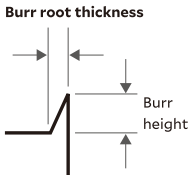# XEBEC Back Burr Cutter™

Perfect for deburring both front and back of a drilled hole.

Applicable burr size

Burr root thickness of 0.2 mm or less (burrs of this size can be removed with fingernails)

Burr root thickness

Burr height

Video (YouTube)

Tool composition

Spherical deburring cutter and custom-made tool Path. For information of custom-made Path machining program, please refer to P. 29 – 30.

Applicable equipment

This tool can be used on equipment with 3-axis simultaneous control.

Machining center

Lathe (with milling function)

AlTiCrN coated

| Steel | Stainless steel | Cast iron | Heat resistant alloy | Nonferrous metals |

	Product code	Cutter diameter Dc (mm)	Cutter radius R (mm)	Neck diameter dn (mm)	Neck Length L2 (mm)	Overall length L1 (mm)	Shank diameter Ds (mm)	Number of blades	Fig
3 blades short type	XC-08-AS-3F	φ0.8	0.4	φ0.48	3	60	φ 3	3	16
	XC-13-AS-3F	φ1.3	0.65	φ0.78	5	60	φ 3	3	16
	XC-18-AS-3F	φ1.8	0.9	φ1.1	6	60	φ 3	3	16
	XC-23-AS-3F	φ2.3	1.15	φ1.4	7.5	70	φ 3	3	16
	XC-28-AS-3F	φ2.8	1.4	φ1.7	9	70	φ 4	3	16
	XC-33-AS-3F	φ3.3	1.65	φ2.0	10.5	70	φ 4	3	16
	XC-38-AS-3F	φ3.8	1.9	φ2.4	12	70	φ 4	3	16
	XC-48-AS-3F	φ4.8	2.4	φ3.0	15	70	φ 6	3	16
	XC-58-AS-3F	φ5.8	2.9	φ3.5	18	70	φ 6	3	16
	XC-78-AS-3F	φ7.8	3.9	φ4.7	24	100	φ 8	3	16
	XC-98-AS-3F	φ9.8	4.9	φ5.9	30	120	φ10	3	16
Regular type	XC-08-A	φ0.8	0.4	φ0.48	5	60	φ 3	2	16
	XC-13-A	φ1.3	0.65	φ0.78	8	60	φ 3	2	16
	XC-18-A	φ1.8	0.9	φ1.1	10	60	φ 3	2	16
	XC-23-A	φ2.3	1.15	φ1.4	12.5	70	φ 3	2	16
	XC-28-A	φ2.8	1.4	φ1.7	15	70	φ 4	2	16
	XC-33-A	φ3.3	1.65	φ2.0	17.5	70	φ 4	2	16
	XC-38-A	φ3.8	1.9	φ2.4	20	70	φ 4	2	16
	XC-48-A	φ4.8	2.4	φ3.0	25	70	φ 6	2	16
	XC-58-A	φ5.8	2.9	φ3.5	30	70	φ 6	2	16
	XC-78-A	φ7.8	3.9	φ4.7	40	100	φ 8	3	16
	XC-98-A	φ9.8	4.9	φ5.9	50	120	φ10	3	16
Straight type	XC-18-B	φ1.8	0.9	φ1.1	—	50	φ1.1	2	17
	XC-23-B	φ2.3	1.15	φ1.4	—	60	φ1.4	2	17
	XC-28-B	φ2.8	1.4	φ1.7	—	70	φ1.7	2	17
	XC-33-B	φ3.3	1.65	φ2.0	—	80	φ2.0	2	17
	XC-38-B	φ3.8	1.9	φ2.4	—	85	φ2.4	2	17
	XC-48-B	φ4.8	2.4	φ3.0	—	105	φ3.0	2	17
	XC-58-B	φ5.8	2.9	φ3.5	—	120	φ3.5	2	17
	XC-78-B	φ7.8	3.9	φ4.7	—	150	φ4.7	3	17
	XC-98-B	φ9.8	4.9	φ5.9	—	180	φ5.9	3	17

Uncoated

| Nonferrous metals | Resin |

	Product code	Cutter diameter Dc (mm)	Cutter radius R (mm)	Neck diameter dn (mm)	Neck Length L2 (mm)	Overall length L1 (mm)	Shank diameter Ds (mm)	Number of blades	Fig
Regular type	XC-08-A-N	φ0.8	0.4	φ0.48	5	60	φ 3	2	16
	XC-13-A-N	φ1.3	0.65	φ0.78	8	60	φ 3	2	16
	XC-18-A-N	φ1.8	0.9	φ1.1	10	60	φ 3	2	16
	XC-23-A-N	φ2.3	1.15	φ1.4	12.5	70	φ 3	2	16
	XC-28-A-N	φ2.8	1.4	φ1.7	15	70	φ 4	2	16
	XC-33-A-N	φ3.3	1.65	φ2.0	17.5	70	φ 4	2	16
	XC-38-A-N	φ3.8	1.9	φ2.4	20	70	φ 4	2	16
	XC-48-A-N	φ4.8	2.4	φ3.0	25	70	φ 6	2	16
	XC-58-A-N	φ5.8	2.9	φ3.5	30	70	φ 6	2	16
	XC-78-A-N	φ7.8	3.9	φ4.7	40	100	φ 8	3	16
	XC-98-A-N	φ9.8	4.9	φ5.9	50	120	φ10	3	16

φDc
φdn
L2
L1
φDs
Fig16

φDc
φdn
L1
φDs
Fig17

Precautions for Use

• XEBEC Back Burr Cutter is designed for NC machines. Never use it as a hand tool.

Caution

• Turn on advanced preview control of the machine tool helps to reduce errors in contouring the edges to be deburred.
• The processing error of the hole position must be kept as small as possible.

Applications

CNC deburring of valve

Material : Free-cutting steel
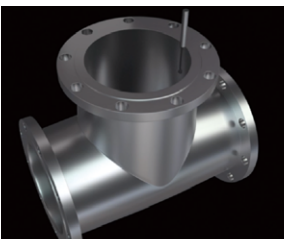Previous process : Drilling
Tool : XC-18-A

Before

Deburring was done with φ2 chamfering, nylon brush and φ3 chamfering. 3-step deburring with a different tool for each step, with a long cycle time.

After

Deburring is done with a single Cutter. Shortened the deburring time by 9 secs. per workpiece. Reduced the tool costs by reducing the number of tools.

CNC deburring of industrial component

Material : SUS304
Previous process : Tapping
Tool : XC-18-A

Before

Deburring by manual work, tapping and air blowing. There were two more processes necessary after time-consuming deburring. A long cycle time was a problem.

After

XEBEC Path for tap holes was introduced. Deburring time is shortened from 120 sec. to 40 sec. Manual work is no longer needed. Improved safety.

Machining Parameters

Standard Machining Parameters

AlTiCrN coated

| Steel | Stainless steel | Cast iron | Heat resistant alloy | Nonferrous metals |

	Product code	Cutter diameter φDc (mm)	Tool Projection Length (mm)	Number of blades	Steel, stainless steel, cast iron, heat resistant alloy		Nonferrous metals	
					Rotational speed n (min⁻¹)	Feed rate Vf (mm/min)	Rotational speed n (min⁻¹)	Feed rate Vf (mm/min)
3 blades short type	XC-08-AS-3F	φ0.8	3Dc	3	20000	1080	20000	1170
	XC-13-AS-3F	φ1.3	3Dc	3	20000	1080	20000	1170
	XC-18-AS-3F	φ1.8	3Dc	3	20000	1080	20000	1170
	XC-23-AS-3F	φ2.3	3Dc	3	15000	1350	18000	1710
	XC-28-AS-3F	φ2.8	3Dc	3	12500	1800	15000	2520
	XC-33-AS-3F	φ3.3	3Dc	3	10600	1890	12700	2250
	XC-38-AS-3F	φ3.8	3Dc	3	9200	2160	11000	2880
	XC-48-AS-3F	φ4.8	3Dc	3	7200	1980	8500	2880
	XC-58-AS-3F	φ5.8	3Dc	3	6000	1620	7000	2160
	XC-78-AS-3F	φ7.8	3Dc	3	4500	1620	5400	1920
	XC-98-AS-3F	φ9.8	3Dc	3	3600	1320	4300	1560
Regular type	XC-08-A	φ0.8	5Dc	2	20000	600	20000	650
	XC-13-A	φ1.3	5Dc	2	20000	600	20000	650
	XC-18-A	φ1.8	5Dc	2	20000	600	20000	650
	XC-23-A	φ2.3	5Dc	2	15000	750	18000	950
	XC-28-A	φ2.8	5Dc	2	12500	1000	15000	1400
	XC-33-A	φ3.3	5Dc	2	10600	1050	12700	1250
	XC-38-A	φ3.8	5Dc	2	9200	1200	11000	1600
	XC-48-A	φ4.8	5Dc	2	7200	1100	8500	1600
	XC-58-A	φ5.8	5Dc	2	6000	900	7000	1200
	XC-78-A	φ7.8	5Dc	3	4500	1350	5400	1600
	XC-98-A	φ9.8	5Dc	3	3600	1100	4300	1300
Straight type	XC-18-B	φ1.8	10Dc	2	4400	220	4400	220
	XC-23-B	φ2.3	10Dc	2	3500	220	3500	220
	XC-28-B	φ2.8	10Dc	2	2800	220	2800	220
	XC-33-B	φ3.3	10Dc	2	2400	190	2400	190
	XC-38-B	φ3.8	10Dc	2	2000	160	2000	160
	XC-48-B	φ4.8	10Dc	2	1600	120	1600	120
	XC-58-B	φ5.8	10Dc	2	1300	100	1300	100
	XC-78-B	φ7.8	10Dc	3	650	70	650	70
	XC-98-B	φ9.8	10Dc	3	500	50	500	50

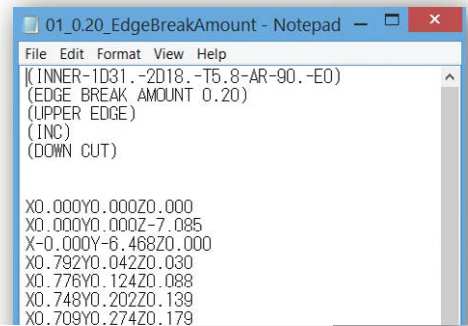#### Uncoated

| Nonferrous metals | Resin |

	Product code	Cutter diameter φDc (mm)	Projection amount (mm)	Number of blades	Rotational speed n (min⁻¹)	Feed rate Vf (mm/min)
Regular type	XC-08-A-N	φ0.8	5Dc	2	20000	650
	XC-13-A-N	φ1.3	5Dc	2	20000	650
	XC-18-A-N	φ1.8	5Dc	2	20000	650
	XC-23-A-N	φ2.3	5Dc	2	18000	950
	XC-28-A-N	φ2.8	5Dc	2	15000	1400
	XC-33-A-N	φ3.3	5Dc	2	12700	1250
	XC-38-A-N	φ3.8	5Dc	2	11000	1600
	XC-48-A-N	φ4.8	5Dc	2	8500	1600
	XC-58-A-N	φ5.8	5Dc	2	7000	1200
	XC-78-A-N	φ7.8	5Dc	3	5400	1600
	XC-98-A-N	φ9.8	5Dc	3	4300	1300

* Tool projection length is defined by multiples of Dc (Cutter Diameter)
* For the Straight type, the tool projection length may be varied, and optimal machining parameters for specified tool projection lengths can be found in the instruction manual
* Rotational speed and feed rates listed are to be referred to as a guide for initial machining. Adjust them as needed.
* In case vibration or abnormal noise is detected, lower the rotational speed and feed rate by the same rate.
* If the max rotational speed or feed rate of the machine is below the parameters listed above, lower them both at the same rate to be within the machine's capability.

Instruction manual

27 XEBEC Back Burr Cutter™   XEBEC Back Burr Cutter™ 28

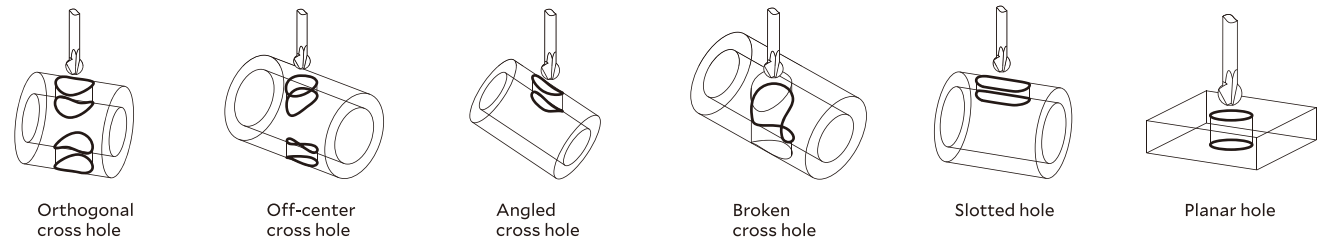# XEBEC Path™ Patented

An integral component of this deburring solution, XEBEC Path is a custom-made
NC tool path that ensures optimal performance of XEBEC Back Burr Cutter

```
01_0.20_EdgeBreakAmount - Notepad
File  Edit  Format  View  Help
(INNER-1D31.-2D18.-T5.8-AR-90.-E0)
(EDGE BREAK AMOUNT 0.20)
(UPPER EDGE)
(INC)
(DOWN CUT)

X0.000Y0.000Z0.000
X0.000Y0.000Z-7.085
X-0.000Y-6.468Z0.000
X0.792Y0.042Z0.030
X0.776Y0.124Z0.088
X0.748Y0.202Z0.139
X0.709Y0.274Z0.179
```

Standard Path

**For predetermined set of commonly encountered cross hole configurations shown below,
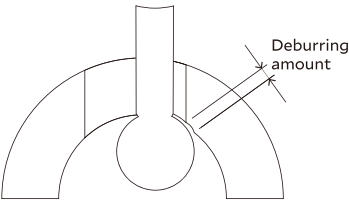standardized Paths are readily available.**

Quotation will be submitted soon after you apply for a Standard Path via the
Online Application Form detailed on Page 30.

Orthogonal cross hole   Off-center cross hole   Angled cross hole   Broken cross hole   Slotted hole   Planar hole

Deburring amount and allowable cumulative error

Product code	Cutter diameter Dc (mm)	Edge Break Length (mm)					Max Allowed Accumulated Variance (mm)
		①	②	③	④	⑤	
XC-08-AS-3F/A/A-N	φ 0.8	0.02	0.04	0.06	0.08	0.10	0.03
XC-13-AS-3F/A/A-N	φ 1.3	0.04	0.06	0.08	0.10	0.12	0.05
XC-18-AS-3F/A/B/A-N	φ 1.8	0.07	0.09	0.11	0.13	0.15	0.08
XC-23-AS-3F/A/B/A-N	φ 2.3	0.07	0.09	0.11	0.13	0.15	0.09
XC-28-AS-3F/A/B/A-N	φ 2.8	0.08	0.11	0.14	0.17	0.20	0.10
XC-33-AS-3F/A/B/A-N	φ 3.3	0.08	0.11	0.14	0.17	0.20	0.11
XC-38-AS-3F/A/B/A-N	φ 3.8	0.09	0.13	0.17	0.21	0.25	0.12
XC-48-AS-3F/A/B/A-N	φ 4.8	0.10	0.15	0.20	0.25	0.30	0.15
XC-58-AS-3F/A/B/A-N	φ 5.8	0.10	0.15	0.20	0.25	0.30	0.18
XC-78-AS-3F/A/B/A-N	φ 7.8	0.10	0.15	0.20	0.25	0.30	0.18
XC-98-AS-3F/A/B/A-N	φ 9.8	0.10	0.15	0.20	0.25	0.30	0.18

Deburring amount means "a width of
an edge after deburring".

Deburring amount

Standard Path for Tapped Holes

**Standardized Paths are readily available for
metric thread sizes ranging between M3 and M24.**

Tap size	Applicable Cutter Product code	Cutter diameter Dc (mm)	Deburring amount (mm)
M3	XC-23-AS-3F/A/B/A-N	φ 2.3	0.11
M4	XC-28-AS-3F/A/B/A-N	φ 2.8	0.14
M5	XC-33-AS-3F/A/B/A-N	φ 3.3	0.14
M6	XC-38-AS-3F/A/B/A-N	φ 3.8	0.17
M8	XC-48-AS-3F/A/B/A-N	φ 4.8	0.20
M10	XC-58-AS-3F/A/B/A-N	φ 5.8	0.20
M12	XC-78-AS-3F/A/B/A-N	φ 7.8	0.20
M16 - 24	XC-98-AS-3F/A/B/A-N	φ 9.8	0.20

XEBEC Path All Edges

Tool Path customized for extremely complex edge profiles.
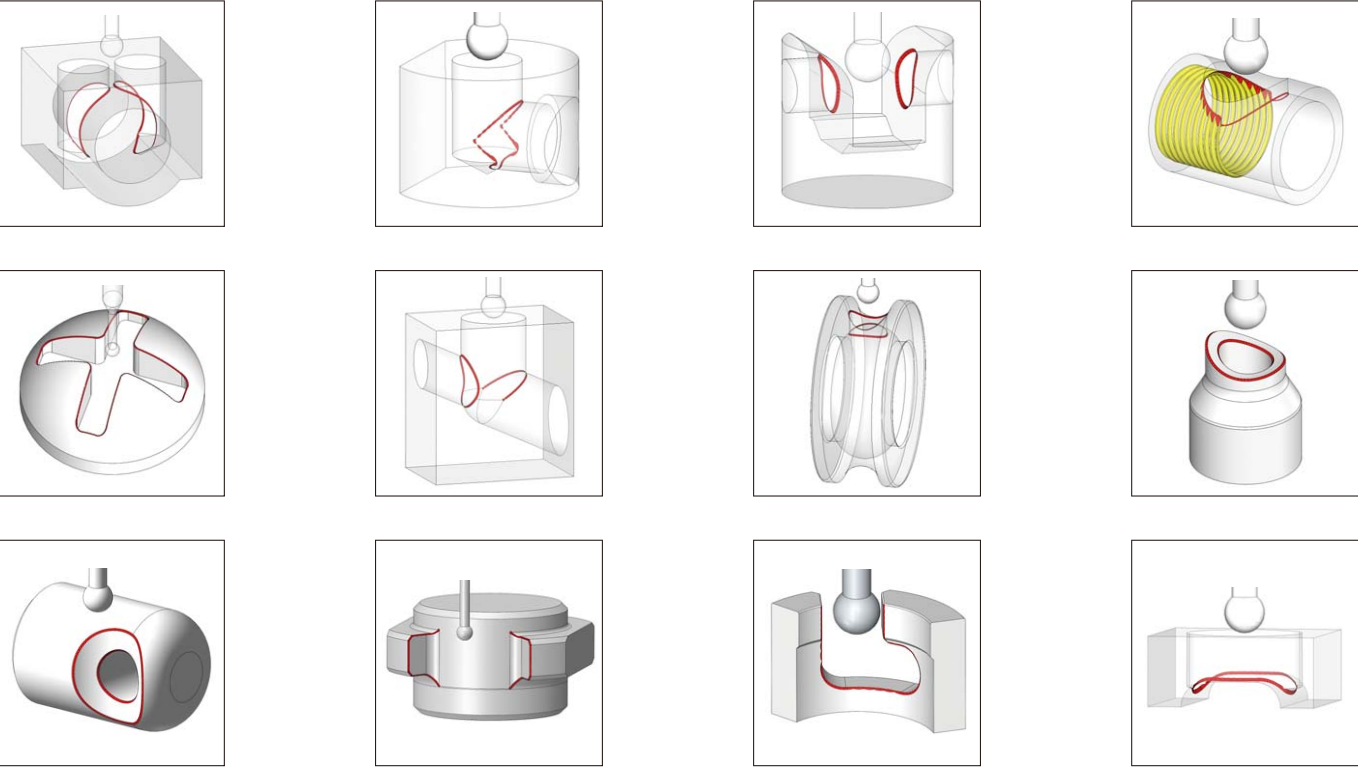
How to Order

Standard Path

STEP 1 Free assessment	STEP 2 Quotation	STEP 3 Order
You can check whether XEBEC Back Burr Cutter and Path can be implemented on your workpiece and machining equipment. The result is immediately available.	You can receive a quotation by submitting your contact information.	Send your order to our distributor in your region after confirming the details.

＊Online Application Form

Visit the Online Application Form for assessment and to submit a request for quotation. All you
need to do is to enter a few dimensions including hole diameters and to specify the orientation of
the workpiece inside the machine.

Website link

＊To request XEBEC Path All Edges, please contact us.