



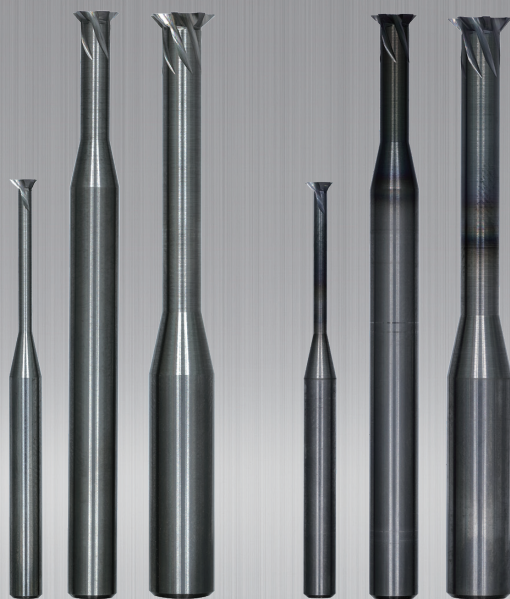
**ToYo Tool<sup>®</sup>**

**Solid Carbide Milling & Drilling  
Tools Catalog**



# Carbide 45° Back Chamfering Cutter

BC / BCC

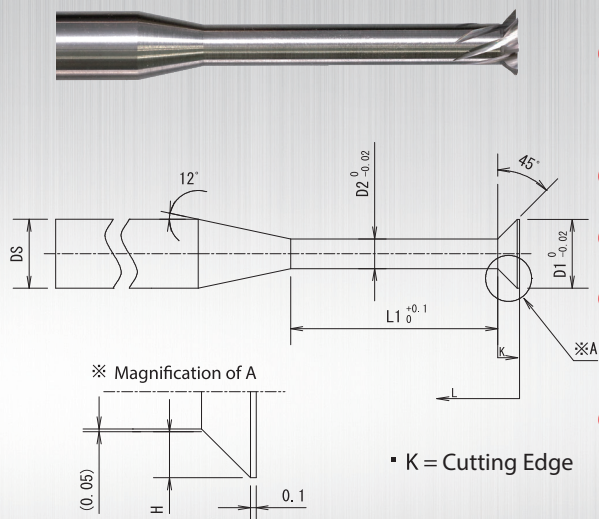


Uncoated

Coated

## Carbide Back Chamfering Cutter BC45 & BC45C Series

| No. | Type | Model number: Uncoated | Model number: Coated  | Tip diameter D1 | Recess diameter D2 | Recess length L1 | Effective blade length H | Number of flutes | Shank diameter DS | Overall length L |
|-----|------|------------------------|-----------------------|-----------------|--------------------|------------------|--------------------------|------------------|-------------------|------------------|
| 1   | S    | BC45-0.75-0.35-3.5(#)  |                       | 0.75            | 0.35               | 3.5              | 0.15                     | 3                | 3                 | 50               |
|     | L    | BC45-0.75-0.35-5(#)    |                       |                 |                    | 5                |                          |                  |                   |                  |
| 2   | S    | BC45-0.85-0.35-3.5(#)  |                       | 0.85            | 0.35               | 3.5              | 0.2                      | 3                | 3                 | 50               |
|     | L    | BC45-0.85-0.35-5(#)    |                       |                 |                    | 5                |                          |                  |                   |                  |
| 3   | S    | BC45-1.05-0.35-3.5(*)  |                       | 1.05            | 0.35               | 3.5              | 0.3                      | 3                | 3                 | 50               |
|     | L    | BC45-1.05-0.35-5(*)    |                       |                 |                    | 5                |                          |                  |                   |                  |
| 4   | S    | BC45-1.2-0.45-3.5(*)   | BC45C-1.2-0.45-3.5(*) | 1.2             | 0.45               | 3.5              | 0.325                    | 3                | 3                 | 50               |
|     | L    | BC45-1.2-0.45-5(*)     | BC45C-1.2-0.45-5(*)   |                 |                    | 5                |                          |                  |                   |                  |
| 5   | S    | BC45-1.3-0.5-3.5(*)    | BC45C-1.3-0.5-3.5(*)  | 1.3             | 0.5                | 3.5              | 0.35                     | 3                | 3                 | 50               |
|     | L    | BC45-1.3-0.5-5(*)      | BC45C-1.3-0.5-5(*)    |                 |                    | 5                |                          |                  |                   |                  |
| 6   | S    | BC45-1.4-0.55-3.5      | BC45C-1.4-0.55-3.5    | 1.4             | 0.55               | 3.5              | 0.375                    | 3                | 3                 | 50               |
|     | L    | BC45-1.4-0.55-5        | BC45C-1.4-0.55-5      |                 |                    | 5                |                          |                  |                   |                  |
| 7   | S    | BC45-1.6-0.65-5        | BC45C-1.6-0.65-5      | 1.6             | 0.65               | 5                | 0.425                    | 3                | 3                 | 50               |
|     | L    | BC45-1.6-0.65-10       | BC45C-1.6-0.65-10     |                 |                    | 10               |                          |                  |                   |                  |
| 8   | S    | BC45-1.8-0.8-5(*)      | BC45C-1.8-0.8-5(*)    | 1.8             | 0.8                | 5                | 0.45                     | 3                | 3                 | 50               |
|     | L    | BC45-1.8-0.8-10(*)     | BC45C-1.8-0.8-10(*)   |                 |                    | 10               |                          |                  |                   |                  |
| 9   | S    | BC45-2.0-0.85-5        | BC45C-2.0-0.85-5      | 2               | 0.85               | 5                | 0.525                    | 3                | 3                 | 50               |
|     | L    | BC45-2.0-0.85-10       | BC45C-2.0-0.85-10     |                 |                    | 10               |                          |                  |                   |                  |
| 10  | S    | BC45-2.2-0.9-5         | BC45C-2.2-0.9-5       | 2.2             | 0.9                | 5                | 0.6                      | 3                | 3                 | 50               |
|     | L    | BC45-2.2-0.9-10        | BC45C-2.2-0.9-10      |                 |                    | 10               |                          |                  |                   |                  |
| 11  | S    | BC45-2.4-1.0-5(*)      | BC45C-2.4-1.0-5(*)    | 2.4             | 1                  | 5                | 0.65                     | 3                | 3                 | 50               |
|     | L    | BC45-2.4-1.0-10(*)     | BC45C-2.4-1.0-10(*)   |                 |                    | 10               |                          |                  |                   |                  |
| 12  | S    | BC45-2.6-1.1-7         | BC45C-2.6-1.1-7       | 2.6             | 1.1                | 7                | 0.7                      | 3                | 3                 | 50               |
|     | L    | BC45-2.6-1.1-12        | BC45C-2.6-1.1-12      |                 |                    | 12               |                          |                  |                   |                  |
| 13  | S    | BC45-2.8-1.2-7         | BC45C-2.8-1.2-7       | 2.8             | 1.2                | 7                | 0.75                     | 3                | 3                 | 50               |
|     | L    | BC45-2.8-1.2-12        | BC45C-2.8-1.2-12      |                 |                    | 12               |                          |                  |                   |                  |
| 14  | S    | BC45-3.0-1.3-9         | BC45C-3.0-1.3-9       | 3               | 1.3                | 9                | 0.8                      | 3                | 3                 | 50               |
|     | L    | BC45-3.0-1.3-15        | BC45C-3.0-1.3-15      |                 |                    | 15               |                          |                  |                   |                  |
| 15  | S    | BC45-3.3-1.5-9         | BC45C-3.3-1.5-9       | 3.3             | 1.5                | 9                | 0.85                     | 3                | 4                 | 60               |
|     | L    | BC45-3.3-1.5-15        | BC45C-3.3-1.5-15      |                 |                    | 15               |                          |                  |                   |                  |
| 16  | S    | BC45-3.5-1.6-9         | BC45C-3.5-1.6-9       | 3.5             | 1.6                | 9                | 0.9                      | 3                | 4                 | 60               |
|     | L    | BC45-3.5-1.6-15        | BC45C-3.5-1.6-15      |                 |                    | 15               |                          |                  |                   |                  |
| 17  | S    | BC45-3.8-1.85-10       | BC45C-3.8-1.85-10     | 3.8             | 1.85               | 10               | 0.925                    | 3                | 4                 | 60               |
|     | L    | BC45-3.8-1.85-17       | BC45C-3.8-1.85-17     |                 |                    | 17               |                          |                  |                   |                  |
| 18  | S    | BC45-4.0-2.0-10(*)     | BC45C-4.0-2.0-10(*)   | 4               | 2                  | 10               | 0.95                     | 3                | 4                 | 60               |
|     | L    | BC45-4.0-2.0-17(*)     | BC45C-4.0-2.0-17(*)   |                 |                    | 17               |                          |                  |                   |                  |
| 19  | S    | BC45-4.3-2.15-10       | BC45C-4.3-2.15-10     | 4.3             | 2.15               | 10               | 1.025                    | 3                | 6                 | 70               |
|     | L    | BC45-4.3-2.15-17       | BC45C-4.3-2.15-17     |                 |                    | 17               |                          |                  |                   |                  |
| 20  | S    | BC45-4.8-2.4-10        | BC45C-4.8-2.4-10      | 4.8             | 2.4                | 10               | 1.15                     | 3                | 6                 | 70               |
|     | L    | BC45-4.8-2.4-17        | BC45C-4.8-2.4-17      |                 |                    | 17               |                          |                  |                   |                  |
| 21  | S    | BC45-5.3-2.65-14       | BC45C-5.3-2.65-14     | 5.3             | 2.65               | 14               | 1.275                    | 5                | 6                 | 70               |
|     | L    | BC45-5.3-2.65-24       | BC45C-5.3-2.65-24     |                 |                    | 24               |                          |                  |                   |                  |
| 22  | S    | BC45-5.8-3.6-14(*)     | BC45C-5.8-3.6-14(*)   | 5.8             | 3.6                | 14               | 1.05                     | 5                | 6                 | 70               |
|     | L    | BC45-5.8-3.6-24(*)     | BC45C-5.8-3.6-24(*)   |                 |                    | 24               |                          |                  |                   |                  |
| 23  | S    | BC45-6.8-4.2-14        | BC45C-6.8-4.2-14      | 6.8             | 4.2                | 14               | 1.25                     | 7                | 8                 | 80               |
|     | L    | BC45-6.8-4.2-24        | BC45C-6.8-4.2-24      |                 |                    | 24               |                          |                  |                   |                  |
| 24  | S    | BC45-8.0-4.8-14(*)     | BC45C-8.0-4.8-14(*)   | 8               | 4.8                | 14               | 1.55                     | 7                | 8                 | 80               |
|     | M    | BC45-8.0-4.8-24(*)     | BC45C-8.0-4.8-24(*)   |                 |                    | 24               |                          |                  |                   |                  |
|     | L    | BC45-8.0-4.8-34(*)     | BC45C-8.0-4.8-34(*)   |                 |                    | 34               |                          |                  |                   |                  |
| 25  | S    | BC45-10.0-6.0-14       | BC45C-10.0-6.0-14     | 10              | 6                  | 14               | 1.95                     | 9                | 10                | 90               |
|     | M    | BC45-10.0-6.0-24       | BC45C-10.0-6.0-24     |                 |                    | 24               |                          |                  |                   |                  |
|     | L    | BC45-10.0-6.0-39       | BC45C-10.0-6.0-39     |                 |                    | 39               |                          |                  |                   |                  |
| 26  | S    | BC45-12.0-7.6-19       | BC45C-12.0-7.6-19     | 12              | 7.6                | 19               | 2.15                     | 11               | 12                | 100              |
|     | M    | BC45-12.0-7.6-29       | BC45C-12.0-7.6-29     |                 |                    | 29               |                          |                  |                   |                  |
|     | L    | BC45-12.0-7.6-44       | BC45C-12.0-7.6-44     |                 |                    | 44               |                          |                  |                   |                  |



★ Uncoated ⇒ Work material: aluminum alloy, titanium alloy, and resin

★ Coated ⇒ Work material: stainless steel, general steel, and heat-resistant alloy

● Models with a D1 of  $\Phi 0.75$  /  $\Phi 0.85$  /  $\Phi 1.05$  are applicable only to work made of aluminum alloy. These are all uncoated models.

# ● Models with a D1 of  $\Phi 0.75$  /  $\Phi 0.85$  are made to order.  
(Minimum order quantity: 2 pcs.)

Model number with (\*)

⇒ Recommended size for screw chamfering.

•  $\Phi 1.05 = M1.4$

•  $\Phi 1.2 = M1.6 \sim M1.7$

•  $\Phi 1.3 = M1.7 \sim M2.$

•  $\Phi 1.8 = M2.3 \sim M2.6$

•  $\Phi 2.4 = M3. \sim M4.$

•  $\Phi 4.0 = M5. \sim M6.$

•  $\Phi 5.8 = M7. \sim$

•  $\Phi 8.0 = M10. \sim$

# Carbide 45° Back Chamfering Cutter

## Recommended cutting conditions

| Work materials<br>(Verified material) | • Cutting speed (m/min)<br>• Feed rate (mm/blade) |                     |                      |                      |                      |                      |                      |                      |                     |                        |                       | Recommended tool |
|---------------------------------------|---------------------------------------------------|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------|------------------------|-----------------------|------------------|
|                                       | Φ0.75~Φ1.05                                       | Φ1.2~Φ1.4           | Φ1.6~Φ1.8            | Φ2.0~Φ2.4            | Φ2.6~Φ3.0            | Φ3.3~Φ3.8            | Φ4.0~Φ4.8            | Φ5.3~Φ5.8            | Φ6.8~Φ8.0           | Φ10.0                  | Φ12.0                 |                  |
| Aluminum alloy<br>(A5052)             | 5~25<br>0.005~0.02                                | 10~25<br>0.01~0.035 | 20~35<br>0.01~0.035  | 25~45<br>0.01~0.035  | 20~35<br>0.015~0.04  | 15~35<br>0.025~0.055 | 25~45<br>0.025~0.055 | 20~45<br>0.03~0.085  | 20~45<br>0.03~0.085 | 100~160<br>0.01~0.04   | 100~160<br>0.01~0.04  | Uncoated         |
| General steel<br>(S50C)               | ×                                                 | 5~20<br>0.025~0.055 | 10~25<br>0.025~0.055 | 10~25<br>0.025~0.055 | 10~25<br>0.025~0.055 | 15~35<br>0.025~0.055 | 25~45<br>0.03~0.06   | 20~35<br>0.04~0.07   | 20~35<br>0.03~0.06  | 140~160<br>0.01~0.04   | 140~160<br>0.01~0.04  | Coated           |
| Stainless steel<br>(SUS304)           | ×                                                 | 5~20<br>0.01~0.025  | 10~25<br>0.01~0.025  | 10~25<br>0.01~0.025  | 10~25<br>0.01~0.025  | 10~25<br>0.015~0.04  | 10~35<br>0.02~0.045  | 10~35<br>0.03~0.055  | 10~35<br>0.03~0.055 | 140~160<br>0.01~0.035  | 140~160<br>0.01~0.04  | Coated           |
| Titanium alloy<br>(64 Titanium)       | ×                                                 | 5~20<br>0.01~0.025  | 10~25<br>0.015~0.035 | 10~25<br>0.015~0.035 | 10~25<br>0.01~0.025  | 10~25<br>0.02~0.035  | 15~30<br>0.02~0.035  | 15~30<br>0.025~0.045 | 15~30<br>0.03~0.055 | 150~160<br>0.01~0.04   | 140~160<br>0.01~0.03  | Uncoated         |
| Heat-resistant alloy<br>(ALLOY C276)  | ×                                                 | 5~20<br>0.01~0.025  | 10~25<br>0.02~0.035  | 10~25<br>0.02~0.035  | 10~25<br>0.01~0.025  | 10~20<br>0.01~0.025  | 15~35<br>0.015~0.03  | 15~30<br>0.025~0.045 | 10~25<br>0.015~0.04 | 150~160<br>0.005~0.025 | 140~160<br>0.01~0.025 | Coated           |

※ ≪ Resin ≫ machining is possible under the recommended cutting conditions for aluminum alloy.

### <Precautions>

※ Recommended cut direction: downward

※ The values listed in the recommended cutting conditions were calculated by TOYO Co., Ltd., so fine-tuning may be necessary depending on the material, processing machine, state of the work, or other factors.

※ Depending on the material, processing machine, state of the work, or other factors, processing should be done by making several cuts.

※ To improve the surface roughness, you can use a tool with lower values than those in the recommended cutting conditions, but the tool life might be shortened.

● Models with a D1 of Φ0.75 / Φ0.85 / Φ1.05 are applicable only to work made of aluminum alloy. These are all uncoated models.





# Carbide 30° Back Chamfering Cutter



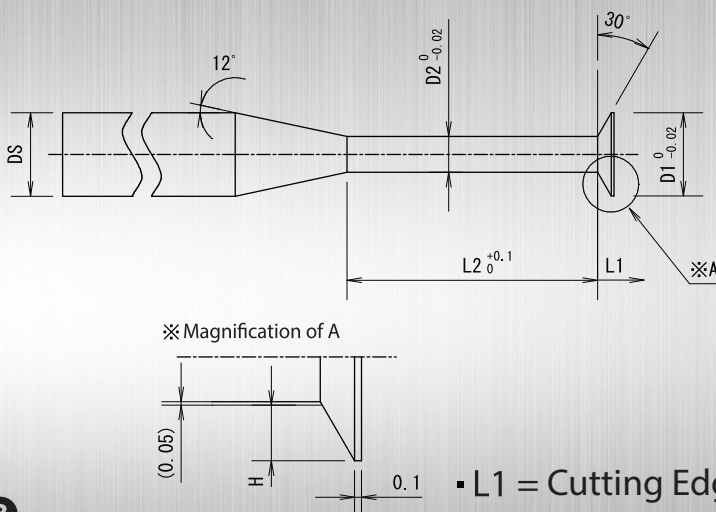
**BC / BCC**

## Carbide 30° Back Chamfering Cutter

|   | Type | Model number: Uncoated | Model number: Coated | Tip diameter<br>D1 | Tip length<br>L1 | Recess diameter<br>D2 | Recess length<br>L2 | Effective<br>blade length<br>H | Number of<br>flutes | Shank diameter<br>D S | Overall length<br>L |
|---|------|------------------------|----------------------|--------------------|------------------|-----------------------|---------------------|--------------------------------|---------------------|-----------------------|---------------------|
| 1 | S    | BC30-0.9-0.4-3.5       | BC30C-0.9-0.4-3.5    | 0.9                | 0.244            | 0.4                   | 3.5                 | 0.2                            | 3                   | 3                     | 50                  |
|   | L    | BC30-0.9-0.4-5         | BC30C-0.9-0.4-5      |                    |                  |                       | 5                   |                                |                     |                       |                     |
| 2 | S    | BC30-1.4-0.75-3.5      | BC30C-1.4-0.75-3.5   | 1.4                | 0.288            | 0.75                  | 3.5                 | 0.275                          | 3                   | 3                     | 50                  |
|   | L    | BC30-1.4-0.75-5        | BC30C-1.4-0.75-5     |                    |                  |                       | 5                   |                                |                     |                       |                     |
| 3 | S    | BC30-1.9-1.05-5        | BC30C-1.9-1.05-5     | 1.9                | 0.345            | 1.05                  | 5                   | 0.375                          | 3                   | 3                     | 50                  |
|   | L    | BC30-1.9-1.05-10       | BC30C-1.9-1.05-10    |                    |                  |                       | 10                  |                                |                     |                       |                     |
| 4 | S    | BC30-2.4-1.3-5         | BC30C-2.4-1.3-5      | 2.4                | 0.418            | 1.3                   | 5                   | 0.5                            | 3                   | 3                     | 50                  |
|   | L    | BC30-2.4-1.3-10        | BC30C-2.4-1.3-10     |                    |                  |                       | 10                  |                                |                     |                       |                     |
| 5 | S    | BC30-2.9-1.6-10        | BC30C-2.9-1.6-10     | 2.9                | 0.475            | 1.6                   | 10                  | 0.6                            | 3                   | 3                     | 50                  |
|   | L    | BC30-2.9-1.6-15        | BC30C-2.9-1.6-15     |                    |                  |                       | 15                  |                                |                     |                       |                     |

★Uncoated ⇒ Work material: aluminum alloy, titanium alloy, and resin

★Coated ⇒ Work material: stainless steel, general steel, and heat-resistant alloy



### Recommended cutting conditions

| Work material<br>(Verified material) | Cutting speed (m/min)<br>Feed rate (mm/blade) | Recommended tool |
|--------------------------------------|-----------------------------------------------|------------------|
| Aluminum alloy<br>(A5052)            | 20 ~ 60<br>0.01 ~ 0.05                        | Uncoated         |
| General steel<br>(S50C)              | 10 ~ 50<br>0.02 ~ 0.075                       | Coated           |
| Stainless steel<br>(SUS304)          | 10 ~ 50<br>0.01 ~ 0.04                        | Coated           |
| Titanium alloy<br>(64 Titanium)      | 15 ~ 45<br>0.015 ~ 0.07                       | Uncoated         |
| Heat-resistant alloy<br>(ALLOY C276) | 10 ~ 30<br>0.01 ~ 0.035                       | Coated           |

※ ≪ Resin ≫ machining is possible under the recommended cutting conditions for aluminum alloy.



# Twist Chamfer Mill

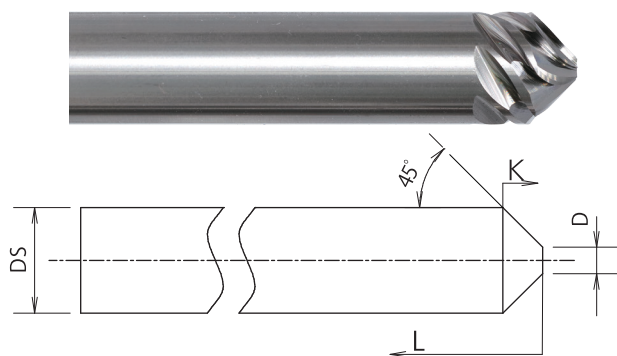
## Carbide 90° End Mill for Front Chamfering

TCM

TCMC

Uncoated

Coated



• K=Cutting Edge

### Twist Chamfer Mill Carbide 90° End Mill for Front Chamfering

|   | Model number |               | Tip diameter D | Effective blade length K | Number of flutes | Shank diameter DS | Overall length L |
|---|--------------|---------------|----------------|--------------------------|------------------|-------------------|------------------|
|   | Uncoated     | Coated        |                |                          |                  |                   |                  |
| ① | TCM 90 - 3   | TCM 90 C - 3  | 0.5            | 1.25                     | 3                | 3                 | 40               |
| ② | TCM 90 - 4   | TCM 90 C - 4  | 0.5            | 1.75                     | 3                | 4                 | 50               |
| ③ | TCM 90 - 6   | TCM 90 C - 6  | 0.75           | 2.625                    | 5                | 6                 | 60               |
| ④ | TCM 90 - 8   | TCM 90 C - 8  | 1.25           | 3.375                    | 5                | 8                 | 60               |
| ⑤ | TCM 90 - 10  | TCM 90 C - 10 | 2.5            | 3.75                     | 7                | 10                | 70               |
| ⑥ | TCM 90 - 12  | TCM 90 C - 12 | 2.5            | 4.75                     | 7                | 12                | 70               |
| ⑦ | TCM90-10-11S | TCM90C-10-11S | 4              | 3                        | 11               | 10                | 70               |
| ⑧ | TCM90-12-11S | TCM90C-12-11S | 4              | 4                        | 11               | 12                | 70               |

### Recommended cutting conditions

| Work material         | Aluminum alloy       | General steel | Stainless steel | Titanium alloy | Heat-resistant alloy |
|-----------------------|----------------------|---------------|-----------------|----------------|----------------------|
| Shank diameter        | Feed rate (mm/blade) |               |                 |                |                      |
| Cutting speed (m/min) | 85 ~ 175             | 40 ~ 90       | 30 ~ 60         | 25 ~ 55        | 20 ~ 45              |
| Φ3. / Φ4.             | 0.01 ~ 0.05          | 0.025 ~ 0.065 | 0.02 ~ 0.06     | 0.025 ~ 0.05   | 0.02 ~ 0.04          |
| Φ6. / Φ8.             | 0.015 ~ 0.055        | 0.02 ~ 0.06   | 0.015 ~ 0.055   | 0.02 ~ 0.055   | 0.01 ~ 0.05          |
| Φ10. / Φ12.           | 0.015 ~ 0.055        | 0.015 ~ 0.055 | 0.01 ~ 0.05     | 0.02 ~ 0.045   | 0.01 ~ 0.035         |
| Chamfering depth      | ~ 0.3DS              | ~ 0.15DS      | ~ 0.2DS         | ~ 0.15DS       | ~ 0.15DS             |

|                       |           |           |           |          |          |
|-----------------------|-----------|-----------|-----------|----------|----------|
| Cutting speed (m/min) | 150 ~ 305 | 100 ~ 225 | 90 ~ 180  | 75 ~ 165 | 65 ~ 150 |
| Φ10. / Φ12. (11S)     | ~ 0.03    | ~ 0.035   | ~ 0.03    | ~ 0.025  | ~ 0.035  |
| Chamfering depth      | ~ 0.2DS   | ~ 0.1DS   | ~ 0.125DS | ~ 0.1DS  | ~ 0.1DS  |

※ ≪ Resin ≫ machining is possible under the recommended cutting conditions for aluminum alloy.

<Precautions>

※ The values listed in the recommended cutting conditions were calculated by TOYO Co., Ltd., so fine-tuning may be necessary depending on the material, processing machine, state of the work, or other factors.

※ Recommended cut direction: downward

※ We recommend you use an **oil-based or water-soluble coolant** while machining.

※ Depending on the material, processing machine, state of the work, or other factors, processing should be done by making several cuts.

※ To prevent **tool damage, chattering, or burrs**, make sure **the work is clamped securely and the tool is set in a manner where it does not shake**.

※ To improve the surface roughness, set a lower feed rate per blade or a lower chamfering depth.

※ When chamfering a hole by thrusting, set a lower cutting speed.

※ For a long thrust, set a lower value than that of the condition.

### <Recommended type>

|          | Aluminum | General steel | Stainless steel | Titanium alloy | Heat-resistant alloy |
|----------|----------|---------------|-----------------|----------------|----------------------|
| Uncoated | ◎        | △             | △               | ○              | ×                    |
| Coated   | ○        | ○             | ◎               | ◎              | ○                    |

※ Resin ※



# Carbide C Chamfering Cutter "Front/Back"

## Solid Carbide Front/Back Chamfering Series

**BCM / WCM**

**Uncoated** Carbide C Chamfering Cutter for Aluminum BCM/WCM ※ << Resin >> machining is possible ※

| Model number |                     | Tip diameter | Tip length | Recess diameter | Recess length | Effective blade length | Number of flutes     | Shank diameter | Overall length | Applicable range |
|--------------|---------------------|--------------|------------|-----------------|---------------|------------------------|----------------------|----------------|----------------|------------------|
|              |                     | D1           | L1         | D2              | L2            | H                      |                      | D S            | L              |                  |
| ①            | BCM45-1.05-0.35-3.5 | 1.05         | 1.05       | 0.35            | 3.5           | 0.3                    | 3                    | 3              | 50             | M1.4             |
| ②            | BCM45-1.2-0.45-3.5  | 1.2          | 1.2        | 0.45            | 3.5           | 0.325                  | 3                    | 3              | 50             | M1.6 ~ M1.7      |
| ③            | BCM45-1.2-0.45-5    |              |            |                 | 5             |                        |                      |                |                |                  |
| ④            | BCM45-1.3-0.5-3.5   | 1.3          | 1.3        | 0.5             | 3.5           | 0.35                   | 3                    | 3              | 50             | M1.7 ~ M2.       |
| ⑤            | BCM45-1.3-0.5-5     |              |            |                 | 5             |                        |                      |                |                |                  |
| ⑥            | BCM45-1.8-0.8-5     | 1.8          | 1.8        | 0.8             | 5             | 0.45                   | 3                    | 3              | 50             | M2.3 ~ M2.6      |
| ⑦            | BCM45-2.4-1.0-10    | 2.4          | 2.4        | 1               | 10            | 0.65                   | 3                    | 3              | 50             | M3. ~ M4.        |
| ⑧            | BCM45-4.0-2.0-15    | 4            | 4          | 2               | 15            | 0.95                   | 3                    | 4              | 50             | M5. ~ M6.        |
| ⑨            | WCM45-5.0-2.8-20    | 5            | 5          | 2.8             | 20            | 1.05                   | 3 (Staggered blades) | 6              | 60             | M7. ~            |
| ⑩            | WCM45-8.0-4.8-25    | 8            | 8          | 4.8             | 25            | 1.55                   | 3 (Staggered blades) | 8              | 70             | M10. ~           |



### Recommended cutting conditions

| Model number         | Cutting speed (m/min) | Number of revolutions (min <sup>-1</sup> ) | Feed rate (mm/blade) | Feeding speed (mm/min) | Cut direction |
|----------------------|-----------------------|--------------------------------------------|----------------------|------------------------|---------------|
| BCM45-1.05-0.35-3.5  | 10                    | S4200                                      | 0.010                | F130                   | Downward      |
| BCM45-1.2-0.45-3.5/5 | 20                    | S7700                                      | 0.010                | F231                   | Downward      |
| BCM45-1.3-0.5-3.5/5  | 20                    | S7000                                      | 0.015                | F315                   | Downward      |
| BCM45-1.8-0.8-5      | 30                    | S7300                                      | 0.015                | F329                   | Downward      |
| BCM45-2.4-1.0-10     | 40                    | S7500                                      | 0.015                | F338                   | Downward      |
| BCM45-4.0-2.0-15     | 15 ~ 35               | ×                                          | ~ 0.02               | ×                      | Downward      |
| WCM45-5.0-2.8-20     | 15 ~ 35               | ×                                          | ~ 0.02               | ×                      | Downward      |
| WCM45-8.0-4.8-25     | 15 ~ 35               | ×                                          | ~ 0.02               | ×                      | Downward      |

**TITAN-BCM / WCM**

**Uncoated** Carbide C Chamfering Cutter for Titanium TITAN-BCM/WCM

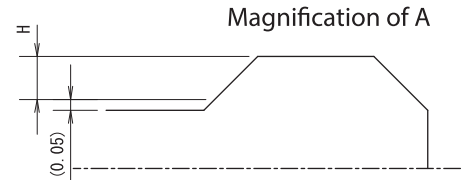
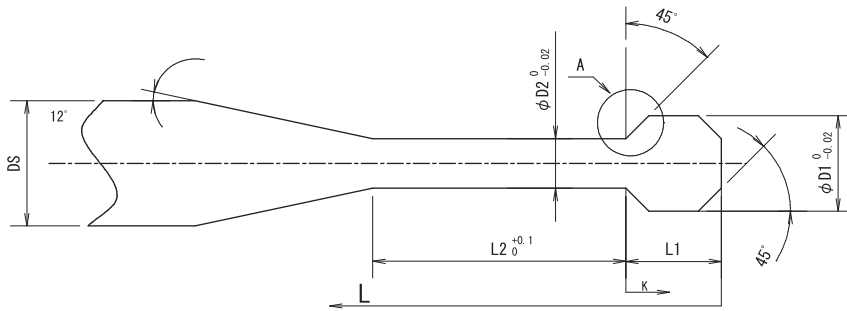
| Model number |                         | Tip diameter | Tip length | Recess diameter | Recess length | Effective blade length | Number of flutes     | Shank diameter | Overall length |
|--------------|-------------------------|--------------|------------|-----------------|---------------|------------------------|----------------------|----------------|----------------|
|              |                         | D1           | L1         | D2              | L2            | H                      |                      | D S            | L              |
| ①            | TITAN-BCM45-1.3-0.8-3.5 | 1.3          | 1.3        | 0.8             | 3.5           | 0.2                    | 3                    | 3              | 60             |
| ②            | TITAN-BCM45-1.3-0.8-5   |              |            |                 | 5             |                        |                      |                |                |
| ③            | TITAN-BCM45-2.3-1.2-4   | 2.3          | 2.3        | 1.2             | 4             | 0.5                    | 3                    | 3              | 60             |
| ④            | TITAN-BCM45-2.3-1.2-6   |              |            |                 | 6             |                        |                      |                |                |
| ⑤            | TITAN-WCM45-3.8-2.0-5   | 3.8          | 2.3        | 2               | 5             | 0.85                   | 3 (Staggered blades) | 4              | 60             |
| ⑥            | TITAN-WCM45-3.8-2.0-10  |              |            |                 | 10            |                        |                      |                |                |
| ⑦            | TITAN-WCM45-5.0-2.8-10  | 5            | 4          | 2.8             | 10            | 1.05                   | 3 (Staggered blades) | 6              | 60             |
| ⑧            | TITAN-WCM45-5.0-2.8-15  |              |            |                 | 15            |                        |                      |                |                |
| ⑨            | TITAN-WCM45-5.0-2.8-20  |              |            |                 | 20            |                        |                      |                |                |
| ⑩            | TITAN-WCM45-8.0-4.8-15  | 8            | 6          | 4.8             | 15            | 1.55                   | 3 (Staggered blades) | 8              | 60             |
| ⑪            | TITAN-WCM45-8.0-4.8-20  |              |            |                 | 20            |                        |                      |                | 70             |
| ⑫            | TITAN-WCM45-8.0-4.8-25  |              |            |                 | 25            |                        |                      |                |                |



### Recommended cutting conditions

| Model number                 | Cutting speed (m/min) front/back | Number of revolutions (min <sup>-1</sup> ) front/back | Feed rate (mm/blade) front/back | Feeding speed (mm/min) front/back | Cut direction |
|------------------------------|----------------------------------|-------------------------------------------------------|---------------------------------|-----------------------------------|---------------|
| TITAN-BCM45-1.3-0.8-3.5/5    | 5/10                             | S1500/S3000                                           | 0.030                           | F135/F270                         | Downward      |
| TITAN-BCM45-2.3-1.2-4/6      | 10/15                            | S1800/S2700                                           | 0.030                           | F162/F243                         | Downward      |
| TITAN-WCM45-3.8-2.0-5/10     | 15                               | S1600                                                 | 0.020                           | F100                              | Downward      |
| TITAN-WCM45-5.0-2.8-10/15/20 | 15                               | S1200                                                 | 0.020                           | F72                               | Downward      |
| TITAN-WCM45-8.0-4.8-15/20/25 | 15                               | S750                                                  | 0.020                           | F45                               | Downward      |





K = Cutting Edge

Coated

Carbide C Chamfering Cutter for Stainless Steel SUS-BCM/WCM

**SUS-BCM / WCM**

| Model number |                       | Tip diameter<br>D1 | Tip length<br>L1 | Recess diameter<br>D2 | Recess length<br>L2 | Effective blade length<br>H | Number of<br>flutes     | Shank diameter<br>D S | Overall length<br>L |
|--------------|-----------------------|--------------------|------------------|-----------------------|---------------------|-----------------------------|-------------------------|-----------------------|---------------------|
| ①            | SUS-BCM45-1.3-0.8-3.5 | 1.3                | 1.3              | 0.8                   | 3.5                 | 0.2                         | 3                       | 3                     | 50                  |
| ②            | SUS-BCM45-1.3-0.8-5   |                    |                  |                       | 5                   |                             |                         |                       |                     |
| ③            | SUS-BCM45-2.3-1.2-6   | 2.3                | 2.3              | 1.2                   | 6                   | 0.5                         | 3                       | 3                     | 50                  |
| ④            | SUS-BCM45-2.3-1.2-8   |                    |                  |                       | 8                   |                             |                         |                       |                     |
| ⑤            | SUS-BCM45-2.3-1.2-10  |                    |                  |                       | 10                  |                             |                         |                       |                     |
| ⑥            | SUS-BCM45-3.8-2.0-8   | 3.8                | 3.8              | 2                     | 8                   | 0.85                        | 3                       | 4                     | 50                  |
| ⑦            | SUS-BCM45-3.8-2.0-10  |                    |                  |                       | 10                  |                             |                         |                       |                     |
| ⑧            | SUS-BCM45-3.8-2.0-15  |                    |                  |                       | 15                  |                             |                         |                       |                     |
| ⑨            | SUS-WCM45-5.0-2.8-10  | 5                  | 5                | 2.8                   | 10                  | 1.05                        | 3<br>(Staggered blades) | 6                     | 50                  |
| ⑩            | SUS-WCM45-5.0-2.8-15  |                    |                  |                       | 15                  |                             |                         |                       | 60                  |
| ⑪            | SUS-WCM45-5.0-2.8-20  |                    |                  |                       | 20                  |                             |                         |                       | 60                  |
| ⑫            | SUS-WCM45-8.0-4.8-15  | 8                  | 8                | 4.8                   | 15                  | 1.55                        | 3<br>(Staggered blades) | 8                     | 60                  |
| ⑬            | SUS-WCM45-8.0-4.8-20  |                    |                  |                       | 20                  |                             |                         |                       | 70                  |
| ⑭            | SUS-WCM45-8.0-4.8-25  |                    |                  |                       | 25                  |                             |                         |                       | 70                  |



#### Recommended cutting conditions

| Model number               | Cutting speed<br>(m/min)<br>front/back | Number of<br>revolutions<br>(min <sup>-1</sup> )<br>front/back | Feed rate<br>(mm/blade)<br>front/back | Feeding speed<br>(mm/min)<br>front/back | Cut direction |
|----------------------------|----------------------------------------|----------------------------------------------------------------|---------------------------------------|-----------------------------------------|---------------|
| SUS-BCM45-1.3-0.8-3.5/5    | 5/10                                   | S1500/S3000                                                    | 0.015                                 | F70/F135                                | Downward      |
| SUS-BCM45-2.3-1.2-6/8/10   | 10/15                                  | S1800/S2700                                                    | 0.015                                 | F80/F125                                | Downward      |
| SUS-BCM45-3.8-2.0-8/10/15  | 10/20                                  | S1100/S2200                                                    | 0.015                                 | F50/F100                                | Downward      |
| SUS-WCM45-5.0-2.8-10/15/20 | 20                                     | S1600                                                          | 0.015                                 | F75                                     | Downward      |
| SUS-WCM45-8.0-4.8-15/20/25 | 20                                     | S1000                                                          | 0.015                                 | F45                                     | Downward      |

Coated

Carbide C Chamfering Cutter for General Steel STEEL-BCM/WCM

**STEEL-BCM / WCM**

| Model number |                         | Tip diameter<br>D1 | Tip length<br>L1 | Recess diameter<br>D2 | Recess length<br>L2 | Effective blade length<br>H | Number of<br>flutes     | Shank diameter<br>D S | Overall length<br>L |
|--------------|-------------------------|--------------------|------------------|-----------------------|---------------------|-----------------------------|-------------------------|-----------------------|---------------------|
| ①            | STEEL-BCM45-1.3-0.8-3.5 | 1.3                | 1.3              | 0.8                   | 3.5                 | 0.2                         | 3                       | 3                     | 60                  |
| ②            | STEEL-BCM45-1.3-0.8-5   |                    |                  |                       | 5                   |                             |                         |                       |                     |
| ③            | STEEL-BCM45-2.3-1.2-4   | 2.3                | 2.3              | 1.2                   | 4                   | 0.5                         | 3                       | 3                     | 60                  |
| ④            | STEEL-BCM45-2.3-1.2-6   |                    |                  |                       | 6                   |                             |                         |                       |                     |
| ⑤            | STEEL-WCM45-3.8-2.0-5   |                    |                  |                       | 5                   | 0.85                        | 3<br>(Staggered blades) | 4                     | 60                  |
| ⑥            | STEEL-WCM45-3.8-2.0-10  | 3.8                | 2.8              | 2                     | 10                  |                             |                         |                       |                     |
| ⑦            | STEEL-WCM45-3.8-2.0-15  |                    |                  |                       | 15                  |                             |                         |                       |                     |
| ⑧            | STEEL-WCM45-5.0-2.8-10  | 5                  | 5                | 2.8                   | 10                  | 1.05                        | 3<br>(Staggered blades) | 6                     | 60                  |
| ⑨            | STEEL-WCM45-5.0-2.8-15  |                    |                  |                       | 15                  |                             |                         |                       |                     |
| ⑩            | STEEL-WCM45-5.0-2.8-20  |                    |                  |                       | 20                  |                             |                         |                       |                     |
| ⑪            | STEEL-WCM45-8.0-4.8-15  | 8                  | 8                | 4.8                   | 15                  | 1.55                        | 3<br>(Staggered blades) | 8                     | 60                  |
| ⑫            | STEEL-WCM45-8.0-4.8-20  |                    |                  |                       | 20                  |                             |                         |                       | 70                  |
| ⑬            | STEEL-WCM45-8.0-4.8-25  |                    |                  |                       | 25                  |                             |                         |                       | 70                  |



#### Recommended cutting conditions

| Model number                 | Cutting speed<br>(m/min) | Number of<br>revolutions<br>(min <sup>-1</sup> ) | Feed rate<br>(mm/blade)<br>front/back | Feeding speed<br>(mm/min)<br>front/back | Cut direction |
|------------------------------|--------------------------|--------------------------------------------------|---------------------------------------|-----------------------------------------|---------------|
| STEEL-BCM45-1.3-0.8-3.5/5    | 7.5                      | S2170                                            | 0.03 / 0.05                           | F195 / F326                             | Downward      |
| STEEL-BCM45-2.3-1.2-4/6      | 15                       | S2700                                            | 0.03 / 0.05                           | F243 / F405                             | Downward      |
| STEEL-WCM45-3.8-2.0-5/10     | 15                       | S1600                                            | 0.100                                 | F480                                    | Downward      |
| STEEL-WCM45-5.0-2.8-10/15/20 | 30                       | S2417                                            | 0.050                                 | F363                                    | Downward      |
| STEEL-WCM45-8.0-4.8-15/20/25 | 30                       | S1480                                            | 0.050                                 | F222                                    | Downward      |



#### **Precautions (common)**

##### **BC and BCC Series (30° and 45°) / BCM and WCM Series / WFM**

- ※ Recommended cut direction: downward
- ※ The values listed in the recommended cutting conditions were calculated by TOYO Co., Ltd., so fine-tuning may be necessary depending on the material, processing machine, state of the work, or other factors.
- ※ Depending on the material, processing machine, state of the work, or other factors, processing should be done by making several cuts.
- ※ To improve the surface roughness, you can use a tool with lower values than those in the recommended cutting conditions, but the tool life might be shortened.

#### **<Notices>**

The dimensions, coatings, shapes, and other specifications are subject to change without notice to provide better products.

Thank you in advance for your understanding.

Please note that the specifications of the package design, such as label case, are also subject to change.

Manufactured and distributed by

**ToYo Tool<sup>®</sup> TOYO Co., Ltd.**

**Vol.2.1**

1000-5 Gobara, Hirooka, Shiojiri, Nagano 399-0704, Japan  
TEL: +81-263-52-2451 (main), FAX: +81-263-54-1834  
E-mail [toyotool@toyo.vc](mailto:toyotool@toyo.vc) URL <http://www.toyo.vc>