

焼入鋼加工用コーテッドCBN焼結体  
Coated SUMIBORON for Hardened Steel Machining

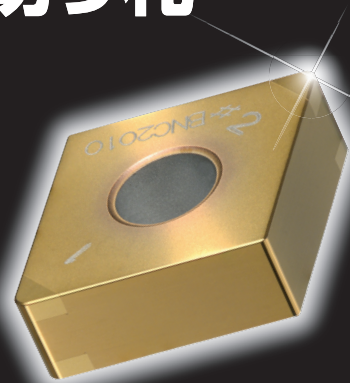
# コーテッドスミボロン **BNC2010/BNC2020**

Coated SUMIBORON BNC2010 / BNC2020



## 安定・長寿命 コスト低減の切り札

Stable, Long Tool Life  
Trump Card for Cost Reduction



- 高能率加工用チップもラインナップ
- チップブレーカ付きワンユースチップ ブレイクマスター  
軽切削用 FV型 / 仕上げ切削用 LV型 シリーズ化

- Inserts for High-efficiency Machining Also Available
- One-use Insert Break Master with Chipbreaker  
FV Type for Light Cutting/LV Type for Finishing Added to Series

P M K N S H



# 更なる長寿命化 コスト低減の切り札

Longer Tool Life  
Trump Card for Cost Reduction

コーテッドスミボロン  
**BNC2010**  
COATED SUMIBORON

高精度  
HIGH PRECISION

- ・面粗度、寸法精度が要求される仕上げ加工に対応した高精度加工用材種
- ・新開発のCBN母材にTiCN膜をコーティングし、更に耐摩耗性を向上
- ・新開発の特殊多層膜により境界摩耗を抑制し、優れた面粗度を安定して実現

・ A grade for high-precision machining applicable to finishing requiring good surface roughness and dimensional accuracy  
・ Provides further improved wear resistance thanks to a newly developed CBN substrate coated with a TiCN layer  
・ Reduces boundary wear and stably achieves excellent surface finish thanks to newly developed special multi-layered coating

コーテッドスミボロン  
**BNC2020**  
COATED SUMIBORON

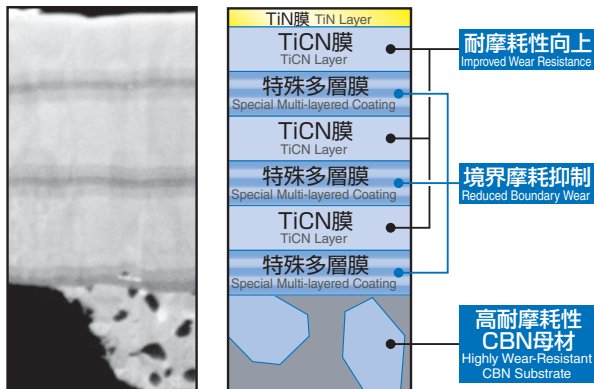
汎用・高能率  
GENERAL PURPOSE  
HIGH EFFICIENCY

- ・焼入鋼全般の加工に対応した汎用材種
- ・新開発の強靱なCBN母材に耐摩耗性に優れたTiAlN膜をコーティング
- ・強密着層による膜剥離抑制により更なる安定加工、長寿命化を実現

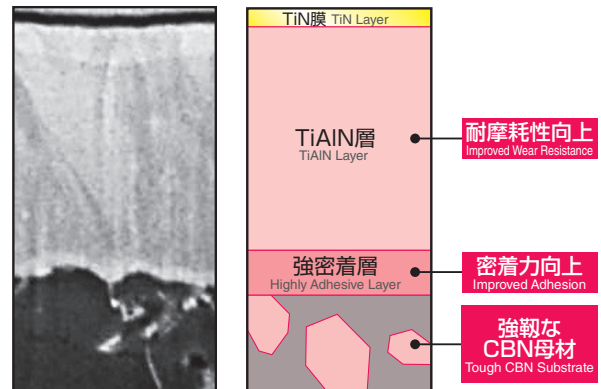
・ A general-purpose grade applicable to general hardened steel machining  
・ A newly developed tough CBN substrate coated with a highly wear-resistant TiAlN layer  
・ Achieves more stable machining and longer tool life by employing a highly adhesive layer to reduce delamination

## ■ BNC2010とBNC2020のCBN母材とコーティング構造 CBN Substrate and Coating Structure of BNC2010 and BNC2020

### BNC2010



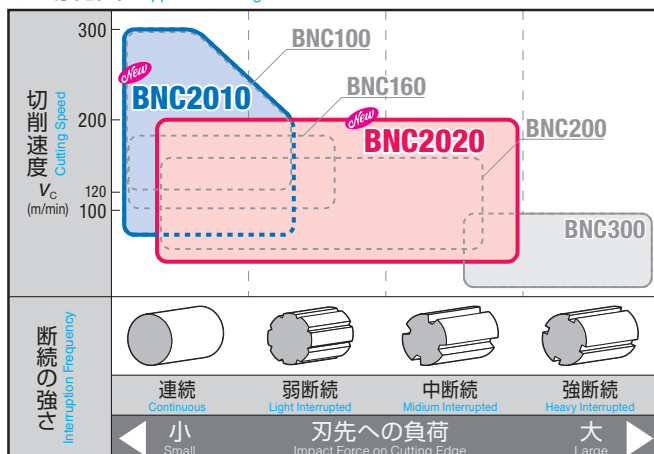
### BNC2020



TiCN 膜と特殊多層膜の積層構造により優れた耐境界摩耗性を実現  
Achieves excellent boundary wear resistance thanks to a laminated structure of a TiCN layer and special multi-layered coating

TiAlN 膜と強密着層により更なる安定性を実現  
Achieves further stability thanks to TiAlN and highly adhesive coating layers

## ■ 適用範囲 Application Range



## ■ 推奨切削条件 Recommended Cutting Conditions

### BNC2010

| 切削速度 Cutting Speed $V_c$ (m/min) |                             |
|----------------------------------|-----------------------------|
| 120 150 200 250 300              |                             |
|                                  |                             |
| 送り量 Feed Rate $f$ (mm/rev)       | 切込み Depth of Cut $a_p$ (mm) |
| 0.03 ~ 0.25                      | 0.03 ~ 0.35                 |



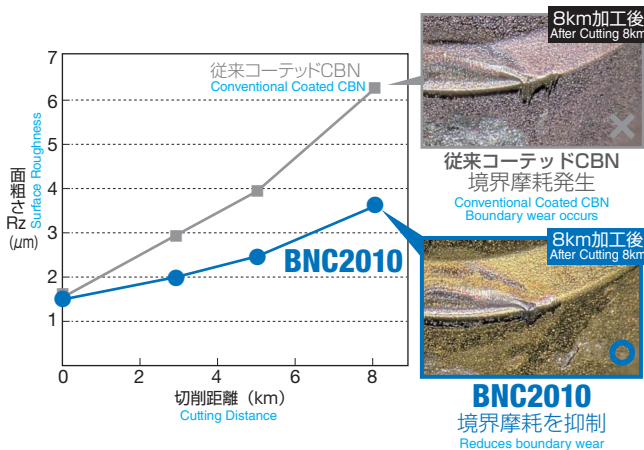
### BNC2020

| 切削速度 Cutting Speed $V_c$ (m/min) |                             |
|----------------------------------|-----------------------------|
| 50 100 150 200 220               |                             |
|                                  |                             |
| 送り量 Feed Rate $f$ (mm/rev)       | 切込み Depth of Cut $a_p$ (mm) |
| 0.03 ~ 0.40                      | 0.03 ~ 0.50                 |



## ■ 切削性能 Cutting Performance

### BNC2010



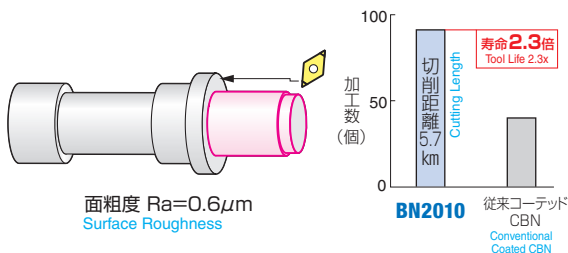
被削材: SCM415 58-62HRC (連続)  
Work Material Continuous  
チップ: 4NC-DNGA150408 刃先処理: S01225  
Inserts Cutting Edge Treatment  
切削条件:  $v_c=160\text{m/min}$   $f=0.08\text{mm/rev}$   $a_p=0.1\text{mm}$  Wet  
Cutting Conditions

## ■ 使用実例 Application Example

### メインシャフト外径連続加工 (58~60HRC) BNC2010

Continuous External Turning of Main Shaft

BNC2010は耐摩耗性に優れ、良好な面粗度を実現  
BNC2010 provides excellent wear resistance and achieves excellent surface roughness.

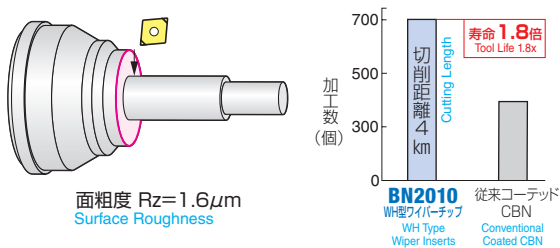


チップ: 4NC-DNGA150408 (BNC2010)  
Inserts  
切削条件:  $v_c=200\text{m/min}$   $f=0.10\text{mm/rev}$   $a_p=0.35\text{mm}$  Dry  
Cutting Conditions

### CVJアウターレース端面加工 (58~60HRC) BNC2010

Facing of CVJ Outer Race

BNC2010 + ワイパーチップ WH 型は、優れた面粗度を長時間維持  
BNC2010 with a WH type wiper insert maintains excellent surface finish for a long time.

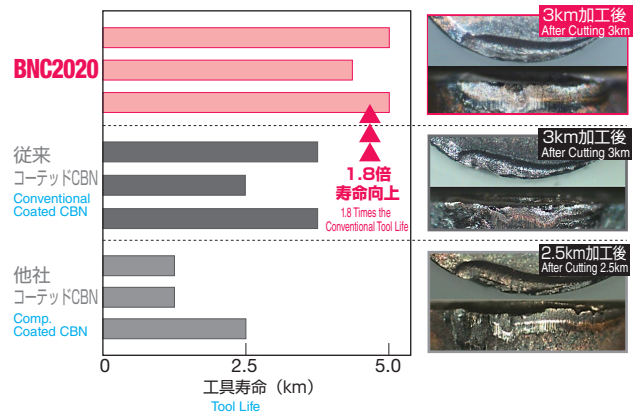


チップ: 2NC-CNGA120412WH (BNC2010)  
Inserts  
切削条件:  $v_c=150\text{m/min}$   $f=0.2\text{mm/rev}$   $a_p=0.2\text{mm}$  Dry  
Cutting Conditions

## ■ 刃先処理仕様 Cutting Edge Treatment

| 材種<br>Grades | 汎用タイプ: 標準型<br>General Purpose: Standard |     |      |                 | 刃先強化タイプ: HS型<br>Strong Edge Type: HS |     |      |                 |                                                                                                                                                                                                                        |
|--------------|-----------------------------------------|-----|------|-----------------|--------------------------------------|-----|------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | 刃先仕様記号<br>Edge Treatment                | α   | W    | ホーニング<br>Honing | 刃先仕様記号<br>Edge Treatment             | α   | W    | ホーニング<br>Honing |                                                                                                                                                                                                                        |
| BNC2010      | S01225                                  | 25° | 0.12 | あり<br>Yes       | S01730                               | 30° | 0.17 | あり<br>Yes       | <p>● 刃先仕様記号の呼び方<br/>Edge Treatment Identification Code</p> <p>S 0 1 2 2 5</p> <p>ネガランド幅W Negative Land Width<br/>ネガランド角α Negative Land Angle<br/>T: ネガランド Negative Land<br/>S: ネガランド+Rホーニング Negative Land + Honing</p> |
| BNC2020      | S01225                                  | 25° | 0.12 | あり<br>Yes       | S02735                               | 35° | 0.27 | あり<br>Yes       |                                                                                                                                                                                                                        |

### BNC2020

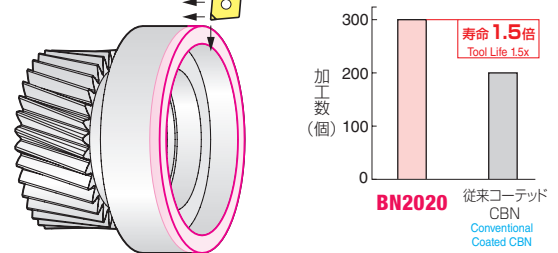


被削材: SCM415-5V 58-62HRC (断続切削)  
Work Material Interrupted  
チップ: 4NC-CNGA120412 刃先処理: S01225  
Inserts Cutting Edge Treatment  
切削条件:  $v_c=130\text{m/min}$   $f=0.1\text{mm/rev}$   $a_p=0.6\text{mm}$  Dry  
Cutting Conditions

### サンギア浸炭層除去加工 (58~60HRC) BNC2020

Carburized Layer Removal for Sun Gears

BNC2020は高負荷切削で長寿命を達成  
BNC2020 achieves a long tool life in high load cutting.

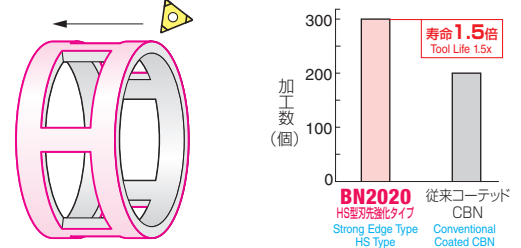


チップ: 4NC-DNGA120408 (BNC2020)  
Inserts  
切削条件:  $v_c=100\text{m/min}$   $f=0.15\text{mm/rev}$   $a_p=0.5\text{mm}$  Wet  
Cutting Conditions

### CVJケーシング窓断続加工 (58~60HRC) BNC2020

Interrupted Machining of CVJ Cage Window

BNC2020の刃先強化タイプHS型は、断続切削で安定性能を発揮  
BNC2020 strong edge HS type provides stable performance in interrupted cutting.



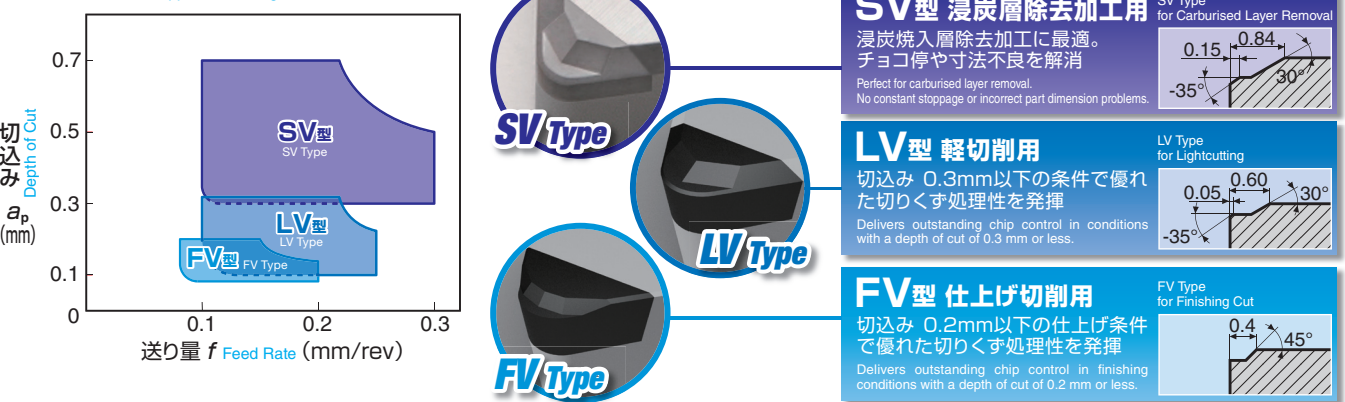
チップ: 3NC-TNGA160420HS (BNC2020)  
Inserts  
切削条件:  $v_c=120\text{m/min}$   $f=0.10\text{mm/rev}$   $a_p=0.15\text{mm}$  Dry  
Cutting Conditions



■ チップブレーカ付きワンユースチップ ブレイクマスター FV 型 /LV 型 /SV 型 SUMIBORON Break Master FV Type / LV Type / SV Type

- ・焼入鋼加工の切り屑処理に最適なチップブレーカ
  - ・FV/LV 型は焼入鋼仕上げ～軽切削に最適
  - ・SV 型は浸炭層除去加工に最適で、独自設計のブレーカ形状により、焼入部から未焼入部まで切り屑処理が可能
- ・ A chipbreaker ideal for chip control in hardened steel machining.
  - ・ FV Type and LV Type are ideal for finishing and light cutting of hardened steel.
  - ・ SV Type is ideal for carburized layer removal and is applicable to both hardened and non-hardened parts with effective chip control thanks to its unique chipbreaker design.

● 適用範囲 Application Range



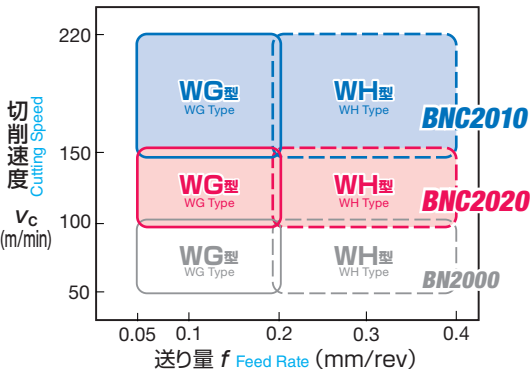
■ 刃先処理仕様 Cutting Edge Treatment

| 材種<br>Grades                                | ブレイクマスター FV型<br>Break Master FV Type |                                         |      |                                | ブレイクマスター LV型<br>Break Master LV Type |     |      |                 | ブレイクマスター SV型<br>Break Master SV Type |     |      |                 |                                                                                                                                                                                                                                                                                                                                                                                     |   |   |   |   |   |   |                                |  |                                |  |                                |  |                                             |  |                                         |  |  |  |
|---------------------------------------------|--------------------------------------|-----------------------------------------|------|--------------------------------|--------------------------------------|-----|------|-----------------|--------------------------------------|-----|------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|--------------------------------|--|--------------------------------|--|--------------------------------|--|---------------------------------------------|--|-----------------------------------------|--|--|--|
|                                             | 刃先仕様記号<br>Edge Treatment             | α                                       | W    | ホーニング<br>Honing                | 刃先仕様記号<br>Edge Treatment             | α   | W    | ホーニング<br>Honing | 刃先仕様記号<br>Edge Treatment             | α   | W    | ホーニング<br>Honing |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   |   |   |   |   |   |                                |  |                                |  |                                |  |                                             |  |                                         |  |  |  |
| BNC2010                                     | —                                    | 0°                                      | 0.12 | あり<br>Yes                      | S00535                               | 35° | 0.05 | あり<br>Yes       | S01235                               | 35° | 0.12 | あり<br>Yes       | <p>● 刃先仕様記号の呼び方<br/>Edge Treatment Identification Code</p> <table border="1"><tr><td>S</td><td>0</td><td>1</td><td>2</td><td>2</td><td>5</td></tr><tr><td colspan="2">ネガランド幅W<br/>Negative Land Width</td><td colspan="2">ネガランド角α<br/>Negative Land Angle</td><td colspan="2">ネガランド角α<br/>Negative Land Angle</td></tr><tr><td colspan="2">刃先形状 T: ネガランド<br/>Cutting Edge Negative Land</td><td colspan="4">S: ネガランド+Rホーニング<br/>Negative Land Honing</td></tr></table> | S | 0 | 1 | 2 | 2 | 5 | ネガランド幅W<br>Negative Land Width |  | ネガランド角α<br>Negative Land Angle |  | ネガランド角α<br>Negative Land Angle |  | 刃先形状 T: ネガランド<br>Cutting Edge Negative Land |  | S: ネガランド+Rホーニング<br>Negative Land Honing |  |  |  |
| S                                           | 0                                    | 1                                       | 2    | 2                              | 5                                    |     |      |                 |                                      |     |      |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   |   |   |   |   |   |                                |  |                                |  |                                |  |                                             |  |                                         |  |  |  |
| ネガランド幅W<br>Negative Land Width              |                                      | ネガランド角α<br>Negative Land Angle          |      | ネガランド角α<br>Negative Land Angle |                                      |     |      |                 |                                      |     |      |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   |   |   |   |   |   |                                |  |                                |  |                                |  |                                             |  |                                         |  |  |  |
| 刃先形状 T: ネガランド<br>Cutting Edge Negative Land |                                      | S: ネガランド+Rホーニング<br>Negative Land Honing |      |                                |                                      |     |      |                 |                                      |     |      |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   |   |   |   |   |   |                                |  |                                |  |                                |  |                                             |  |                                         |  |  |  |
| BNC2020                                     | —                                    | 0°                                      | 0.12 | あり<br>Yes                      | S00535                               | 35° | 0.05 | あり<br>Yes       | S01235                               | 35° | 0.12 | あり<br>Yes       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |   |   |   |   |   |   |                                |  |                                |  |                                |  |                                             |  |                                         |  |  |  |

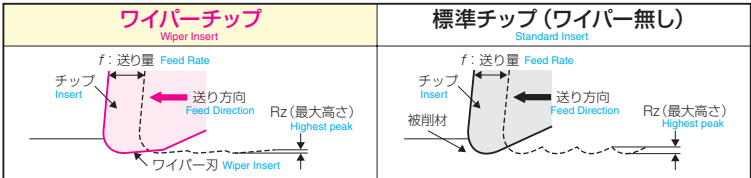
■ ワンユースワイパーチップ WG 型 /WH 型 SUMIBORON One-Use Wiper inserts WG Type / WH Type

- ・焼入鋼加工用ワイパーチップで研削加工に匹敵する優れた面粗さを実現
- ・低送り加工用 WG 型、高送り加工用 WH 型をラインアップ
- ・ By using wiper inserts for hardened steel machining, achieves excellent surface roughness on the same level achieved with grinding.
- ・ WG Type for low-feed machining and WH Type for high-feed machining are available.

● 適用領域 (面粗さ規格 1.6s～3.2s) Application Range (Surface Roughness Standard: 1.6s to 3.2s)



● ワイパーチップの作用 Purpose of Wiper Edge



● ワイパーチップの仕上げ面粗さ Surface Roughness of Wiper Insert

|                                                          | ワイパーチップ (WG型/WH型)<br>Wiper Insert (WG Type/WH Type) |                                      | 標準チップ (ワイパー無し)<br>Standard Insert (No Wiper) |                                      |
|----------------------------------------------------------|-----------------------------------------------------|--------------------------------------|----------------------------------------------|--------------------------------------|
|                                                          | 低送り加工 (f=0.1mm)<br>Low feed cutting                 | 高送り加工 (f=0.3mm)<br>High feed cutting | 低送り加工 (f=0.1mm)<br>Low feed cutting          | 高送り加工 (f=0.3mm)<br>High feed cutting |
| 面粗さ<br>Surface Roughness Profile                         |                                                     |                                      |                                              |                                      |
| 理論面粗さRz<br>(最大高さ)<br>Surface Roughness Rz (Highest peak) | 0.63μm                                              | 1.39μm                               | 1.98μm                                       | 9.20μm                               |

- ・ワイパー切れ刃の効果を最大限に発揮するため、連続切削での使用を推奨します。
- ・うねりやびびりが発生する可能性がありますので、剛性の高い機械と被削材で使用してください。
- ・ To optimize the effectiveness, we recommend using wiper inserts for continuous cutting.
- ・ Chattering and undulation may occur, so use with high-rigidity machines and work materials.

■ 刃先処理仕様 Cutting Edge Treatment

| 材種<br>Grades                   | ワイパーチップ WG型<br>Wiper Insert : WG Type |     |      |                                        | ワイパーチップ WH型<br>Wiper Insert : WH Type |     |      |                 |                                                                                                                                                                                                                                                                                                                                                                                 |   |   |   |   |   |   |                                |                                |  |  |                                |  |                      |                          |  |  |                                        |  |
|--------------------------------|---------------------------------------|-----|------|----------------------------------------|---------------------------------------|-----|------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|--------------------------------|--------------------------------|--|--|--------------------------------|--|----------------------|--------------------------|--|--|----------------------------------------|--|
|                                | 刃先仕様記号<br>Edge Treatment              | α   | W    | ホーニング<br>Honing                        | 刃先仕様記号<br>Edge Treatment              | α   | W    | ホーニング<br>Honing |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |   |   |   |   |   |                                |                                |  |  |                                |  |                      |                          |  |  |                                        |  |
| BNC2010                        | S01215                                | 15° | 0.12 | あり<br>Yes                              | S01215                                | 15° | 0.12 | あり<br>Yes       | <p>● 刃先仕様記号の呼び方<br/>Edge Treatment Identification Code</p> <table border="1"><tr><td>S</td><td>0</td><td>1</td><td>2</td><td>2</td><td>5</td></tr><tr><td>ネガランド幅W<br/>Negative Land Width</td><td colspan="3">ネガランド角α<br/>Negative Land Angle</td><td colspan="2">ネガランド角α<br/>Negative Land Angle</td></tr><tr><td>刃先形状<br/>Cutting Edge</td><td colspan="3">T:ネガランド<br/>Negative Land</td><td colspan="2">S:ネガランド+Rホーニング<br/>Negative Land Honing</td></tr></table> | S | 0 | 1 | 2 | 2 | 5 | ネガランド幅W<br>Negative Land Width | ネガランド角α<br>Negative Land Angle |  |  | ネガランド角α<br>Negative Land Angle |  | 刃先形状<br>Cutting Edge | T:ネガランド<br>Negative Land |  |  | S:ネガランド+Rホーニング<br>Negative Land Honing |  |
| S                              | 0                                     | 1   | 2    | 2                                      | 5                                     |     |      |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |   |   |   |   |   |                                |                                |  |  |                                |  |                      |                          |  |  |                                        |  |
| ネガランド幅W<br>Negative Land Width | ネガランド角α<br>Negative Land Angle        |     |      | ネガランド角α<br>Negative Land Angle         |                                       |     |      |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |   |   |   |   |   |                                |                                |  |  |                                |  |                      |                          |  |  |                                        |  |
| 刃先形状<br>Cutting Edge           | T:ネガランド<br>Negative Land              |     |      | S:ネガランド+Rホーニング<br>Negative Land Honing |                                       |     |      |                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |   |   |   |   |   |                                |                                |  |  |                                |  |                      |                          |  |  |                                        |  |
| BNC2020                        | S01215                                | 15° | 0.12 | あり<br>Yes                              | S01215                                | 15° | 0.12 | あり<br>Yes       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |   |   |   |   |   |                                |                                |  |  |                                |  |                      |                          |  |  |                                        |  |



BNC2010/BNC2020 在庫型番(ネガティブ)

■マルチコーナーワンユースチップ/ネガティブ(穴つき)  
Multi-cornered,One-use Type/Negative(With Hole)

| 外 観<br>Appearance                                                                          | 型 番<br>Catalogue No. | 在庫<br>Stock |         | コーナ<br>ー数<br>No of<br>Cutting<br>Edges | 焼結体<br>切刃長<br>Cutting Edge<br>Length | 寸法 Dimensions (mm)         |                  |             |                          |
|--------------------------------------------------------------------------------------------|----------------------|-------------|---------|----------------------------------------|--------------------------------------|----------------------------|------------------|-------------|--------------------------|
|                                                                                            |                      | BNC2010     | BNC2020 |                                        |                                      | 内接円<br>Inscribed<br>Circle | 厚 さ<br>Thickness | 穴 径<br>Hole | ノーズ<br>半径<br>Nose Radius |
|            | 2NC-CNGA120404       | ●           | ●       | 2                                      | 2.5                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                            | 120408               | ●           | ●       |                                        | 2.4                                  |                            |                  |             | 0.8                      |
|                                                                                            | 120412               | ●           | ●       |                                        | 2.3                                  |                            |                  |             | 1.2                      |
|            | 4NC-CNGA120404       | ●           | ●       | 4                                      | 2.5                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                            | 120408               | ●           | ●       |                                        | 2.4                                  |                            |                  |             | 0.8                      |
|                                                                                            | 120412               | ●           | ●       |                                        | 2.3                                  |                            |                  |             | 1.2                      |
| <br>ワイパー   | 4NC-CNGA120404WG     | ●           | ●       | 4                                      | 2.4                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                            | 120408WG             | ●           | ●       |                                        | 2.4                                  |                            |                  |             | 0.8                      |
|                                                                                            | 120412WG             | ●           | ●       |                                        | 2.3                                  |                            |                  |             | 1.2                      |
| <br>ワイパー   | 4NC-CNGA120404WH     | ●           | ●       | 4                                      | 2.4                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                            | 120408WH             | ●           | ●       |                                        | 2.3                                  |                            |                  |             | 0.8                      |
|                                                                                            | 120412WH             | ●           | ●       |                                        | 2.2                                  |                            |                  |             | 1.2                      |
|            | 2NC-DNGA150404       | ●           | ●       | 2                                      | 2.5                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                            | 150408               | ●           | ●       |                                        | 2.1                                  |                            |                  |             | 0.8                      |
|                                                                                            | 150412               | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 1.2                      |
|            | 4NC-DNGA150404       | ●           | ●       | 4                                      | 2.5                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                            | 150408               | ●           | ●       |                                        | 2.1                                  |                            |                  |             | 0.8                      |
|                                                                                            | 150412               | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 1.2                      |
| <br>ワイパー   | 4NC-DNGA150404WG     | ●           | ●       | 4                                      | 2.3                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                            | 150408WG             | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 0.8                      |
|                                                                                            |                      |             |         |                                        |                                      |                            |                  |             |                          |
| <br>ワイパー   | 4NC-DNGA150404WH     | ●           | ●       | 4                                      | 2.1                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                            | 150408WH             | ●           | ●       |                                        | 1.8                                  |                            |                  |             | 0.8                      |
|                                                                                            |                      |             |         |                                        |                                      |                            |                  |             |                          |
|           | 4NC-SNGA120404       | ●           | ●       | 4                                      | 2.5                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                            | 120408               | ●           | ●       |                                        | 2.3                                  |                            |                  |             | 0.8                      |
|                                                                                            | 120412               | ●           | ●       |                                        | 2.1                                  |                            |                  |             | 1.2                      |
|          | 3NC-TNGA160404       | ●           | ●       | 3                                      | 2.3                                  | 9.525                      | 4.76             | 3.81        | 0.4                      |
|                                                                                            | 160408               | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 0.8                      |
|                                                                                            | 160412               | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 1.2                      |
|          | 6NC-TNGA160404       | ●           | ●       | 6                                      | 2.3                                  | 9.525                      | 4.76             | 3.81        | 0.4                      |
|                                                                                            | 160408               | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 0.8                      |
|                                                                                            | 160412               | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 1.2                      |
|          | 2NC-VNGA160404       | ●           | ●       | 2                                      | 2.8                                  | 9.525                      | 4.76             | 3.81        | 0.4                      |
|                                                                                            | 160408               | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 0.8                      |
|                                                                                            | 160412               | ●           | ●       |                                        | 1.7                                  |                            |                  |             | 1.2                      |
|          | 4NC-VNGA160404       | ●           | ●       | 4                                      | 2.8                                  | 9.525                      | 4.76             | 3.81        | 0.4                      |
|                                                                                            | 160408               | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 0.8                      |
|                                                                                            | 160412               | ●           | ●       |                                        | 1.7                                  |                            |                  |             | 1.2                      |
|          | 6NC-WNGA080404       | ●           | ●       | 6                                      | 2.3                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                            | 080408               | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 0.8                      |
|                                                                                            | 080412               | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 1.2                      |
| <br>ワイパー | 6NC-WNGA080408WH     | ●           | ●       | 6                                      | 1.9                                  | 12.7                       | 4.76             | 5.16        | 0.8                      |
|                                                                                            |                      |             |         |                                        |                                      |                            |                  |             |                          |
|                                                                                            |                      |             |         |                                        |                                      |                            |                  |             |                          |
| <br>ワイパー | 6NC-WNGA080408WG     | ●           | ●       | 6                                      | 2.0                                  | 12.7                       | 4.76             | 5.16        | 0.8                      |
|                                                                                            |                      |             |         |                                        |                                      |                            |                  |             |                          |
|                                                                                            |                      |             |         |                                        |                                      |                            |                  |             |                          |

※型番末尾 WG：低送り用ワイパーチップ WH型：高送り用ワイパーチップ  
WG: Wiper insert for Low-feed type WH: Wiper insert for High-feed type

■マルチコーナーワンユースチップ/ネガティブ(穴つき)  
Multi-cornered,One-use Type/Negative(With Hole)

| 外 観<br>Appearance                                                                  | 型 番<br>Catalogue No. | 在庫<br>Stock |         | コーナ<br>ー数<br>No of<br>Cutting<br>Edges | 焼結体<br>切刃長<br>Cutting Edge<br>Length | 寸法 Dimensions (mm)         |                  |             |                          |
|------------------------------------------------------------------------------------|----------------------|-------------|---------|----------------------------------------|--------------------------------------|----------------------------|------------------|-------------|--------------------------|
|                                                                                    |                      | BNC2010     | BNC2020 |                                        |                                      | 内接円<br>Inscribed<br>Circle | 厚 さ<br>Thickness | 穴 径<br>Hole | ノーズ<br>半径<br>Nose Radius |
|  | 2NC-CNGA120416       | ●           | ●       | 2                                      | 3.3                                  | 12.7                       | 4.76             | 5.16        | 1.6                      |
|                                                                                    | 120420               | ●           | ●       |                                        | 3.2                                  |                            |                  |             | 2.0                      |
|                                                                                    | 120424               | ●           | ●       |                                        | 3.1                                  |                            |                  |             | 2.4                      |
|  | 4NC-CNGA120416       | ●           | ●       | 4                                      | 3.3                                  | 12.7                       | 4.76             | 5.16        | 1.6                      |
|                                                                                    | 120420               | ●           | ●       |                                        | 3.2                                  |                            |                  |             | 2.0                      |
|                                                                                    | 120424               | ●           | ●       |                                        | 3.1                                  |                            |                  |             | 2.4                      |
|  | 2NC-DNGA150416       | ●           | ●       | 2                                      | 3.4                                  | 12.7                       | 4.76             | 5.16        | 1.6                      |
|                                                                                    | 150420               | ●           | ●       |                                        | 3.0                                  |                            |                  |             | 2.0                      |
|                                                                                    | 150424               | ●           | ●       |                                        | 2.7                                  |                            |                  |             | 2.4                      |
|  | 4NC-DNGA150416       | ●           | ●       | 4                                      | 3.4                                  | 12.7                       | 4.76             | 5.16        | 1.6                      |
|                                                                                    | 150420               | ●           | ●       |                                        | 3.0                                  |                            |                  |             | 2.0                      |
|                                                                                    | 150424               | ●           | ●       |                                        | 2.7                                  |                            |                  |             | 2.4                      |
|  | 3NC-TNGA160416       | ●           | ●       | 3                                      | 3.3                                  | 9.525                      | 4.76             | 3.81        | 1.6                      |
|                                                                                    | 160420               | ●           | ●       |                                        | 3.0                                  |                            |                  |             | 2.0                      |
|                                                                                    | 160424               | ●           | ●       |                                        | 2.7                                  |                            |                  |             | 2.4                      |
|  | 6NC-TNGA160416       | ●           | ●       | 6                                      | 3.3                                  | 9.525                      | 4.76             | 3.81        | 1.6                      |
|                                                                                    | 160420               | ●           | ●       |                                        | 3.0                                  |                            |                  |             | 2.0                      |
|                                                                                    | 160424               | ●           | ●       |                                        | 2.7                                  |                            |                  |             | 2.4                      |

※チップ逃げ面が干渉する為、専用ホルダをご使用ください。専用ホルダの詳細は総合カタログ「スミボロン」をご覧ください。  
\* The insert flank may cause interference, so use exclusive holders. For details on exclusive holders, refer to the chapter of SUMIBORON in the General Catalog.

●印：標準在庫品 無印：受注生産品  
●Mark: Standard Stock Item No mark: Made-to-order item

■マルチコーナーワンユースチップ/ネガティブ(穴つき)  
Multi-cornered,One-use Type/Negative(With Hole)

刃先強化タイプ HS 型  
Strong Edge Type HS

| 外 観<br>Appearance                                                                 | 型 番<br>Catalogue No. | 在庫<br>Stock |         | コーナ<br>ー数<br>No of<br>Cutting<br>Edges | 焼結体<br>切刃長<br>Cutting Edge<br>Length | 寸法 Dimensions (mm)         |                  |             |                          |
|-----------------------------------------------------------------------------------|----------------------|-------------|---------|----------------------------------------|--------------------------------------|----------------------------|------------------|-------------|--------------------------|
|                                                                                   |                      | BNC2010     | BNC2020 |                                        |                                      | 内接円<br>Inscribed<br>Circle | 厚 さ<br>Thickness | 穴 径<br>Hole | ノーズ<br>半径<br>Nose Radius |
|  | 4NC-CNGA120404HS     | ●           | ●       | 4                                      | 2.5                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                   | 120408HS             | ●           | ●       |                                        | 2.4                                  |                            |                  |             | 0.8                      |
|                                                                                   | 120412HS             | ●           | ●       |                                        | 2.3                                  |                            |                  |             | 1.2                      |
|  | 4NC-DNGA150404HS     | ●           | ●       | 4                                      | 2.5                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                   | 150408HS             | ●           | ●       |                                        | 2.1                                  |                            |                  |             | 0.8                      |
|                                                                                   | 150412HS             | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 1.2                      |
|  | 6NC-TNGA160404HS     | ●           | ●       | 6                                      | 2.3                                  | 9.525                      | 4.76             | 3.81        | 0.4                      |
|                                                                                   | 160408HS             | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 0.8                      |
|                                                                                   | 160412HS             | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 1.2                      |
|  | 4NC-VNGA160404HS     | ●           | ●       | 4                                      | 2.8                                  | 9.525                      | 4.76             | 3.81        | 0.4                      |
|                                                                                   | 160408HS             | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 0.8                      |
|                                                                                   | 160412HS             | ●           | ●       |                                        | 1.7                                  |                            |                  |             | 1.2                      |
|  | 6NC-WNGA080408HS     | ●           | ●       | 6                                      | 2.0                                  | 12.7                       | 4.76             | 5.16        | 0.8                      |
|                                                                                   |                      |             |         |                                        |                                      |                            |                  |             |                          |
|                                                                                   |                      |             |         |                                        |                                      |                            |                  |             |                          |

■マルチコーナーワンユースチップ/ネガティブ(穴つき)  
Multi-cornered,One-use Type/Negative(With Hole)

ブレイクマスター  
Break Master

| 外 観<br>Appearance                                                                   | 型 番<br>Catalogue No. | 在庫<br>Stock |         | コーナ<br>ー数<br>No of<br>Cutting<br>Edges | 焼結体<br>切刃長<br>Cutting Edge<br>Length | 寸法 Dimensions (mm)         |                  |             |                          |
|-------------------------------------------------------------------------------------|----------------------|-------------|---------|----------------------------------------|--------------------------------------|----------------------------|------------------|-------------|--------------------------|
|                                                                                     |                      | BNC2010     | BNC2020 |                                        |                                      | 内接円<br>Inscribed<br>Circle | 厚 さ<br>Thickness | 穴 径<br>Hole | ノーズ<br>半径<br>Nose Radius |
|    | 4NC-CNGG120404N-FV   | ●           | ●       | 4                                      | 2.5                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                     | 120408N-FV           | ●           | ●       |                                        | 2.4                                  |                            |                  |             | 0.8                      |
|                                                                                     | 120412N-FV           | ●           | ●       |                                        | 2.3                                  |                            |                  |             | 1.2                      |
|   | 4NC-CNGG120404N-LV   | ●           | ●       | 4                                      | 2.5                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                     | 120408N-LV           | ●           | ●       |                                        | 2.4                                  |                            |                  |             | 0.8                      |
|                                                                                     | 120412N-LV           | ●           | ●       |                                        | 2.3                                  |                            |                  |             | 1.2                      |
|  | 4NC-CNGG120404N-SV   | ●           | ●       | 4                                      | 2.5                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                     | 120408N-SV           | ●           | ●       |                                        | 2.4                                  |                            |                  |             | 0.8                      |
|                                                                                     | 120412N-SV           | ●           | ●       |                                        | 2.4                                  |                            |                  |             | 1.2                      |
|  | 4NC-DNGG150404N-FV   | ●           | ●       | 4                                      | 2.5                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                     | 150408N-FV           | ●           | ●       |                                        | 2.1                                  |                            |                  |             | 0.8                      |
|                                                                                     | 150412N-FV           | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 1.2                      |
|  | 4NC-DNGG150404N-LV   | ●           | ●       | 4                                      | 2.5                                  | 12.7                       | 4.76             | 5.16        | 0.4                      |
|                                                                                     | 150408N-LV           | ●           | ●       |                                        | 2.1                                  |                            |                  |             | 0.8                      |
|                                                                                     | 150412N-LV           | ●           | ●       |                                        | 2.0                                  |                            |                  |             | 1.                       |

## BNC2010/BNC2020 在庫型番(ポジティブ)

### ■マルチコーナーワンユースチップ/ポジティブ(穴つき) Multi-cornered, One-use Type/Positive(With Hole)

| 外 観<br>Appearance | 逃げ角<br>Relief Angle | 型 番<br>Catalogue No. | 在庫<br>Stock |         | コー<br>ナ<br>ー<br>数<br>No. of<br>Cutting<br>Edges | 焼結体<br>切刃長<br>Cutting<br>Edge Length | 寸法 Dimensions (mm)         |                 |             |                          |
|-------------------|---------------------|----------------------|-------------|---------|-------------------------------------------------|--------------------------------------|----------------------------|-----------------|-------------|--------------------------|
|                   |                     |                      | BNC2010     | BNC2020 |                                                 |                                      | 内接円<br>Inscribed<br>Circle | 厚さ<br>Thickness | 穴 径<br>Hole | ノーズ<br>半径<br>Nose Radius |
|                   | 7°                  | 2NC-CCGW060202       | ●           | ●       | 2                                               | 2.4                                  | 6.35                       | 2.38            | 2.8         | 0.2                      |
|                   |                     | 060204               | ●           | ●       |                                                 | 2.3                                  |                            |                 |             | 0.4                      |
|                   | 7°                  | 2NC-CCGW09T302       | ●           | ●       | 2                                               | 2.5                                  | 9.525                      | 3.97            | 4.4         | 0.2                      |
|                   |                     | 09T304               | ●           | ●       |                                                 | 2.5                                  |                            |                 |             | 0.4                      |
|                   | 7°                  | 2NC-CCGW09T304WG     | ●           | ●       | 2                                               | 2.4                                  | 9.525                      | 3.97            | 4.4         | 0.4                      |
|                   |                     | 09T308WG             | ●           | ●       |                                                 | 2.4                                  |                            |                 |             | 0.8                      |
|                   | 7°                  | 2NC-CCGW09T304WH     | ●           | ●       | 2                                               | 2.4                                  | 9.525                      | 3.97            | 4.4         | 0.4                      |
|                   |                     | 09T308WH             | ●           | ●       |                                                 | 2.3                                  |                            |                 |             | 0.8                      |
|                   | 7°                  | 2NC-DCGW070202       | ●           | ●       | 2                                               | 2.6                                  | 6.35                       | 2.38            | 2.8         | 0.2                      |
|                   |                     | 070204               | ●           | ●       |                                                 | 2.5                                  |                            |                 |             | 0.4                      |
|                   | 7°                  | 2NC-DCGW11T302       | ●           | ●       | 2                                               | 2.7                                  | 9.525                      | 3.97            | 4.4         | 0.2                      |
|                   |                     | 11T304               | ●           | ●       |                                                 | 2.5                                  |                            |                 |             | 0.4                      |
|                   | 7°                  | 2NC-DCGW11T304WG     | ●           | ●       | 2                                               | 2.3                                  | 9.525                      | 3.97            | 4.4         | 0.4                      |
|                   |                     | 11T308WG             | ●           | ●       |                                                 | 2.1                                  |                            |                 |             | 0.8                      |
|                   | 7°                  | 2NC-DCGW11T304WH     | ●           | ●       | 2                                               | 2.1                                  | 9.525                      | 3.97            | 4.4         | 0.4                      |
|                   |                     | 11T308WH             | ●           | ●       |                                                 | 1.8                                  |                            |                 |             | 0.8                      |
|                   | 11°                 | 3NC-TPGW110302       | ●           | ●       | 3                                               | 2.4                                  | 6.35                       | 3.18            | 3.4         | 0.2                      |
|                   |                     | 110304               | ●           | ●       |                                                 | 2.3                                  |                            |                 |             | 0.4                      |
|                   | 11°                 | 3NC-TPGW160402       | ●           | ●       | 3                                               | 2.0                                  | 9.525                      | 4.76            | 4.4         | 0.8                      |
|                   |                     | 160404               | ●           | ●       |                                                 | 2.4                                  |                            |                 |             | 0.4                      |
|                   | 5°                  | 2NC-VBGW110302       | ●           | ●       | 2                                               | 3.2                                  | 6.35                       | 3.18            | 4.4         | 0.2                      |
|                   |                     | 110304               | ●           | ●       |                                                 | 2.8                                  |                            |                 |             | 0.4                      |
|                   | 5°                  | 2NC-VBGW160402       | ●           | ●       | 2                                               | 3.3                                  | 9.525                      | 4.76            | 4.4         | 0.4                      |
|                   |                     | 160404               | ●           | ●       |                                                 | 3.3                                  |                            |                 |             | 0.8                      |
|                   | 7°                  | 2NC-VCGW160404       | ●           | ●       | 2                                               | 2.8                                  | 9.525                      | 4.76            | 4.4         | 0.4                      |
|                   |                     | 160408               | ●           | ●       |                                                 | 1.9                                  |                            |                 |             | 0.8                      |

※型番末尾 WG: 低送り用ワイパーチップ WH型: 高送り用ワイパーチップ  
WG: Wiper insert for Low-feed type WH: Wiper insert for High-feed type

### ■マルチコーナーワンユースチップ/ポジティブ(穴つき) 刃先強化タイプ HS 型 Multi-cornered, One-use Type/Positive(With Hole) Strong Edge Type HS

| 外 観<br>Appearance | 逃げ角<br>Relief Angle | 型 番<br>Catalogue No. | 在庫<br>Stock |         | コー<br>ナ<br>ー<br>数<br>No. of<br>Cutting<br>Edges | 焼結体<br>切刃長<br>Cutting<br>Edge Length | 寸法 Dimensions (mm)         |                 |             |                          |
|-------------------|---------------------|----------------------|-------------|---------|-------------------------------------------------|--------------------------------------|----------------------------|-----------------|-------------|--------------------------|
|                   |                     |                      | BNC2010     | BNC2020 |                                                 |                                      | 内接円<br>Inscribed<br>Circle | 厚さ<br>Thickness | 穴 径<br>Hole | ノーズ<br>半径<br>Nose Radius |
|                   | 11°                 | 3NC-TPGW160404HS     | ●           | ●       | 3                                               | 2.3                                  | 9.525                      | 4.76            | 3.4         | 0.4                      |
|                   |                     | 160408HS             | ●           | ●       |                                                 | 2.0                                  |                            |                 |             | 0.8                      |
|                   | 7°                  | 2NC-VCGW160404HS     | ●           | ●       | 2                                               | 2.8                                  | 9.525                      | 4.76            | 4.4         | 0.4                      |
|                   |                     | 160408HS             | ●           | ●       |                                                 | 1.9                                  |                            |                 |             | 0.8                      |

### ■マルチコーナーワンユースチップ/ポジティブ(穴つき) ブレイクマスター Multi-cornered, One-use Type/Positive(With Hole) Break Master

| 外 観<br>Appearance | 逃げ角<br>Relief Angle | 型 番<br>Catalogue No. | 在庫<br>Stock |         | コー<br>ナ<br>ー<br>数<br>No. of<br>Cutting<br>Edges | 焼結体<br>切刃長<br>Cutting<br>Edge Length | 寸法 Dimensions (mm)         |                 |             |                          |
|-------------------|---------------------|----------------------|-------------|---------|-------------------------------------------------|--------------------------------------|----------------------------|-----------------|-------------|--------------------------|
|                   |                     |                      | BNC2010     | BNC2020 |                                                 |                                      | 内接円<br>Inscribed<br>Circle | 厚さ<br>Thickness | 穴 径<br>Hole | ノーズ<br>半径<br>Nose Radius |
|                   | 7°                  | 2NC-CCGT060204N-FV   | ●           | ●       | 2                                               | 2.3                                  | 6.35                       | 2.38            | 2.8         | 0.4                      |
|                   |                     |                      | ●           | ●       |                                                 |                                      |                            |                 |             |                          |
|                   | 7°                  | 2NC-CCGT09T304N-FV   | ●           | ●       | 2                                               | 2.4                                  | 9.525                      | 3.97            | 4.4         | 0.4                      |
|                   |                     | 09T308N-FV           | ●           | ●       |                                                 | 2.3                                  |                            |                 |             | 0.8                      |
|                   | 7°                  | 2NC-CCGT09T304N-LV   | ●           | ●       | 2                                               | 2.4                                  | 9.525                      | 3.97            | 4.4         | 0.4                      |
|                   |                     | 09T308N-LV           | ●           | ●       |                                                 | 2.3                                  |                            |                 |             | 0.8                      |
|                   | 7°                  | 2NC-DCGT070204N-FV   | ●           | ●       | 2                                               | 2.4                                  | 6.35                       | 2.38            | 2.8         | 0.4                      |
|                   |                     |                      | ●           | ●       |                                                 |                                      |                            |                 |             |                          |
|                   | 7°                  | 2NC-DCGT11T304N-FV   | ●           | ●       | 2                                               | 2.4                                  | 9.525                      | 3.97            | 4.4         | 0.4                      |
|                   |                     | 11T308N-FV           | ●           | ●       |                                                 | 2.0                                  |                            |                 |             | 0.8                      |
|                   | 7°                  | 2NC-DCGT11T304N-LV   | ●           | ●       | 2                                               | 2.4                                  | 9.525                      | 3.97            | 4.4         | 0.4                      |
|                   |                     | 11T308N-LV           | ●           | ●       |                                                 | 2.0                                  |                            |                 |             | 0.8                      |
|                   | 11°                 | 3NC-TPGT110304N-FV   | ●           | ●       | 3                                               | 2.3                                  | 6.35                       | 3.97            | 3.4         | 0.4                      |
|                   |                     | 110308N-FV           | ●           | ●       |                                                 | 2.0                                  |                            |                 |             | 0.8                      |

※型番末尾 FV: 仕上げ切削用 LV: 軽切削用  
FV: Chipbreaker for Finish cutting type LV: Chipbreaker for Light cutting type

●印: 標準在庫品 無印: 受注生産品  
●Mark: Standard Stock Item No mark: Made-to-order item

### ◆安全にお使いいただくために◆



- 高温の切りくずが飛散したり長く伸びた切りくずが排出されることがありますので、安全カバーや保護メガネ等の保護具を使用し、防災・防火に十分ご注意ください。
- 鋭い切れ刃を持っているため取扱いにご注意ください。
- 使用方法を誤ったり、使用条件が不適切な場合、工具破損、飛散を招きますので推奨条件の範囲内でご利用ください。
- 不水溶性の切削液をご使用になる場合は、自動消火装置を設置するなどの対策を講じて頂き、火災にくれぐれもご注意ください。
- 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.

## 住友電気工業株式会社

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切削工具の最新情報を発信中  
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