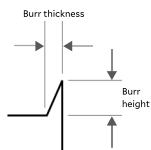


XEBEC Brush™ Crosshole

Deburring, cutter mark removal, polishing on inner diameters & counterbores ($\leq \phi 20$ mm)

Applicable burr size

Burr thickness ≤ 0.1 mm
(Burr this size can be easily bent by fingernails)



VIDEO

Applicable equipment

This tool is used on equipment with rotational speed control (> 6500 min⁻¹).



Machining
center



Lathe
(with live tools)



Dedicated
machine



Robot

Brushes

Brush (color)	Product code	Brush dia. (mm)	Shank dia. (mm)		Shank length ℓ_s (mm)	Bristle length ℓ (mm)	Overall length L (mm)	Maximum rotational speed (min ⁻¹)	Target hole diameter (mm)	Fig.
			Dc	Ds						
A12 (red)	CH-A12-1.5M	$\phi 1.5$	$\phi 2.5$	$\phi 3$	30	50	120	20000	$\phi 3.5 - 5$	6
	CH-A12-3M-TL	$\phi 3$	$\phi 4$	$\phi 3$	30	50	120	14000	$\phi 5 - 8$	6
	CH-A12-3L-TL	$\phi 3$	$\phi 4$	$\phi 4$	30	50	170	12000	$\phi 5 - 8$	6
	CH-A12-5M-TL	$\phi 5$	$\phi 6$	$\phi 6$	30	50	120	14000	$\phi 8 - 10$	6
	CH-A12-5L-TL	$\phi 5$	$\phi 6$	$\phi 6$	30	50	170	12000	$\phi 8 - 10$	6
	CH-A12-7M-TL	$\phi 7$	$\phi 8$	$\phi 6$	30	50	120	14000	$\phi 10 - 20$	6
	CH-A12-7L-TL	$\phi 7$	$\phi 8$	$\phi 8$	30	50	170	12000	$\phi 10 - 20$	6
	CH-A12-11M	$\phi 11$	$\phi 12$	$\phi 12$	30	50	120	14000	$\phi 14 - 20$	6
	CH-A12-11L	$\phi 11$	$\phi 12$	$\phi 12$	30	50	170	12000	$\phi 14 - 20$	6
	CH-A33-3M	$\phi 3$	$\phi 4$	$\phi 3$	30	60	130	14000	$\phi 5 - 8$	6
A33 (blue)	CH-A33-3L	$\phi 3$	$\phi 4$	$\phi 4$	30	60	180	12000	$\phi 5 - 8$	6
	CH-A33-5M	$\phi 5$	$\phi 6$	$\phi 6$	30	60	130	14000	$\phi 8 - 10$	6
	CH-A33-5L	$\phi 5$	$\phi 6$	$\phi 6$	30	60	180	12000	$\phi 8 - 10$	6
	CH-A33-7M	$\phi 7$	$\phi 8$	$\phi 6$	30	60	130	14000	$\phi 10 - 14$	6
	CH-A33-7L	$\phi 7$	$\phi 8$	$\phi 8$	30	60	180	12000	$\phi 10 - 14$	6
	CH-A33-11M	$\phi 11$	$\phi 12$	$\phi 12$	30	60	130	14000	$\phi 14 - 20$	6
	CH-A33-11L	$\phi 11$	$\phi 12$	$\phi 12$	30	60	180	12000	$\phi 14 - 20$	6

■ Brush size is approximate as the tip expands with rotation.

Precautions for use

The shank must be inserted ≥ 30 mm in the holder to secure it properly.

The brush will break if:

- used beyond the maximum rotational speed
- used with pneumatic or electric rotary tools
- rotated outside of the bore (outside workpiece)
- used with brush tip < 20 mm inside bore

The brush may break when used with:

- off-center or angled crossholes
- t-shaped holes, when secondary bore diameter $\geq$ main bore
- crossholes, when secondary bore diameter $\geq 70\%$ main bore

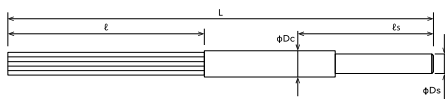


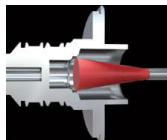
Fig. 6

Go to page 50 to select brush color

Applications

Automation of crosshole deburring

Input shaft



Material: SCM
Follows: Drilling
Tool: CH-A12-7M-TL

Before

Manual deburring by abrasive nylon brush. Not all burrs were removed and output was low.

After

A dedicated machine is used to automate deburring. All burrs are removed by high grinding power. Quality is stable.

Automation of crosshole deburring

Valve case



Material: Resin
Follows: Drilling
Tool: CH-A12-5M-TL

Before

Manual deburring by cutter was time-consuming. Cutter left scratches on inner surface.

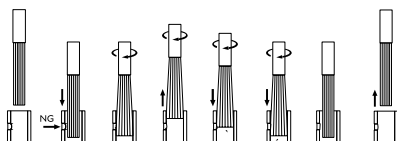
After

Deburring inside the machine reduced cycle time significantly. No scratching on inner surface and finish quality is stable.

How to use

Caution: Rotating the brush outside of the bore may damage the brush and cause injury to the operator.

Step 1 Step 2 Step 3 Step 4 Step 5 Step 6

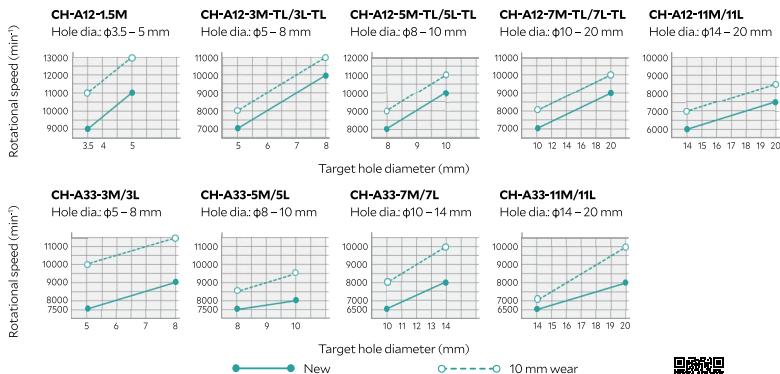


1. Insert the brush stationary into the bore.
2. Rotate the tool once past the crosshole.
3. Machine while pulling the brush back.
4. Machine while pushing the brush forward.
5. Stop the brush rotation.
6. Remove the brush when it is stationary.

Machining parameter adjustments

Rotational speed

Brush performance can be optimized by adjusting rotational speed in accordance with brush size, target hole diameter and brush wear. Refer below for recommended rotational speeds.



Feed rate

300 mm/min

Rotational direction

Uniform deburring and edge quality can be achieved by rotating the tool in both clockwise and counter-clockwise directions.



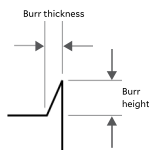
MANUAL

XEBEC Brush™ Crosshole Extra-Large

Deburring, cutter mark removal, polishing on inner diameters & counterbores ($\geq \phi 20$ mm)

Applicable burr size

Burr thickness ≤ 0.1 mm
(Burs this size can be easily bent by fingernails)



VIDEO



Applicable equipment

This tool is used on equipment with rotational speed control (> 4000 min⁻¹).



Machining center



Lathe (with live tools)



Dedicated machine



Robot

Tool composition

Brush and shank are sold separately. Assemble before use.

Brush

Shank



Brushes

Brush (color)	Product code	Brush dia. (mm)	Bristle length ℓ (mm)	Shank insertion depth d_s (mm)	Max. rotational speed (min ⁻¹)	Target hole diameter (mm)	Matching shank	Fig.
A34 (dark blue)	CH-A34-15	$\phi 15$	60	10	9000	$\phi 20 \sim 25$	CH-SH-6	7
	CH-A34-20	$\phi 20$	60	16	9000	$\phi 25 \sim 30$	CH-SH-8	7
	CH-A34-25	$\phi 25$	60	16	9000	$\phi 30 \sim 35$	CH-SH-8	7

■ Brush size is approximate as the tip expands with rotation.

■ Overall length of assembled brush and shank is 150 mm.

Shanks

Product code	Shaft dia. D_s (mm)	Shank length ℓ_s (mm)	Matching brush	Fig.
CH-SH-6	$\phi 6$	80	CH-A34-15	8
CH-SH-8	$\phi 8$	86	CH-A34-20, CH-A34-25	8



MANUAL

Fig. 7

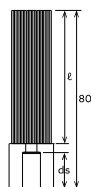
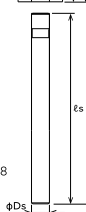


Fig. 8



Precautions for use

The shank must be inserted ≥ 30 mm in the holder to secure it properly.

The brush will break if:

- used beyond the maximum rotational speed
- used with pneumatic or electric rotary tools
- rotated outside of the bore (outside workpiece)
- used with brush tip < 20 mm inside bore

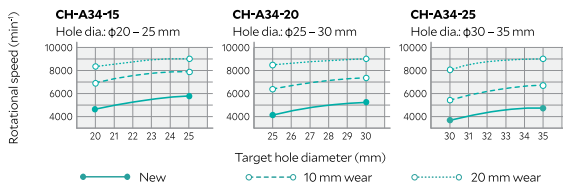
The brush may break when used with:

- crossholes larger than $\phi 12$

Contact XEBEC technical support before using on crossholes $> \phi 12$.

Machining parameters

Brush performance can be optimized by adjusting rotational speed in accordance with brush size, target hole diameter, and brush wear. Refer below for recommended rotational speeds.



Rotational speed:

7000 min⁻¹

Feed rate:

300 mm/min

Rotational direction:

Uniform deburring and edge quality can be achieved by rotating the tool in both clockwise and counter-clockwise directions.

Applicable materials:

Plastics, nonferrous materials, steel, stainless steel.

Go to page 12 for 'How to use'

XEBEC Brush™ Crosshole Extra-Long Patented

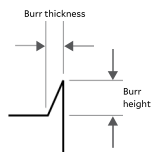
Deburring, cutter mark removal, polishing on bores over $\phi 150$ mm in depth

Custom-made item



Applicable burr size

Burr thickness ≤ 0.1 mm
(Burs this size can be easily bent by fingernails)



Applicable equipment

This tool is used on full cover type equipment with rotational speed control (> 6500 min⁻¹).



Machining center



Lathe (with live tools)



Dedicated machine

Tool composition

Brush, collar and shank are sold separately. Assemble before use.

Brushes

Brush (color)	Product code	Brush diameter (mm)	Shank diameter Ds (mm)	Overall length L (mm)	Maximum rotational speed (min ⁻¹)
A12 (red)	*	$\phi 3$	$\phi 4$	400	12000
	*	$\phi 5$	$\phi 6$	400	12000
	*	$\phi 7$	$\phi 8$	400	12000
	*	$\phi 11$	$\phi 12$	400	12000
A33 (blue)	*	$\phi 3$	$\phi 4$	410	12000
	*	$\phi 5$	$\phi 6$	410	12000
	*	$\phi 7$	$\phi 8$	410	12000
	*	$\phi 11$	$\phi 12$	410	12000

■ This is a custom-made item. Contact XEBEC technical support for details.

■ Brush size is approximate as the tip expands with rotation.

Precautions for use

The brush will break if:

- used beyond the maximum rotational speed
- used with pneumatic or electric rotary tools
- rotated outside of the bore (outside workpiece)

The brush may break when used with:

- off-center or angled crossholes
- t-shaped holes, when the secondary bore diameter is $> 50\%$ of the main bore
- crossholes, when the secondary bore diameter is $> 25\%$ of the main bore



MANUAL

Go to page 12 for machining parameters

Go to page 50 to select brush color