

Burrless Chamfering Cutter Instruction Manual

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For Your Safety

Safety Precautions

Warning and Caution Logos

The meanings of the indications and symbols related to matters which must be observed in order to ensure the safety of this product are as detailed below.

Warning and Caution Logos

 WARNING	WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury
 CAUTION	CAUTION indicates practices that may cause injuries and damages

Symbols



Obey all safety messages that follow this symbol to avoid possible injury or death.



This is the safety alert symbol. It is used to alert you to potential physical injury hazards.

Operator Safety Protection

	 WARNING
	Make sure that the product is free of any visible damage prior to use The product may break, and fragments may scatter if the product is used with any damage or excessive tool wear.
	Do not touch the product while it is in motion Make sure to isolate this product while in use by taking measures such as closing the door of the machine tool.
	If vibrations or any other abnormality occurs, discontinue use immediately. If the use of the product is continued with any abnormality, the product may break or fall off, possibly causing injury or loss of sight.
	Wear protective gloves and gears when touching the product If the cutting blades is touched with bare hands, there is risk of injury or burns.

Wear protective gears

Wear protective gears such as goggles, face mask, gloves, and earmuff when using this product. Furthermore, make sure to cover your skin with clothing.

Attention to the Work Area

- **Install an enclosure so that persons other than the operator do not enter the work area, and ensure that all persons, if any, in the work area are wearing protective gears.**
- **In particular be careful that children do not enter the work area.**
- **Keep the floor of the work area clean at all times to prevent the risk of slipping or tripping on chips, dust, cutting fluids, coolant, or other substances.**
- **There is the risk of fire caused by heating, sparks, or other factor resulting from use of the product. Do not use the product close to a flammable liquid or in an explosive atmosphere. Also be sure to enact fire prevention measures.**

Chips and Dust

Make sure to use a dust collector or other means to collect chips, dust, and other substances to prevent them from scattering into the surrounding.

Precautions for Setup and Installation

	 WARNING
	Select the appropriate tool size. Select the appropriate tool size and set the protrusion length appropriately to avoid damages to the product, jig or the machine tool.
	During use, this product must be clamped firmly to the machine tool and the workpiece must be fixtured securely. If the workpiece moves during machining, the workpiece or this product may break, causing fragments to scatter.
	Make sure the tool runout is less than 0.01mm after the tool is clamped in the tool holder. If the tool runout is greater, this product may break when it is rotated or applied to the workpiece.
	Before use, perform test with air cutting or simulation software to make sure there is no error with the machining program. If there is any error with the program, this product or the workpiece may break.

Pre-Use Inspection

	 WARNING
	Select and use coolant or cutting fluid that is suitable for the purpose. Depending on the type of coolant or cutting fluid, there is a risk of fire caused by overheating, sparks, or other problem. If there is any risk of overheating or sparks, be sure to implement fire prevention measures.

	 CAUTION
	Prior to the use of this product, make sure that there will be no tool collision. Select the appropriate tool size and set the projection length appropriately by taking into consideration the movement and the tool path of this product while in use.
	Adjust the direction of cutting fluid or coolant to ensure that it is applied to the cutting blades. If the cutting fluid or coolant is not applied sufficiently, the cutting blades may become overheated, and the tool life may be shortened.

Precautions for Use

	 WARNING
	DO NOT use at excessive rotational speeds. The use of this product at any excessive rotational speed may cause it to break. Refer to the standard machining parameters for each tool size.
	DO NOT use this product in counterclockwise (CCW) rotation. This product must be used in clockwise (CW) rotation. Using this product in CCW rotation will result in damages.
	DO NOT use this product with hand tools. This product must be used with CNC machines. If used with any hand tool, it may break and cause injuries.
	DO NOT use this product for any purpose other than chamfering. This product is designed for chamfering. It may break if used for any other purpose.

	 CAUTION
	Edges with gaps and openings If there is any gap or opening on the edge to be chamfered, the cutting edge is more prone to chipping, and the tool life may be shortened.

Regular Maintenance

When replacing this product, remove any dirt from the tool holder and the shank, and keep them clean.

Features

XEBEC Burrless Chamfering Cutter is a chamfering tool that does not generate burrs. Following benefits can be expected.

Reduction of Deburring Process

With conventional chamfering tools, burrs are generated on both upper and lower edge. On the other hand, this product does not generate burrs either on upper or lower edge. This eliminates the deburring process for both edges.

Reduction of Tool Costs

Tests have shown that the tool life of this cutter is at least twice as long as that of a conventional chamfering cutter. This contributes to tool cost reduction.

Reduction of Machining Time

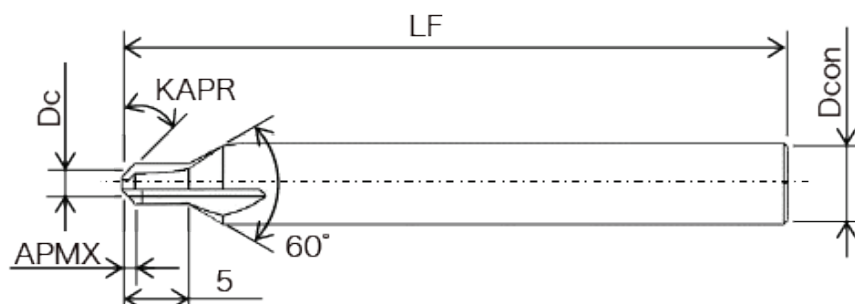
Multi-blade design enables high feed rate.
This reduces machining time for more efficient chamfering.

Improvement of Positional Accuracy

The flat tip design prevents rounding and chipping that may cause tool length measurement errors. This improves the machining positional accuracy.

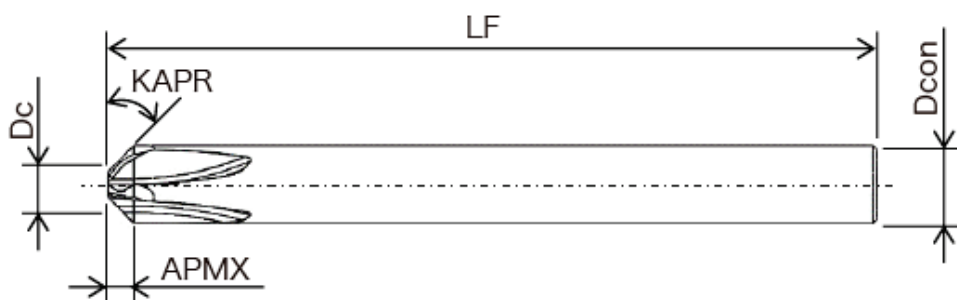
Product Specifications

XC-C-03-M / N



Product code	XC-C-03-M	XC-C-03-N
Chamfer size (mm)	C0.3-0.6	
Coating	AlTiCrN coated (for carbon steel, stainless steel, heat resistant alloys)	Uncoated (for aluminum, plastics)
LF (mm)	50	
KAPR	45°	
APMX(mm)	1	
Dcon(mm)	● 6	
Number of blades	3	
Dc (Chamfering Alignment Diameter)(mm)	● 2	
Usage	Cross-feed machining	

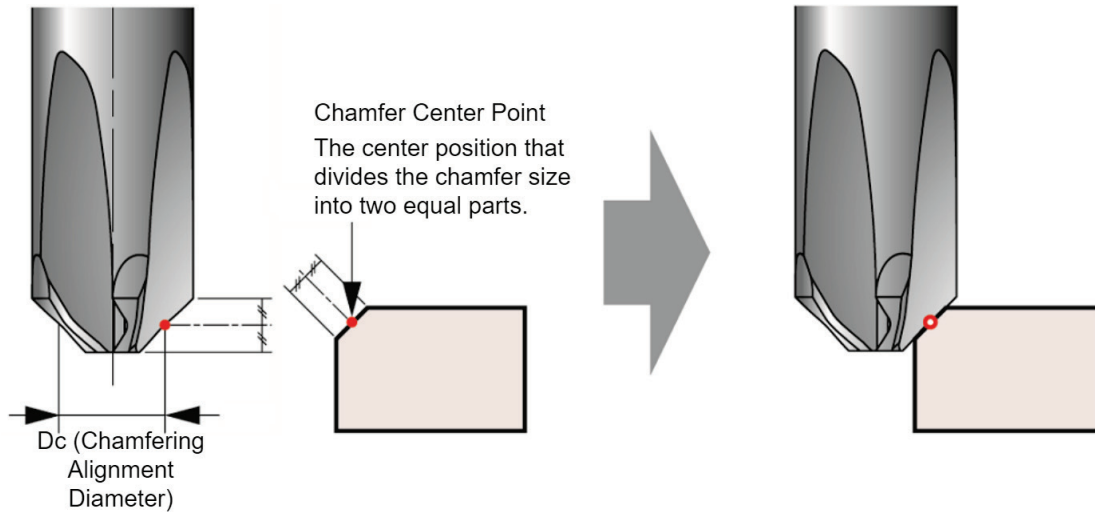
XC-C-06-M / N



Product code	XC-C-06-M	XC-C-06-N
Chamfer size (mm)	C0.7-1.5	
Coating	AlTiCrN coated (for carbon steel, stainless steel, heat resistant alloys)	Uncoated (for aluminum, plastics)
LF (mm)	60	
KAPR	45°	
APMX(mm)	2	
Dcon(mm)	● 6	
Number of blades	4	
Dc (Chamfering Alignment Diameter)(mm)	● 4	
Usage	Cross-feed machining	

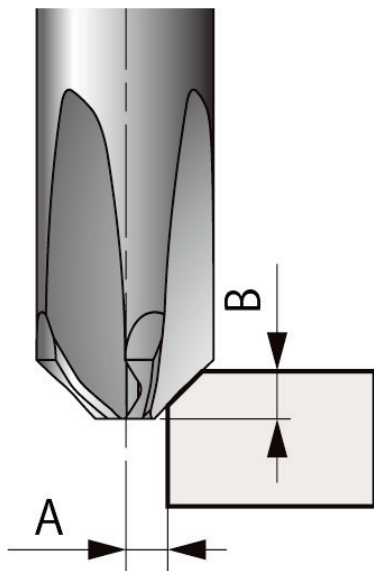
How to Use

- This product is a dedicated tool for cross-feed machining.
- As shown in the figure, position this tool so that Dc (Chamfering Alignment Diameter) is aligned with the Chamfer Center Point to suppress formation of burrs while chamfering. Refer to the [Chamfer Size Adjustment Chart \(P.9\)](#) for actual tool positions.



Chamfer Size Adjustment Chart

Create the machining program by referring to Offsets A and B in the table below for desired chamfer size. This ensures Dc (Chamfer Alignment Diameter) and the Chamfer Center Point are aligned properly.



Formula for calculating Offsets A and B

$$A = (D_c - C) / 2$$

$$B = (APMX + C) / 2$$

*C=chamfer size

XC-C-03-M / N

Chamfer size (mm)	Offsets (mm)	
	A	B
C0.3	0.85	0.65
C0.4	0.80	0.70
C0.5	0.75	0.75
C0.6	0.70	0.80

XC-C-06-M / N

Chamfer size (mm)	Offsets (mm)	
	A	B
C0.7	1.65	1.35
C0.8	1.60	1.40
C0.9	1.55	1.45
C1.0	1.50	1.50
C1.1	1.45	1.55
C1.2	1.40	1.60
C1.3	1.35	1.65
C1.4	1.30	1.70
C1.5	1.25	1.75

Machining Parameters

1. Rotational speed and feed rate are a guide for initial use.
2. To improve the machining result, take steps such as adjusting the rotational speed and feed rate, or try smaller chamfer sizes and increase them gradually to obtain the desired chamfer size.
3. If vibration or abnormal noise is detected, lower the rotational speed and feed rate, or try smaller chamfer sizes and increase them gradually to obtain the desired chamfer size.
4. If burrs are generated when machining plastics, maintain the feed per tooth as listed in the table and use the same rotational speed as the tool you normally work with.

XC-C-03-M / N

Workpiece material	Copper	Stainless steel	Titanium alloy (Ti64)	Inconel	Aluminum alloys	Plastics
Coating	AlTiCrN				Uncoated	
Cutting speed (m/min)	60-100	40-80	45-60	20-30	200-300	60-100
Rotational speed (min ⁻¹)	12000	9000	8000	4000	40000	12000
Feed rate (mm/min)	1800	1350	1200	600	6000	1800
Feed per tooth (mm/tooth)	0.05	0.05	0.05	0.05	0.05	0.05

XC-C-06-M / N

Workpiece material	Copper	Stainless steel	Titanium alloy (Ti64)	Inconel	Aluminum alloys	Plastics
Coating	AlTiCrN				Uncoated	
Cutting speed (m/min)	60-100	40-80	45-60	20-30	200-300	60-100
Rotational speed (min ⁻¹)	6300	4800	4000	2000	20000	6300
Feed rate (mm/min)	1260	960	800	400	4000	1760
Feed per tooth (mm/tooth)	0.05	0.05	0.05	0.05	0.05	0.07