |
| 11          | 0.5   | 48                | R           |                    |          |        |        |      |                 |       |          |                    |          |          |        |        |  |                 |   |          |   |  |  |  |  |  |
|             | ~1.5  | ~16               | L           |                    |          |        |        |      |                 |       |          |                    |          |          |        |        |  |                 |   |          |   |  |  |  |  |  |
| 16          | 0.5   | 48                | R           | 16ERA55            | ○        | ○      | ●      | ●    |                 | 0.9   | 0.7      |                    |          |          |        |        |  |                 |   |          |   |  |  |  |  |  |
|             | ~1.5  | ~16               | L           | 16ELA55            | ○        | ○      |        |      |                 |       |          |                    |          |          |        |        |  |                 |   |          |   |  |  |  |  |  |
|             | 0.5   | 48                | R           | 16ERAG55           |          | ●      | ●      | ●    | 9.525           |       | 1.1      |                    |          |          |        |        |  |                 |   |          |   |  |  |  |  |  |
|             | ~3.0  | ~8                | L           | 16ELAG55           |          |        |        |      |                 |       |          |                    |          |          |        |        |  |                 |   |          |   |  |  |  |  |  |
| 16          | 1.75  | 14                | R           | 16ERG55            | ○        | ○      | ●      | ●    |                 |       |          |                    |          |          |        |        |  |                 |   |          |   |  |  |  |  |  |
|             | ~3.0  | ~8                | L           | 16ELG55            | ○        | ○      |        |      |                 |       |          |                    |          |          |        |        |  |                 |   |          |   |  |  |  |  |  |
| 22          | 3.5   | 7~5               | R           | 22ERN55            | ○        | ●      | ●      | ●    | 12.70           | 2.5   | 1.7      | 0.50               |          |          |        |        |  |                 |   |          |   |  |  |  |  |  |
|             | ~5.0  |                   | L           | 22ELN55            |          |        |        |      |                 |       |          |                    |          |          |        |        |  |                 |   |          |   |  |  |  |  |  |

B-type Threading Inserts

■ ISO metric full-profile inserts with chipbreaker



Right hand insert for external threading shown

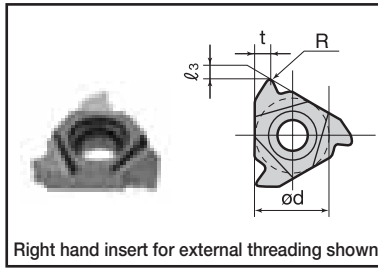
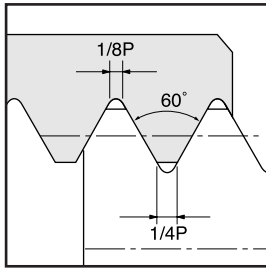
| Insert Size | Applicable toolholder |                             |
|-------------|-----------------------|-----------------------------|
|             | External              | Internal                    |
| 11          |                       | SNR□□□□□11□<br>SNR□□□□□11SC |
| 16          | CER/L□□□□□16□         | SNR/L□□□□□16□               |
|             | B-SER/L□□□□16         | CNR/L□□□□□16□               |
|             | B-CER/L□□□□16         | TSNR/L□□□□□16               |
|             | BC-SER/L□□□□16        | TCNR/L□□□□□16               |

| Insert size | Pitch | Number of threads | Hand of cut | External threading |        |  |  |       |                 |       |        | Internal threading |          |              |   |  |  |                 |   |        |   |  |  |  |  |  |
|-------------|-------|-------------------|-------------|--------------------|--------|--|--|-------|-----------------|-------|--------|--------------------|----------|--------------|---|--|--|-----------------|---|--------|---|--|--|--|--|--|
|             |       |                   |             | Cat. No.           | Grades |  |  |       | Dimensions (mm) |       |        |                    | Cat. No. | Grades       |   |  |  | Dimensions (mm) |   |        |   |  |  |  |  |  |
|             |       |                   |             |                    | Coated |  |  |       | d               | t     | $\ell$ | R                  |          | Coated       |   |  |  | d               | t | $\ell$ | R |  |  |  |  |  |
| AH740       |       |                   |             |                    |        |  |  | AH740 |                 |       |        |                    |          |              |   |  |  |                 |   |        |   |  |  |  |  |  |
| 11          | 0.5   |                   |             |                    |        |  |  |       |                 |       |        |                    |          |              |   |  |  |                 |   |        |   |  |  |  |  |  |
|             | 0.75  |                   |             |                    |        |  |  |       |                 |       |        |                    |          |              |   |  |  |                 |   |        |   |  |  |  |  |  |
|             | 1.0   |                   |             |                    |        |  |  |       |                 |       |        |                    |          |              |   |  |  |                 |   |        |   |  |  |  |  |  |
|             | 1.25  |                   |             |                    |        |  |  |       |                 |       |        |                    |          |              |   |  |  |                 |   |        |   |  |  |  |  |  |
|             | 1.5   |                   |             |                    |        |  |  |       |                 |       |        |                    |          |              |   |  |  |                 |   |        |   |  |  |  |  |  |
|             | 1.75  |                   |             |                    |        |  |  |       |                 |       |        |                    |          |              |   |  |  |                 |   |        |   |  |  |  |  |  |
|             | 2.0   |                   |             |                    |        |  |  |       |                 |       |        |                    |          |              |   |  |  |                 |   |        |   |  |  |  |  |  |
| 16          | 1.0   |                   | R           | 16ER10ISO-B        | ●      |  |  |       |                 |       |        |                    | 0.13     | 16NR10ISO-B  | ● |  |  |                 |   |        |   |  |  |  |  |  |
|             | 1.25  |                   | R           | 16ER125ISO-B       | ●      |  |  |       |                 | 0.9   | 0.7    |                    | 0.16     | 16NR125ISO-B | ● |  |  |                 |   |        |   |  |  |  |  |  |
|             | 1.5   |                   | R           | 16ER15ISO-B        | ●      |  |  |       |                 |       |        |                    | 0.19     | 16NR15ISO-B  | ● |  |  |                 |   |        |   |  |  |  |  |  |
|             | 1.75  |                   | R           | 16ER175ISO-B       | ●      |  |  |       |                 | 9.525 |        |                    | 0.22     | 16NR175ISO-B | ● |  |  |                 |   |        |   |  |  |  |  |  |
|             | 2.0   |                   | R           | 16ER20ISO-B        | ●      |  |  |       |                 |       |        |                    | 0.25     | 16NR20ISO-B  | ● |  |  |                 |   |        |   |  |  |  |  |  |
|             | 2.5   |                   | R           | 16ER25ISO-B        | ●      |  |  |       |                 |       |        |                    | 0.31     | 16NR25ISO-B  | ● |  |  |                 |   |        |   |  |  |  |  |  |
|             | 3.0   |                   | R           | 16ER30ISO-B        | ●      |  |  |       |                 |       |        |                    | 0.38     | 16NR30ISO-B  | ● |  |  |                 |   |        |   |  |  |  |  |  |



## ST-type Inserts

### ■ ISO metric full-profile inserts



Right hand insert for external threading shown

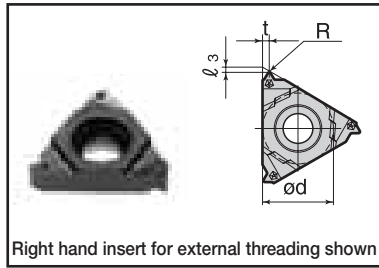
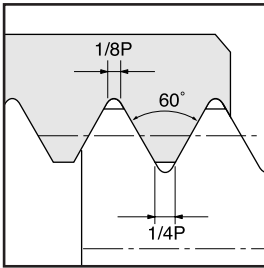
| Insert Size | Applicable toolholder |               |
|-------------|-----------------------|---------------|
|             | External              | Internal      |
| 11          |                       | SNR/L□□□□□11□ |
| 16          | CER/L□□□□□16□         | SNR/L□□□□□16□ |
|             | B-SER/L□□□□□16        | CNR/L□□□□□16□ |
|             | B-CER/L□□□□□16        | TSNR/L□□□□□16 |
|             | BC-SER/L□□□□□16       | TCNR/L□□□□□16 |
| 22          | CER/L□□□□□22□         | SNR/L□□□□□22□ |
|             |                       | TSNR/L□□□□□22 |
|             |                       | CNR/L□□□□□22□ |
|             |                       | TCNR/L□□□□□22 |
| 27          | CER/L□□□□□27□         | CNR/L□□□□□27□ |

TAC Threading Tools

| Insert size | Pitch | Number of threads | Hand of cut | External threading       |                        |        |        | Internal threading |        |                |                          |                          |                        |        |        |                 |        |                |   |        |        |     |      |
|-------------|-------|-------------------|-------------|--------------------------|------------------------|--------|--------|--------------------|--------|----------------|--------------------------|--------------------------|------------------------|--------|--------|-----------------|--------|----------------|---|--------|--------|-----|------|
|             |       |                   |             | Cat. No.                 | Grades                 |        |        | Dimensions (mm)    |        |                |                          | Cat. No.                 | Grades                 |        |        | Dimensions (mm) |        |                |   |        |        |     |      |
|             |       |                   |             |                          | Uncoated               | Cermet | Coated | d                  | t      | l <sub>3</sub> | R                        |                          | Uncoated               | Cermet | Coated | d               | t      | l <sub>3</sub> | R |        |        |     |      |
| UX30        | TH10  | NS530             | T313V       | UX30                     | TH10                   | NS530  | T313V  |                    |        |                |                          |                          |                        |        |        |                 |        |                |   |        |        |     |      |
| 11          | 0.5   |                   | R<br>L      |                          |                        |        |        |                    |        |                | 11NR05ISO<br>11NL05ISO   | ○<br>○                   | ○<br>○                 | ●<br>● | ●<br>● |                 |        |                |   | 6.35   | 0.5    | 1.2 | 0.04 |
|             | 0.75  |                   | R<br>L      |                          |                        |        |        |                    |        |                | 11NR075ISO<br>11NL075ISO |                          |                        | ●<br>● | ●<br>● |                 |        |                |   | 6.35   | 0.5    | 1.2 | 0.05 |
|             | 1.0   |                   | R<br>L      |                          |                        |        |        |                    |        |                | 11NR10ISO<br>11NL10ISO   | ○<br>○                   | ○<br>○                 | ●<br>● | ●<br>● |                 |        |                |   | 6.35   |        |     | 0.07 |
|             | 1.25  |                   | R<br>L      |                          |                        |        |        |                    |        |                | 11NR125ISO<br>11NL125ISO | ○<br>○                   |                        | ●<br>● | ●<br>● |                 |        |                |   | 6.35   |        |     | 0.09 |
|             | 1.5   |                   | R<br>L      |                          |                        |        |        |                    |        |                | 11NR15ISO<br>11NL15ISO   | ○<br>○                   | ○<br>○                 | ●<br>● | ●<br>● |                 |        |                |   | 6.35   | 0.9    | 0.7 | 0.11 |
|             | 1.75  |                   | R<br>L      |                          |                        |        |        |                    |        |                | 11NR175ISO<br>11NL175ISO |                          |                        | ●<br>● | ●<br>● |                 |        |                |   | 6.35   |        |     | 0.12 |
|             | 2.0   |                   | R<br>L      |                          |                        |        |        |                    |        |                | 11NR20ISO<br>11NL20ISO   | ○<br>○                   |                        | ●<br>● | ●<br>● |                 |        |                |   | 6.35   |        |     | 0.14 |
|             | 16    | 0.5               |             | R<br>L                   | 16ER05ISO<br>16EL05ISO | ○<br>○ | ○<br>○ | ●<br>●             | ●<br>● |                |                          |                          | 16NR05ISO<br>16NL05ISO | ○<br>○ |        | ●<br>●          | ●<br>● |                |   |        | 9.525  | 0.5 | 1.2  |
| 0.75        |       |                   | R<br>L      | 16ER075ISO<br>16EL075ISO | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●             |        |                |                          | 16NR075ISO<br>16NL075ISO |                        |        | ●<br>● | ●<br>●          |        |                |   | 9.525  | 0.5    | 1.2 | 0.05 |
| 1.0         |       |                   | R<br>L      | 16ER10ISO<br>16EL10ISO   | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●             |        |                |                          | 16NR10ISO<br>16NL10ISO   | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●          |        |                |   | 9.525  |        |     | 0.07 |
| 1.25        |       |                   | R<br>L      | 16ER125ISO<br>16EL125ISO | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●             |        |                |                          | 16NR125ISO<br>16NL125ISO | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●          |        |                |   | 9.525  | 0.9    | 0.7 | 0.09 |
| 1.5         |       |                   | R<br>L      | 16ER15ISO<br>16EL15ISO   | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●             | 9.525  |                |                          | 16NR15ISO<br>16NL15ISO   | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●          |        |                |   | 9.525  |        |     | 0.11 |
| 1.75        |       |                   | R<br>L      | 16ER175ISO<br>16EL175ISO | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●             |        |                |                          | 16NR175ISO<br>16NL175ISO |                        |        | ●<br>● | ●<br>●          |        |                |   | 9.525  |        |     | 0.12 |
| 2.0         |       |                   | R<br>L      | 16ER20ISO<br>16EL20ISO   | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●             |        |                |                          | 16NR20ISO<br>16NL20ISO   | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●          |        |                |   | 9.525  | 1.6    | 1.2 | 0.14 |
| 2.5         |       |                   | R<br>L      | 16ER25ISO<br>16EL25ISO   | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●             |        |                |                          | 16NR25ISO<br>16NL25ISO   | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●          |        |                |   | 9.525  | 1.6    | 1.2 | 0.18 |
| 3.0         |       |                   | R<br>L      | 16ER30ISO<br>16EL30ISO   | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●             |        |                |                          | 16NR30ISO<br>16NL30ISO   | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●          |        |                |   | 9.525  |        |     | 0.21 |
| 22          |       | 3.5               |             | R<br>L                   | 22ER35ISO<br>22EL35ISO | ●<br>○ | ○<br>○ | ●<br>●             | ●<br>● |                |                          |                          | 22NR35ISO<br>22NL35ISO | ●<br>○ | ○<br>○ | ●<br>●          | ●<br>● |                |   |        | 12.70  |     |      |
|             | 4.0   |                   | R<br>L      | 22ER40ISO<br>22EL40ISO   | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●             |        |                |                          | 22NR40ISO<br>22NL40ISO   | ●<br>○                 | ○<br>○ | ●<br>● | ●<br>●          |        |                |   | 12.70  | 2.5    | 1.7 | 0.28 |
|             | 4.5   |                   | R<br>L      | 22ER45ISO<br>22EL45ISO   |                        |        |        | ●<br>●             |        |                |                          | 22NR45ISO<br>22NL45ISO   |                        |        |        | ●<br>●          |        |                |   | 12.70  | 2.5    | 1.7 | 0.32 |
|             | 5.0   |                   | R<br>L      | 22ER50ISO<br>22EL50ISO   | ○<br>○                 | ○<br>○ | ●<br>● | ●<br>●             |        |                |                          | 22NR50ISO<br>22NL50ISO   | ○<br>○                 | ○<br>○ | ●<br>● | ●<br>●          |        |                |   | 12.70  |        |     | 0.35 |
|             | 27    | 5.5               |             | R<br>L                   | 27ER55ISO<br>27EL55ISO |        |        |                    | ○<br>○ | 15.875         | 3.2                      | 2.2                      | 27NR55ISO<br>27NL55ISO |        |        |                 |        |                |   |        | 15.875 | 3.2 | 2.2  |
| 6.0         |       |                   | R<br>L      | 27ER60ISO<br>27EL60ISO   | ○<br>○                 |        |        | ○<br>○             |        |                |                          | 27NR60ISO<br>27NL60ISO   | ○<br>○                 |        | ○<br>○ |                 |        |                |   | 15.875 |        |     | 0.42 |

# ST-type Inserts

## ■ Unified, full-profile inserts with chipbreaker



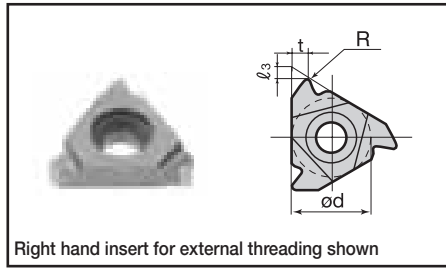
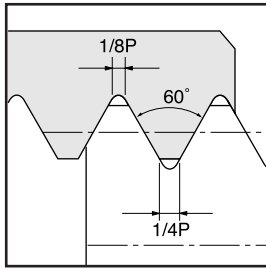
Right hand insert for external threading shown

| Insert Size | Applicable toolholder |            |
|-------------|-----------------------|------------|
|             | External              | Internal   |
| 16          | CER□□□□16□□           | SNR□□□□16□ |
|             | B-SER□□□□16           | TSNR□□□□16 |
|             | B-CER□□□□16           | CNR□□□□16□ |
|             | BC-SER□□□□16          | TCNR□□□□16 |

| Insert size | Pitch (Ref.) | Number of threads | Hand of cut | External threading |          |        |        |                 |       |                | Internal threading |          |            |        |        |                 |   |                |     |     |      |
|-------------|--------------|-------------------|-------------|--------------------|----------|--------|--------|-----------------|-------|----------------|--------------------|----------|------------|--------|--------|-----------------|---|----------------|-----|-----|------|
|             |              |                   |             | Cat. No.           | Grades   |        |        | Dimensions (mm) |       |                |                    | Cat. No. | Grades     |        |        | Dimensions (mm) |   |                |     |     |      |
|             |              |                   |             |                    | Uncoated | Cermet | Coated | ød              | t     | l <sub>3</sub> | R                  |          | Uncoated   | Cermet | Coated | ød              | t | l <sub>3</sub> | R   |     |      |
| 16          | (1.588)      | 16                | R           | 16ER16UN-B         |          |        | AH740  | ●               | 9.525 | 0.9            | 0.7                | 0.2      | 16NR16UN-B |        |        | AH740           | ● | 9.525          | 0.9 | 0.7 | 0.11 |
|             | (2.117)      | 12                | R           | 16ER12UN-B         |          |        | ●      |                 |       | 1.6            | 1.2                | 0.27     | 16NR12UN-B |        |        | ●               |   |                | 1.6 | 1.2 | 0.15 |

## ST-type Inserts

## ■ Unified, full-profile inserts



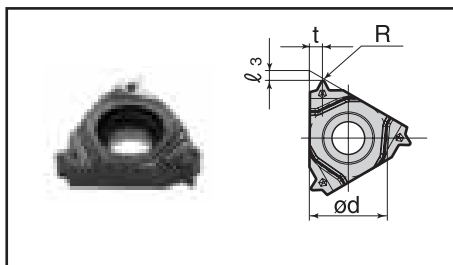
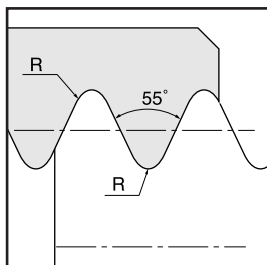
Right hand insert for external threading shown

| Insert Size | Applicable toolholder                                                                                                                                             |                                                                                                                                                                |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | External                                                                                                                                                          | Internal                                                                                                                                                       |
| 11          |                                                                                                                                                                   | SNR/L <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 11 |
| 16          | CER/L <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 16    | SNR/L <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 16 |
|             | B-SER/L <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 16  | CNR/L <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 16 |
|             | B-CER/L <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 16  | TSNR <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 16  |
| 22          | BC-SER/L <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 16 | TCNR <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 16  |
|             | CER/L <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 22    | SNR/L <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 22 |
| 27          | CER/L <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 27    | CNR/L <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> 27 |

| Insert size | Pitch   | Number of threads | Hand of cut | External threading |          |        |        | Internal threading |       |                |       |          |          |        |        |                 |   |                |   |  |
|-------------|---------|-------------------|-------------|--------------------|----------|--------|--------|--------------------|-------|----------------|-------|----------|----------|--------|--------|-----------------|---|----------------|---|--|
|             |         |                   |             | Cat. No.           | Grades   |        |        | Dimensions (mm)    |       |                |       | Cat. No. | Grades   |        |        | Dimensions (mm) |   |                |   |  |
|             |         |                   |             |                    | Uncoated | Cermet | Coated | d                  | t     | l <sub>3</sub> | R     |          | Uncoated | Cermet | Coated | d               | t | l <sub>3</sub> | R |  |
| UX30        | TH10    | NS530             | T313V       |                    |          |        |        | UX30               | TH10  | NS530          | T313V |          |          |        |        |                 |   |                |   |  |
| 11          | (0.794) | 32                | R           |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         |                   | L           |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             | (0.907) | 28                | R           |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         |                   | L           |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             | (1.058) | 24                | R           |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         |                   | L           |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             | (1.270) | 20                | R           |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         | L                 |             |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             | (1.411) | 18                | R           |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         | L                 |             |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             | (1.588) | 16                | R           |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         | L                 |             |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             | (1.814) | 14                | R           |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         | L                 |             |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
| 16          | (0.794) | 32                | R           | 16ER32UN           |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         |                   | L           | 16EL32UN           |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             | (0.907) | 28                | R           | 16ER28UN           |          |        |        |                    |       | 0.5            | 1.2   |          |          |        |        |                 |   |                |   |  |
|             |         |                   | L           | 16EL28UN           |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             | (1.058) | 24                | R           | 16ER24UN           |          | ●      | ●      |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         |                   | L           | 16EL24UN           |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             | (1.270) | 20                | R           | 16ER20UN           |          | ●      | ●      |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         |                   | L           | 16EL20UN           |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             | (1.411) | 18                | R           | 16ER18UN           |          | ●      | ●      |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         |                   | L           | 16EL18UN           |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         | 16                | R           | 16ER16UN           |          | ●      | ●      |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         |                   | L           | 16EL16UN           |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             | (1.814) | 14                | R           | 16ER14UN           |          | ●      | ○      |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         |                   | L           | 16EL14UN           |          |        |        |                    | 9.525 |                |       |          |          |        |        |                 |   |                |   |  |
|             | (1.954) | 13                | R           | 16ER13UN           |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         | L                 | 16EL13UN    |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
| (2.117)     | 12      | R                 | 16ER12UN    |                    |          | ○      | ●      |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         | L                 | 16EL12UN    |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
| (2.309)     | 11      | R                 | 16ER11UN    |                    |          | ●      | ●      |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         | L                 | 16EL11UN    |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
| (2.540)     | 10      | R                 | 16ER10UN    |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         | L                 | 16EL10UN    |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
| (2.822)     | 9       | R                 | 16ER9UN     |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         | L                 | 16EL9UN     |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
| (3.175)     | 8       | R                 | 16ER8UN     |                    |          | ●      | ●      |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         | L                 | 16EL8UN     |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
| 22          | (3.629) | 7                 | R           | 22ER7UN            |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         |                   | L           | 22EL7UN            |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             | (4.233) | 6                 | R           | 22ER6UN            |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         |                   | L           | 22EL6UN            |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
| (5.080)     | 5       | R                 | 22ER5UN     |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         | L                 | 22EL5UN     |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
| 27          | (5.644) | 4.5               | R           | 27ER45UN           |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         |                   | L           | 27EL45UN           |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             | (6.350) | 4                 | R           | 27ER4UN            |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |
|             |         | L                 | 27EL4UN     |                    |          |        |        |                    |       |                |       |          |          |        |        |                 |   |                |   |  |

# ST-type Inserts

■ Whitworth, full-profile inserts with chipbreaker

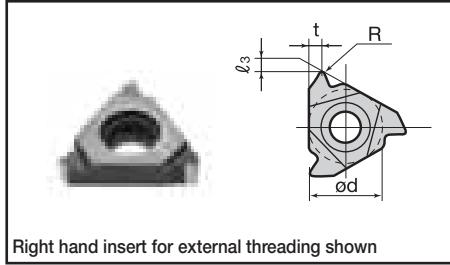
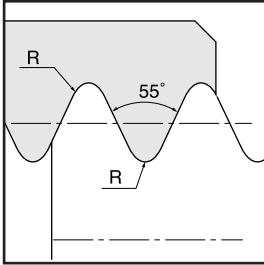


| Insert Size | Applicable toolholder |            |
|-------------|-----------------------|------------|
|             | External              | Internal   |
| 16          | CER□□□□16□            | SNR□□□□16□ |
|             | B-SER□□□16            | CNR□□□□16□ |
|             | B-CER□□□16            | TSNR□□□□16 |
|             | BC-SER□□□16           | TCNR□□□□16 |

| Insert size | Pitch (Ref.) | Number of threads | Hand of cut | External threading |          |        |        |                 |       |                |     | Internal threading |           |        |        |                 |   |                |     |     |      |
|-------------|--------------|-------------------|-------------|--------------------|----------|--------|--------|-----------------|-------|----------------|-----|--------------------|-----------|--------|--------|-----------------|---|----------------|-----|-----|------|
|             |              |                   |             | Cat. No.           | Grades   |        |        | Dimensions (mm) |       |                |     | Cat. No.           | Grades    |        |        | Dimensions (mm) |   |                |     |     |      |
|             |              |                   |             |                    | Uncoated | Cermet | Coated | ød              | t     | l <sub>3</sub> | R   |                    | Uncoated  | Cermet | Coated | ød              | t | l <sub>3</sub> | R   |     |      |
| 16          | (1.814)      | 14                | R           | 16ER14W-B          |          |        | AH740  | ●               | 9.525 | 1.6            | 1.2 | 0.23               | 16NR14W-B |        |        | AH740           | ● | 9.525          | 1.6 | 1.2 | 0.23 |
|             | (2.309)      | 11                | R           | 16ER11W-B          |          |        | ●      | 0.29            |       |                |     | 16NR11W-B          |           |        | ●      | 0.29            |   |                |     |     |      |

## ST-type Inserts

■ Whitworth, full-profile inserts



Right hand insert for external threading shown

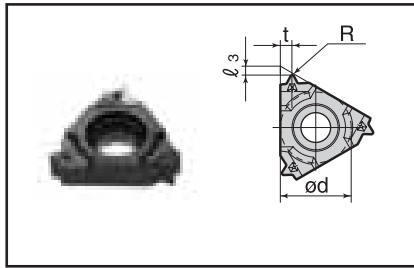
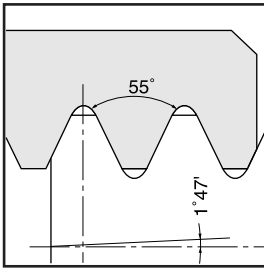
| Insert Size | Applicable toolholder |               |
|-------------|-----------------------|---------------|
|             | External              | Internal      |
| 11          |                       | SNR/L□□□□□11□ |
| 16          | CER/L□□□□□16□         | SNR/L□□□□□16□ |
|             | B-SER/L□□□□□16□       | CNR/L□□□□□16□ |
|             | BC-SER/L□□□□□16□      | TCNR□□□□□16□  |
| 22          | CER/L□□□□□22□         | SNR/L□□□□□22□ |
|             |                       | CNR/L□□□□□22□ |
| 27          | CER/L□□□□□27□         | CNR/L□□□□□27□ |

TAC Threading Tools

| Insert size | Pitch   | Number of threads | Hand of cut | External threading |          |        |        |      |                 |        |                |     |                    | Internal threading |        |        |        |                 |        |                |       |      |      |
|-------------|---------|-------------------|-------------|--------------------|----------|--------|--------|------|-----------------|--------|----------------|-----|--------------------|--------------------|--------|--------|--------|-----------------|--------|----------------|-------|------|------|
|             |         |                   |             | Cat. No.           | Grades   |        |        |      | Dimensions (mm) |        |                |     | Cat. No.           | Grades             |        |        |        | Dimensions (mm) |        |                |       |      |      |
|             |         |                   |             |                    | Uncoated | Cermet | Coated |      | d               | t      | l <sub>3</sub> | R   |                    | Uncoated           | Cermet | Coated |        | d               | t      | l <sub>3</sub> | R     |      |      |
| UX30        | TH10    | NS530             | T313V       |                    |          |        |        | UX30 | TH10            | NS530  | T313V          |     |                    |                    |        |        |        |                 |        |                |       |      |      |
| 11          | (1.337) | 19                | R<br>L      |                    |          |        |        |      |                 |        |                |     | 11NR19W<br>11NL19W | ●<br>○             | ○<br>● | ●<br>● | ●<br>● | 6.35            | 0.9    |                | 0.17  |      |      |
|             | (1.814) | 14                | R<br>L      |                    |          |        |        |      |                 |        |                |     | 11NR14W<br>11NL14W | ●<br>○             | ○<br>● | ●<br>● | ●<br>● |                 |        |                |       | 0.23 |      |
| 16          | (0.907) | 28                | R<br>L      | 16ER28W<br>16EL28W |          |        | ●      | ●    |                 |        |                |     | 16NR28W<br>16NL28W |                    |        |        |        | 9.525           | 0.7    | 0.8            | 0.11  |      |      |
|             | (0.970) | 26                | R<br>L      | 16ER26W<br>16EL26W |          |        |        |      |                 |        |                |     | 16NR26W<br>16NL26W |                    |        |        |        |                 |        |                | 0.12  |      |      |
|             | (1.270) | 20                | R<br>L      | 16ER20W<br>16EL20W |          |        | ●      |      |                 |        |                |     | 16NR20W<br>16NL20W |                    |        | ○      |        |                 |        |                | 0.16  |      |      |
|             | (1.337) | 19                | R<br>L      | 16ER19W<br>16EL19W | ●        |        | ●      |      |                 |        |                |     | 16NR19W<br>16NL19W |                    |        |        | ●      |                 |        |                | 0.17  |      |      |
|             | (1.411) | 18                | R<br>L      | 16ER18W<br>16EL18W |          |        |        | ○    |                 |        |                |     | 16NR18W<br>16NL18W |                    |        | ○      |        |                 |        |                | 0.18  |      |      |
|             | (1.588) | 16                | R<br>L      | 16ER16W<br>16EL16W | ○        |        | ●      | ●    |                 |        |                |     | 16NR16W<br>16NL16W |                    |        | ○      | ●      |                 |        |                | 0.20  |      |      |
|             | (1.814) | 14                | R<br>L      | 16ER14W<br>16EL14W | ●        | ○      | ●      | ●    |                 |        |                |     | 16NR14W<br>16NL14W | ●                  | ○      | ○      | ●      |                 |        |                | 9.525 | 0.23 |      |
|             | (2.117) | 12                | R<br>L      | 16ER12W<br>16EL12W | ○        |        | ●      | ●    |                 |        |                |     | 16NR12W<br>16NL12W |                    |        | ○      | ●      |                 |        |                | 0.27  |      |      |
|             | (2.309) | 11                | R<br>L      | 16ER11W<br>16EL11W | ●        | ○      | ●      | ●    |                 |        |                |     | 16NR11W<br>16NL11W | ●                  | ○      | ○      | ●      |                 |        |                | 1.6   | 1.2  | 0.29 |
|             | (2.540) | 10                | R<br>L      | 16ER10W<br>16EL10W |          |        |        | ○    | ●               |        |                |     | 16NR10W<br>16NL10W |                    |        | ○      | ●      |                 |        |                | 0.32  |      |      |
| 22          | (2.822) | 9                 | R<br>L      | 16ER9W<br>16EL9W   |          |        |        |      |                 |        |                |     | 16NR9W<br>16NL9W   |                    |        |        |        | 0.36            |        |                |       |      |      |
|             | (3.175) | 8                 | R<br>L      | 16ER8W<br>16EL8W   |          |        |        | ○    | ●               |        |                |     | 16NR8W<br>16NL8W   |                    |        | ○      | ●      | 0.40            |        |                |       |      |      |
|             | (3.629) | 7                 | R<br>L      | 22ER7W<br>22EL7W   |          |        |        |      |                 |        |                |     | 22NR7W<br>22NL7W   |                    |        |        | ●      | 0.45            |        |                |       |      |      |
| 27          | (4.233) | 6                 | R<br>L      | 22ER6W<br>22EL6W   |          |        |        |      |                 | 12.70  | 2.5            | 1.7 | 0.53               | 22NR6W<br>22NL6W   |        |        |        |                 | 12.70  | 2.5            | 1.7   | 0.53 |      |
|             | (5.080) | 5                 | R<br>L      | 22ER5W<br>22EL5W   |          |        |        |      |                 |        |                |     | 22NR5W<br>22NL5W   |                    |        |        |        | 0.64            |        |                |       |      |      |
| 27          | (5.644) | 4.5               | R<br>L      | 27ER45W<br>27EL45W |          |        |        |      |                 |        |                |     | 27NR45W<br>27NL45W |                    |        |        |        | 0.71            |        |                |       |      |      |
|             | (6.350) | 4                 | R<br>L      | 27ER4W<br>27EL4W   |          |        |        |      |                 | 15.875 | 3.2            | 2.2 | 0.79               | 27NR4W<br>27NL4W   |        |        |        |                 | 15.875 | 3.2            | 2.2   | 0.79 |      |

# ST-type Inserts

■ PT (JIS taper pipe thread), full-profile inserts with chipbreaker

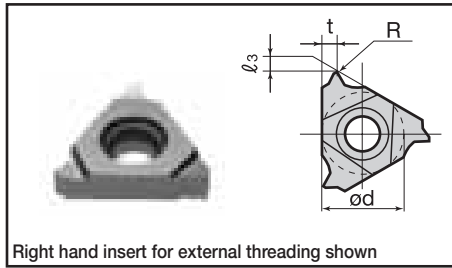
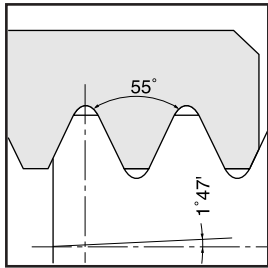


| Insert Size | Applicable toolholder                                 |                          |
|-------------|-------------------------------------------------------|--------------------------|
|             | External                                              | Internal                 |
| 16          | CER□□□□16□<br>B-SER□□□16<br>B-CER□□□16<br>BC-SER□□□16 | SNR□□□□16□<br>CNR□□□□16□ |

| Insert size | Pitch (Ref.) | Number of threads | Hand of cut | External threading |          |        |        | Internal threading |     |                |      |            |          |        |        |                 |     |                |      |
|-------------|--------------|-------------------|-------------|--------------------|----------|--------|--------|--------------------|-----|----------------|------|------------|----------|--------|--------|-----------------|-----|----------------|------|
|             |              |                   |             | Cat. No.           | Grades   |        |        | Dimensions (mm)    |     |                |      | Cat. No.   | Grades   |        |        | Dimensions (mm) |     |                |      |
|             |              |                   |             |                    | Uncoated | Cermet | Coated | ød                 | t   | l <sub>3</sub> | R    |            | Uncoated | Cermet | Coated | ød              | t   | l <sub>3</sub> | R    |
| 16          | (1.814)      | 14                | R           | 16ER14PT-B         |          |        | AH740  | 9.525              | 1.6 | 1.2            | 0.16 | 16NR14PT-B |          |        | AH740  | 9.525           | 1.6 | 1.2            | 0.16 |
|             | (2.309)      | 11                | R           | 16ER11PT-B         |          |        |        |                    |     |                | 0.26 | 16NR11PT-B |          |        |        |                 |     |                | 0.26 |

## ST-type Inserts

### ■ PT, full-profile inserts (JIS taper pipe thread)

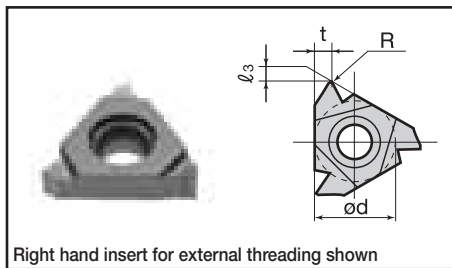
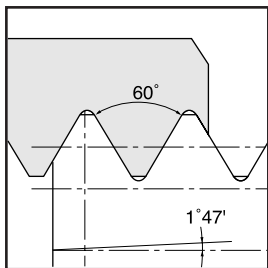


Right hand insert for external threading shown

| Insert Size | Applicable toolholder |               |
|-------------|-----------------------|---------------|
|             | External              | Internal      |
| 11          |                       | SNR/L□□□□□11□ |
| 16          | CER/L□□□□□16□         | SNR/L□□□□□16□ |
|             | B-SER/L□□□□□16        | CNR/L□□□□□16□ |
|             | B-CER/L□□□□□16        | TSNR□□□□□16   |
|             | BC-SER/L□□□□□16       | TCNR□□□□□16   |
| 22          |                       |               |
| 27          |                       |               |

| Insert size | Pitch   | Number of threads | Hand of cut | External threading   |          |        |        |                 |       |                |     | Internal threading |                      |        |        |                 |                      |                |     |     |      |       |     |      |      |
|-------------|---------|-------------------|-------------|----------------------|----------|--------|--------|-----------------|-------|----------------|-----|--------------------|----------------------|--------|--------|-----------------|----------------------|----------------|-----|-----|------|-------|-----|------|------|
|             |         |                   |             | Cat. No.             | Grades   |        |        | Dimensions (mm) |       |                |     | Cat. No.           | Grades               |        |        | Dimensions (mm) |                      |                |     |     |      |       |     |      |      |
|             |         |                   |             |                      | Uncoated | Cermet | Coated | d               | t     | l <sub>3</sub> | R   |                    | Uncoated             | Cermet | Coated | d               | t                    | l <sub>3</sub> | R   |     |      |       |     |      |      |
| UX30        | TH10    | NS530             | T313V       | UX30                 | TH10     | NS530  | T313V  | d               | t     | l <sub>3</sub> | R   | UX30               | TH10                 | NS530  | T313V  | d               | t                    | l <sub>3</sub> | R   |     |      |       |     |      |      |
| 11          | (1.337) | 19                | R<br>L      |                      |          |        |        |                 |       |                |     |                    | 11NR19PT<br>11NL19PT | ○      | ○      | ○               | ○                    | 6.35           | 0.9 | 0.7 | 0.14 |       |     |      |      |
|             | (1.814) | 14                | R<br>L      |                      |          |        |        |                 |       |                |     |                    | 11NR14PT<br>11NL14PT | ○      | ○      | ○               | ○                    |                |     |     |      |       |     | 0.16 |      |
| 16          | (0.907) | 28                | R<br>L      | 16ER28PT<br>16EL28PT | ○        |        | ○      | ○               | 9.525 | 0.9            | 0.7 | 0.09               |                      |        |        |                 |                      |                |     |     |      |       |     |      |      |
|             | (1.337) | 19                | R<br>L      | 16ER19PT<br>16EL19PT | ○        |        | ○      | ○               |       |                |     |                    |                      |        |        | 0.14            |                      |                |     |     |      |       |     |      |      |
|             | (1.814) | 14                | R<br>L      | 16ER14PT<br>16EL14PT | ○        |        | ○      | ○               |       |                |     |                    |                      |        |        | 0.16            | 16NR14PT<br>16NL14PT | ○              | ○   | ○   | ○    | 9.525 | 1.6 | 1.2  | 0.16 |
|             | (2.309) | 11                | R<br>L      | 16ER11PT<br>16EL11PT | ○        |        | ○      | ○               |       |                |     |                    |                      |        |        | 0.26            | 16NR11PT<br>16NL11PT | ○              | ○   | ○   | ○    |       |     |      |      |

### ■ NPT, full-profile inserts



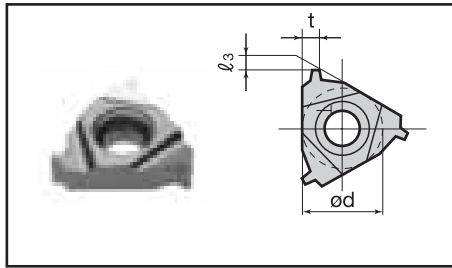
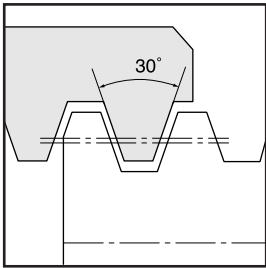
Right hand insert for external threading shown

| Insert Size | Applicable toolholder |               |
|-------------|-----------------------|---------------|
|             | External              | Internal      |
| 11          |                       |               |
| 16          | CER/L□□□□□16□         | SNR/L□□□□□16□ |
|             | B-SER/L□□□□□16        | CNR/L□□□□□16□ |
|             | B-CER/L□□□□□16        |               |
|             | BC-SER/L□□□□□16       |               |
| 22          |                       |               |
| 27          |                       |               |

| Insert size | Pitch   | Number of threads | Hand of cut | External threading       |          |        |        |                 |       |                |     | Internal threading |                        |        |        |                 |       |                |     |      |                          |   |   |   |   |     |     |      |      |
|-------------|---------|-------------------|-------------|--------------------------|----------|--------|--------|-----------------|-------|----------------|-----|--------------------|------------------------|--------|--------|-----------------|-------|----------------|-----|------|--------------------------|---|---|---|---|-----|-----|------|------|
|             |         |                   |             | Cat. No.                 | Grades   |        |        | Dimensions (mm) |       |                |     | Cat. No.           | Grades                 |        |        | Dimensions (mm) |       |                |     |      |                          |   |   |   |   |     |     |      |      |
|             |         |                   |             |                          | Uncoated | Cermet | Coated | d               | t     | l <sub>3</sub> | R   |                    | Uncoated               | Cermet | Coated | d               | t     | l <sub>3</sub> | R   |      |                          |   |   |   |   |     |     |      |      |
| UX30        | TH10    | NS530             | T313V       | UX30                     | TH10     | NS530  | T313V  | d               | t     | l <sub>3</sub> | R   | UX30               | TH10                   | NS530  | T313V  | d               | t     | l <sub>3</sub> | R   |      |                          |   |   |   |   |     |     |      |      |
| 16          | (0.941) | 27                | R<br>L      | 16ER27NPT<br>16EL27NPT   |          |        |        |                 | 9.525 | 0.5            | 1.2 | 0.02               | 16NR27NPT<br>16NL27NPT |        |        |                 | 9.525 | 0.5            | 1.2 | 0.02 |                          |   |   |   |   |     |     |      |      |
|             | (1.411) | 18                | R<br>L      | 16ER18NPT<br>16EL18NPT   | ○        |        | ●      | ●               |       |                |     |                    |                        |        |        | 0.03            |       |                |     |      | 16NR18NPT<br>16NL18NPT   |   |   |   |   |     |     | 0.03 |      |
|             | (1.814) | 14                | R<br>L      | 16ER14NPT<br>16EL14NPT   | ○        |        | ●      | ●               |       |                |     |                    |                        |        |        | 0.04            |       |                |     |      | 16NR14NPT<br>16NL14NPT   | ○ | ○ | ● | ● |     |     |      | 0.04 |
|             | (2.209) | 11.5              | R<br>L      | 16ER115NPT<br>16EL115NPT | ○        |        | ●      | ●               |       |                |     |                    |                        |        | 1.2    | 0.05            |       |                |     |      | 16NR115NPT<br>16NL115NPT | ○ | ○ | ● | ● | 1.6 | 1.2 | 0.05 |      |
|             | (3.175) | 8                 | R<br>L      | 16ER8NPT<br>16EL8NPT     |          |        |        |                 |       |                |     |                    |                        |        | 1.6    | 0.07            |       |                |     |      | 16NR8NPT<br>16NL8NPT     | ○ | ○ |   |   |     |     |      |      |

# ST-type Inserts

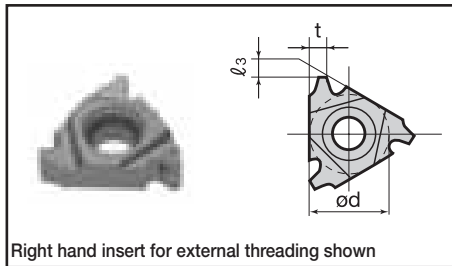
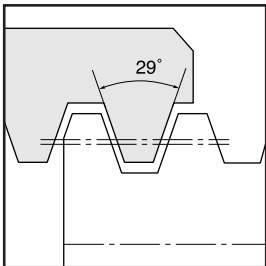
## ■ 30° Trapezoidal (DIN103)



| Insert Size | Applicable toolholder |               |
|-------------|-----------------------|---------------|
|             | External              | Internal      |
| 11          |                       |               |
| 16          | CER/L□□□□□16□         | SNR/L□□□□□16□ |
|             | B-SER/L□□□□16         | CNR/L□□□□□16□ |
|             | B-CER/L□□□□16         | TSNR□□□□□16   |
|             | BC-SER/L□□□□16        | TCNR□□□□□16   |
| 22          | CER/L□□□□□22□         | CNR/L□□□□□22□ |
|             |                       | TSNR□□□□□22   |
| 27          | CER/L□□□□□27□         | CNR/L□□□□□27□ |
|             |                       |               |

| Insert size | Pitch | Number of threads | Hand of cut | External threading |          |        |        |      |                 |       |                | Internal threading |          |          |        |          |          |                 |     |                |   |
|-------------|-------|-------------------|-------------|--------------------|----------|--------|--------|------|-----------------|-------|----------------|--------------------|----------|----------|--------|----------|----------|-----------------|-----|----------------|---|
|             |       |                   |             | Cat. No.           | Grades   |        |        |      | Dimensions (mm) |       |                |                    | Cat. No. | Grades   |        |          |          | Dimensions (mm) |     |                |   |
|             |       |                   |             |                    | Uncoated | Cermet | Coated |      | d               | t     | l <sub>3</sub> | R                  |          | Uncoated | Cermet | Coated   |          | d               | t   | l <sub>3</sub> | R |
| UX30        | TH10  | NS530             | T313V       |                    |          |        |        | UX30 | TH10            | NS530 | T313V          |                    |          |          |        |          |          |                 |     |                |   |
| 16          | 1.5   | 12                | R           | 16ER15TR           |          |        |        |      | 9.525           | 0.8   | 0.9            | -                  | 16NR15TR |          |        |          |          | 9.525           | 0.8 | 0.9            | - |
|             |       |                   | L           | 16EL15TR           |          |        |        |      |                 |       |                |                    |          |          |        |          |          |                 |     |                |   |
|             | 2.0   | 10                | R           | 16ER20TR           | ●        |        | ●      | ●    |                 |       |                |                    |          | 16NR20TR |        |          | ●        | ●               |     |                |   |
| L           |       |                   | 16EL20TR    |                    |          |        |        |      |                 |       |                |                    | 16NL20TR |          |        |          |          |                 |     |                |   |
| 22          | 3.0   | 8                 | R           | 16ER30TR           | ●        |        | ●      | ●    | 1.6             | 1.3   | -              | 16NR30TR           | ○        |          | ●      | ●        |          | 1.6             | 1.3 | -              |   |
|             |       |                   | L           | 16EL30TR           |          |        |        |      |                 |       |                |                    |          |          |        | 16NL30TR |          |                 |     |                |   |
|             | 4.0   | 6                 | R           | 22ER40TR           | ●        |        | ●      | ●    | 12.70           | 2.5   | 2.0            | -                  | 22NR40TR | ○        |        | ●        | ●        | 12.70           | 2.5 | 2.0            | - |
| L           |       |                   | 22EL40TR    |                    |          |        |        |      |                 |       |                |                    |          |          |        | 22NL40TR |          |                 |     |                |   |
| 27          | 5.0   | 4                 | R           | 22ER50TR           | ○        |        | ●      | ●    |                 |       |                |                    | 22NR50TR | ○        |        | ●        | ●        |                 |     |                |   |
|             |       |                   | L           | 22EL50TR           |          |        |        |      |                 |       |                |                    | 22NL50TR |          |        |          |          |                 |     |                |   |
| 27          | 6.0   | 4                 | R           | 27ER60TR           | ○        |        |        | ○    | 15.875          | 3.2   | 2.5            | -                  | 27NR60TR |          |        |          |          | 15.875          | 3.2 | 2.5            | - |
|             |       |                   | L           | 27EL60TR           |          |        |        |      |                 |       |                |                    |          |          |        |          | 27NL60TR |                 |     |                |   |

## ■ 29° Trapezoidal (ACME)



Right hand insert for external threading shown

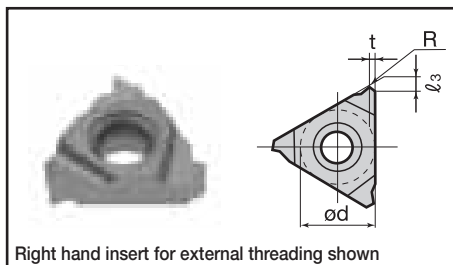
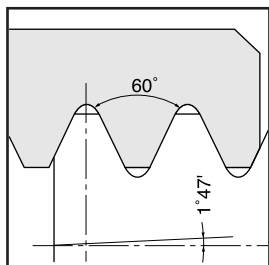
| Insert Size | Applicable toolholder |               |
|-------------|-----------------------|---------------|
|             | External              | Internal      |
| 11          |                       |               |
| 16          | CER/L□□□□□16□         | SNR/L□□□□□16□ |
|             | B-SER/L□□□□16         | CNR/L□□□□□16□ |
|             | B-CER/L□□□□16         | TSNR□□□□□16   |
|             | BC-SER/L□□□□16        | TCNR□□□□□16   |
| 22          | CER/L□□□□□22□         | CNR/L□□□□□22□ |
|             |                       | TSNR□□□□□22   |
| 27          | CER/L□□□□□27□         | CNR/L□□□□□27□ |
|             |                       |               |

| Insert size | Pitch   | Number of threads | Hand of cut | External threading |          |        |        |      |                 |       |                | Internal threading |            |            |        |        |           |                 |     |                |   |
|-------------|---------|-------------------|-------------|--------------------|----------|--------|--------|------|-----------------|-------|----------------|--------------------|------------|------------|--------|--------|-----------|-----------------|-----|----------------|---|
|             |         |                   |             | Cat. No.           | Grades   |        |        |      | Dimensions (mm) |       |                |                    | Cat. No.   | Grades     |        |        |           | Dimensions (mm) |     |                |   |
|             |         |                   |             |                    | Uncoated | Cermet | Coated |      | d               | t     | l <sub>3</sub> | R                  |            | Uncoated   | Cermet | Coated |           | d               | t   | l <sub>3</sub> | R |
| UX30        | TH10    | NS530             | T313V       |                    |          |        |        | UX30 | TH10            | NS530 | T313V          |                    |            |            |        |        |           |                 |     |                |   |
| 16          | (2.117) | 12                | R           | 16ER12ACME         |          |        |        |      | 9.525           | 1.6   | 1.3            | -                  | 16NR10ACME |            |        |        |           | 9.525           | 1.6 | 1.3            | - |
|             |         |                   | L           | 16EL12ACME         |          |        |        |      |                 |       |                |                    |            |            |        |        |           |                 |     |                |   |
|             | (2.540) | 10                | R           | 16ER10ACME         |          |        |        |      |                 |       |                |                    |            | 16NR10ACME |        |        |           |                 |     |                |   |
| L           |         |                   | 16EL10ACME  |                    |          |        |        |      |                 |       |                |                    | 16NL10ACME |            |        |        |           |                 |     |                |   |
| 22          | (3.175) | 8                 | R           | 16ER8ACME          | ○        |        |        | ○    | 12.70           | 2.5   | 2.0            | -                  | 16NR8ACME  | ○          |        |        | ○         | 12.70           | 2.5 | 2.0            | - |
|             |         |                   | L           | 16EL8ACME          |          |        |        |      |                 |       |                |                    |            |            |        |        | 16NL8ACME |                 |     |                |   |
|             | (4.233) | 6                 | R           | 22ER6ACME          | ○        |        |        | ○    |                 |       |                |                    |            | 22NR6ACME  |        |        |           | ○               |     |                |   |
| L           |         |                   | 22EL6ACME   |                    |          |        |        |      |                 |       |                |                    | 22NL6ACME  |            |        |        |           |                 |     |                |   |
| 27          | (5.080) | 4                 | R           | 22ER5ACME          | ○        |        |        | ○    |                 |       |                |                    | 22NR5ACME  |            |        |        | ○         |                 |     |                |   |
|             |         |                   | L           | 22EL5ACME          |          |        |        |      |                 |       |                |                    | 22NL5ACME  |            |        |        |           |                 |     |                |   |
| 27          | (6.350) | 4                 | R           | 27ER4ACME          |          |        |        |      | 15.875          | 3.0   | 2.5            | -                  | 27NR4ACME  |            |        |        |           | 15.875          | 3.0 | 2.5            | - |
|             |         |                   | L           | 27EL4ACME          |          |        |        |      |                 |       |                |                    |            |            |        |        | 27NL4ACME |                 |     |                |   |



## ST-type Inserts

### Round

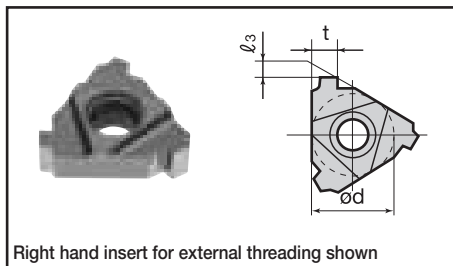
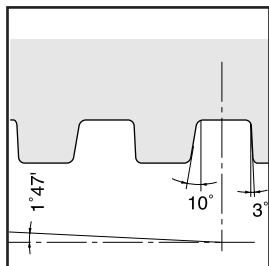


Right hand insert for external threading shown

| Insert Size | Applicable toolholder                                                   |                                |
|-------------|-------------------------------------------------------------------------|--------------------------------|
|             | External                                                                | Internal                       |
| 11          |                                                                         |                                |
| 16          | CER/L□□□□□16□<br>B-SER/L□□□□□16□<br>B-CER/L□□□□□16□<br>BC-SER/L□□□□□16□ | SNR/L□□□□□16□<br>CNR/L□□□□□16□ |
| 22          |                                                                         |                                |
| 27          |                                                                         |                                |

| Insert size | Pitch | Number of threads | Hand of cut | External threading |          |        |        |  |                 |      |                | Internal threading |            |          |        |        |       |                 |     |                |   |
|-------------|-------|-------------------|-------------|--------------------|----------|--------|--------|--|-----------------|------|----------------|--------------------|------------|----------|--------|--------|-------|-----------------|-----|----------------|---|
|             |       |                   |             | Cat. No.           | Grades   |        |        |  | Dimensions (mm) |      |                |                    | Cat. No.   | Grades   |        |        |       | Dimensions (mm) |     |                |   |
|             |       |                   |             |                    | Uncoated | Cermet | Coated |  | d               | t    | l <sub>3</sub> | R                  |            | Uncoated | Cermet | Coated |       | d               | t   | l <sub>3</sub> | R |
| UX30        | TH10  | NS530             | T313V       |                    |          |        |        |  |                 | UX30 | TH10           | NS530              | T313V      |          |        |        |       |                 |     |                |   |
| 16          | 2.54  | 10                | R           | 16ER10RAPI         |          |        |        |  | 9.525           | 1.6  | 1.2            | 0.36               | 16NR10RAPI |          |        |        | 9.525 | 1.6             | 1.2 | 0.36           |   |
|             |       |                   | L           | 16EL10RAPI         |          |        |        |  |                 |      |                |                    | 16NL10RAPI |          |        |        |       |                 |     |                |   |
|             | 3.175 | 8                 | R           | 16ER8RAPI          |          |        |        |  | 9.525           | 1.6  | 1.2            | 0.43               | 16NR8RAPI  |          |        |        | 9.525 | 1.6             | 1.2 | 0.43           |   |
|             |       |                   | L           | 16EL8RAPI          |          |        |        |  |                 |      |                |                    | 16NL8RAPI  |          |        |        |       |                 |     |                |   |

### Buttress



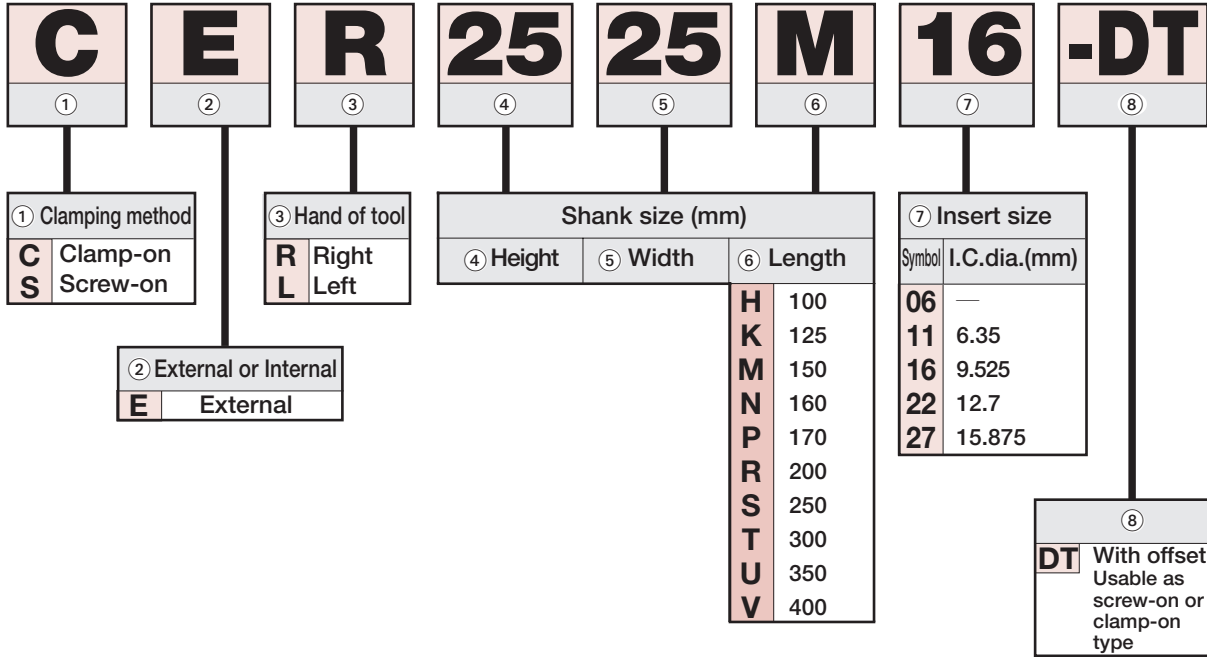
Right hand insert for external threading shown

| Insert Size | Applicable toolholder |                                |
|-------------|-----------------------|--------------------------------|
|             | External              | Internal                       |
| 11          |                       |                                |
| 16          |                       |                                |
| 22          | CER/L□□□□□22□         | SNR/L□□□□□22□<br>CNR/L□□□□□22□ |
| 27          |                       |                                |

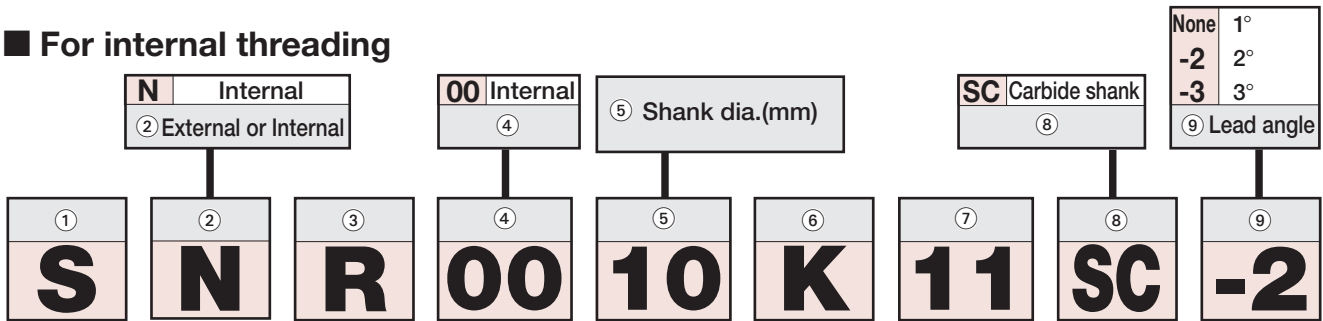
| Insert size | Pitch | Number of threads | Hand of cut | External threading |          |        |        |  |                 |      |                | Internal threading |           |          |        |        |       |                 |     |                |   |
|-------------|-------|-------------------|-------------|--------------------|----------|--------|--------|--|-----------------|------|----------------|--------------------|-----------|----------|--------|--------|-------|-----------------|-----|----------------|---|
|             |       |                   |             | Cat. No.           | Grades   |        |        |  | Dimensions (mm) |      |                |                    | Cat. No.  | Grades   |        |        |       | Dimensions (mm) |     |                |   |
|             |       |                   |             |                    | Uncoated | Cermet | Coated |  | d               | t    | l <sub>3</sub> | R                  |           | Uncoated | Cermet | Coated |       | d               | t   | l <sub>3</sub> | R |
| UX30        | TH10  | NS530             | T313V       |                    |          |        |        |  |                 | UX30 | TH10           | NS530              | T313V     |          |        |        |       |                 |     |                |   |
| 22          | 5.08  | 5                 | R           | 22ER5BAPI          |          |        |        |  | 12.70           | 3.72 | 2.2            | -                  | 22NR5BAPI |          |        |        | 12.70 | 3.45            | 2.2 | -              |   |
|             |       |                   | L           | 22EL5BAPI          |          |        |        |  |                 |      |                |                    | 22NL5BAPI |          |        |        |       |                 |     |                |   |

# Nomenclature for ST-type Threading Toolholder

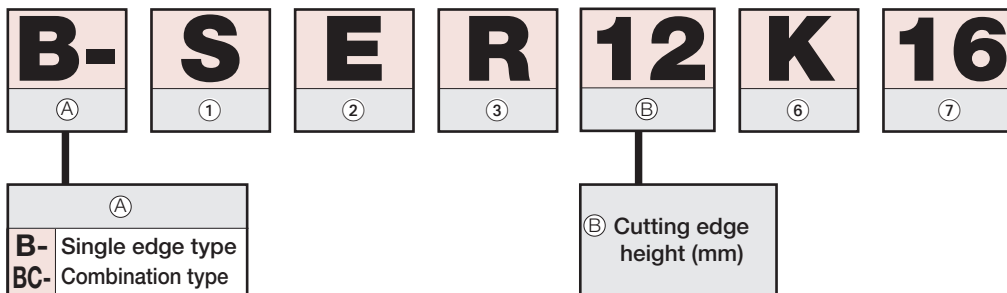
## ■ For external threading



## ■ For internal threading

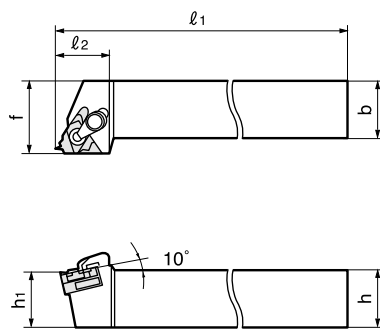
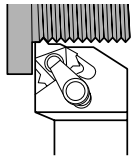


## ■ For gang tooling



## ST-type Toolholder (Clamp-on type)

External threading

**CE R/L T**

Right hand (R) shown

| Cat. No.      | Stock |   | Insert     | Dimensions (mm) |    |                |                |                |    | Clamping set | Shim set       |         | Clamping screw | Wrench |       |
|---------------|-------|---|------------|-----------------|----|----------------|----------------|----------------|----|--------------|----------------|---------|----------------|--------|-------|
|               | R     | L |            | h               | b  | l <sub>1</sub> | l <sub>2</sub> | h <sub>1</sub> | f  |              | f <sub>1</sub> | R       |                |        | L     |
| CER/L1212H16T |       |   | 16ER/L□□□□ | 12              | 12 | 100            | 22             | 12             | 16 | —            | CSP16          | GXE16-1 | GXN16-1        | —      | T-15F |
| CER/L1616H16T |       |   |            | 16              | 16 | 100            | 22             | 16             | 20 | —            |                |         |                |        |       |
| CER/L2020K16T |       |   |            | 20              | 20 | 125            | 22             | 20             | 25 | —            |                |         |                |        |       |
| CER/L2525M16T |       |   |            | 25              | 25 | 150            | 25             | 25             | 32 | —            |                |         |                |        |       |
| CER/L3232P16T | ●     |   |            | 32              | 32 | 170            | 32             | 32             | 40 | —            |                |         |                |        |       |
| CER/L2525M22T |       |   | 22ER/L□□□□ | 25              | 25 | 150            | 28             | 25             | 32 | —            | CSP22          | NXE22-1 | NXN22-1        | —      | T-20F |
| CER/L3232P22T | ●     |   |            | 32              | 32 | 170            | 32             | 32             | 40 | —            |                |         |                |        |       |
| CER/L4040R22T |       |   |            | 40              | 40 | 200            | 36             | 40             | 50 | —            |                |         |                |        |       |
| CER/L2525M27T | ○     |   | 27ER/L□□□□ | 25              | 25 | 150            | 34             | 25             | 32 | —            | CSP27          | NXE27-1 | NXN27-1        | —      | P-4   |
| CER/L3232P27T | ○     |   |            | 32              | 32 | 170            | 34             | 32             | 40 | —            |                |         |                |        |       |
| CER/L4040R27T |       |   |            | 40              | 40 | 200            | 40             | 40             | 50 | —            |                |         |                |        |       |

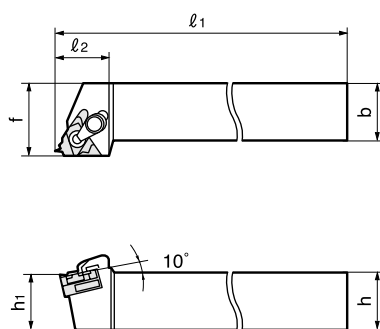
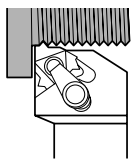
Notes:

- Clamping sets for CER/L type consist of a clamp and a clamping screw.
- Shim sets for CER/L type consist of a shim and a shim screw.
- Standard shims for CER/L type can be used for both the left hand and right-hand toolholder. Use either of the sides depending on the hand.

## CE-type Toolholder

Dual clamping: Screw-on and clamp-on

External threading

**CE R/L DT**

Right hand (R) shown

| Cat. No.       | Stock |   | Insert     | Dimensions (mm) |    |                |                |                |    | Clamping set | Shim  | Shim screw | Clamping screw | Wrench     |                       |
|----------------|-------|---|------------|-----------------|----|----------------|----------------|----------------|----|--------------|-------|------------|----------------|------------|-----------------------|
|                | R     | L |            | h               | b  | l <sub>1</sub> | l <sub>2</sub> | h <sub>1</sub> | f  |              |       |            |                |            | f <sub>1</sub>        |
| CER/L1212H16DT | ●     | ○ | 16ER/L□□□□ | 12              | 12 | 100            | 22             | 12             | 16 | —            | CSP16 | GX16-1DT   | DTS5-3.5       | CSTB-3.5ST | T-15F<br>P-3.5        |
| CER/L1616H16DT | ●     | ○ |            | 16              | 16 |                |                | 22             | 16 | 20           |       |            |                |            |                       |
| CER/L2020K16DT | ●     | ○ |            | 20              | 20 | 125            | 20             | 25             | —  |              |       |            |                |            |                       |
| CER/L2525M16DT | ●     | ○ |            | 25              | 25 | 150            | 25             | 25             | 32 | —            |       |            |                |            |                       |
| CER/L2525M22DT | ●     | ○ | 22ER/L□□□□ | 25              | 25 | 150            | 28             | 25             | 32 | —            | CSP22 | GX22-1DT   | DTS6-4         | CSTB-4ST   | T-15F<br>T-20F<br>P-4 |

Note: Standard shim is used for both right and left hand toolholder.

Thread types

P. 230

Reference

guide

### B-type Toolholder (For gang tooling)

**External threading**

**B-SER/L**  
**B-CER/L**

**B-SER/L (Screw-on type)**

Right hand (R) shown

**B-CER/L (Clamp-on type)**

Right hand (R) shown

| Cat. No.     | Stock |   | Insert     | Dimensions (mm) |    |                |                |                |    |                | Clamping set | Shim set |         | Clamping screw | Wrench |
|--------------|-------|---|------------|-----------------|----|----------------|----------------|----------------|----|----------------|--------------|----------|---------|----------------|--------|
|              | R     | L |            | h               | b  | l <sub>1</sub> | l <sub>2</sub> | h <sub>1</sub> | f  | f <sub>1</sub> |              | R        | L       |                |        |
| B-SER/L10H16 | ○     |   | 16ER/L□□□□ | 20              | 10 | 100            | 15             | 10             | 16 | —              | —            | —        | —       | CSTB-3.5       | T-15F  |
| B-SER/L12K16 | ○     |   |            | 24              | 12 | 125            | 18             | 12             | 18 | —              | —            | —        | —       |                |        |
| B-CER/L16M16 | ○     | ○ |            | 32              | 16 | 150            | 24             | 16             | 22 | —              | CSP16        | GXE16-1  | GXN16-1 | —              |        |

### Screw-on type for gang tooling

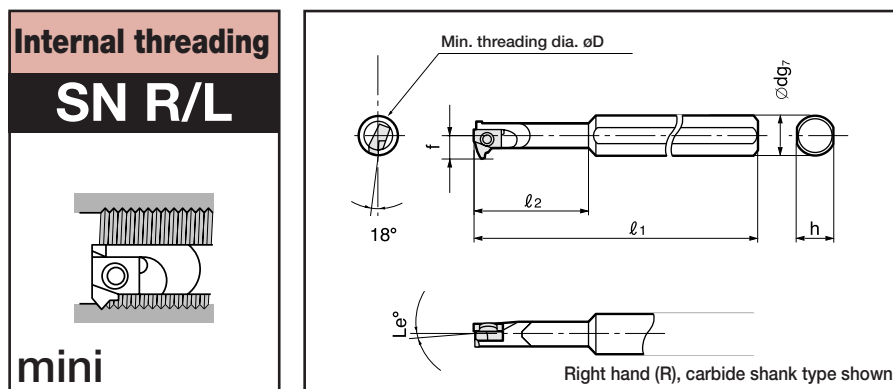
**External threading**

**BC-SER/L**

Right hand (R) shown

| Cat. No.      | Stock |   | Insert                   | Dimensions (mm) |    |                |                |                |    |                | Clamping set | Shim set |   | Clamping screw | Wrench |
|---------------|-------|---|--------------------------|-----------------|----|----------------|----------------|----------------|----|----------------|--------------|----------|---|----------------|--------|
|               | R     | L |                          | h               | b  | l <sub>1</sub> | l <sub>2</sub> | h <sub>1</sub> | f  | f <sub>1</sub> |              | R        | L |                |        |
| BC-SER/L12K16 | ○     |   | 16ER/L□□□□<br>CC□T09T3□□ | 24              | 16 | 125            | —              | 12             | 23 | 7              | —            | —        | — | CSTB-3.5       | T-15F  |
| BC-SER/L16M16 |       |   |                          | 32              | 20 | 150            | —              | 16             | 25 | 5              | —            | —        | — |                |        |

## Carbide and steel shank, screw-on type



## Carbide shank

| Cat. No.         | Stock |   | Insert    | Min. threading dia. | Dimensions (mm) |     |       |       |   | Lead angle | Clamping-set | Shim set |   | Clamping screw | Wrench |
|------------------|-------|---|-----------|---------------------|-----------------|-----|-------|-------|---|------------|--------------|----------|---|----------------|--------|
|                  | R     | L |           | $\phi D$            | $\phi d$        | f   | $l_1$ | $l_2$ | h | Le         |              | R        | L |                |        |
| SNR/L0006K06SC-2 | ●     |   | 6NR/L□□□□ | 8                   | 8               | 4.7 | 125   | 30    | 7 | 2°         | —            | —        | — | CSTB-2L040     | T-6F   |
| SNR/L0006K06SC-3 | ●     |   |           | 8                   | 8               | 4.7 | 125   | 30    | 7 | 3°         | —            | —        | — |                |        |
| SNR/L0008K06SC-2 | ○     |   |           | 10                  | 8               | 5.7 | 125   | —     | 7 | 2°         | —            | —        | — | CSTB-2L        |        |
| SNR/L0008K06SC-3 | ○     |   |           | 10                  | 8               | 5.7 | 125   | —     | 7 | 3°         | —            | —        | — |                |        |

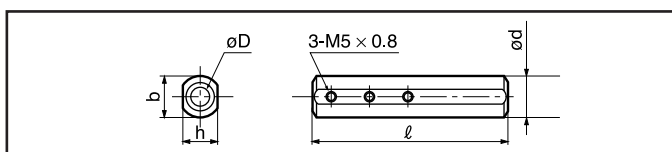
## Steel shank

| Cat. No.       | Stock |   | Insert    | Min. threading dia. | Dimensions (mm) |     |       |       |   | Lead angle | Clamping-set | Shim set |   | Clamping screw | Wrench |
|----------------|-------|---|-----------|---------------------|-----------------|-----|-------|-------|---|------------|--------------|----------|---|----------------|--------|
|                | R     | L |           | $\phi D$            | $\phi d$        | f   | $l_1$ | $l_2$ | h | Le         |              | R        | L |                |        |
| SNR/L0006H06-2 | ●     |   | 6NR/L□□□□ | 8                   | 8               | 4.7 | 100   | 18    | 7 | 2°         | —            | —        | — | CSTB-2L040     | T-6F   |
| SNR/L0006H06-3 | ●     |   |           | 8                   | 8               | 4.7 | 100   | 18    | 7 | 3°         | —            | —        | — |                |        |
| SNR/L0008H06-2 | ●     |   |           | 10                  | 8               | 5.7 | 100   | —     | 7 | 2°         | —            | —        | — | CSTB-2L        |        |
| SNR/L0008H06-3 | ○     |   |           | 10                  | 8               | 5.7 | 100   | —     | 7 | 3°         | —            | —        | — |                |        |

## ● Sleeves

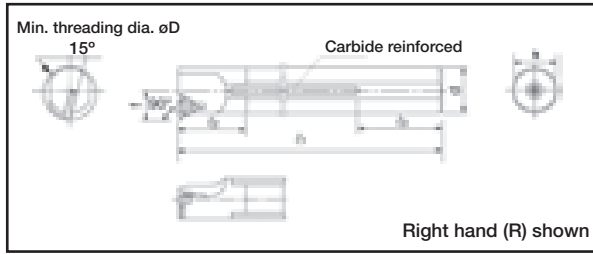
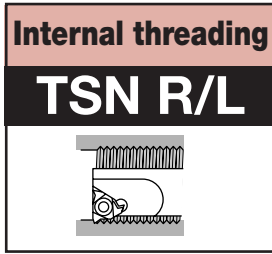
### BLM

| Cat. No.  | Stock | Dimensions (mm) |          |     |    |    |
|-----------|-------|-----------------|----------|-----|----|----|
|           |       | $\phi D$        | $\phi d$ | $l$ | h  | b  |
| BLM20-08  | ●     | 8               | 20       | 100 | 18 | 19 |
| BLM25-08C | ●     | 8               | 25       | 55  | 23 | 24 |



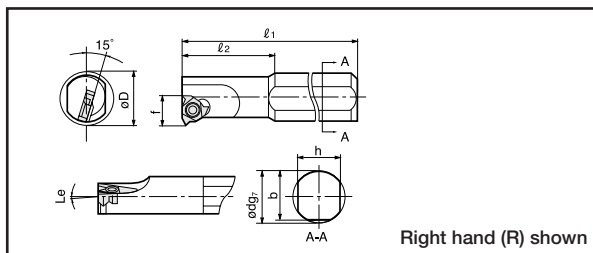
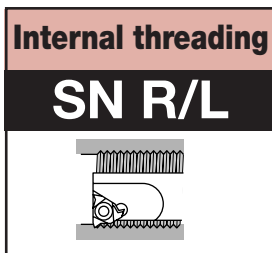
Note: When setting the toolholder on a tool post, direct clamping on the shank with bolts should be avoided. Placing the sleeve between the toolholder and tool post is recommended for stable operation.

Screw-on type, "T-Bar"



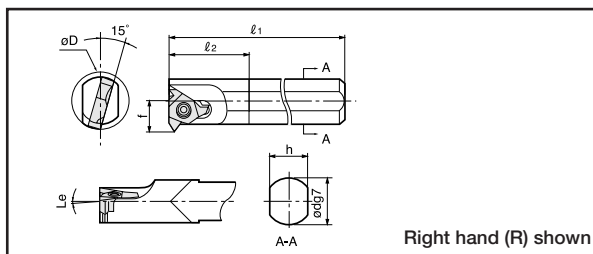
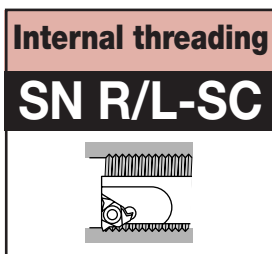
| Cat. No.      | Stock |   | Insert     | Min. threading dia. | Dimensions (mm) |      |     |                |                |                |   | Lead angle | Clamping set | Shim set |        | Clamping screw | Wrench |
|---------------|-------|---|------------|---------------------|-----------------|------|-----|----------------|----------------|----------------|---|------------|--------------|----------|--------|----------------|--------|
|               | R     | L |            |                     | ØD              | Ød   | f   | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | h |            |              | b        | R      |                |        |
| TSNR/L0016Q16 | ●     |   | 16NR/L□□□□ | 19                  | 16              | 10.6 | 180 | 40             | 59             | 15             | — | 1°         | —            | —        | —      | CSTB-3.5       | T-15F  |
| TSNR/L0020R22 | ●     |   | 22NR/L□□□□ | 24                  | 20              | 13.9 | 200 | 50             | 49             | 18             | — | —          | —            | —        | CSTB-4 |                |        |

Screw-on type, steel shank



| Cat. No.       | Stock |   | Insert     | Min. threading dia. | Dimensions (mm) |      |     |                |                |      |    | Lead angle | Clamping set | Shim set |          | Clamping screw | Wrench |
|----------------|-------|---|------------|---------------------|-----------------|------|-----|----------------|----------------|------|----|------------|--------------|----------|----------|----------------|--------|
|                | R     | L |            |                     | ØD              | Ød   | f   | l <sub>1</sub> | l <sub>2</sub> | h    | b  |            |              | R        | L        |                |        |
| SNR/L0010K11   | ●     | ● | 11NR/L□□□□ | 12                  | 16              | 6.6  | 125 | 25             | 15             | 15   | 1° | —          | —            | —        | CSTB-2.5 | T-8F           |        |
| SNR/L0010K11-2 | ●     |   |            | 12                  | 16              | 6.6  | 125 | 25             | 15             | 15.5 | 2° | —          | —            | —        |          |                |        |
| SNR/L0010K11-3 | ●     |   |            | 12                  | 16              | 6.6  | 125 | 25             | 15             | 15.5 | 3° | —          | —            | —        |          |                |        |
| SNR/L0013L11   | ●     | ● |            | 15                  | 16              | 8.2  | 140 | 32.5           | 15             | 15   | 1° | —          | —            | —        |          |                |        |
| SNR/L0013L11-2 | ○     |   |            | 15                  | 16              | 8.2  | 140 | 32.5           | 15             | 15.5 | 2° | —          | —            | —        |          |                |        |
| SNR/L0013L11-3 | ○     |   |            | 15                  | 16              | 8.2  | 140 | 32.5           | 15             | 15.5 | 3° | —          | —            | —        |          |                |        |
| SNR/L0016M16   | ●     | ● | 16NR/L□□□□ | 19                  | 16              | 10.6 | 150 | 40             | 15             | 15   | 1° | —          | —            | —        | CSTB-3.5 | T-15F          |        |
| SNR/L0016M16-2 | ●     |   |            | 19                  | 16              | 10.6 | 150 | 40             | 15             | 15.5 | 2° | —          | —            | —        |          |                |        |
| SNR/L0016M16-3 | ○     |   |            | 19                  | 16              | 10.6 | 150 | 40             | 15             | 15.5 | 3° | —          | —            | —        |          |                |        |
| SNR/L0020Q22   | ●     | ● | 22NR/L□□□□ | 24                  | 20              | 13.9 | 180 | 50             | 18             | 18.5 | 1° | —          | —            | —        | CSTB-4   |                |        |
| SNR/L0020Q22-2 | ○     |   |            | 24                  | 20              | 13.9 | 180 | 50             | 18             | 19   | 2° | —          | —            | —        |          |                |        |
| SNR/L0020Q22-3 | ○     |   |            | 24                  | 20              | 13.9 | 180 | 50             | 18             | 19   | 3° | —          | —            | —        |          |                |        |

Screw-on type, carbide shank

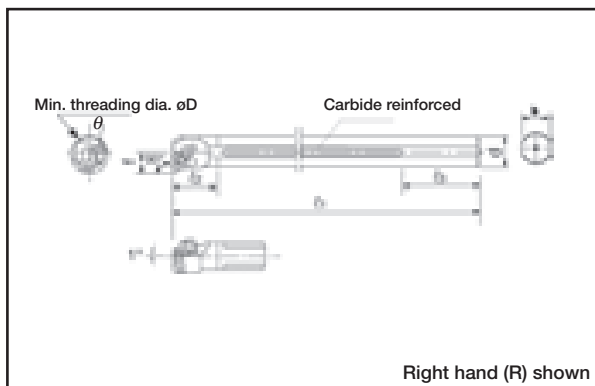
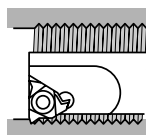


| Cat. No.         | Stock |   | Insert     | Min. threading dia. | Dimensions (mm) |      |     |                |                |   |    | Lead angle | Clamping set | Shim set |          | Clamping screw | Wrench |
|------------------|-------|---|------------|---------------------|-----------------|------|-----|----------------|----------------|---|----|------------|--------------|----------|----------|----------------|--------|
|                  | R     | L |            |                     | ØD              | Ød   | f   | l <sub>1</sub> | l <sub>2</sub> | h | b  |            |              | R        | L        |                |        |
| SNR/L0010M11SC   | ●     |   | 11NR/L□□□□ | 13                  | 10              | 7.4  | 150 | 17             | 9              | — | 1° | —          | —            | —        | CSTB-2.5 | T-8F           |        |
| SNR/L0010M11SC-2 | ○     |   |            | 13                  | 10              | 7.4  | 150 | 17             | 9              | — | 2° | —          | —            | —        |          |                |        |
| SNR/L0010M11SC-3 | ○     |   |            | 13                  | 10              | 7.4  | 150 | 17             | 9              | — | 3° | —          | —            | —        |          |                |        |
| SNR/L0012P11SC   | ●     |   |            | 15                  | 12              | 8.5  | 170 | 20             | 11             | — | 1° | —          | —            | —        |          |                |        |
| SNR/L0012P11SC-2 | ○     |   |            | 15                  | 12              | 8.5  | 170 | 20             | 11             | — | 2° | —          | —            | —        |          |                |        |
| SNR/L0012P11SC-3 | ○     |   |            | 15                  | 12              | 8.5  | 170 | 20             | 11             | — | 3° | —          | —            | —        |          |                |        |
| SNR/L0016R16SC   | ●     | ● | 16NR/L□□□□ | 20                  | 16              | 11.9 | 200 | 24             | 15             | — | 1° | —          | —            | —        | CSTB-3.5 | T-15F          |        |
| SNR/L0016R16SC-2 | ○     |   |            | 20                  | 16              | 11.9 | 200 | 24             | 15             | — | 2° | —          | —            | —        |          |                |        |
| SNR/L0016R16SC-3 | ○     |   |            | 20                  | 16              | 11.9 | 200 | 24             | 15             | — | 3° | —          | —            | —        |          |                |        |

## “T-Bar”, dual clamping methods of screw-on and clamp-on

Internal threading

**TCN R/L**

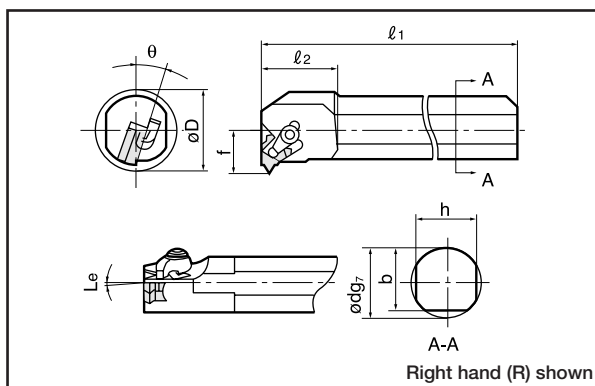
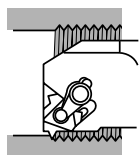


| Cat. No.        | Stock |   | Inserts    | Min. threading dia. | Dimensions (mm) |      |     |                |                |                |   |     | Lead angle | Clamping-set | Shim     | Shim screw | Clamping screw        | Wrench |
|-----------------|-------|---|------------|---------------------|-----------------|------|-----|----------------|----------------|----------------|---|-----|------------|--------------|----------|------------|-----------------------|--------|
|                 | R     | L |            |                     | øD              | ød   | f   | l <sub>1</sub> | l <sub>2</sub> | l <sub>3</sub> | h | b   |            |              |          |            |                       |        |
| TCNR/L0020R16DT | ●     |   | 16NR/L□□□□ | 24                  | 20              | 14   | 200 | 30             | 49             | 18             |   |     |            | CSP16        | GX16-1DT | DTS5-3.5   | CSTB-3.5ST            | T-15F  |
| TCNR/L0025S16DT | ●     |   |            | 29                  | 25              | 16.5 | 250 | 38             | 64             | 23             | - | 15° | 1°         |              |          |            |                       | P-3.5  |
| TCNR/L0025S22DT | ●     |   | 22NR/L□□□□ | 30                  | 25              | 18.2 | 250 | 38             | 64             | 23             |   |     | CSP22      | GX22-1DT     | DTS6-4   | CSTB-4ST   | T-15F<br>T-20F<br>P-4 |        |

## Clamp-on type

Internal threading

**CN R/L**



| Cat. No.     | Stock        |   | Inserts    | Min. bore dia. | Dimensions (mm) |            |     |                |                |      |     |    | Lead angle | Clamping-set | Shim set |         | Wrench |   |
|--------------|--------------|---|------------|----------------|-----------------|------------|-----|----------------|----------------|------|-----|----|------------|--------------|----------|---------|--------|---|
|              | R            | L |            |                | øD              | ød         | f   | l <sub>1</sub> | l <sub>2</sub> | h    | b   | θ  |            |              | Le       | R       |        | L |
|              | CNR/L0020P16 | ● |            |                | ●               | 16NR/L□□□□ | 24  | 20             | 14.0           | 170  | 30  | 18 |            |              | 18.5     |         |        |   |
| CNR/L0025R16 | ●            | ● | 29         | 25             | 16.5            |            | 200 | 38             | 23             | 22.5 |     |    | 1°         |              |          |         |        |   |
| CNR/L0032S16 | ●            | ● | 37         | 32             | 20.1            |            | 250 | 48             | 30             | 29.5 | 15° | 1° |            |              |          |         |        |   |
| CNR/L0040T16 |              |   | 45         | 40             | 24.1            |            | 300 | 60             | 37             | 37.5 |     |    | 1°         |              |          |         |        |   |
| CNR/L0050U16 |              |   | 55         | 50             | 29.4            |            | 350 | 75             | 47             | 47.5 |     |    | 1°         |              |          |         |        |   |
| CNR/L0025R22 | ●            | ● | 22NR/L□□□□ | 30             | 25              | 18.2       | 200 | 38             | 23             | 22.5 |     |    | 1°         | CSP22        | NXN22-1  | NXE22-1 | T-20F  |   |
| CNR/L0032S22 | ●            | ● |            | 38             | 32              | 21.9       | 250 | 48             | 30             | 29.5 |     |    | 1°         |              |          |         |        |   |
| CNR/L0040T22 |              |   |            | 46             | 40              | 26.1       | 300 | 60             | 37             | 31.5 | 15° | 1° |            |              |          |         |        |   |
| CNR/L0050U22 |              |   |            | 56             | 50              | 31.0       | 350 | 75             | 47             | 47.5 |     |    | 1°         |              |          |         |        |   |
| CNR/L0063V22 |              |   |            | 69             | 63              | 37.5       | 400 | 95             | 57             | 60.5 |     |    | 1°         |              |          |         |        |   |
| CNR/L0040T27 | ○            |   | 27NR/L□□□□ | 46             | 40              | 26.9       | 300 | 60             | 37             | 37.5 |     |    | 1°         | CSP27        | NXN27-1  | NXE27-1 | P-4    |   |
| CNR/L0050U27 |              |   |            | 56             | 50              | 31.9       | 350 | 75             | 37             | 47.5 | 10° | 1° |            |              |          |         |        |   |
| CNR/L0063V27 |              |   |            | 70             | 63              | 38.7       | 400 | 95             | 57             | 60.5 |     |    | 1°         |              |          |         |        |   |

Notes : ● Clamping-sets for CNR/L type toolholder consist of a clamp and a clamping screw.

● Shim sets for CNR/L type toolholder consist of a shim and a shim fixing screw.

● Standard shims for CNR/L type toolholder are commonly used for right- and left-hand toolholder. Use either top side or backside depending on the hand.

Thread types  
P. 230

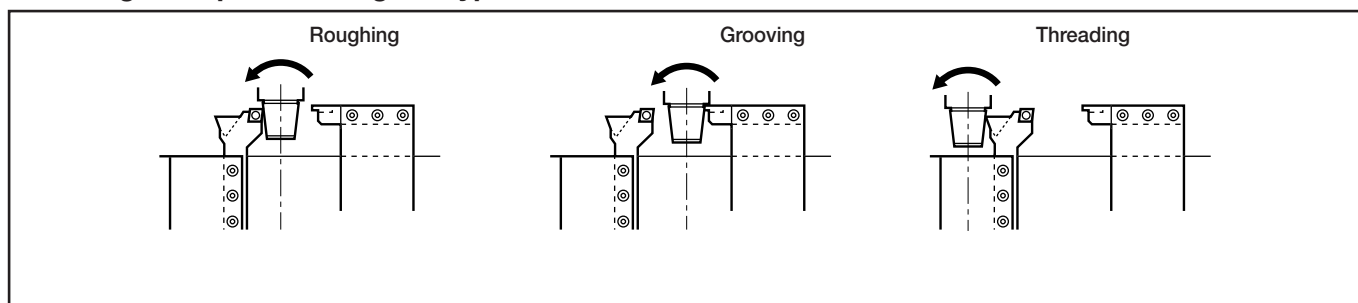
Reference  
guide

### Selection of External Toolholder

| Type                                                     | Cat. No.       | Insert     |
|----------------------------------------------------------|----------------|------------|
| <b>CE</b><br>Clamp-on type                               | CER/L1212H16T  | 16ER/L□□□□ |
|                                                          | CER/L1616H16T  |            |
|                                                          | CER/L2020K16T  |            |
|                                                          | CER/L2525M16T  |            |
|                                                          | CER/L3232P16T  |            |
|                                                          | CER/L1212H16DT |            |
|                                                          | CER/L1616H16DT |            |
|                                                          | CER/L2020K16DT |            |
|                                                          | CER/L2525M16DT |            |
|                                                          | CER/L2525M22T  |            |
| CER/L3232P22T                                            |                |            |
| CER/L4040R22T                                            |                |            |
| <b>CE-DT</b><br>(Dual clamping of screw-on and clamp-on) | CER/L2525M22DT | 27ER/L□□□□ |
|                                                          | CER/L3232P27T  |            |
|                                                          | CER/L4040R27T  |            |
|                                                          | CER/L2525M27T  |            |

| Type                       | Cat. No.      | Insert     |
|----------------------------|---------------|------------|
| <b>B</b><br>Screw-on type  | B-SER/L10H16  | 16ER/L□□□□ |
|                            | B-SER/L12K16  |            |
| <b>B</b><br>Clamp-on type  | B-CER/L16M16  | 16ER/L□□□□ |
|                            | B-CER/L16M16  |            |
| <b>BC</b><br>Screw-on type | BC-SER/L12K16 | 16ER/L□□□□ |
|                            | BC-SER/L16M16 |            |

● Tooling examples of using BC-type toolholder



TAC Threading Tools

### Selection of Internal Threading Toolholder

Relations between nominal sizes of threads and applicable toolholder and inserts are shown in the Tables on the following pages.

- : Recommended
- : Usable
- ▣ : Recommended by changing of the shim
- 2 : Needs changing of the shim (Example: indicates that the shim must be changed to □□□□ → 2).
- : Impossible

■ Criteria for evaluation

|                          |                                    |                       |             |
|--------------------------|------------------------------------|-----------------------|-------------|
| Clearance C <sub>1</sub> | <p>Internal diameter of thread</p> | C <sub>1</sub> ≥ 3 mm |             |
|                          |                                    |                       | Steel shank |
| Carbide shank            | L/D ≤ 3                            |                       |             |



## Selection of Internal Toolholder — Relationship between thread sizes, toolholder and inserts – Part 1

### Metric coarse screw thread (ISO)

| Nominal size | Pitch | Effective diameter | Lead angle | Shank           | Steel shank |             |             |             |             |             |             |             |             |             |             |             | Carbide shank |           |             |           | "T-Bar"     |               |               |               |               |               |               |               |               |              |                |
|--------------|-------|--------------------|------------|-----------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|-----------|-------------|-----------|-------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|--------------|----------------|
|              |       |                    |            | Insert size     | 6NR         |             |             | 11NR        |             |             | 16NR        |             |             | 22NR        |             |             | 27NR          |           | 6NR         |           | 11NR        | 16NR          | 22NR          |               |               |               |               |               |               |              |                |
|              |       |                    |            | Holder Cat. No. | SNR006H06-2 | SNR006H06-3 | SNR008H06-2 | SNR008H06-3 | SNR010K11-2 | SNR010K11-3 | SNR013L11-2 | SNR013L11-3 | SNR016M16-2 | SNR016M16-3 | SNR020Q22-2 | SNR020Q22-3 | CNR025R22     | CNR032S22 | (CNR040T22) | CNR040T27 | (CNR050U27) | SNR006K06SC-2 | SNR006K06SC-3 | SNR008K06SC-2 | SNR008K06SC-3 | SNR010M11SC-2 | SNR010M11SC-3 | SNR016R16SC-2 | SNR016R16SC-3 | TCNR025S22DT | (TCNR032T22DT) |
|              |       |                    |            | Insert Cat. No. |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M10          | 1.5   | 9.03               | 3°02'      | NR15ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M11          | 1.5   | 10.03              | 2°44'      | NR15ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M12          | 1.75  | 10.86              | 2°56'      | NR175ISO        |             | ○           |             |             |             |             |             |             |             |             |             |             |               |           |             |           | ○           |               |               |               |               |               |               |               |               |              |                |
| M14          | 2     | 12.7               | 2°52'      | NR20ISO         |             |             | ○           |             |             |             |             |             |             |             |             |             |               |           |             |           |             | ○             |               |               |               |               |               |               |               |              |                |
| M16          | 2     | 14.7               | 2°29'      | NR20ISO         |             |             | ○           |             |             |             |             |             |             |             |             |             |               |           |             |           |             | ○             |               |               |               |               |               |               |               |              |                |
| M18          | 2.5   | 16.38              | 2°47'      | NR25ISO         |             |             |             | ○           |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M20          | 2.5   | 18.38              | 2°29'      | NR25ISO         |             |             |             |             | ○           |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M22          | 2.5   | 20.38              | 2°14'      | NR25ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M24          | 3     | 22.05              | 2°29'      | NR30ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M27          | 3     | 25.05              | 2°11'      | NR30ISO         |             |             |             |             |             |             | ○           |             |             |             |             |             |               |           |             |           |             |               |               |               |               | ○             |               |               |               |              |                |
| M30          | 3.5   | 27.73              | 2°18'      | NR35ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M33          | 3.5   | 30.73              | 2°05'      | NR35ISO         |             |             |             |             |             |             |             |             | ○           |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M36          | 4     | 33.4               | 2°11'      | NR40ISO         |             |             |             |             |             |             |             |             |             | ○           |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M39          | 4     | 36.4               | 2°00'      | NR40ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M42          | 4.5   | 39.08              | 2°06'      | NR45ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M45          | 4.5   | 42.08              | 1°57'      | NR45ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M48          | 5     | 44.75              | 2°02'      | NR50ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M52          | 5     | 48.75              | 1°52'      | NR50ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M56          | 5.5   | 52.43              | 1°55'      | NR55ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M60          | 5.5   | 56.43              | 1°47'      | NR55ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M64          | 6     | 60.1               | 1°49'      | NR60ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |
| M68          | 6     | 64.1               | 1°42'      | NR60ISO         |             |             |             |             |             |             |             |             |             |             |             |             |               |           |             |           |             |               |               |               |               |               |               |               |               |              |                |

② : Change the shim to NXN22-2 ←      ② : Change the shim to GXN22-2DT ←  
 ② : Change the shim to NXN27-2 ←

### Metric fine screw thread (ISO)

1/4

| Nominal size | Pitch | Effective diameter | Lead angle | Shank           | Steel shank |             |             |             |           |             |             |           |             |             | Carbide shank |               |               |               |               |               |             |               |               |   |   |   |   |  |
|--------------|-------|--------------------|------------|-----------------|-------------|-------------|-------------|-------------|-----------|-------------|-------------|-----------|-------------|-------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------|---------------|---------------|---|---|---|---|--|
|              |       |                    |            | Insert size     | 6NR         |             |             |             | 11NR      |             |             |           |             |             | 6NR           |               | 11NR          |               |               |               |             |               |               |   |   |   |   |  |
|              |       |                    |            | Holder Cat. No. | SNR006H06-2 | SNR006H06-3 | SNR008H06-2 | SNR008H06-3 | SNR010K11 | SNR010K11-2 | SNR010K11-3 | SNR013L11 | SNR013L11-2 | SNR013L11-3 | SNR006K06SC-2 | SNR006K06SC-3 | SNR008K06SC-2 | SNR008K06SC-3 | SNR010M11SC-2 | SNR010M11SC-3 | SNR012P11SC | SNR012P11SC-2 | SNR012P11SC-3 |   |   |   |   |  |
|              |       |                    |            | Insert Cat. No. |             |             |             |             |           |             |             |           |             |             |               |               |               |               |               |               |             |               |               |   |   |   |   |  |
| M9x0.75      | 0.75  | 8.51               | 1°36'      | NR075ISO        |             |             |             |             |           |             |             |           |             |             |               |               |               |               |               |               |             |               |               |   |   |   |   |  |
| M9x1         | 1     | 8.32               | 2°11'      | NR10ISO         |             |             |             |             |           |             |             |           |             |             |               |               |               |               |               |               |             |               |               |   |   |   |   |  |
| M10x0.75     | 0.75  | 9.51               | 1°26'      | NR075ISO        |             |             |             |             |           |             |             |           |             |             |               |               |               |               |               |               |             |               |               |   |   |   |   |  |
| M10x1        | 1     | 9.35               | 1°57'      | NR10ISO         |             | ○           |             |             |           |             |             |           |             |             |               |               |               |               |               |               | ○           |               |               |   |   |   |   |  |
| M10x1.25     | 1.25  | 9.19               | 2°29'      | NR125ISO        |             |             |             |             |           |             |             |           |             |             |               |               |               |               |               |               |             |               |               |   |   |   |   |  |
| M11x0.75     | 0.75  | 10.51              | 1°18'      | NR075ISO        |             |             |             |             |           |             |             |           |             |             |               |               |               |               |               |               |             |               |               |   |   |   |   |  |
| M11x1        | 1     | 10.35              | 1°46'      | NR10ISO         |             | ○           |             |             |           |             |             |           |             |             |               |               |               |               |               |               | ○           |               |               |   |   |   |   |  |
| M12x1        | 1     | 11.35              | 1°36'      | NR10ISO         |             |             | ○           |             |           |             |             |           |             |             |               |               |               |               |               |               |             | ○             |               |   |   |   |   |  |
| M12x1.25     | 1.25  | 11.19              | 2°02'      | NR125ISO        |             | ○           |             |             |           |             |             |           |             |             |               |               |               |               |               |               | ○           |               |               |   |   |   |   |  |
| M12x1.5      | 1.5   | 11.03              | 2°29'      | NR15ISO         |             | ○           |             |             |           |             |             |           |             |             |               |               |               |               |               |               | ○           |               |               |   |   |   |   |  |
| M14x1        | 1     | 13.35              | 1°22'      | NR10ISO         |             |             |             |             |           |             |             |           |             |             |               |               |               |               |               |               |             |               |               |   |   |   |   |  |
| M14x1.25     | 1.25  | 13.19              | 1°44'      | NR125ISO        |             |             | ○           |             |           |             |             |           |             |             |               |               |               |               |               |               |             | ○             |               |   |   |   |   |  |
| M14x1.5      | 1.5   | 13.03              | 2°06'      | NR15ISO         |             |             | ○           |             |           |             |             |           |             |             |               |               |               |               |               |               |             | ○             |               |   |   |   |   |  |
| M15x1        | 1     | 14.35              | 1°16'      | NR10ISO         |             |             |             |             |           |             |             |           |             |             |               |               |               |               |               |               |             |               |               |   |   |   |   |  |
| M15x1.5      | 1.5   | 14.03              | 1°57'      | NR15ISO         |             |             | ○           |             |           |             |             |           |             |             |               |               |               |               |               |               |             | ○             |               |   |   |   |   |  |
| M16x1        | 1     | 15.35              | 1°11'      | NR10ISO         |             |             |             | ○           |           |             |             |           |             |             |               |               |               |               |               |               |             |               |               |   |   |   |   |  |
| M16x1.5      | 1.5   | 15.03              | 1°49'      | NR15ISO         |             |             | ○           |             |           |             |             |           |             |             |               |               |               |               |               |               |             | ○             |               |   |   |   |   |  |
| M17x1        | 1     | 16.35              | 1°07'      | NR10ISO         |             |             |             |             | ○         |             |             |           |             |             |               |               |               |               |               |               |             |               | ○             |   |   |   |   |  |
| M17x1.5      | 1.5   | 16.03              | 1°42'      | NR15ISO         |             |             |             |             |           | ○           |             |           |             |             |               |               |               |               |               |               |             | ○             |               |   |   |   |   |  |
| M18x1        | 1     | 17.35              | 1°03'      | NR10ISO         |             |             |             |             |           | ○           |             |           |             |             |               |               |               |               |               |               |             |               | ○             |   |   |   |   |  |
| M18x1.5      | 1.5   | 17.03              | 1°36'      | NR15ISO         |             |             |             |             |           |             | ○           |           |             |             |               |               |               |               |               |               |             |               | ○             |   |   |   |   |  |
| M18x2        | 2     | 16.7               | 2°11'      | NR20ISO         |             |             |             |             |           |             |             | ○         |             |             |               |               |               |               |               |               |             |               |               | ○ |   |   |   |  |
| M20x1        | 1     | 19.35              | 0°57'      | NR10ISO         |             |             |             |             |           |             |             |           | ○           |             |               |               |               |               |               |               |             |               |               |   | ○ |   |   |  |
| M20x1.5      | 1.5   | 19.03              | 1°26'      | NR15ISO         |             |             |             |             |           |             |             |           |             | ○           |               |               |               |               |               |               |             |               |               |   |   | ○ |   |  |
| M20x2        | 2     | 18.7               | 1°57'      | NR20ISO         |             |             |             |             |           |             |             |           |             |             | ○             |               |               |               |               |               |             |               |               |   |   |   | ○ |  |





Selection of Internal Toolholder — Relationship between thread sizes, toolholder and inserts

Unified fine screw thread (UNF)

| Nominal size | TPI | Effective diameter | Lead angle | Shank           | Steel shank  |              |              |              |              |              |            |              | Carbide shank |            |                |                |                |                | "T-Bar"      |                |              |                |              |                |             |               |               |
|--------------|-----|--------------------|------------|-----------------|--------------|--------------|--------------|--------------|--------------|--------------|------------|--------------|---------------|------------|----------------|----------------|----------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|-------------|---------------|---------------|
|              |     |                    |            | Insert size     | 6NR          |              |              | 11NR         |              | 16NR         |            |              | 6NR           |            | 11NR           |                | 16NR           |                | 16NR         |                |              |                |              |                |             |               |               |
|              |     |                    |            | Holder Cat. No. | SNR0006H06-2 | SNR0006H06-3 | SNR0008H06-2 | SNR0008H06-3 | SNR0010K11-2 | SNR0013L11-2 | SNR0016M16 | SNR0016M16-2 | CNR0020P16    | CNR0025R16 | SNR0006K06SC-2 | SNR0006K06SC-3 | SNR0008K06SC-2 | SNR0008K06SC-3 | SNR0010M11SC | SNR0010M11SC-2 | SNR0012P11SC | SNR0012P11SC-2 | SNR0016R16SC | SNR0016R16SC-2 | TSNR0016C16 | TCNR0020R16DT | TCNR0025S16DT |
|              |     |                    |            | Insert Cat. No. |              |              |              |              |              |              |            |              |               |            |                |                |                |                |              |                |              |                |              |                |             |               |               |
| 3/8-24UNF    | 24  | 8.84               | 2°11'      | (NR24UN)        |              |              |              |              |              |              |            |              |               |            |                |                |                |                |              |                |              |                |              |                |             |               |               |
|              |     |                    |            | NRA60           |              |              |              |              |              |              |            |              |               |            |                |                |                |                |              |                |              |                |              |                |             |               |               |
| 7/16-20UNF   | 20  | 10.29              | 2°15'      | (NR20UN)        |              |              |              |              |              |              |            |              |               |            |                |                |                |                |              |                |              |                |              |                |             |               |               |
|              |     |                    |            | NRA60           | ○            |              |              |              |              |              |            |              | ○             |            |                |                |                |                |              |                |              |                |              |                |             |               |               |
| 1/2-20UNF    | 20  | 11.87              | 1°57'      | (NR20UN)        |              |              |              |              |              |              |            |              |               |            |                |                |                |                |              |                |              |                |              |                |             |               |               |
|              |     |                    |            | NRA60           |              | ○            |              |              |              |              |            |              |               |            | ○              |                |                |                |              |                |              |                |              |                |             |               |               |
| 9/16-18UNF   | 18  | 13.37              | 1°55'      | (NR18UN)        |              |              |              |              |              |              |            |              |               |            |                |                |                |                |              |                |              |                |              |                |             |               |               |
|              |     |                    |            | NRA60           |              | ○            |              |              |              |              |            |              |               |            | ○              |                |                |                |              |                |              |                |              |                |             |               |               |
| 5/8-18UNF    | 18  | 14.96              | 1°43'      | (NR18UN)        |              |              |              |              |              |              |            |              |               |            |                |                |                |                |              |                |              |                |              |                |             |               |               |
|              |     |                    |            | NRA60           |              | ○            |              |              |              |              |            |              |               |            | ○              |                |                |                |              |                |              |                |              |                |             |               |               |
| 3/4-16UNF    | 16  | 18.02              | 1°36'      | (NR16UN)        |              |              |              |              | ○            |              |            |              |               |            |                |                |                | ○              |              |                |              |                |              |                |             |               |               |
| 7/8-14UNF    | 14  | 21.05              | 1°34'      | NR14UN          |              |              |              |              |              | ○            |            |              |               |            |                |                |                |                | ○            |                |              |                |              |                |             |               |               |
| 1-12UNF      | 12  | 24.03              | 1°36'      | NR12UN          |              |              |              |              |              |              | ○          |              |               |            |                |                |                |                |              |                | ○            |                |              |                |             |               |               |
| 1 1/8-12UNF  | 12  | 27.2               | 1°25'      | NR12UN          |              |              |              |              |              |              |            | ○            |               |            |                |                |                |                |              |                |              | ○              |              |                |             |               |               |
| 1 1/4-12UNF  | 12  | 30.38              | 1°16'      | NR12UN          |              |              |              |              |              |              |            |              | ○             |            |                |                |                |                |              |                |              | ○              |              |                |             |               |               |
| 1 3/8-12UNF  | 12  | 33.55              | 1°09'      | NR12UN          |              |              |              |              |              |              |            |              |               | ○          |                |                |                |                |              |                |              | ○              |              |                |             |               |               |
| 1 1/2-12UNF  | 12  | 36.73              | 1°03'      | NR12UN          |              |              |              |              |              |              |            |              |               |            | ○              |                |                |                |              |                |              | ○              |              |                |             |               |               |

Whitworth coarse screw thread (W)

| Nominal size | TPI | Pitch | Effective diameter | Lead angle | Shank           | Steel shank  |              |              |              |            |            | Carbide shank |            |              | "T-Bar"      |                |                  |               |                 |  |  |  |   |   |
|--------------|-----|-------|--------------------|------------|-----------------|--------------|--------------|--------------|--------------|------------|------------|---------------|------------|--------------|--------------|----------------|------------------|---------------|-----------------|--|--|--|---|---|
|              |     |       |                    |            | Insert size     | 16NR         |              | 22NR         |              | 27NR       |            | 16NR          |            |              | 22NR         |                |                  |               |                 |  |  |  |   |   |
|              |     |       |                    |            | Holder Cat. No. | SNR0016M16-2 | SNR0016M16-3 | SNR0020Q22-2 | SNR0020Q22-3 | CNR0025R22 | CNR0032S22 | (CNR0040T22)  | CNR0040T27 | (CNR0050U27) | SNR0016R16SC | SNR0016R16SC-2 | (SNR0016R16SC-3) | TCNR0025S22DT | (TCNR0032T22DT) |  |  |  |   |   |
|              |     |       |                    |            | Insert Cat. No. |              |              |              |              |            |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W7/16        | 14  | 1.81  | 9.95               | 3°19'      | (NR14W)         |              |              |              |              |            |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W1/2         | 12  | 2.12  | 11.35              | 3°24'      | NR12W           |              |              |              |              |            |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W9/16        | 12  | 2.12  | 12.93              | 2°59'      | NR12W           |              |              |              |              |            |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W5/8         | 11  | 2.31  | 14.4               | 2°55'      | NR11W           |              |              |              |              |            |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W3/4         | 10  | 2.54  | 17.42              | 2°39'      | NR10W           |              |              |              |              |            |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W7/8         | 9   | 2.82  | 20.42              | 2°31'      | (NR9W)          |              |              |              |              |            |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W1           | 8   | 3.18  | 23.37              | 2°29'      | NR8W            | ○            |              |              |              |            |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W1 1/8       | 7   | 3.63  | 26.25              | 2°31'      | (NR7W)          |              |              |              |              |            |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W1 1/4       | 7   | 3.63  | 29.43              | 2°15'      | (NR7W)          |              |              |              |              | ○          |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W1 3/8       | 6   | 4.23  | 32.21              | 2°24'      | (NR6W)          |              |              |              |              | ○          |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W1 1/2       | 6   | 4.23  | 35.39              | 2°11'      | (NR6W)          |              |              |              |              | ○          |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W1 5/8       | 5   | 5.08  | 38.02              | 2°26'      | (NR5W)          |              |              |              |              |            |            | ②             |            |              |              |                |                  |               |                 |  |  |  | ② |   |
| W1 3/4       | 5   | 5.08  | 41.2               | 2°15'      | (NR5W)          |              |              |              |              |            |            | ②             |            |              |              |                |                  |               |                 |  |  |  | ② |   |
| W1 7/8       | 4.5 | 5.64  | 44.01              | 2°20'      | (NR45W)         |              |              |              |              |            |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W2           | 4.5 | 5.64  | 47.19              | 2°11'      | (NR45W)         |              |              |              |              |            |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W2 1/4       | 4   | 6.35  | 53.08              | 2°11'      | (NR4W)          |              |              |              |              |            |            |               |            |              |              |                |                  |               |                 |  |  |  |   |   |
| W2 1/2       | 4   | 6.35  | 59.43              | 1°57'      | (NR4W)          |              |              |              |              |            |            |               |            |              |              |                |                  |               |                 |  |  |  |   | ② |

② : Change the shim to NXN22-2 ←

② : Change the shim to NXN27-2 ←

② : Change the shim to GXN22-2DT

## Selection of Internal Toolholder — Relationship between thread sizes, toolholder and inserts

### Whitworth fine screw thread (W)

1/2

| Nominal size | TPI | Pitch | Effective diameter | Lead angle | Shank           | Steel shank  |              |              |              |            |              |            |              |            |              | Carbide shank |            |            | "T-Bar"        |                |              |                |             |               |               |
|--------------|-----|-------|--------------------|------------|-----------------|--------------|--------------|--------------|--------------|------------|--------------|------------|--------------|------------|--------------|---------------|------------|------------|----------------|----------------|--------------|----------------|-------------|---------------|---------------|
|              |     |       |                    |            | Insert size     | 6NR          |              |              |              | 11NR       |              |            |              | 16NR       |              | 11NR          | 16NR       | 16NR       |                |                |              |                |             |               |               |
|              |     |       |                    |            | Holder Cat. No. | SNR0006H06-2 | SNR0006H06-3 | SNR0008H06-2 | SNR0008H06-3 | SNR0010K11 | SNR0010K11-2 | SNR0013L11 | SNR0013L11-2 | SNR0016M16 | SNR0016M16-2 | SNR0016M16-3  | CNR0020P16 | CNR0025R16 | SNR0010M11SC-2 | SNR0012P11SC-2 | SNR0016R16SC | SNR0016R16SC-2 | TSNR0016C16 | TCNR0020R16DT | TCNR0025S16DT |
|              |     |       |                    |            | Insert Cat. No. |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W13          | 16  | 1.588 | 11.98              | 2°25'      | (NR16W)         |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W13.5        | 16  | 1.588 | 12.48              | 2°19'      | (NR16W)         |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W14          | 16  | 1.588 | 12.98              | 2°14'      | (NR16W)         |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W14.5        | 16  | 1.588 | 13.48              | 2°09'      | (NR16W)         |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W15          | 16  | 1.588 | 13.98              | 2°04'      | (NR16W)         |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W16          | 14  | 1.814 | 14.84              | 2°14'      | (NR14W)         |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W17          | 14  | 1.814 | 15.84              | 2°05'      | (NR14W)         |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W18          | 14  | 1.814 | 16.84              | 1°58'      | (NR14W)         |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W19          | 12  | 2.117 | 17.65              | 2°11'      | NR12W           |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W20          | 12  | 2.117 | 18.65              | 2°04'      | NR12W           |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W21          | 12  | 2.117 | 19.65              | 1°58'      | NR12W           |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W22          | 12  | 2.117 | 20.65              | 1°52'      | NR12W           |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W23          | 10  | 2.54  | 21.37              | 2°10'      | NR10W           |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W24          | 10  | 2.54  | 22.37              | 2°04'      | NR10W           |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W25          | 10  | 2.54  | 23.37              | 1°59'      | NR10W           |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W26          | 10  | 2.54  | 24.37              | 1°54'      | NR10W           |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W28          | 9   | 2.822 | 26.19              | 1°58'      | (NR9W)          |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W30          | 9   | 2.822 | 28.19              | 1°50'      | (NR9W)          |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W32          | 9   | 2.822 | 30.19              | 1°42'      | (NR9W)          |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W34          | 8   | 3.175 | 31.97              | 1°49'      | NR8W            |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W35          | 8   | 3.175 | 32.97              | 1°45'      | NR8W            |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W36          | 8   | 3.175 | 33.97              | 1°42'      | NR8W            |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W38          | 8   | 3.175 | 35.97              | 1°37'      | NR8W            |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W40          | 8   | 3.175 | 37.97              | 1°31'      | NR8W            |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |
| W42          | 8   | 3.175 | 39.97              | 1°27'      | NR8W            |              |              |              |              |            |              |            |              |            |              |               |            |            |                |                |              |                |             |               |               |

② : Change the shim to GXN16-2 ←

② : Change the shim to GXN16-2DT ←

TAC Threading Tools

### Whitworth fine screw thread (W)

2/2

| Nominal size | TPI | Pitch | Effective diameter | Lead angle | Shank           | Steel shank |              |            |            |              |              |              |            |              |              | "T-Bar"     |               |                 |  |  |  |  |  |  |
|--------------|-----|-------|--------------------|------------|-----------------|-------------|--------------|------------|------------|--------------|--------------|--------------|------------|--------------|--------------|-------------|---------------|-----------------|--|--|--|--|--|--|
|              |     |       |                    |            | Insert size     | 22NR        |              |            |            |              | 27NR         |              |            |              |              | 22NR        |               |                 |  |  |  |  |  |  |
|              |     |       |                    |            | Holder Cat. No. | SNR0020Q22  | SNR0020Q22-2 | CNR0025R22 | CNR0032S22 | (CNR0040T22) | (CNR0050U22) | (CNR0063V22) | CNR0040T27 | (CNR0050U27) | (CNR0063V27) | TSNR0020R22 | TCNR0025S22DT | (TCNR0032T22DT) |  |  |  |  |  |  |
|              |     |       |                    |            | Insert Cat. No. |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W44          | 7   | 3.629 | 41.68              | 1°35'      | (22NR7W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W45          | 7   | 3.629 | 42.68              | 1°33'      | (22NR7W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W46          | 7   | 3.629 | 43.68              | 1°31'      | (22NR7W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W48          | 7   | 3.629 | 45.68              | 1°27'      | (22NR7W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W50          | 7   | 3.629 | 47.68              | 1°23'      | (22NR7W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W52          | 7   | 3.629 | 49.68              | 1°20'      | (22NR7W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W55          | 6   | 4.233 | 52.29              | 1°29'      | (22NR6W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W58          | 6   | 4.233 | 55.29              | 1°24'      | (22NR6W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W60          | 6   | 4.233 | 57.29              | 1°21'      | (22NR6W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W62          | 6   | 4.233 | 59.29              | 1°18'      | (22NR6W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W65          | 6   | 4.233 | 62.29              | 1°14'      | (22NR6W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W68          | 6   | 4.233 | 65.29              | 1°11'      | (22NR6W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W70          | 6   | 4.233 | 67.29              | 1°09'      | (22NR6W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W72          | 6   | 4.233 | 69.29              | 1°07'      | (22NR6W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W75          | 5   | 5.08  | 71.75              | 1°17'      | (22NR5W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W78          | 5   | 5.08  | 74.75              | 1°14'      | (22NR5W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W80          | 5   | 5.08  | 76.75              | 1°12'      | (22NR5W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W82          | 5   | 5.08  | 78.75              | 1°11'      | (22NR5W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W85          | 5   | 5.08  | 81.75              | 1°08'      | (22NR5W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W88          | 5   | 5.08  | 84.75              | 1°06'      | (22NR5W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W90          | 5   | 5.08  | 86.75              | 1°04'      | (22NR5W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W92          | 5   | 5.08  | 88.75              | 1°03'      | (22NR5W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W95          | 5   | 5.08  | 91.75              | 1°01'      | (22NR5W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W98          | 5   | 5.08  | 94.75              | 0°59'      | (22NR5W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W100         | 5   | 5.08  | 96.75              | 0°57'      | (22NR5W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W105         | 5   | 5.08  | 101.75             | 0°55'      | (22NR5W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |
| W110         | 4   | 6.35  | 105.93             | 0°52'      | (27NR4W)        |             |              |            |            |              |              |              |            |              |              |             |               |                 |  |  |  |  |  |  |

② : Change the shim to NXN22-2 ←

② : Change the shim to GXN22-2 ←

Selection of Internal Toolholder — Relationship between thread sizes, toolholder and inserts

30° trapezoidal thread (TR)

1/2

| Nominal size | Pitch | Effective diameter | Lead angle | Shank           | Steel shank |              |              |            |            |            |              |              |            |              |              | Carbide shank |            |            | "T-Bar"      |              |                |                  |             |               |               |                 |             |               |                 |
|--------------|-------|--------------------|------------|-----------------|-------------|--------------|--------------|------------|------------|------------|--------------|--------------|------------|--------------|--------------|---------------|------------|------------|--------------|--------------|----------------|------------------|-------------|---------------|---------------|-----------------|-------------|---------------|-----------------|
|              |       |                    |            | Insert size     | 16NR        |              |              |            |            |            | 22NR         |              |            | 27NR         | 16NR         |               |            | 16NR       | 22NR         |              |                |                  |             |               |               |                 |             |               |                 |
|              |       |                    |            | Holder Cat. No. | SNR0016M16  | SNR0016M16-2 | SNR0016M16-3 | CNR0020P16 | CNR0025R16 | CNR0032S16 | (CNR0040T16) | (CNR0050U16) | SNR0020Q22 | SNR0020Q22-2 | SNR0020Q22-3 | CNR0025R22    | CNR0032S22 | CNR0040T27 | (CNR0050U27) | SNR0016R16SC | SNR0016R16SC-2 | (SNR0016R16SC-3) | TSNR0016Q16 | TCNR0020R16DT | TCNR0025S16DT | (TCNR0032T16DT) | TSNR0020R22 | TCNR0025S22DT | (TCNR0032T22DT) |
|              |       |                    |            | Insert Cat. No. |             |              |              |            |            |            |              |              |            |              |              |               |            |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR22x3       | 3     | 20.5               | 2°40'      | NR30TR          |             |              |              |            |            |            |              |              |            |              |              |               |            |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR24x5       | 5     | 21.5               | 4°14'      | NR50TR          |             |              |              |            |            |            |              |              |            |              |              |               |            |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR24x3       | 3     | 22.5               | 2°26'      | NR30TR          |             |              |              |            |            |            |              |              |            |              |              |               |            |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR26x5       | 5     | 23.5               | 3°52'      | NR50TR          |             |              |              |            |            |            |              |              |            |              |              |               |            |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR26x3       | 3     | 24.5               | 2°14'      | NR30TR          |             | ○            |              |            |            |            |              |              |            |              |              |               |            |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR28x5       | 5     | 25.5               | 3°34'      | NR50TR          |             |              |              |            |            |            |              |              |            |              |              |               |            |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR28x3       | 3     | 26.5               | 2°04'      | NR30TR          |             |              |              |            |            |            |              |              |            |              |              |               |            | ○          |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR30x6       | 6     | 27                 | 4°03'      | NR60TR          |             |              |              |            |            |            |              |              |            |              |              |               |            |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR30x3       | 3     | 28.5               | 1°55'      | NR30TR          |             |              |              |            |            |            |              |              |            |              |              |               |            | ○          |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR32x6       | 6     | 29                 | 3°46'      | NR60TR          |             |              |              |            |            |            |              |              |            |              |              |               |            |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR32x3       | 3     | 30.5               | 1°48'      | NR30TR          |             |              | ②            |            |            |            |              |              |            |              |              |               |            |            |              |              |                |                  | ②           |               |               |                 |             |               |                 |
| TR34x6       | 6     | 31                 | 3°32'      | NR60TR          |             |              |              |            |            |            |              |              |            |              |              |               |            |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR34x3       | 3     | 32.5               | 1°41'      | NR30TR          |             |              | ②            |            |            |            |              |              |            |              |              |               |            |            |              |              |                |                  | ②           |               |               |                 |             |               |                 |
| TR36x6       | 6     | 33                 | 3°19'      | NR60TR          |             |              |              |            |            |            |              |              |            |              |              |               |            |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR36x3       | 3     | 34.5               | 1°35'      | NR30TR          |             |              | 2            | ②          |            |            |              |              |            |              |              |               |            |            |              |              |                |                  | 2           | ②             |               |                 |             |               |                 |
| TR38x3       | 3     | 36.5               | 1°30'      | NR30TR          |             |              | 2            | ②          |            |            |              |              |            |              |              |               |            |            |              |              |                |                  | 2           | ②             |               |                 |             |               |                 |
| TR40x3       | 3     | 38.5               | 1°25'      | NR30TR          |             |              |              | ○          |            |            |              |              |            |              |              |               | ○          |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR42x3       | 3     | 40.5               | 1°21'      | NR30TR          |             |              |              | ○          |            |            |              |              |            |              |              |               | ○          |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR44x3       | 3     | 42.5               | 1°17'      | NR30TR          |             |              |              |            | ○          |            |              |              |            |              |              |               | ○          |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR46x3       | 3     | 44.5               | 1°14'      | NR30TR          |             |              |              |            | ○          |            |              |              |            |              |              |               | ○          |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR48x3       | 3     | 46.5               | 1°11'      | NR30TR          |             |              |              |            | ○          |            |              |              |            |              |              |               | ○          |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR50x3       | 3     | 48.5               | 1°08'      | NR30TR          |             |              |              |            | ○          |            |              |              |            |              |              |               | ○          |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR52x3       | 3     | 50.5               | 1°05'      | NR30TR          |             |              |              |            | ○          |            |              |              |            |              |              |               | ○          |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR55x3       | 3     | 53.5               | 1°01'      | NR30TR          |             |              |              |            | ○          |            |              |              |            |              |              |               | ○          |            |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR60x3       | 3     | 58.5               | 0°56'      | NR30TR          |             |              |              |            | ○          |            |              |              |            |              |              |               | ○          |            |              |              |                |                  |             |               |               |                 |             |               |                 |

② : Change the shim to GXN16-2 ←

② : Change the shim to GXN16-2DT ←

30° trapezoidal thread (TR)

2/2

| Nominal size | Pitch | Effective diameter | Lead angle | Shank           | Steel shank |              |              |            |            |            |            |              |              |            |            | Carbide shank |              |              | "T-Bar"    |              |              |              |                |                  |             |               |               |                 |             |               |                 |
|--------------|-------|--------------------|------------|-----------------|-------------|--------------|--------------|------------|------------|------------|------------|--------------|--------------|------------|------------|---------------|--------------|--------------|------------|--------------|--------------|--------------|----------------|------------------|-------------|---------------|---------------|-----------------|-------------|---------------|-----------------|
|              |       |                    |            | Insert size     | 16NR        |              |              |            |            |            | 22NR       |              |              | 27NR       | 16NR       |               |              | 16NR         | 22NR       |              |              |              |                |                  |             |               |               |                 |             |               |                 |
|              |       |                    |            | Holder Cat. No. | SNR0016M16  | SNR0016M16-2 | SNR0016M16-3 | CNR0020P16 | CNR0025R16 | CNR0032S16 | SNR0020Q22 | SNR0020Q22-2 | SNR0020Q22-3 | CNR0025R22 | CNR0032S22 | (CNR0040T22)  | (CNR0050U22) | (CNR0063V22) | CNR0040T27 | (CNR0050U27) | (CNR0063V27) | SNR0016R16SC | SNR0016R16SC-2 | (SNR0016R16SC-3) | TSNR0016Q16 | TCNR0020R16DT | TCNR0025S16DT | (TCNR0032T16DT) | TSNR0020R22 | TCNR0025S22DT | (TCNR0032T22DT) |
|              |       |                    |            | Insert Cat. No. |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR65x4       | 4     | 63                 | 1°09'      | NR40TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 | ○           |               |                 |
| TR70x4       | 4     | 68                 | 1°04'      | NR40TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 | ○           |               |                 |
| TR75x4       | 4     | 73                 | 1°00'      | NR40TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 | ○           |               |                 |
| TR80x4       | 4     | 78                 | 0°56'      | NR40TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 | ○           |               |                 |
| TR85x4       | 4     | 83                 | 0°53'      | NR40TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 | ○           |               |                 |
| TR90x4       | 4     | 88                 | 0°50'      | NR40TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 | ○           |               |                 |
| TR95x4       | 4     | 93                 | 0°47'      | NR40TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 | ○           |               |                 |
| TR100x4      | 4     | 98                 | 0°45'      | NR40TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 | ○           |               |                 |
| TR105x4      | 4     | 103                | 0°42'      | NR40TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 | ○           |               |                 |
| TR110x4      | 4     | 108                | 0°41'      | NR40TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 | ○           |               |                 |
| TR115x6      | 6     | 112                | 0°59'      | NR60TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR120x6      | 6     | 117                | 0°56'      | NR60TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR125x6      | 6     | 122                | 0°54'      | NR60TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR130x6      | 6     | 127                | 0°52'      | NR60TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR135x6      | 6     | 132                | 0°50'      | NR60TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR140x6      | 6     | 137                | 0°48'      | NR60TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR145x6      | 6     | 142                | 0°46'      | NR60TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR150x6      | 6     | 147                | 0°45'      | NR60TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR155x6      | 6     | 152                | 0°43'      | NR60TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR160x6      | 6     | 157                | 0°42'      | NR60TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR165x6      | 6     | 162                | 0°41'      | NR60TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 |             |               |                 |
| TR170x6      | 6     | 167                | 0°39'      | NR60TR          |             |              |              |            |            |            |            |              |              |            |            |               |              |              |            |              |              |              |                |                  |             |               |               |                 |             |               |                 |

## Selection of Internal Toolholder — Relationship between thread sizes, toolholder and inserts

**Parallel pipe thread (PF)** This table is also applied to G, Rp, and PS type threads.

| Nominal size | TPI | Pitch | Effective diameter | Lead angle | Shank           | Steel shank  |              |            |              |            |              |            |              | Carbide shank |            |            |              | "T-Bar"      |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
|--------------|-----|-------|--------------------|------------|-----------------|--------------|--------------|------------|--------------|------------|--------------|------------|--------------|---------------|------------|------------|--------------|--------------|----------------|----------------|----------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|-------------|---------------|---------------|---|
|              |     |       |                    |            | Insert size     | 6NR          |              | 11NR       |              | 16NR       |              |            |              | 6NR           |            | 11NR       |              | 16NR         |                | 16NR           |                |                |              |                |              |                |              |                |             |               |               |   |
|              |     |       |                    |            | Holder Cat. No. | SNR0006H06-2 | SNR0008H06-2 | SNR0010K11 | SNR0010K11-2 | SNR0013L11 | SNR0013L11-2 | SNR0016M16 | SNR0016M16-2 | CNR0020P16    | CNR0025R16 | CNR0032S16 | (CNR0040T16) | (CNR0050U16) | SNR0006K06SC-2 | SNR0006K06SC-3 | SNR0008K06SC-2 | SNR0008K06SC-3 | SNR0010M11SC | SNR0010M11SC-2 | SNR0012P11SC | SNR0012P11SC-2 | SNR0016R16SC | SNR0016R16SC-2 | TSNR0016C16 | TCNR0020R16DT | TCNR0025S16DT |   |
|              |     |       |                    |            | Insert Cat. No. | ○            |              | ○          |              | ○          |              | ○          |              | ○             |            | ○          |              | ○            |                | ○              |                | ○              |              | ○              |              | ○              |              | ○              |             | ○             |               | ○ |
| PF1/4        | 19  | 1.34  | 12.30              | 1°59'      | NR19W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF3/8        | 19  | 1.34  | 15.81              | 1°33'      | NR19W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF1/2        | 14  | 1.81  | 19.79              | 1°40'      | NR14W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF5/8        | 14  | 1.81  | 21.75              | 1°31'      | NR14W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF3/4        | 14  | 1.81  | 25.28              | 1°19'      | NR14W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF7/8        | 14  | 1.81  | 29.04              | 1°08'      | NR14W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF1          | 11  | 2.31  | 31.77              | 1°20'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF1-1/8      | 11  | 2.31  | 36.42              | 1°09'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF1-1/4      | 11  | 2.31  | 40.43              | 1°02'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF1-1/2      | 11  | 2.31  | 46.32              | 0°55'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF1-3/4      | 11  | 2.31  | 52.27              | 0°48'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF2          | 11  | 2.31  | 58.14              | 0°43'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF2-1/4      | 11  | 2.31  | 64.23              | 0°39'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF2-1/2      | 11  | 2.31  | 73.71              | 0°34'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF2-3/4      | 11  | 2.31  | 80.06              | 0°32'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF3          | 11  | 2.31  | 86.41              | 0°29'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF3-1/2      | 11  | 2.31  | 98.85              | 0°26'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF4          | 11  | 2.31  | 111.55             | 0°23'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF4-1/2      | 11  | 2.31  | 124.25             | 0°20'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF5          | 11  | 2.31  | 136.95             | 0°18'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF6          | 11  | 2.31  | 162.35             | 0°16'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF7          | 11  | 2.31  | 187.75             | 0°13'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF8          | 11  | 2.31  | 213.15             | 0°12'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF9          | 11  | 2.31  | 238.55             | 0°11'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF10         | 11  | 2.31  | 263.95             | 0°10'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |
| PF12         | 11  | 2.31  | 314.75             | 0°08'      | NR11W           |              |              |            |              |            |              |            |              |               |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |   |

☐: Change the shim to GXN16-0DT ← ☐: Change the shim to GXN16-0DT ←

**Taper pipe thread (PT)** This table is also applied to Rc type pipe thread.

| Nominal size | TPI | Pitch | Effective diameter | Lead angle | Shank           | Steel shank  |              |              |              |            |              |            |              | Carbide shank |              |            |            | "T-Bar"    |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
|--------------|-----|-------|--------------------|------------|-----------------|--------------|--------------|--------------|--------------|------------|--------------|------------|--------------|---------------|--------------|------------|------------|------------|--------------|--------------|----------------|----------------|----------------|----------------|--------------|----------------|--------------|----------------|--------------|----------------|-------------|---------------|---------------|
|              |     |       |                    |            | Insert size     | 6NR          |              | 11NR         |              | 16NR       |              |            |              | 6NR           |              | 11NR       |            | 16NR       |              | 16NR         |                |                |                |                |              |                |              |                |              |                |             |               |               |
|              |     |       |                    |            | Holder Cat. No. | SNR0006H06-2 | SNR0006H06-3 | SNR0008H06-2 | SNR0008H06-3 | SNR0010K11 | SNR0010K11-2 | SNR0013L11 | SNR0013L11-2 | SNR0016M16    | SNR0016M16-2 | CNR0020P16 | CNR0025R16 | CNR0032S16 | (CNR0040T16) | (CNR0050U16) | SNR0006K06SC-2 | SNR0006K06SC-3 | SNR0008K06SC-2 | SNR0008K06SC-3 | SNR0010M11SC | SNR0010M11SC-2 | SNR0012P11SC | SNR0012P11SC-2 | SNR0016R16SC | SNR0016R16SC-2 | TSNR0016C16 | TCNR0020R16DT | TCNR0025S16DT |
|              |     |       |                    |            | Insert Cat. No. | ○            |              | ○            |              | ○          |              | ○          |              | ○             |              | ○          |            | ○          |              | ○            |                | ○              |                | ○              |              | ○              |              | ○              |              | ○              |             | ○             |               |
| PT1/4        | 19  | 1.34  | 12.30              | 1°59'      | NR19PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT3/8        | 19  | 1.34  | 15.81              | 1°33'      | NR19PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT1/2        | 14  | 1.81  | 19.79              | 1°40'      | NR14PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT3/4        | 14  | 1.81  | 25.28              | 1°19'      | NR14PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT1          | 11  | 2.31  | 31.77              | 1°20'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT1 1/4      | 11  | 2.31  | 40.43              | 1°02'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT1 1/2      | 11  | 2.31  | 46.32              | 0°55'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT2          | 11  | 2.31  | 58.14              | 0°43'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT2 1/2      | 11  | 2.31  | 73.71              | 0°34'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT3          | 11  | 2.31  | 86.41              | 0°29'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT3 1/2      | 11  | 2.31  | 98.85              | 0°26'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT4          | 11  | 2.31  | 111.55             | 0°23'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT5          | 11  | 2.31  | 136.95             | 0°18'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT6          | 11  | 2.31  | 162.35             | 0°16'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT7          | 11  | 2.31  | 187.75             | 0°13'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT8          | 11  | 2.31  | 213.15             | 0°12'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT9          | 11  | 2.31  | 238.55             | 0°11'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT10         | 11  | 2.31  | 263.95             | 0°10'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |
| PT12         | 11  | 2.31  | 314.75             | 0°08'      | NR11PT          |              |              |              |              |            |              |            |              |               |              |            |            |            |              |              |                |                |                |                |              |                |              |                |              |                |             |               |               |

☐: Change the shim to GXN16-2 ← ☐: Change the shim to GXN16-2DT ←

Selection of Internal Toolholder — Relationship between thread sizes, toolholder and inserts

Taper pipe thread (NPT)

| Nominal size | TPI  | Pitch | Lead angle | Shank           | Steel shank  |              |              |              |            |              |              |            |            |            | Carbide shank |              |                | "T-Bar"        |                |                |              |                |                  |             |               |               |
|--------------|------|-------|------------|-----------------|--------------|--------------|--------------|--------------|------------|--------------|--------------|------------|------------|------------|---------------|--------------|----------------|----------------|----------------|----------------|--------------|----------------|------------------|-------------|---------------|---------------|
|              |      |       |            | Insert size     | 6NR          |              |              |              | 16NR       |              |              |            |            |            | 6NR           |              | 16NR           | 16NR           |                |                |              |                |                  |             |               |               |
|              |      |       |            | Holder Cat. No. | SNR0006H06-2 | SNR0006H06-3 | SNR0008H06-2 | SNR0008H06-3 | SNR0016M16 | SNR0016M16-2 | SNR0016M16-3 | CNR0020P16 | CNR0025R16 | CNR0032S16 | (CNR0040T16)  | (CNR0050U16) | SNR0006K06SC-2 | SNR0006K06SC-3 | SNR0008K06SC-2 | SNR0008K06SC-3 | SNR0016R16SC | SNR0016R16SC-2 | (SNR0016R16SC-3) | TSNR0016Q16 | TCNR0020R16DT | TCNR0025S16DT |
|              |      |       |            | Insert Cat. No. |              |              |              |              |            |              |              |            |            |            |               |              |                |                |                |                |              |                |                  |             |               |               |
| 3/8NPT       | 18   | 1.41  | 1°37'      | NR18NPT         |              |              | ○            |              |            |              |              |            |            |            |               | ○            |                |                |                |                |              |                |                  |             |               |               |
| 1/2NPT       | 14   | 1.81  | 1°40'      | NR14NPT         |              |              |              |              |            |              |              |            |            |            |               |              |                |                |                |                |              |                |                  |             |               |               |
| 3/4NPT       | 14   | 1.81  | 1°19'      | NR14NPT         |              |              |              |              | ○          |              |              |            |            |            |               |              |                |                | ○              |                |              |                | ○                |             |               |               |
| 1NPT         | 11.5 | 2.21  | 1°17'      | NR115NPT        |              |              |              |              | ○          |              |              |            |            |            |               |              |                |                | ○              |                |              |                | ○                |             |               |               |
| 1 1/4NPT     | 11.5 | 2.21  | 1°00'      | NR115NPT        |              |              |              |              | ○          |              |              |            |            | ○          |               |              |                |                | ○              |                |              |                |                  | ○           |               |               |
| 1 1/2NPT     | 11.5 | 2.21  | 0°52'      | NR115NPT        |              |              |              |              | ○          |              |              |            |            | ○          |               |              |                |                | ○              |                |              |                |                  | ○           |               |               |
| 2NPT         | 11.5 | 2.21  | 0°41'      | NR115NPT        |              |              |              |              | ○          |              |              |            |            |            | ○             |              |                |                | ○              |                |              |                |                  | ○           |               |               |
| 2 1/2NPT     | 8    | 3.175 | 0°50'      | NR8NPT          |              |              |              |              | ○          |              |              |            |            |            | ○             |              |                |                | ○              |                |              |                |                  | ○           |               |               |
| 3NPT         | 8    | 3.175 | 0°40'      | NR8NPT          |              |              |              |              | ○          |              |              |            |            |            | ○             |              |                |                | ○              |                |              |                |                  | ○           |               |               |
| 3 1/2NPT     | 8    | 3.175 | 0°35'      | NR8NPT          |              |              |              |              | ○          |              |              |            |            |            | ○             |              |                |                | ○              |                |              |                |                  | ○           |               |               |
| 4NPT         | 8    | 3.175 | 0°31'      | NR8NPT          |              |              |              |              | ○          |              |              |            |            |            | ○             |              |                |                | ○              |                |              |                |                  | ○           |               |               |
| 5NPT         | 8    | 3.175 | 0°25'      | NR8NPT          |              |              |              |              |            |              |              |            | 0          | 0          | 0             | □            | □              |                |                |                |              |                |                  | 0           | 0             |               |
| 6NPT         | 8    | 3.175 | 0°21'      | NR8NPT          |              |              |              |              |            |              |              |            | 0          | 0          | 0             | □            | □              |                |                |                |              |                |                  | 0           | 0             |               |
| 8NPT         | 8    | 3.175 | 0°16'      | NR8NPT          |              |              |              |              |            |              |              |            | 0          | 0          | 0             | □            | □              |                |                |                |              |                |                  | 0           | 0             |               |
| 10NPT        | 8    | 3.175 | 0°13'      | NR8NPT          |              |              |              |              |            |              |              |            | 0          | 0          | 0             | □            | □              |                |                |                |              |                |                  | 0           | 0             |               |
| 12NPT        | 8    | 3.175 | 0°11'      | NR8NPT          |              |              |              |              |            |              |              |            | 0          | 0          | 0             | □            | □              |                |                |                |              |                |                  | 0           | 0             |               |
| 14NPT        | 8    | 3.175 | 0°10'      | NR8NPT          |              |              |              |              |            |              |              |            | 0          | 0          | 0             | □            | □              |                |                |                |              |                |                  | 0           | 0             |               |
| 16NPT        | 8    | 3.175 | 0°09'      | NR8NPT          |              |              |              |              |            |              |              |            | 0          | 0          | 0             | □            | □              |                |                |                |              |                |                  | 0           | 0             |               |
| 18NPT        | 8    | 3.175 | 0°08'      | NR8NPT          |              |              |              |              |            |              |              |            | 0          | 0          | 0             | □            | □              |                |                |                |              |                |                  | 0           | 0             |               |
| 20NPT        | 8    | 3.175 | 0°07'      | NR8NPT          |              |              |              |              |            |              |              |            | 0          | 0          | 0             | □            | □              |                |                |                |              |                |                  | 0           | 0             |               |
| 24NPT        | 8    | 3.175 | 0°06'      | NR8NPT          |              |              |              |              |            |              |              |            | 0          | 0          | 0             | □            | □              |                |                |                |              |                |                  | 0           | 0             |               |

□ : Change the shim to GXN16-0 ←

□ : Change the shim to GXN16-0DT ←

29° trapezoidal thread (ACME)

| Nominal size | TPI | Pitch | Effective diameter | Lead angle | Shank           | Steel shank |              |              |            |            |            |            |              |              | Carbide shank |            |            | "T-Bar"      |              |                |                  |             |               |               |  |  |
|--------------|-----|-------|--------------------|------------|-----------------|-------------|--------------|--------------|------------|------------|------------|------------|--------------|--------------|---------------|------------|------------|--------------|--------------|----------------|------------------|-------------|---------------|---------------|--|--|
|              |     |       |                    |            | Insert size     | 16NR        |              |              |            | 22NR       |            |            | 27NR         | 16NR         |               | 16NR       | 22NR       |              |              |                |                  |             |               |               |  |  |
|              |     |       |                    |            | Holder Cat. No. | SNR0016M16  | SNR0016M16-2 | SNR0016M16-3 | CNR0020P16 | CNR0025R16 | CNR0032S16 | SNR0020Q22 | SNR0020Q22-2 | SNR0020Q22-3 | CNR0025R22    | CNR0032S22 | CNR0040T27 | (CNR0050U27) | SNR0016R16SC | SNR0016R16SC-2 | (SNR0016R16SC-3) | TSNR0016Q16 | TCNR0020R16DT | TCNR0025S22DT |  |  |
|              |     |       |                    |            | Insert Cat. No. |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |
| 3/8          | 12  | 2.12  | 8.465              | 4°33'      | NR12ACME        |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |
| 7/16         | 12  | 2.12  | 10.053             | 3°50'      | NR12ACME        |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |
| 1/2          | 10  | 2.54  | 11.43              | 4°03'      | NR10ACME        |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |
| 5/8          | 8   | 3.18  | 14.274             | 4°03'      | NR8ACME         |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |
| 3/4          | 6   | 4.23  | 16.934             | 4°33'      | NR6ACME         |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |
| 7/8          | 6   | 4.23  | 20.109             | 3°50'      | NR6ACME         |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |
| 1            | 5   | 5.08  | 22.86              | 4°03'      | NR5ACME         |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |
| 1-1/8        | 5   | 5.08  | 26.035             | 3°33'      | NR5ACME         |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |
| 1-1/4        | 5   | 5.08  | 29.21              | 3°10'      | NR5ACME         |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |
| 1-3/8        | 4   | 6.35  | 31.75              | 3°39'      | NR4ACME         |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |
| 1-1/2        | 4   | 6.35  | 34.925             | 3°19'      | NR4ACME         |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |
| 1-3/4        | 4   | 6.35  | 41.275             | 2°48'      | NR4ACME         |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |
| 2            | 4   | 6.35  | 47.625             | 2°26'      | NR4ACME         |             |              |              |            |            |            |            |              |              |               |            |            |              |              |                |                  |             |               |               |  |  |

Because this thread standard is characterized with large pitch and small diameter (that is a large lead angle), the standard inserts and toolholder cannot be used for machining this thread type. The application is limited to outside of the standard.



## Shim replacement method (Compensation for the lead angle and tool relief angle)

When the pitch is large or the screw diameter is small, the lead angle becomes large and the effective relief angle on the advance flank side  $\beta_2$  becomes small. In particular, this will cause shorter life of the insert in the case of trapezoidal screw with small flank angle. It is ideal without any interference for the thread cutting tip to have the equal relief angle on both right and left. Replace the shim so that the rake face of insert faces the thread groove direction (that is,  $\beta = \beta_3$ ).

### Calculating the lead angle

The lead angle is calculated as follows:

$$\tan \beta = l / \pi d = nP / \pi d$$

$\beta$  : Lead angle  
 $l$  : Lead  
 $n$  : No. of threads  
 $P$  : Pitch  
 $d$  : Thread diameter

### Calculating the relief angle

The relief angle  $\beta_1$  is calculated as follows:

$$\tan \beta_1 = \tan \theta \cdot \tan \alpha$$

The  $\alpha$  of a standard toolholder is  $10^\circ$  for external threading and  $15^\circ$  for internal threading.

| Included angle<br>$2\theta$ | Half included angle<br>$\theta$ | Relief angle $\beta_1$  |                         |
|-----------------------------|---------------------------------|-------------------------|-------------------------|
|                             |                                 | External threading tool | Internal threading tool |
| $60^\circ$                  | $30^\circ$                      | $5.8^\circ$             | $8.8^\circ$             |
| $55^\circ$                  | $27.5^\circ$                    | $5.2^\circ$             | $7.9^\circ$             |
| $30^\circ$                  | $15^\circ$                      | $2.7^\circ$             | $4.1^\circ$             |
| $29^\circ$                  | $14.5^\circ$                    | $2.6^\circ$             | $4.0^\circ$             |

Accordingly, the effective relief angle is calculated as follows:

$$\beta_2 = \beta_1 + \beta_3 - \beta$$

$\beta$  : Lead angle  
 $\beta_2$  : Effective relief angle  
 $\beta_3$  : Lead angle compensation value

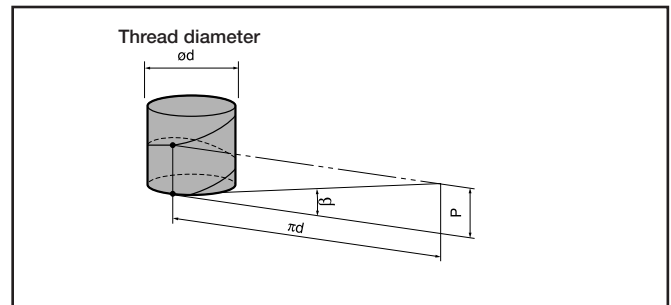
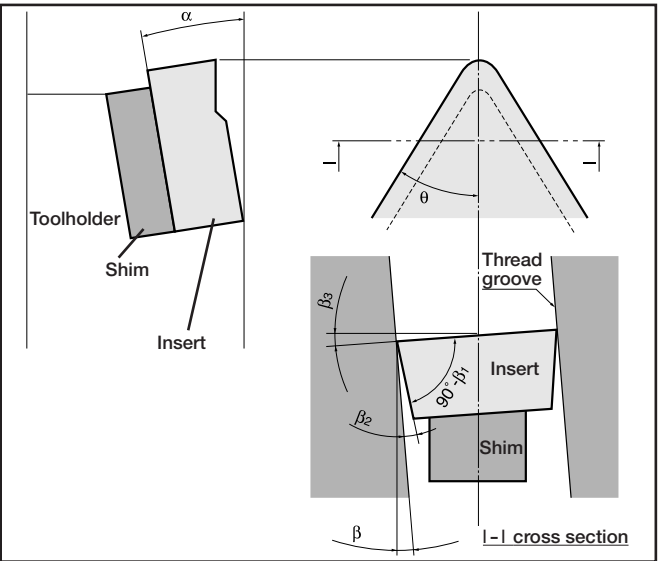
In other words,  $\beta_1 = \beta_2$  when the thread lead angle is equal to the compensation value. Namely, the relief angle of the tool itself is equal to the effective relief angle. If the wrong compensation value is used,  $\beta_1 > \beta_2$ . Namely, the effective relief angle becomes smaller. Therefore, carry out compensation of the lead angle so that the following range is obtained:

- $\pm 1^\circ$  when the included angle is  $60^\circ$  and  $55^\circ$
- $\pm 30^\circ$  when the included angle is  $30^\circ$  and  $29^\circ$

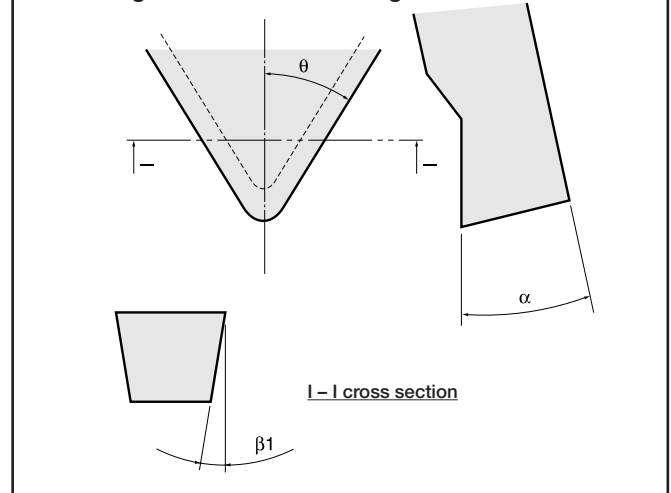
### Type of shim

The Cat. No. of the shim and compensated lead angles are shown in the table.

| Compensated lead angle | $-2^\circ$ | $-1^\circ$ | $0^\circ$ | $1^\circ$ | $2^\circ$ | $3^\circ$ | $4^\circ$ |
|------------------------|------------|------------|-----------|-----------|-----------|-----------|-----------|
| Shim                   | □□□-98     | □□□-99     | □□□-0     | □□□-1     | □□□-2     | □□□-3     | □□□-4     |



### Calculating the effective relief angle



TAC Threading Tools

### Toolholder and applicable shims

#### Screw-on /clamp-on dual toolholder

| Toolholder Cat. No. | Shim      |           |
|---------------------|-----------|-----------|
|                     | R         | L         |
| CER/L□□□□□16DT      | GXE16-□DT | GXN16-□DT |
| CER/L□□□□□22DT      | GXE22-□DT | GXN22-□DT |
| TCNR/L□□□□□16DT     | GXN16-□DT | GXE16-□DT |
| TCNR/L□□□□□22DT     | GXN22-□DT | GXE22-□DT |

Note: Standard shim is GX □□-1DT. Other types are optional.

#### Clamp-on type toolholder

| Toolholder Cat. No. | Shim    |         |
|---------------------|---------|---------|
|                     | R       | L       |
| CER/L□□□□□16□       | GXE16-□ | GXN16-□ |
| CER/L□□□□□22□       | NXE22-□ | NXN22-□ |
| CER/L□□□□□27□       | NXE27-□ | NXN27-□ |
| CNR/L□□□□□16□       | GXN16-□ | GXE16-□ |
| CNR/L□□□□□22□       | NXN22-□ | NXE22-□ |
| CNR/L□□□□□27□       | NXN22-□ | NXE27-□ |
| B-CER/L□□□□16       | GXE16-□ | GXN16-□ |

Note: Standard shims set before delivery are all indicated as □□□□-1.

# Threading Methods and Combinations

| External threading                                                                                                                                                                                                                                                                                    |                     |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------|----------------|-------------------|--------------------|-------|----------------|-------|---------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|----------------|-------------------|--------------------|------|----------------|------|---------------|---------------------|
| Right hand thread                                                                                                                                                                                                                                                                                     | Left hand thread    |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
|                                                                                                                                                                                                                                                                                                       |                     |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| <table border="1"> <tr><td>Work rotation</td><td>Regular</td></tr> <tr><td>Feed direction</td><td>Toward chuck side</td></tr> <tr><td>Hand of toolholder</td><td>Right</td></tr> <tr><td>Hand of insert</td><td>Right</td></tr> <tr><td>Standard shim</td><td>□XE□□-1<br/>GX□□-1DT</td></tr> </table> | Work rotation       | Regular | Feed direction | Toward chuck side | Hand of toolholder | Right | Hand of insert | Right | Standard shim | □XE□□-1<br>GX□□-1DT | <table border="1"> <tr><td>Work rotation</td><td>Reverse</td></tr> <tr><td>Feed direction</td><td>Toward chuck side</td></tr> <tr><td>Hand of toolholder</td><td>Left</td></tr> <tr><td>Hand of insert</td><td>Left</td></tr> <tr><td>Standard shim</td><td>□XN□□-1<br/>GX□□-1DT</td></tr> </table> | Work rotation | Reverse | Feed direction | Toward chuck side | Hand of toolholder | Left | Hand of insert | Left | Standard shim | □XN□□-1<br>GX□□-1DT |
| Work rotation                                                                                                                                                                                                                                                                                         | Regular             |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Feed direction                                                                                                                                                                                                                                                                                        | Toward chuck side   |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of toolholder                                                                                                                                                                                                                                                                                    | Right               |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of insert                                                                                                                                                                                                                                                                                        | Right               |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Standard shim                                                                                                                                                                                                                                                                                         | □XE□□-1<br>GX□□-1DT |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Work rotation                                                                                                                                                                                                                                                                                         | Reverse             |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Feed direction                                                                                                                                                                                                                                                                                        | Toward chuck side   |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of toolholder                                                                                                                                                                                                                                                                                    | Left                |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of insert                                                                                                                                                                                                                                                                                        | Left                |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Standard shim                                                                                                                                                                                                                                                                                         | □XN□□-1<br>GX□□-1DT |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
|                                                                                                                                                                                                                                                                                                       |                     |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| <table border="1"> <tr><td>Work rotation</td><td>Reverse</td></tr> <tr><td>Feed direction</td><td>Toward chuck side</td></tr> <tr><td>Hand of toolholder</td><td>Right</td></tr> <tr><td>Hand of insert</td><td>Right</td></tr> <tr><td>Standard shim</td><td>□XE□□-1<br/>GX□□-1DT</td></tr> </table> | Work rotation       | Reverse | Feed direction | Toward chuck side | Hand of toolholder | Right | Hand of insert | Right | Standard shim | □XE□□-1<br>GX□□-1DT | <table border="1"> <tr><td>Work rotation</td><td>Regular</td></tr> <tr><td>Feed direction</td><td>Toward chuck side</td></tr> <tr><td>Hand of toolholder</td><td>Left</td></tr> <tr><td>Hand of insert</td><td>Left</td></tr> <tr><td>Standard shim</td><td>□XE□□-1<br/>GX□□-1DT</td></tr> </table> | Work rotation | Regular | Feed direction | Toward chuck side | Hand of toolholder | Left | Hand of insert | Left | Standard shim | □XE□□-1<br>GX□□-1DT |
| Work rotation                                                                                                                                                                                                                                                                                         | Reverse             |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Feed direction                                                                                                                                                                                                                                                                                        | Toward chuck side   |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of toolholder                                                                                                                                                                                                                                                                                    | Right               |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of insert                                                                                                                                                                                                                                                                                        | Right               |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Standard shim                                                                                                                                                                                                                                                                                         | □XE□□-1<br>GX□□-1DT |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Work rotation                                                                                                                                                                                                                                                                                         | Regular             |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Feed direction                                                                                                                                                                                                                                                                                        | Toward chuck side   |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of toolholder                                                                                                                                                                                                                                                                                    | Left                |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of insert                                                                                                                                                                                                                                                                                        | Left                |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Standard shim                                                                                                                                                                                                                                                                                         | □XE□□-1<br>GX□□-1DT |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |

| Internal threading                                                                                                                                                                                                                                                                                    |                     |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|---------|----------------|-------------------|--------------------|-------|----------------|-------|---------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------|----------------|-------------------|--------------------|------|----------------|------|---------------|---------------------|
| Right hand thread                                                                                                                                                                                                                                                                                     | Left hand thread    |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
|                                                                                                                                                                                                                                                                                                       |                     |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| <table border="1"> <tr><td>Work rotation</td><td>Regular</td></tr> <tr><td>Feed direction</td><td>Toward chuck side</td></tr> <tr><td>Hand of toolholder</td><td>Right</td></tr> <tr><td>Hand of insert</td><td>Right</td></tr> <tr><td>Standard shim</td><td>□XN□□-1<br/>GX□□-1DT</td></tr> </table> | Work rotation       | Regular | Feed direction | Toward chuck side | Hand of toolholder | Right | Hand of insert | Right | Standard shim | □XN□□-1<br>GX□□-1DT | <table border="1"> <tr><td>Work rotation</td><td>Reverse</td></tr> <tr><td>Feed direction</td><td>Toward chuck side</td></tr> <tr><td>Hand of toolholder</td><td>Left</td></tr> <tr><td>Hand of insert</td><td>Left</td></tr> <tr><td>Standard shim</td><td>□XE□□-1<br/>GX□□-1DT</td></tr> </table> | Work rotation | Reverse | Feed direction | Toward chuck side | Hand of toolholder | Left | Hand of insert | Left | Standard shim | □XE□□-1<br>GX□□-1DT |
| Work rotation                                                                                                                                                                                                                                                                                         | Regular             |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Feed direction                                                                                                                                                                                                                                                                                        | Toward chuck side   |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of toolholder                                                                                                                                                                                                                                                                                    | Right               |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of insert                                                                                                                                                                                                                                                                                        | Right               |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Standard shim                                                                                                                                                                                                                                                                                         | □XN□□-1<br>GX□□-1DT |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Work rotation                                                                                                                                                                                                                                                                                         | Reverse             |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Feed direction                                                                                                                                                                                                                                                                                        | Toward chuck side   |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of toolholder                                                                                                                                                                                                                                                                                    | Left                |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of insert                                                                                                                                                                                                                                                                                        | Left                |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Standard shim                                                                                                                                                                                                                                                                                         | □XE□□-1<br>GX□□-1DT |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
|                                                                                                                                                                                                                                                                                                       |                     |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
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| Work rotation                                                                                                                                                                                                                                                                                         | Regular             |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Feed direction                                                                                                                                                                                                                                                                                        | Toward chuck side   |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of toolholder                                                                                                                                                                                                                                                                                    | Right               |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of insert                                                                                                                                                                                                                                                                                        | Right               |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Standard shim                                                                                                                                                                                                                                                                                         | □XN□□-1<br>GX□□-1DT |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Work rotation                                                                                                                                                                                                                                                                                         | Reverse             |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Feed direction                                                                                                                                                                                                                                                                                        | Toward chuck side   |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of toolholder                                                                                                                                                                                                                                                                                    | Left                |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Hand of insert                                                                                                                                                                                                                                                                                        | Left                |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |
| Standard shim                                                                                                                                                                                                                                                                                         | □XE□□-1<br>GX□□-1DT |         |                |                   |                    |       |                |       |               |                     |                                                                                                                                                                                                                                                                                                     |               |         |                |                   |                    |      |                |      |               |                     |

## Insert Grades and Standard Cutting Speed

| Work materials     | Hardness   | Cutting speed Vc (m/min) |           |           |          |           |
|--------------------|------------|--------------------------|-----------|-----------|----------|-----------|
|                    |            | AH740                    | T313V     | TH10      | UX30     | NS530     |
| Carbon steels      | < 200HB    | 80 ~ 150                 | 100 ~ 200 |           | 80 ~ 120 | 150 ~ 180 |
|                    | > 200HB    | 80 ~ 130                 | 100 ~ 150 |           | 70 ~ 100 | 100 ~ 120 |
| Stainless steels   |            | 50 ~ 100                 | 70 ~ 130  | 30 ~ 50   | 70 ~ 100 | 70 ~ 100  |
| Cast irons         |            |                          | 70 ~ 150  | 70 ~ 90   |          |           |
| Non-ferrous metals |            |                          |           | 100 ~ 500 |          |           |
| Hard materials     | HRC50 ~ 60 |                          |           | 10 ~ 30   |          |           |
| Super alloys       |            |                          |           | 10 ~ 40   |          |           |

Recommended grade

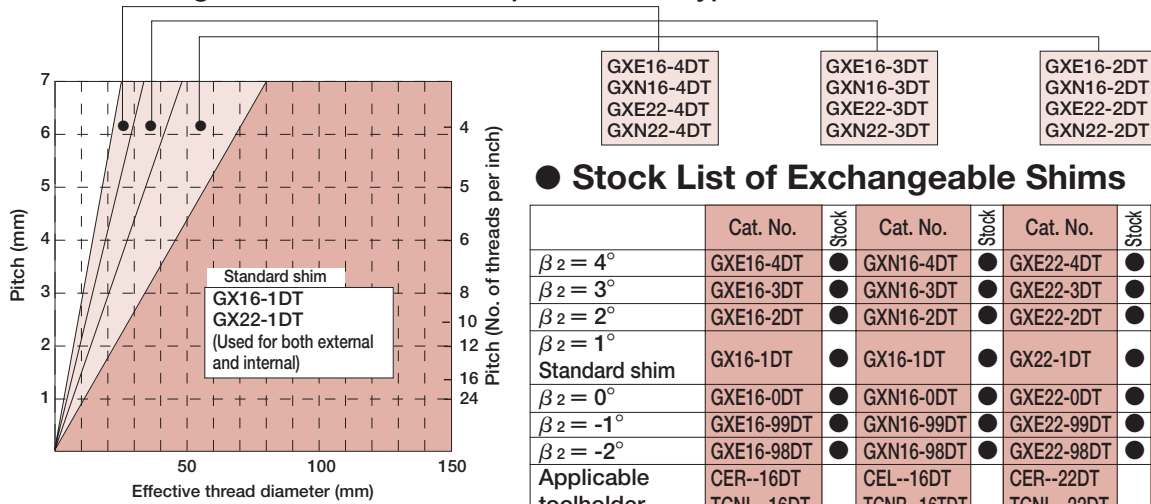
## Guideline for infeed per pass and number of passes

● Determine the infeed per pass and number of passes while referring to the table and description below.

| Pitch         | 0.5   | 0.75  | 1.0   | 1.25  | 1.5    | 1.75   | 2.0    | 2.5    | 3.0     | 3.5     | 4.0     | 4.5     | 5.0 ~   |
|---------------|-------|-------|-------|-------|--------|--------|--------|--------|---------|---------|---------|---------|---------|
| thread/inch   | 48    | 32    | 24    | 20    | 16     | 14     | 12     | 10     | 8       | 7       | 6       | 5.5     | 5 ~     |
| No. of passes | 4 ~ 6 | 4 ~ 7 | 4 ~ 8 | 5 ~ 9 | 6 ~ 10 | 7 ~ 12 | 7 ~ 12 | 8 ~ 14 | 10 ~ 16 | 11 ~ 18 | 11 ~ 18 | 11 ~ 19 | 12 ~ 24 |

- When using the full-profile insert, set the total infeed amount by taking the finish stock of 0.1 mm into account.
- Set the first infeed to 150 ~ 200% of nose R and do not allow it to exceed 0.5 mm.
- The infeed amount during the final pass must be 0.05 mm minimum. No zero cut to be made (extra-small infeed or zero cut for machining of the work hardened surface only will cause shortening of tool life).
- The partial-profile insert or inside diameter insert has small nose R. Reduce the infeed per pass and increase the no. of passes.
- Standard infeed per pass and no. of passes are shown on page 261 - 262 for each thread shape.

### ● Shim selection guide for screw-on/clamp-on dual ST-type tools

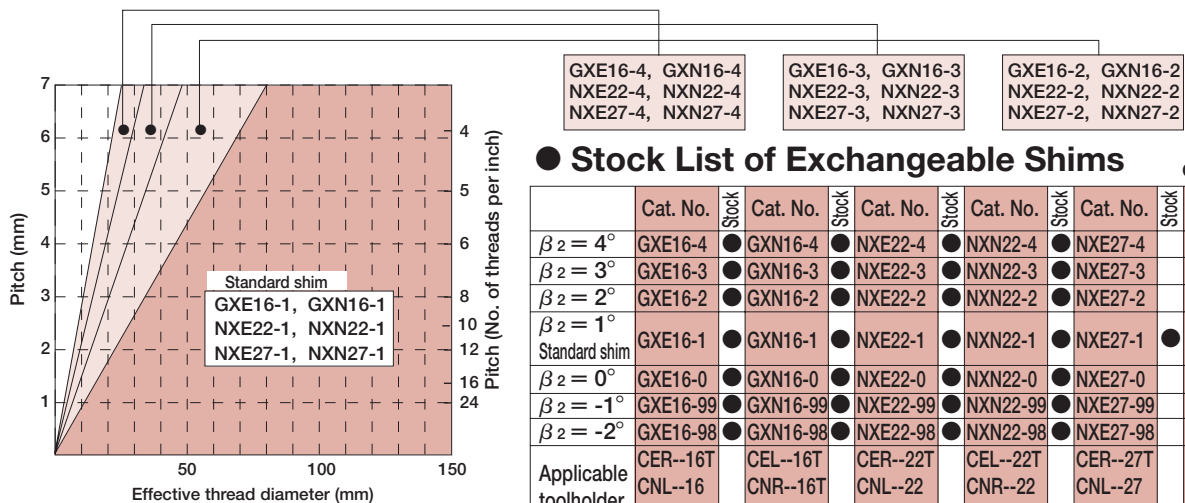


### ● Stock List of Exchangeable Shims

Grade: D30

|                       | Cat. No.   | Stock | Cat. No.    | Stock | Cat. No.   | Stock | Cat. No.    | Stock |
|-----------------------|------------|-------|-------------|-------|------------|-------|-------------|-------|
| $\beta_2 = 4^\circ$   | GXE16-4DT  | ●     | GXN16-4DT   | ●     | GXE22-4DT  | ●     | GXN22-4DT   | ●     |
| $\beta_2 = 3^\circ$   | GXE16-3DT  | ●     | GXN16-3DT   | ●     | GXE22-3DT  | ●     | GXN22-3DT   | ●     |
| $\beta_2 = 2^\circ$   | GXE16-2DT  | ●     | GXN16-2DT   | ●     | GXE22-2DT  | ●     | GXN22-2DT   | ●     |
| $\beta_2 = 1^\circ$   | GXE16-1DT  | ●     | GXN16-1DT   | ●     | GXE22-1DT  | ●     | GXN22-1DT   | ●     |
| Standard shim         | GX16-1DT   | ●     | GX16-1DT    | ●     | GX22-1DT   | ●     | GX22-1DT    | ●     |
| $\beta_2 = 0^\circ$   | GXE16-0DT  | ●     | GXN16-0DT   | ●     | GXE22-0DT  | ●     | GXN22-0DT   | ●     |
| $\beta_2 = -1^\circ$  | GXE16-99DT | ●     | GXN16-99DT  | ●     | GXE22-99DT | ●     | GXN22-99DT  | ●     |
| $\beta_2 = -2^\circ$  | GXE16-98DT | ●     | GXN16-98DT  | ●     | GXE22-98DT | ●     | GXN22-98DT  | ●     |
| Applicable toolholder | CER--16DT  |       | CEL--16DT   |       | CER--22DT  |       | CEL--16DT   |       |
|                       | TCNL--16DT |       | TCNR--16TDT |       | TCNL--22DT |       | TCNR--16TDT |       |

### ● Shim selection guide for clamp-on type ST-tools



### ● Stock List of Exchangeable Shims

Grade: D30

|                       | Cat. No.  | Stock | Cat. No.  | Stock | Cat. No. | Stock | Cat. No. | Stock | Cat. No. | Stock    |
|-----------------------|-----------|-------|-----------|-------|----------|-------|----------|-------|----------|----------|
| $\beta_2 = 4^\circ$   | GXE16-4   | ●     | GXN16-4   | ●     | NXE22-4  | ●     | NXN22-4  | ●     | NXE27-4  | NXN27-4  |
| $\beta_2 = 3^\circ$   | GXE16-3   | ●     | GXN16-3   | ●     | NXE22-3  | ●     | NXN22-3  | ●     | NXE27-3  | NXN27-3  |
| $\beta_2 = 2^\circ$   | GXE16-2   | ●     | GXN16-2   | ●     | NXE22-2  | ●     | NXN22-2  | ●     | NXE27-2  | NXN27-2  |
| $\beta_2 = 1^\circ$   | GXE16-1   | ●     | GXN16-1   | ●     | NXE22-1  | ●     | NXN22-1  | ●     | NXE27-1  | NXN27-1  |
| Standard shim         | GXE16-1   | ●     | GXN16-1   | ●     | NXE22-1  | ●     | NXN22-1  | ●     | NXE27-1  | NXN27-1  |
| $\beta_2 = 0^\circ$   | GXE16-0   | ●     | GXN16-0   | ●     | NXE22-0  | ●     | NXN22-0  | ●     | NXE27-0  | NXN27-0  |
| $\beta_2 = -1^\circ$  | GXE16-99  | ●     | GXN16-99  | ●     | NXE22-99 | ●     | NXN22-99 | ●     | NXE27-99 | NXN27-99 |
| $\beta_2 = -2^\circ$  | GXE16-98  | ●     | GXN16-98  | ●     | NXE22-98 | ●     | NXN22-98 | ●     | NXE27-98 | NXN27-98 |
| Applicable toolholder | CER--16T  |       | CEL--16T  |       | CER--22T |       | CEL--22T |       | CER--27T | CEL--27T |
|                       | CNL--16   |       | CNR--16T  |       | CNL--22  |       | CNR--22  |       | CNL--27  | CNR--27  |
|                       | B-CER--16 |       | B-CEL--16 |       |          |       |          |       |          |          |

# Cutting depth vs. Number of Passes

ISO metric full-profile inserts for external threading

| Pitch               | 0.50 | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 | 5.50 | 6.00 |      |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Height of thread    | 0.32 | 0.47 | 0.63 | 0.79 | 0.95 | 1.11 | 1.27 | 1.58 | 1.90 | 2.21 | 2.53 | 2.85 | 3.16 | 3.48 | 3.80 |      |
| Total cutting depth | 0.42 | 0.57 | 0.73 | 0.89 | 1.05 | 1.21 | 1.37 | 1.68 | 2.00 | 2.31 | 2.63 | 2.95 | 3.26 | 3.58 | 3.90 |      |
| Nose R              | 0.06 | 0.09 | 0.13 | 0.16 | 0.19 | 0.22 | 0.25 | 0.31 | 0.38 | 0.44 | 0.50 | 0.56 | 0.63 | 0.69 | 0.75 |      |
| Number of passes    | 1    | 0.15 | 0.18 | 0.25 | 0.25 | 0.30 | 0.30 | 0.30 | 0.35 | 0.35 | 0.40 | 0.40 | 0.40 | 0.45 | 0.50 | 0.50 |
|                     | 2    | 0.12 | 0.12 | 0.20 | 0.20 | 0.25 | 0.25 | 0.25 | 0.30 | 0.30 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.40 |
|                     | 3    | 0.10 | 0.10 | 0.13 | 0.15 | 0.20 | 0.20 | 0.20 | 0.25 | 0.25 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
|                     | 4    | 0.05 | 0.10 | 0.10 | 0.14 | 0.15 | 0.16 | 0.20 | 0.20 | 0.20 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
|                     | 5    |      | 0.05 | 0.05 | 0.10 | 0.10 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | 0.20 | 0.25 | 0.25 | 0.25 | 0.25 |
|                     | 6    |      |      |      | 0.05 | 0.05 | 0.10 | 0.12 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
|                     | 7    |      |      |      |      |      | 0.05 | 0.10 | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
|                     | 8    |      |      |      |      |      |      | 0.05 | 0.10 | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | 0.20 |
|                     | 9    |      |      |      |      |      |      |      | 0.05 | 0.10 | 0.15 | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 |
|                     | 10   |      |      |      |      |      |      |      |      | 0.10 | 0.10 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
|                     | 11   |      |      |      |      |      |      |      |      |      | 0.05 | 0.10 | 0.10 | 0.15 | 0.15 | 0.15 |
|                     | 12   |      |      |      |      |      |      |      |      |      |      | 0.05 | 0.10 | 0.10 | 0.15 | 0.15 |
|                     | 13   |      |      |      |      |      |      |      |      |      |      |      | 0.10 | 0.10 | 0.10 | 0.15 |
|                     | 14   |      |      |      |      |      |      |      |      |      |      |      |      | 0.05 | 0.10 | 0.10 |
|                     | 15   |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.10 | 0.10 |
|                     | 16   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.05 |
|                     | 17   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                     | 18   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                     | 19   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                     | 20   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                     | 21   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                     | 22   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                     | 23   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|                     | 24   |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |

ISO metric full-profile inserts for internal threading

| Pitch               | 0.50 | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | 2.00 | 2.50 | 3.00 | 3.50 | 4.00 | 4.50 | 5.00 | 5.50 | 6.00 |      |
|---------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Height of thread    | 0.29 | 0.43 | 0.58 | 0.72 | 0.87 | 1.01 | 1.16 | 1.44 | 1.74 | 2.03 | 2.32 | 2.61 | 2.90 | 3.19 | 3.48 |      |
| Total cutting depth | 0.39 | 0.53 | 0.68 | 0.82 | 0.97 | 1.11 | 1.26 | 1.54 | 1.84 | 2.13 | 2.42 | 2.71 | 3.00 | 3.29 | 3.58 |      |
| Nose R              | 0.04 | 0.05 | 0.07 | 0.09 | 0.11 | 0.12 | 0.14 | 0.18 | 0.21 | 0.25 | 0.28 | 0.32 | 0.35 | 0.39 | 0.42 |      |
| Number of passes    | 1    | 0.08 | 0.10 | 0.14 | 0.15 | 0.20 | 0.20 | 0.20 | 0.25 | 0.25 | 0.30 | 0.30 | 0.35 | 0.35 | 0.40 | 0.40 |
|                     | 2    | 0.07 | 0.09 | 0.13 | 0.13 | 0.16 | 0.18 | 0.18 | 0.22 | 0.22 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 | 0.25 |
|                     | 3    | 0.07 | 0.08 | 0.11 | 0.12 | 0.14 | 0.16 | 0.17 | 0.20 | 0.20 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 | 0.22 |
|                     | 4    | 0.06 | 0.08 | 0.10 | 0.11 | 0.12 | 0.14 | 0.16 | 0.18 | 0.18 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
|                     | 5    | 0.06 | 0.07 | 0.08 | 0.10 | 0.12 | 0.12 | 0.14 | 0.16 | 0.16 | 0.18 | 0.18 | 0.18 | 0.18 | 0.20 | 0.19 |
|                     | 6    | 0.05 | 0.06 | 0.07 | 0.09 | 0.10 | 0.10 | 0.12 | 0.14 | 0.15 | 0.16 | 0.18 | 0.18 | 0.18 | 0.18 | 0.18 |
|                     | 7    |      | 0.05 | 0.05 | 0.07 | 0.08 | 0.09 | 0.10 | 0.10 | 0.14 | 0.14 | 0.16 | 0.16 | 0.16 | 0.16 | 0.17 |
|                     | 8    |      |      |      | 0.05 | 0.05 | 0.07 | 0.08 | 0.10 | 0.13 | 0.13 | 0.14 | 0.14 | 0.14 | 0.14 | 0.16 |
|                     | 9    |      |      |      |      |      |      | 0.05 | 0.06 | 0.08 | 0.12 | 0.12 | 0.14 | 0.14 | 0.14 | 0.15 |
|                     | 10   |      |      |      |      |      |      |      | 0.05 | 0.06 | 0.10 | 0.11 | 0.12 | 0.12 | 0.13 | 0.14 |
|                     | 11   |      |      |      |      |      |      |      |      | 0.05 | 0.09 | 0.10 | 0.12 | 0.12 | 0.13 | 0.14 |
|                     | 12   |      |      |      |      |      |      |      |      |      | 0.07 | 0.10 | 0.10 | 0.12 | 0.12 | 0.13 |
|                     | 13   |      |      |      |      |      |      |      |      |      |      | 0.05 | 0.07 | 0.10 | 0.11 | 0.12 |
|                     | 14   |      |      |      |      |      |      |      |      |      |      |      | 0.05 | 0.09 | 0.10 | 0.12 |
|                     | 15   |      |      |      |      |      |      |      |      |      |      |      |      | 0.07 | 0.10 | 0.11 |
|                     | 16   |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.05 | 0.09 |
|                     | 17   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.08 |
|                     | 18   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.05 |
|                     | 19   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.08 |
|                     | 20   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.05 |
|                     | 21   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.08 |
|                     | 22   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.05 |
|                     | 23   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.08 |
|                     | 24   |      |      |      |      |      |      |      |      |      |      |      |      |      |      | 0.05 |

Unified full-profile inserts

|                     | External |      |      |      |      |      |      | Internal |      |      |      |      |      |      |
|---------------------|----------|------|------|------|------|------|------|----------|------|------|------|------|------|------|
|                     | 24       | 20   | 18   | 16   | 14   | 12   | 8    | 24       | 20   | 18   | 16   | 14   | 12   | 8    |
| No. of threads      | 24       | 20   | 18   | 16   | 14   | 12   | 8    | 24       | 20   | 18   | 16   | 14   | 12   | 8    |
| Height of thread    | 0.67     | 0.80 | 0.89 | 1.01 | 1.15 | 1.34 | 2.01 | 0.61     | 0.74 | 0.82 | 0.92 | 1.05 | 1.23 | 1.84 |
| Total cutting depth | 0.77     | 0.90 | 0.99 | 1.11 | 1.25 | 1.44 | 2.11 | 0.71     | 0.84 | 0.92 | 1.02 | 1.15 | 1.33 | 1.94 |
| Nose R              | 0.13     | 0.16 | 0.18 | 0.20 | 0.23 | 0.27 | 0.40 | 0.07     | 0.09 | 0.10 | 0.11 | 0.13 | 0.15 | 0.22 |
| Number of passes    | 1        | 0.25 | 0.25 | 0.28 | 0.30 | 0.30 | 0.35 | 0.20     | 0.20 | 0.20 | 0.20 | 0.25 | 0.25 | 0.30 |
|                     | 2        | 0.22 | 0.20 | 0.23 | 0.25 | 0.25 | 0.30 | 0.16     | 0.16 | 0.18 | 0.18 | 0.20 | 0.20 | 0.25 |
|                     | 3        | 0.15 | 0.16 | 0.18 | 0.18 | 0.23 | 0.21 | 0.12     | 0.13 | 0.15 | 0.16 | 0.18 | 0.18 | 0.22 |
|                     | 4        | 0.10 | 0.14 | 0.15 | 0.15 | 0.18 | 0.18 | 0.10     | 0.12 | 0.14 | 0.14 | 0.16 | 0.16 | 0.20 |
|                     | 5        | 0.05 | 0.10 | 0.10 | 0.10 | 0.14 | 0.15 | 0.08     | 0.10 | 0.10 | 0.11 | 0.13 | 0.13 | 0.18 |
|                     | 6        |      | 0.05 | 0.05 | 0.08 | 0.10 | 0.12 | 0.05     | 0.08 | 0.10 | 0.10 | 0.10 | 0.10 | 0.16 |
|                     | 7        |      |      |      | 0.05 | 0.05 | 0.10 |          | 0.05 | 0.05 | 0.08 | 0.08 | 0.10 | 0.14 |
|                     | 8        |      |      |      |      |      | 0.08 |          |      |      | 0.05 | 0.05 | 0.08 | 0.12 |
|                     | 9        |      |      |      |      |      |      | 0.05     | 0.12 |      |      |      | 0.08 | 0.12 |
|                     | 10       |      |      |      |      |      |      |          | 0.10 |      |      |      | 0.05 | 0.10 |
|                     | 11       |      |      |      |      |      |      |          |      | 0.05 |      |      |      | 0.10 |
|                     | 12       |      |      |      |      |      |      |          |      |      |      |      |      | 0.05 |
|                     | 13       |      |      |      |      |      |      |          |      |      |      |      |      |      |
|                     | 14       |      |      |      |      |      |      |          |      |      |      |      |      |      |

Whitworth full-profile inserts

|                     | External |      |      |      |      |      |      |      | Internal |      |      |      |      |      |      |      |      |      |      |
|---------------------|----------|------|------|------|------|------|------|------|----------|------|------|------|------|------|------|------|------|------|------|
|                     | 20       | 19   | 18   | 16   | 14   | 12   | 11   | 10   | 8        | 20   | 19   | 18   | 16   | 14   | 12   | 11   | 10   | 8    |      |
| No. of threads      | 20       | 19   | 18   | 16   | 14   | 12   | 11   | 10   | 8        | 20   | 19   | 18   | 16   | 14   | 12   | 11   | 10   | 8    |      |
| Height of thread    | 0.83     | 0.88 | 0.92 | 1.04 | 1.19 | 1.39 | 1.51 | 1.66 | 2.08     | 0.83 | 0.88 | 0.92 | 1.04 | 1.19 | 1.39 | 1.51 | 1.66 | 2.08 |      |
| Total cutting depth | 0.93     | 0.98 | 1.02 | 1.14 | 1.29 | 1.49 | 1.61 | 1.76 | 2.18     | 0.93 | 0.98 | 1.02 | 1.14 | 1.29 | 1.49 | 1.61 | 1.76 | 2.18 |      |
| Nose R              | 0.16     | 0.17 | 0.18 | 0.20 | 0.23 | 0.27 | 0.29 | 0.32 | 0.40     | 0.16 | 0.17 | 0.18 | 0.20 | 0.23 | 0.27 | 0.29 | 0.32 | 0.40 |      |
| Number of passes    | 1        | 0.25 | 0.28 | 0.30 | 0.30 | 0.30 | 0.30 | 0.35 | 0.35     | 0.20 | 0.20 | 0.22 | 0.22 | 0.25 | 0.25 | 0.25 | 0.30 | 0.35 |      |
|                     | 2        | 0.20 | 0.22 | 0.24 | 0.25 | 0.25 | 0.25 | 0.30 | 0.30     | 0.18 | 0.18 | 0.18 | 0.18 | 0.21 | 0.21 | 0.21 | 0.25 | 0.30 |      |
|                     | 3        | 0.18 | 0.18 | 0.18 | 0.18 | 0.23 | 0.21 | 0.21 | 0.24     | 0.25 | 0.16 | 0.16 | 0.17 | 0.17 | 0.20 | 0.20 | 0.20 | 0.22 | 0.25 |
|                     | 4        | 0.15 | 0.15 | 0.15 | 0.14 | 0.20 | 0.18 | 0.18 | 0.20     | 0.23 | 0.14 | 0.16 | 0.16 | 0.16 | 0.18 | 0.18 | 0.18 | 0.20 | 0.22 |
|                     | 5        | 0.10 | 0.10 | 0.10 | 0.12 | 0.16 | 0.15 | 0.15 | 0.15     | 0.22 | 0.12 | 0.13 | 0.14 | 0.14 | 0.16 | 0.16 | 0.16 | 0.16 | 0.20 |
|                     | 6        | 0.05 | 0.05 | 0.05 | 0.10 | 0.10 | 0.14 | 0.14 | 0.14     | 0.20 | 0.08 | 0.10 | 0.10 | 0.12 | 0.14 | 0.14 | 0.14 | 0.14 | 0.18 |
|                     | 7        |      |      |      | 0.05 | 0.05 | 0.12 | 0.12 | 0.12     | 0.18 | 0.05 | 0.05 | 0.05 | 0.10 | 0.10 | 0.10 | 0.12 | 0.12 | 0.16 |
|                     | 8        |      |      |      |      |      | 0.10 | 0.12 | 0.12     | 0.16 |      |      |      | 0.05 | 0.05 | 0.10 | 0.10 | 0.12 | 0.14 |
|                     | 9        |      |      |      |      |      |      | 0.05 | 0.10     | 0.10 | 0.14 |      |      |      |      | 0.10 | 0.10 | 0.10 | 0.12 |
|                     | 10       |      |      |      |      |      |      |      | 0.05     | 0.05 | 0.10 |      |      |      |      |      | 0.05 | 0.10 | 0.11 |
|                     | 11       |      |      |      |      |      |      |      |          | 0.05 |      |      |      |      |      |      |      | 0.05 | 0.10 |
|                     | 12       |      |      |      |      |      |      |      |          |      |      |      |      |      |      |      |      |      | 0.05 |
|                     | 13       |      |      |      |      |      |      |      |          |      |      |      |      |      |      |      |      |      |      |
|                     | 14       |      |      |      |      |      |      |      |          |      |      |      |      |      |      |      |      |      |      |
|                     | 15       |      |      |      |      |      |      |      |          |      |      |      |      |      |      |      |      |      |      |

### 30° Trapezoidal, full-profile inserts

|                     |    | External |      |      |      |      | Internal |      |      |      |      |
|---------------------|----|----------|------|------|------|------|----------|------|------|------|------|
| Pitch               |    | 2.0      | 3.0  | 4.0  | 5.0  | 6.0  | 2.0      | 3.0  | 4.0  | 5.0  | 6.0  |
| Height of thread    |    | 1.25     | 1.75 | 2.25 | 2.75 | 3.50 | 1.25     | 1.75 | 2.25 | 2.75 | 3.50 |
| Total cutting depth |    | 1.35     | 1.85 | 2.35 | 2.85 | 3.60 | 1.35     | 1.85 | 2.35 | 2.85 | 3.60 |
| Nose R              |    | 0.12     | 0.12 | 0.12 | 0.12 | 0.25 | 0.12     | 0.12 | 0.12 | 0.12 | 0.25 |
| Number of passes    | 1  | 0.25     | 0.25 | 0.30 | 0.30 | 0.30 | 0.20     | 0.22 | 0.25 | 0.25 | 0.25 |
|                     | 2  | 0.20     | 0.22 | 0.25 | 0.25 | 0.25 | 0.18     | 0.20 | 0.22 | 0.22 | 0.22 |
|                     | 3  | 0.20     | 0.20 | 0.22 | 0.20 | 0.23 | 0.18     | 0.18 | 0.20 | 0.20 | 0.21 |
|                     | 4  | 0.18     | 0.18 | 0.20 | 0.20 | 0.20 | 0.16     | 0.16 | 0.20 | 0.18 | 0.20 |
|                     | 5  | 0.15     | 0.17 | 0.18 | 0.18 | 0.18 | 0.15     | 0.16 | 0.18 | 0.18 | 0.18 |
|                     | 6  | 0.12     | 0.16 | 0.16 | 0.16 | 0.18 | 0.12     | 0.16 | 0.16 | 0.16 | 0.18 |
|                     | 7  | 0.10     | 0.14 | 0.15 | 0.16 | 0.16 | 0.10     | 0.14 | 0.16 | 0.16 | 0.16 |
|                     | 8  | 0.10     | 0.14 | 0.14 | 0.15 | 0.16 | 0.10     | 0.14 | 0.14 | 0.15 | 0.16 |
|                     | 9  | 0.05     | 0.12 | 0.14 | 0.14 | 0.16 | 0.10     | 0.12 | 0.14 | 0.14 | 0.16 |
|                     | 10 |          | 0.12 | 0.12 | 0.14 | 0.16 | 0.05     | 0.12 | 0.12 | 0.14 | 0.16 |
|                     | 11 |          | 0.10 | 0.12 | 0.14 | 0.16 |          | 0.10 | 0.12 | 0.14 | 0.16 |
|                     | 12 |          | 0.05 | 0.12 | 0.14 | 0.15 |          | 0.10 | 0.12 | 0.14 | 0.15 |
|                     | 13 |          |      | 0.10 | 0.12 | 0.15 |          | 0.05 | 0.10 | 0.12 | 0.15 |
|                     | 14 |          |      | 0.10 | 0.12 | 0.15 |          |      | 0.10 | 0.12 | 0.15 |
|                     | 15 |          |      | 0.05 | 0.12 | 0.14 |          |      | 0.10 | 0.12 | 0.14 |
|                     | 16 |          |      |      | 0.10 | 0.14 |          |      | 0.05 | 0.10 | 0.14 |
|                     | 17 |          |      |      | 0.10 | 0.12 |          |      |      | 0.10 | 0.12 |
|                     | 18 |          |      |      | 0.10 | 0.12 |          |      |      | 0.10 | 0.12 |
|                     | 19 |          |      |      | 0.05 | 0.12 |          |      |      | 0.10 | 0.12 |
|                     | 20 |          |      |      |      | 0.12 |          |      |      | 0.05 | 0.12 |
|                     | 21 |          |      |      |      | 0.10 |          |      |      |      | 0.10 |
|                     | 22 |          |      |      |      | 0.10 |          |      |      |      | 0.10 |
|                     | 23 |          |      |      |      | 0.05 |          |      |      |      | 0.10 |
|                     | 24 |          |      |      |      |      |          |      |      |      | 0.05 |
|                     | 25 |          |      |      |      |      |          |      |      |      |      |
|                     | 26 |          |      |      |      |      |          |      |      |      |      |

### 29° Trapezoidal, full-profile inserts

|                     |    | External |      |      | Internal |      |      |
|---------------------|----|----------|------|------|----------|------|------|
| No. of threads      |    | 8        | 6    | 5    | 8        | 6    | 5    |
| Height of thread    |    | 1.88     | 2.41 | 2.92 | 1.88     | 2.41 | 2.92 |
| Total cutting depth |    | 1.98     | 2.51 | 3.02 | 1.98     | 2.51 | 3.02 |
| Nose R              |    | 0.15     | 0.15 | 0.15 | 0.15     | 0.15 | 0.15 |
| Number of passes    | 1  | 0.25     | 0.25 | 0.25 | 0.22     | 0.22 | 0.22 |
|                     | 2  | 0.22     | 0.22 | 0.22 | 0.20     | 0.20 | 0.20 |
|                     | 3  | 0.20     | 0.20 | 0.20 | 0.18     | 0.18 | 0.18 |
|                     | 4  | 0.18     | 0.18 | 0.18 | 0.16     | 0.18 | 0.18 |
|                     | 5  | 0.16     | 0.17 | 0.18 | 0.16     | 0.16 | 0.16 |
|                     | 6  | 0.16     | 0.16 | 0.16 | 0.16     | 0.15 | 0.16 |
|                     | 7  | 0.16     | 0.16 | 0.16 | 0.15     | 0.15 | 0.15 |
|                     | 8  | 0.14     | 0.14 | 0.14 | 0.14     | 0.14 | 0.14 |
|                     | 9  | 0.14     | 0.14 | 0.14 | 0.14     | 0.14 | 0.14 |
|                     | 10 | 0.12     | 0.14 | 0.14 | 0.12     | 0.14 | 0.14 |
|                     | 11 | 0.10     | 0.14 | 0.14 | 0.10     | 0.14 | 0.14 |
|                     | 12 | 0.10     | 0.12 | 0.14 | 0.10     | 0.12 | 0.14 |
|                     | 13 | 0.05     | 0.12 | 0.12 | 0.10     | 0.12 | 0.12 |
|                     | 14 |          | 0.12 | 0.12 | 0.05     | 0.12 | 0.12 |
|                     | 15 |          | 0.10 | 0.12 |          | 0.10 | 0.12 |
|                     | 16 |          | 0.10 | 0.12 |          | 0.10 | 0.12 |
|                     | 17 |          | 0.05 | 0.12 |          | 0.10 | 0.12 |
|                     | 18 |          |      | 0.12 |          | 0.05 | 0.12 |
|                     | 19 |          |      | 0.10 |          |      | 0.10 |
|                     | 20 |          |      | 0.10 |          |      | 0.10 |
|                     | 21 |          |      | 0.05 |          |      | 0.10 |
|                     | 22 |          |      |      |          |      | 0.05 |
|                     | 23 |          |      |      |          |      |      |
|                     | 24 |          |      |      |          |      |      |
|                     | 25 |          |      |      |          |      |      |
|                     | 26 |          |      |      |          |      |      |

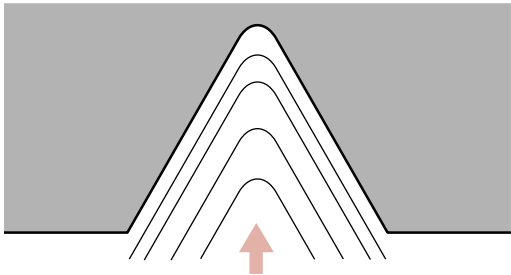
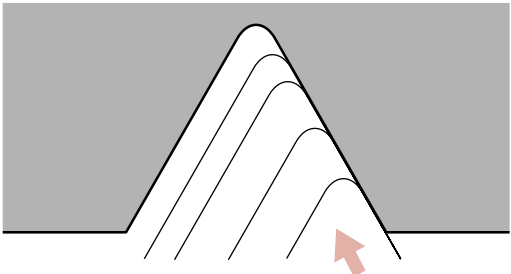
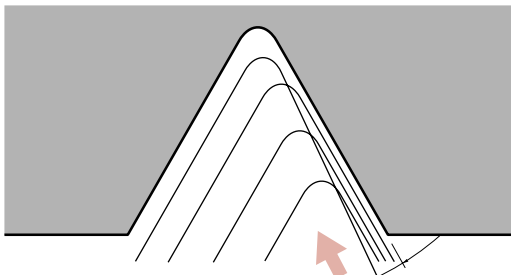
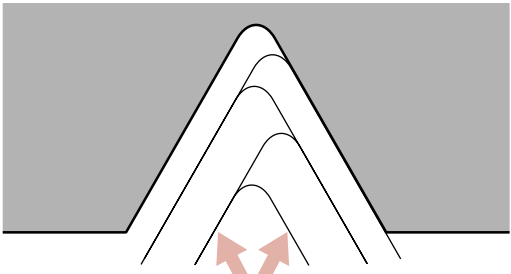
### PT full-profile inserts

|                     |    | External |      |      |      | Internal |      |      |
|---------------------|----|----------|------|------|------|----------|------|------|
| No. of threads      |    | 28       | 19   | 14   | 11   | 19       | 14   | 11   |
| Height of thread    |    | 0.60     | 0.86 | 1.16 | 1.48 | 0.86     | 1.16 | 1.48 |
| Total cutting depth |    | 0.70     | 0.96 | 1.26 | 1.58 | 0.96     | 1.26 | 1.58 |
| Nose R              |    | 0.13     | 0.18 | 0.25 | 0.32 | 0.18     | 0.25 | 0.32 |
| Number of passes    | 1  | 0.25     | 0.28 | 0.30 | 0.30 | 0.22     | 0.25 | 0.25 |
|                     | 2  | 0.20     | 0.20 | 0.25 | 0.25 | 0.18     | 0.22 | 0.22 |
|                     | 3  | 0.10     | 0.18 | 0.20 | 0.22 | 0.16     | 0.18 | 0.18 |
|                     | 4  | 0.10     | 0.15 | 0.15 | 0.18 | 0.15     | 0.15 | 0.18 |
|                     | 5  | 0.05     | 0.10 | 0.11 | 0.15 | 0.10     | 0.11 | 0.15 |
|                     | 6  |          | 0.05 | 0.10 | 0.12 | 0.05     | 0.10 | 0.12 |
|                     | 7  |          |      | 0.10 | 0.11 | 0.05     | 0.10 | 0.11 |
|                     | 8  |          |      | 0.05 | 0.10 |          | 0.01 | 0.10 |
|                     | 9  |          |      |      | 0.10 |          | 0.05 | 0.10 |
|                     | 10 |          |      |      | 0.05 |          |      | 0.10 |
|                     | 11 |          |      |      |      |          |      | 0.05 |
|                     | 12 |          |      |      |      |          |      |      |
|                     | 13 |          |      |      |      |          |      |      |
|                     | 14 |          |      |      |      |          |      |      |
|                     | 15 |          |      |      |      |          |      |      |
|                     | 16 |          |      |      |      |          |      |      |
|                     | 17 |          |      |      |      |          |      |      |
|                     | 18 |          |      |      |      |          |      |      |
|                     | 19 |          |      |      |      |          |      |      |
|                     | 20 |          |      |      |      |          |      |      |
|                     | 21 |          |      |      |      |          |      |      |
|                     | 22 |          |      |      |      |          |      |      |
|                     | 23 |          |      |      |      |          |      |      |
|                     | 24 |          |      |      |      |          |      |      |
|                     | 25 |          |      |      |      |          |      |      |
|                     | 26 |          |      |      |      |          |      |      |

### NPT full-profile inserts

|                     |    | External |      |      |      | Internal |      |      |
|---------------------|----|----------|------|------|------|----------|------|------|
| No. of threads      |    | 18       | 14   | 11.5 | 8    | 14       | 11.5 | 8    |
| Height of thread    |    | 1.14     | 1.47 | 1.79 | 2.58 | 1.47     | 1.79 | 2.58 |
| Total cutting depth |    | 1.24     | 1.57 | 1.89 | 2.68 | 1.57     | 1.89 | 2.68 |
| Nose R              |    | 0.03     | 0.04 | 0.05 | 0.07 | 0.04     | 0.05 | 0.07 |
| Number of passes    | 1  | 0.20     | 0.25 | 0.25 | 0.30 | 0.22     | 0.22 | 0.25 |
|                     | 2  | 0.18     | 0.22 | 0.22 | 0.25 | 0.20     | 0.20 | 0.20 |
|                     | 3  | 0.17     | 0.20 | 0.20 | 0.20 | 0.18     | 0.18 | 0.20 |
|                     | 4  | 0.16     | 0.18 | 0.18 | 0.20 | 0.18     | 0.18 | 0.20 |
|                     | 5  | 0.14     | 0.17 | 0.18 | 0.20 | 0.16     | 0.16 | 0.20 |
|                     | 6  | 0.12     | 0.16 | 0.17 | 0.20 | 0.14     | 0.16 | 0.20 |
|                     | 7  | 0.12     | 0.12 | 0.16 | 0.18 | 0.12     | 0.16 | 0.18 |
|                     | 8  | 0.10     | 0.12 | 0.14 | 0.18 | 0.12     | 0.14 | 0.18 |
|                     | 9  | 0.05     | 0.10 | 0.12 | 0.16 | 0.10     | 0.12 | 0.16 |
|                     | 10 |          | 0.05 | 0.12 | 0.16 | 0.10     | 0.12 | 0.16 |
|                     | 11 |          |      | 0.10 | 0.14 | 0.05     | 0.10 | 0.14 |
|                     | 12 |          |      | 0.05 | 0.14 |          | 0.10 | 0.14 |
|                     | 13 |          |      |      | 0.12 |          | 0.05 | 0.12 |
|                     | 14 |          |      |      | 0.10 |          |      | 0.10 |
|                     | 15 |          |      |      | 0.10 |          |      | 0.10 |
|                     | 16 |          |      |      | 0.05 |          |      | 0.10 |
|                     | 17 |          |      |      |      |          |      | 0.05 |
|                     | 18 |          |      |      |      |          |      |      |
|                     | 19 |          |      |      |      |          |      |      |
|                     | 20 |          |      |      |      |          |      |      |
|                     | 21 |          |      |      |      |          |      |      |
|                     | 22 |          |      |      |      |          |      |      |
|                     | 23 |          |      |      |      |          |      |      |
|                     | 24 |          |      |      |      |          |      |      |
|                     | 25 |          |      |      |      |          |      |      |
|                     | 26 |          |      |      |      |          |      |      |

## Infeed Method

| Infeed method                                                                                                                                                        | Features                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p data-bbox="298 659 651 689">Straight infeed (radial infeed)</p>                 | <ul style="list-style-type: none"> <li>● Most simple and usual method<br/>Suitable for the relatively small pitch threads of easily-machinable material</li> <li>● Chip contact length on right and left is longer, causing chattering, with increased load on the nose end.</li> <li>● When the half included angle is not symmetrical to right and left, infeeding in the direction of 1/2 of the included angle will ensure equal machining with right and left cutting edges.</li> </ul> |
|  <p data-bbox="277 1038 670 1068">Single edge infeed (flank infeed)</p>            | <ul style="list-style-type: none"> <li>● Suitable for the large pitch thread or easy to tear materials. Effectively prevents chattering.</li> <li>● Chips are discharged in one direction only. Satisfactory chip handling.</li> <li>● Edge on the right (with zero infeed) tends to be worn heavily.</li> </ul>                                                                                                                                                                             |
|  <p data-bbox="215 1408 735 1437">Corrected single-edge infeed (flank infeed)</p> | <ul style="list-style-type: none"> <li>● Suitable for the large pitch thread or easy to tear materials. Effectively prevents chattering.</li> <li>● Chips are discharged in one direction only. Satisfactory chip handling.</li> <li>● Edge on the right performs a certain cutting. Wear of this edge can thus be suppressed.</li> </ul>                                                                                                                                                    |
|  <p data-bbox="331 1791 618 1821">Alternating flank infeed</p>                    | <ul style="list-style-type: none"> <li>● Suitable for the large pitch thread or easy to tear material. Effectively prevents chattering.</li> <li>● Chips are discharged alternately in right and left directions, resulting possibly in entanglement.</li> <li>● Right and left edges are used alternately, ensuring uniform wear and extending tool life.</li> </ul>                                                                                                                        |

## Troubleshooting in Threading

| Problem                                              | Possible causes                                       | Countermeasures                                                                                                                                                                              |
|------------------------------------------------------|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Excessive wear</b>                                | ● Cutting speed too high                              | ● Reduce the cutting speed.                                                                                                                                                                  |
|                                                      | ● Incorrect carbide grade                             | ● Change to a more wear resistant grade.                                                                                                                                                     |
|                                                      | ● Too many number of passes                           | ● Reduce the number of passes.                                                                                                                                                               |
|                                                      | ● Too small depth of cut in finishing                 | ● Increase the cutting depth to at least 0.05 mm or more in final finishing.                                                                                                                 |
|                                                      | ● Poor coolant supply                                 | ● Supply sufficient coolant to the cutting point.                                                                                                                                            |
| <b>Uneven wear in the left and right flank faces</b> | ● Incorrect relief angles for the thread's lead angle | ● Select a proper shim.                                                                                                                                                                      |
|                                                      | ● Use of flank infeed.                                | ● Change to alternative flank infeed.                                                                                                                                                        |
|                                                      | ● Half angles of the thread are asymmetrical.         | ● Coincide the infeed angle of the tool with a half angle of the thread.                                                                                                                     |
| <b>Chipping</b>                                      | ● Too low cutting speed                               | ● Increase the cutting speed.                                                                                                                                                                |
|                                                      | ● Too small honing width                              | ● Increase the honing width.                                                                                                                                                                 |
| <b>Edge breakage</b>                                 | ● Recutting chips                                     | ● Supply sufficient coolant to the cutting point.                                                                                                                                            |
|                                                      | ● Caused from the work shape                          | ● Chamfer the portion from which the tool enters the cut and add a groove to the portion from which the tool leaves the cut. The chamfer and groove should be larger than the thread height. |
|                                                      | ● Unstable holding of the workpiece and the tool      | ● Reinforce the holding and select a tougher insert grade.                                                                                                                                   |
| <b>Insert cracking</b>                               | ● Inconsistent coolant supply                         | ● Use constant flood coolant to the cutting point.                                                                                                                                           |
|                                                      | ● Too high cutting speed                              | ● Reduce the cutting speed.                                                                                                                                                                  |
|                                                      | ● Incorrect grade selection                           | ● Change to a tougher grade.                                                                                                                                                                 |
| <b>Distinct plastic deformation</b>                  | ● Too large cutting depth per pass                    | ● Reduce the cutting depth per pass.                                                                                                                                                         |
|                                                      | ● Insufficient coolant supply                         | ● Use flood coolant to the cutting point.                                                                                                                                                    |
|                                                      | ● Too high cutting speed                              | ● Reduce the cutting speed.                                                                                                                                                                  |
|                                                      | ● Incorrect grade selection                           | ● Use a harder insert grade.                                                                                                                                                                 |
| <b>Poor surface finish</b>                           | ● Improper relief angle                               | ● Select a proper shim.                                                                                                                                                                      |
|                                                      | ● Too low cutting speed                               | ● Increase the cutting speed.                                                                                                                                                                |
|                                                      | ● Too rapid tool wear                                 | ● Change to a more wear resistant grade.                                                                                                                                                     |
| <b>Inaccurate thread form</b>                        | ● Inaccurate tool setting                             | ● Check and correct the cutting edge height and tool inclination by using a dial gauge.                                                                                                      |
|                                                      | ● Insufficient thread height                          | ● Check and correct the cutting depth.                                                                                                                                                       |
|                                                      | ● Too rapid tool wear                                 | ● Change to a more wear resistant grade.                                                                                                                                                     |