

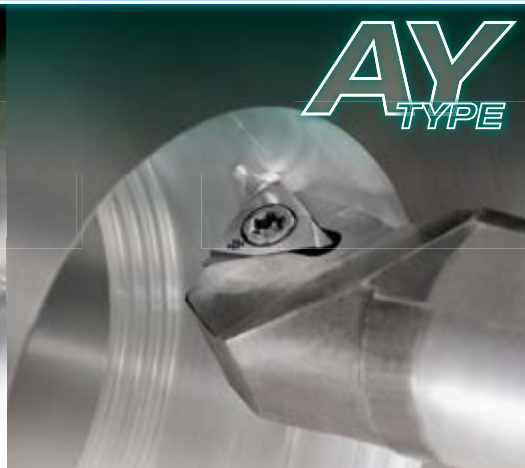
Negative Insert Positive Insert 3D ChipBreaker

AX_{type} / AY_{type} / AG_{type} ChipBreakers

Excellent For Machining Non-Ferrous Metal Components, Such As Aluminum Parts



- High-raked cutting edge design produces beautiful finished surfaces with excellent chip control !
- Series expansion with AX / AY type Chipbreakers !

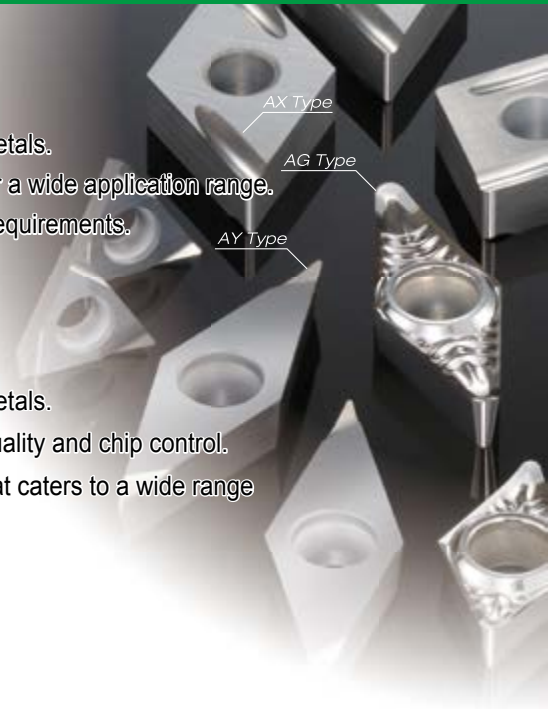


■ Negative Type Insert **AX type** Chipbreaker

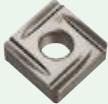
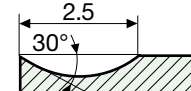

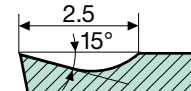

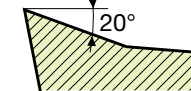
- Excellent combination with carbide grade H1 for external turning of non-ferrous metals.
- High quality ground, parallel type chipbreaker that achieves stable machining over a wide application range.
- A wide lineup selection (total 28 items) that caters to a wide range of application requirements.

■ Positive Type Insert **AY type / AG type** Chipbreaker

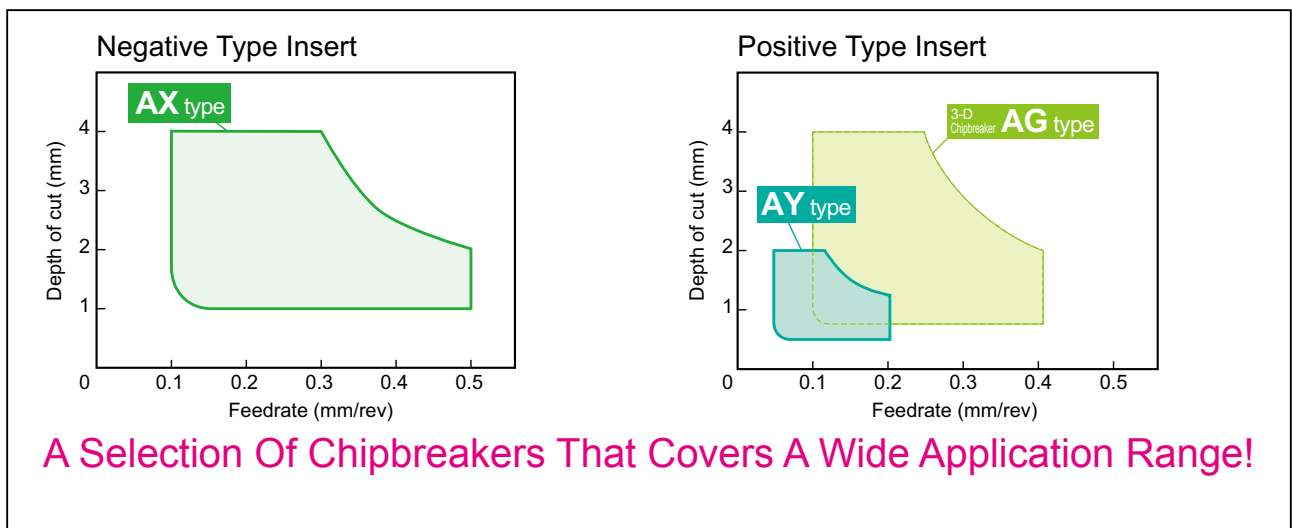
- Excellent combination with carbide grade H1 for external turning of non-ferrous metals.
- High quality ground chipbreaker that achieves both excellent machined surface quality and chip control.
- A wide lineup selection (total 56 items), including the 3-D chipbreaker AG type, that caters to a wide range of application requirements.



■ Features



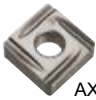


| Chipbreaker | Insert Type | Grade | Cross-section of Chipbreaker | Characteristics |
|---|---------------|-------|---|--|
| AX type  | Negative Type | H1 |  CNGG 1204○○ type | High quality ground, parallel type chipbreaker that achieves stable machining over a wide application range. |
| AY type  | Positive Type | |  CCGT 09T3○○ type | High quality ground chipbreaker for finishing, that achieves both excellent machined surface quality and chip control. |
| AG type  | | |  CCGT 09T3○○ type | 3-D chipbreaker for mirror finish machining, greatly reduces chip adhesion and built-up edge. |

■ Application Range






■ Stock





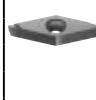
● AX type (Negative Insert)

| Appearance | Catalogue No. | Stock | Dimensions (mm) | | | |
|---|-----------------|-------|------------------|-----------|----------------------|-------------|
| | | ☐ | Inscribed Circle | Thickness | Insert Hole Diameter | Nose Radius |
|  AX | CNGG 120402R-AX | ● | 12.7 | 4.76 | 5.16 | 0.2 |
| | 120402L-AX | ● | | | | 0.2 |
| | 120404R-AX | ● | | | | 0.4 |
| | 120404L-AX | ● | | | | 0.4 |
| | 120408R-AX | ● | | | | 0.8 |
| | 120408L-AX | ● | | | | 0.8 |
|  AX | DNGG 150402R-AX | ● | 12.7 | 4.76 | 5.16 | 0.2 |
| | 150402L-AX | ● | | | | 0.2 |
| | 150404R-AX | ● | | | | 0.4 |
| | 150404L-AX | ● | | | | 0.4 |
| | 150408R-AX | ● | | | | 0.8 |
| | 150408L-AX | ● | | | | 0.8 |
|  AX | SNGG 120404R-AX | ● | 12.7 | 4.76 | 5.16 | 0.4 |
| | 120404L-AX | ● | | | | 0.4 |
| | 120408R-AX | ● | | | | 0.8 |
| | 120408L-AX | ● | | | | 0.8 |
|  AX | TNGG 160402R-AX | ● | 12.7 | 4.76 | 5.16 | 0.2 |
| | 160402L-AX | ● | | | | 0.2 |
| | 160404R-AX | ● | | | | 0.4 |
| | 160404L-AX | ● | | | | 0.4 |
| | 160408R-AX | ● | | | | 0.8 |
| | 160408L-AX | ● | | | | 0.8 |
|  AX | VNGG 160402R-AX | ● | 9.525 | 4.76 | 5.16 | 0.2 |
| | 160402L-AX | ● | | | | 0.2 |
| | 160404R-AX | ● | | | | 0.4 |
| | 160404L-AX | ● | | | | 0.4 |
| | 160408R-AX | ● | | | | 0.8 |
| | 160408L-AX | ● | | | | 0.8 |

● AG type (Positive Insert)

| Appearance | Relief Angle | Catalogue No. | Stock | Dimensions (mm) | | | | | | |
|---|--------------|-----------------|-------|------------------|-----------|----------------------|-------------|------|-----|------|
| | | | ☐ | Inscribed Circle | Thickness | Insert Hole Diameter | Nose Radius | | | |
|  AG | 7° | CCGT 060202N-AG | ● | 6.35 | 2.38 | 2.8 | 0.2 | | | |
| | | 060204N-AG | ● | | | | 0.4 | | | |
| | | CCGT 09T302N-AG | ● | | | | 9.525 | 3.97 | 4.4 | 0.2 |
| | | 09T304N-AG | ● | | | | | | | 0.4 |
| | | 09T308N-AG | ● | | | | | | | 0.8 |
|  AG | 7° | DCGT 070202N-AG | ● | 6.35 | 2.38 | 2.8 | 0.2 | | | |
| | | 070204N-AG | ● | | | | 0.4 | | | |
| | | DCGT 11T302N-AG | ● | | | | 9.525 | 3.97 | 4.4 | 0.2 |
| | | 11T304N-AG | ● | | | | | | | 0.4 |
| | | 11T308N-AG | ● | | | | | | | 0.8 |
|  AG | 7° | VCGT 110302N-AG | ● | 6.35 | 3.18 | 2.8 | 0.2 | | | |
| | | 110304N-AG | ● | | | | 0.4 | | | |
| | | VCGT 160408N-AG | ● | | | | 9.525 | 4.76 | 4.4 | 0.8 |
| | | 160412N-AG | ● | | | | | | | 1.2 |
| | | VCGT 220530N-AG | ● | | | | | | | 12.7 |

● AY type (Positive Insert)

| Appearance | Relief Angle | Catalogue No. | Stock | Dimensions (mm) | | | | | | |
|---|--------------|-----------------|-------|------------------|-----------|----------------------|-------------|------|-----|-----|
| | | | ☐ | Inscribed Circle | Thickness | Insert Hole Diameter | Nose Radius | | | |
|  AY | 7° | CCGT 060201R-AY | ● | 6.35 | 2.38 | 2.8 | 0.1 | | | |
| | | 060201L-AY | ● | | | | 0.1 | | | |
| | | 060202R-AY | ● | | | | 0.2 | | | |
| | | 060202L-AY | ● | | | | 0.2 | | | |
| | | 060204R-AY | ● | | | | 0.4 | | | |
| | | 060204L-AY | ● | | | | 0.4 | | | |
| | | CCGT 09T301R-AY | ● | | | | 9.525 | 3.97 | 4.4 | 0.1 |
| | | 09T301L-AY | ● | | | | | | | 0.1 |
| 09T302R-AY | ● | 0.2 | | | | | | | | |
| 09T302L-AY | ● | 0.2 | | | | | | | | |
| 09T304R-AY | ● | 0.4 | | | | | | | | |
| 09T304L-AY | ● | 0.4 | | | | | | | | |
|  AY | 7° | DCGT 070201R-AY | ● | 6.35 | 2.38 | 2.8 | 0.1 | | | |
| | | 070201L-AY | ● | | | | 0.1 | | | |
| | | 070202R-AY | ● | | | | 0.2 | | | |
| | | 070202L-AY | ● | | | | 0.2 | | | |
| | | 070204R-AY | ● | | | | 0.4 | | | |
| | | 070204L-AY | ● | | | | 0.4 | | | |
| | | DCGT 11T301R-AY | ● | | | | 9.525 | 3.97 | 4.4 | 0.1 |
| | | 11T301L-AY | ● | | | | | | | 0.1 |
| | | 11T302R-AY | ● | | | | | | | 0.2 |
| | | 11T302L-AY | ● | | | | | | | 0.2 |
| 11T304R-AY | ● | 0.4 | | | | | | | | |
| 11T304L-AY | ● | 0.4 | | | | | | | | |
|  AY | 5° | TBGT 060101R-AY | ● | 3.97 | 1.59 | 2.2 | 0.1 | | | |
| | | 060101L-AY | ● | | | | 0.1 | | | |
| | | 060102R-AY | ● | | | | 0.2 | | | |
| | | 060102L-AY | ● | | | | 0.2 | | | |
| | | 060104R-AY | ● | | | | 0.4 | | | |
| | | 060104L-AY | ● | | | | 0.4 | | | |
|  AY | 11° | TPGT 080201R-AY | ● | 4.76 | 2.38 | 2.4 | 0.1 | | | |
| | | 080201L-AY | ● | | | | 0.1 | | | |
| | | 080202R-AY | ● | | | | 0.2 | | | |
| | | 080202L-AY | ● | | | | 0.2 | | | |
| | | 080204R-AY | ● | | | | 0.4 | | | |
| | | 080204L-AY | ● | | | | 0.4 | | | |
| | | TPGT 110202R-AY | ● | | | | 6.35 | 2.38 | 2.8 | 0.2 |
| | | 110202L-AY | ● | | | | | | | 0.2 |
| | | 110204R-AY | ● | | | | | | | 0.4 |
| | | 110204L-AY | ● | | | | | | | 0.4 |
| TPGT 110301R-AY | ● | 6.35 | 3.18 | 3.4 | 0.1 | | | | | |
| 110301L-AY | ● | | | | 0.1 | | | | | |
| 110302R-AY | ● | | | | 0.2 | | | | | |
| 110302L-AY | ● | | | | 0.2 | | | | | |
| 110304R-AY | ● | | | | 0.4 | | | | | |
| 110304L-AY | ● | | | | 0.4 | | | | | |
|  AY | 5° | VBGT 110301R-AY | ● | 6.35 | 3.18 | 2.8 | 0.1 | | | |
| | | 110301L-AY | ● | | | | 0.1 | | | |
| | | 110302R-AY | ● | | | | 0.2 | | | |
| | | 110302L-AY | ● | | | | 0.2 | | | |
| | | 110304R-AY | ● | | | | 0.4 | | | |
| | | 110304L-AY | ● | | | | 0.4 | | | |
| | | VBGT 160402R-AY | ● | | | | 9.525 | 4.76 | 4.4 | 0.2 |
| | | 160402L-AY | ● | | | | | | | 0.2 |
| | | 160404R-AY | ● | | | | | | | 0.4 |
| | | 160404L-AY | ● | | | | | | | 0.4 |
| 160404L-AY | ● | 0.4 | | | | | | | | |
| 160404L-AY | ● | 0.4 | | | | | | | | |

● Mark : Standard Stocked Item




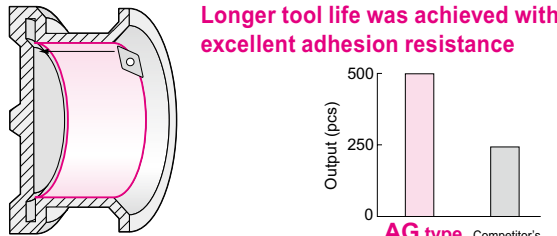
Recommended Cutting Conditions

| Work Material | Chipbreaker (Insert Type) | Grade | Cutting Speed V_c (m/min) | Feedrate f (mm/rev) | Depth of cut a_p (mm) |
|--|---------------------------|-------|-----------------------------|-----------------------|-------------------------|
| Aluminum Alloy (Si: $\leq 12.6\%$) | AX (Negative Insert) | H1 | 200- 600 -1,000 | 0.1- 0.3 -0.5 | 1.0- 2.5 -4.0* |
| | AY (Positive Insert) | | 200- 600 -1,000 | 0.05- 0.1 -0.2 | 0.5- 1.0 -2.0 |
| | AG (Positive Insert) | | 200- 600 -1,000 | 0.1- 0.2 -0.4 | 1.0- 2.5 -4.0 |
| Aluminum Alloy (Si: $> 12.6\%$) | AX (Negative Insert) | H1 | 200- 300 -400 | 0.1- 0.3 -0.5 | 1.0- 2.5 -4.0* |
| | AY (Positive Insert) | | 200- 300 -400 | 0.05- 0.1 -0.2 | 0.5- 1.0 -2.0 |
| | AG (Positive Insert) | | 200- 300 -400 | 0.1- 0.2 -0.4 | 1.0- 2.5 -4.0 |
| Copper Alloy | AX (Negative Insert) | H1 | 200- 300 -400 | 0.1- 0.3 -0.5 | 1.0- 2.5 -4.0* |
| | AY (Positive Insert) | | 200- 300 -400 | 0.05- 0.1 -0.2 | 0.5- 1.0 -2.0 |
| | AG (Positive Insert) | | 200- 300 -400 | 0.1- 0.2 -0.4 | 1.0- 2.5 -4.0 |

*Note : Only for SNGG type inserts, the max. depth of cut is 3.5mm

min. - **optimum** - max.

Application Examples

| | |
|--|--|
| Machine Component AX  <p>Stable chip control Unstable chip control</p> <p>AX type Competitor's</p> <p>Insert : TNGG160404R-AX (H1) Conditions : $V_c=600$m/min $f=0.2$mm/rev $a_p=2.0$mm WET</p> | Machine Component AY  <p>Good chip control Good surface finish Long stringy chips</p> <p>AY type Competitor's</p> <p>Insert : TPGT110302R-AY (H1) Conditions : $V_c=600$m/min $f=0.1$mm/rev $a_p=0.5$mm WET</p> |
| Bearing Holder AG  <p>Achieved excellent finished surface with superior cutting edge sharpness</p> <p>AG type</p> <ul style="list-style-type: none"> • Excellent finished surface (below Rz1.6) • Good chip control with no burrs <p>Competitor's</p> <ul style="list-style-type: none"> • Poor finished surface <p>Insert : CCGT09T308N-AG (H1) Conditions : $V_c=650$m/min $f=0.1$mm/rev $a_p=0.35$mm DRY</p> | Aluminum Wheel AG  <p>Longer tool life was achieved with excellent adhesion resistance</p> <p>Output (pcs)</p> <p>AG type Competitor's</p> <p>Insert : VCGT160408N-AG (H1) Conditions : $V_c=2,200$m/min $f=0.1$mm/rev $a_p=0.25$mm WET</p> |

SAFETY NOTES

- Very hot or lengthy chips may be discharged while the machine is in operation. Therefore, machine guards, safety goggles or other protective covers must be used. Fire safety precautions must also be considered.
- Please handle with care as this product has sharp edges.
- Improper cutting conditions or mis-handling of the tool may result in breakages or projectiles. Therefore, please use the tool within its recommended conditions.
- When using non-water soluble cutting oil, precautions against fire must be taken and please ensure that a fire extinguisher is placed near the machine.

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