

XEBEC Brush™ Crosshole Extra-Large Instruction Manual

Read this instruction manual before using this product. Failure to do so can result in serious injury or death. This instruction manual must be kept in the vicinity of the machine at all times so that it is accessible to the operator.

SAFETY PRECAUTIONS

Be sure to observe the contents of this manual. Using the product in a way that is not consistent with the contents of this manual may result in serious injury or death.

⚠️ WARNING

- There is the risk of operator loss of sight or injury resulting from this product detaching from the processing apparatus, bristles breaking off, workpieces breaking, etc.
- Fragments, cutting particles, burrs, etc., occur due to processing with this product, and these can pierce the eyes or skin of workers causing loss of sight and injury.
- Dust occurring as a result of processing with this product can cause lung damage, irritate skin, and bring on allergic reactions.
- Even if there is no problem at the pre-work check, if vibration or other abnormality occurs during use, discontinue use immediately. Continuing to use the product when there is an abnormality presents the risk of operator loss of sight or injury resulting from this product detaching from the processing apparatus, bristles breaking off, workpieces breaking, etc.
- Machining at a constant point for a prolonged time causes the tip of the tool to become hot which presents the risk of operator loss of sight or injury resulting from bristles coming loose or breaking off. Adjust the processing times on locations being processed so that it does not become hot. Also be careful not to touch the locations being processed directly with bare hands after use.
- If the rotational speed exceeds the maximum, there is the risk of operator loss of sight or injury resulting from this product detaching from the processing equipment, bristles breaking off, workpieces breaking, etc.
- Use the tool suitable to the hole diameter. There is the risk of operator loss of sight or injury resulting from bristles breaking off, parts breaking, etc., if a tool not suitable to the hole diameter is used.
- Start rotation of the tip of the tool after it has been inserted into the cylinder to be machined. Using the product in ways other than described in this document or rotating it outside the cylinder presents a risk of operator loss of sight or injury resulting from the bristles breaking off and being flung.
- If the following cross holes are processed under the initial processing conditions, there is the risk of operator loss of sight or injury resulting from bristles breaking off, etc. Please contact us if you use this product in the following cases:
 - When the cross hole diameter exceeds $\phi 12\text{mm}$
 - When the cross hole is off-center, angled, or slotted

NOTICE

Furthermore, as a result of the situations described above, there is also the risk of damage to machining tools, jigs, and workpieces.

Operator Safety Protection

⚠️ Use of protective equipment

Be sure to wear personal protective gear including goggles, masks, gloves, and earmuffs to prevent injuries common during machining. Wear clothing with long sleeves or other clothing that does not expose the skin, and fasten the cuffs and hems tightly.

⚠️ 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 equipment.
- 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 dust, cutting particles, oil, water, or other substance.
- 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.

⚠️ Precaution regarding cutting particles

Fragments, cutting particles, and other substances generated during work will be scattered into the surrounding area. Be sure to use a dust collector or other means to collect them.

Pre-Work Check

Perform test operation for 1 minute or more before starting work, and for 3 minutes or more after the machine tool or product is changed, and check that there is no looseness, vibration, or other abnormality of the machine and the part where the product is installed. When doing this, start rotation with the tool tip inserted 20mm or more into the inside of the main bore.

Precautions for Use

Installation onto a machining center or other machine

- **⚠️ WARNING:** When installing onto processing equipment, grip the tool shank by 30mm or more.
- If gripped with a grip length less than the specified one, this product may fall from the processing equipment due to vibrations during the machining.
- There is the risk that this may cause operator loss of sight or injury.

- When the product is used with precision machining equipment, there is the risk that cutting particles may have an adverse effect on the equipment sliding parts. Be sure to properly collect cutting particles and perform washing.
- When installing, use a chuck that is correct for the shank diameter.
- Install and use on processing equipment that can control the rotational speed.

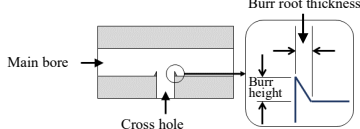
Features

- Centrifugal force generated by rotation causes the brush to expand and remove fine burrs from the crosshole inside the cylinder.
- It polishes and removes black scale from the inside surface of the cylinder, and removes cutting particles and foreign substances from the hole bottom surface.
- The abrasive material is ceramic fiber that contains no abrasive grains at all.
- The brush tip generates grinding power. The tip of the bristle removes burrs and finishes the edges.
- Install onto a machining center, robot, or other processing equipment to remove burrs and cutter marks.
- The original brush material (ceramic fibers) enables consistent deburring and polishing capability without changes to the cutting performance or brush shape.

How to Use

This product is used for removal of post-machining fine burrs with a burr root thickness of 0.1 mm or less, and for removal of fine burrs from the inside of cylinders with inner diameters of $\phi 20\text{mm}$ - $\phi 35\text{mm}$.

Definitions of cross hole and burrs with this tool



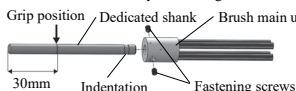
Maximum rotational speed

Use within the range shown below.

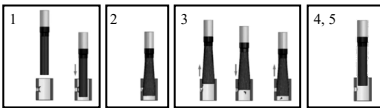
| Product code / Bristle color | Target shaft (Product code) | Target hole diameter (mm) | Maximum rotational speed (min ⁻¹) | Initial processing conditions |
|------------------------------|-----------------------------|---------------------------|---|---|
| Red | Blue | | | |
| - | CH-A34-15 | CH-SH-6 | $\phi 20$ - 25 | Rotational speed 7000 min ⁻¹ Feed speed 300mm/min |
| - | CH-A34-20 | CH-SH-8 | $\phi 25$ - 30 | |
| - | CH-A34-25 | | $\phi 30$ - 35 | |

Attaching the dedicated shank to the brush main unit

1. Insert the end of the dedicated shank (the side with an indentation) to the hole in the brush main unit, then push the shank to the very back of the hole.
2. Use the 2 fastening screws (included) to fasten the brush main unit and the dedicated shank.
 - * Tightening torque: CH-A α -15: 0.63 [Nm] / CH-A α -20/25: 1.5 [Nm]
 - * Use a hexagonal wrench to tighten the fastening screws.
 - * Damage to the brush main unit may result if tightened too much.



Procedure for use



1. With brush rotation stopped, insert the brush into the main bore.
 2. Start brush rotation when it has been inserted past the cross hole.
 3. Machine while pulling or pushing the brush.
 4. Stop the brush rotation while it is inside the cylinder.
 5. After brush rotation has stopped, remove the brush from the cylinder.
- Machining in both the forward and reverse rotation directions will improve the deburring effects and provide a more even edge quality.
 - The side surface of the brush does not generate grinding power.

