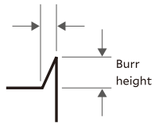
XEBEC Brush™ Crosshole

Ideal for deburring, polishing, and removing cutter marks on inner diameters and counterbores up to φ20

Applicable burr size
Burr root thickness of 0.1 mm or less (burrs of this size can easily be removed with fingernails)

Burr root thickness



Video (YouTube)

Applicable equipment

This tool can be mounted on equipment which can control the rotational speed. The tool must be rotated over 6500 min^{-1}.

Brush (Color)	Product code	Brush diameter (mm)	Shank diameter Dc (mm)	Shank diameter Ds (mm)	Bristle length ℓ (mm)	Overall length L (mm)	Maximum rotational speed (min^{-1})	Target hole diameter (mm)	Fig
A12 (Red)	CH-A12-1.5M	φ 1.5	φ 2.5	φ 3	50	120	20000	φ 3.5 – 5	6
	CH-A12-3M-TL	φ 3	φ 4	φ 3	50	120	14000	φ 5 – 8	6
	CH-A12-3L-TL	φ 3	φ 4	φ 4	50	170	12000	φ 5 – 8	6
	CH-A12-5M-TL	φ 5	φ 6	φ 6	50	120	14000	φ 8 – 10	6
	CH-A12-5L-TL	φ 5	φ 6	φ 6	50	170	12000	φ 8 – 10	6
	CH-A12-7M-TL	φ 7	φ 8	φ 6	50	120	14000	φ 10 – 20	6
	CH-A12-7L-TL	φ 7	φ 8	φ 8	50	170	12000	φ 10 – 20	6
	CH-A12-11M	φ 11	φ 12	φ 12	50	120	14000	φ 14 – 20	6
	CH-A12-11L	φ 11	φ 12	φ 12	50	170	12000	φ 14 – 20	6
A33 (Blue)	CH-A33-3M	φ 3	φ 4	φ 3	60	130	14000	φ 5 – 8	6
	CH-A33-3L	φ 3	φ 4	φ 4	60	180	12000	φ 5 – 8	6
	CH-A33-5M	φ 5	φ 6	φ 6	60	130	14000	φ 8 – 10	6
	CH-A33-5L	φ 5	φ 6	φ 6	60	180	12000	φ 8 – 10	6
	CH-A33-7M	φ 7	φ 8	φ 6	60	130	14000	φ 10 – 14	6
	CH-A33-7L	φ 7	φ 8	φ 8	60	180	12000	φ 10 – 14	6
	CH-A33-11M	φ 11	φ 12	φ 12	60	130	14000	φ 14 – 20	6
	CH-A33-11L	φ 11	φ 12	φ 12	60	180	12000	φ 14 – 20	6

* The brush size is approximate as the tip expands by rotating.

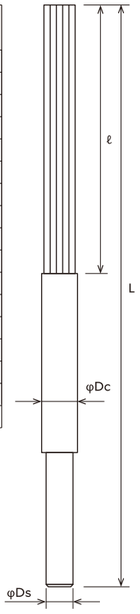


Fig6

Precautions for Use

The clamp length must be 30mm or more when attaching this tool on the machine, and make sure it is affixed rigidly.

The Brush will break off if:
- machined beyond the maximum rotational speed
- used with a pneumatic tool
- rotated outside the cylinder (outside workpiece)
- used with the tip of this tool is less than 20mm inside the bore

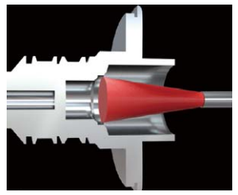
In the following cases, the Brush may break off:
- Off-center cross hole and angled cross hole
- T-shaped hole: If the cross hole diameter is 100% of the main bore diameter or more.
- Cross-shaped hole: If the cross hole diameter is 70% of the main bore diameter or more.

See P. 42 to select Brush color

Applications

Automation of cross hole deburring

Input Shaft



Material : SCM
Previous process : Drilling
Tool : CH-A12-7M-TL

Before

Deburring was done by manual work with abrasive impregnated nylon brush. Failed to remove all burrs with a low yield.

After

Realized automation of deburring with a special machine. All burrs are removed by high grinding power. Quality is stabilized.

Automation of cross hole deburring

Valve Case

Material : Resin
Previous process : Drilling
Tool : CH-A12-5M-TL

Before

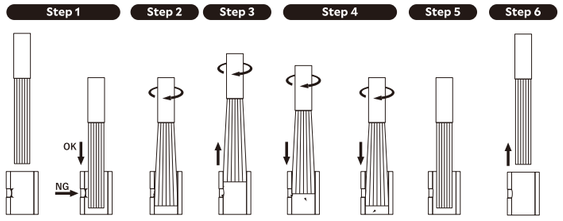
Manual deburring with a cutter was time-consuming. Finished inner surface was scratched with the cutter and resulted in low quality.

After

Automated deburring inside the machine shortened the cycle time significantly. No scratches on the inner surface. Improved deburring quality.

How to use

For effective use



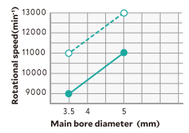
1. Insert the brush while not in motion.
*If you rotate the brush outside the cylinder, the bristles may be damaged or scattered and may cause injury to the operator.
2. Rotate the tool past the cross-hole
3. Process while pulling the brush back.
4. Process while pushing the brush forward.
5. Stop the brush rotation.
6. Remove the brush while it is at rest.

Machining Parameters

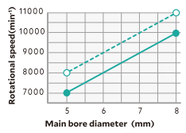
Adjusting the rotational speed

Optimize the performance of this Brush by adjusting the rotational speed depending on the Brush size, main bore diameter, and the Brush wear amount by referring to charts below. When the Brush is new, refer to the continuous line (——) . When the Brush is worn by 10mm, refer to the dotted line (----) .

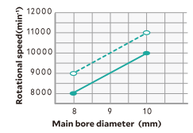
CH-A12-1.5M
Target hole diameter: φ3.5 – 5 mm



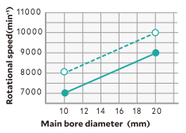
CH-A12-3M-TL/3L-TL
Target hole diameter: φ5 – 8 mm



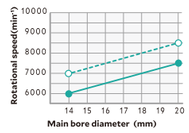
CH-A12-5M-TL/5L-TL
Target hole diameter:φ8 – 10 mm



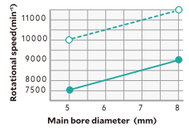
CH-A12-7M-TL/7L-TL
Target hole diameter: φ10 – 20 mm



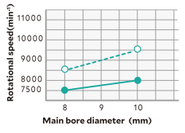
CH-A12-11M/11L
Target hole diameter: φ14 – 20 mm



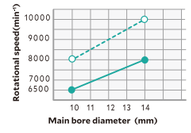
CH-A33-3M/3L
Target hole diameter: φ5 – 8 mm



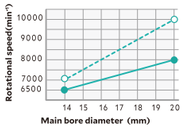
CH-A33-5M/5L
Target hole diameter: φ8 – 10 mm



CH-A33-7M/7L
Target hole diameter: φ10 – 14 mm



CH-A33-11M/11L
Target hole diameter: φ14 – 20 mm



Feed rate

300 mm/min

Rotational direction

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

Instruction manual