XEBEC Brush Turning Machine Round Shank Type

Table of contents

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
	There is a potential for severe injuries and damages listed below when using the product. To prevent them, make sure to take safety measures and use the product with caution. ● **The product may break, fracture or fall off from the machine tool and cause operator injuries or loss of sight. It may also cause damages to the machine tool, jig, fixture or workpiece.** ● **Dust and chips generated when using this product can cause blindness and injury.** ● **Dust and particles generated when using this product can cause lung damage, skin irritation and allergy.**
	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.
	The tip of the tool may become overheated when it is applied to a workpiece for a prolonged span of time, causing ceramic fiber bristles to break loose, which may possibly result in operator injuries or loss of sight. Adjust the machining time to prevent the machined area of the workpiece from overheating. DO NOT touch the machined area of the workpiece directly with hands.
	Make sure to use the product within the range of standard machining parameters. If the product is used exceeding the standard parameters, it may break, fracture or fall off from the machine tool and cause operator injuries or loss of sight.
	Make sure that the product is the appropriate size for the workpiece main bore diameter. If the product is not the appropriate size for the workpiece main bore diameter, it may break and cause operator injuries or loss of sight.

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.

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.

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.**

Pre-Use Inspection

Perform a test run after setting up the Brush on the machine and making sure there is no looseness, vibration or any other abnormality.
Make sure that the Brush is free of any visible damage or abnormality prior to use.

Notes for When Setting up This Product on the Machine

	WARNING
	**Make sure to hold the shank of this product by 30 mm or more with the tool holder.** Otherwise, vibrations may cause this product to fall off from the tool holder. It may cause operator blindness or injury.

- **Dust and chips generated by using the product can affect the sliding parts of the machine tool. Make sure to remove dust and chips by using sludge collection systems, oil skimmer or other means.**
- **Make sure to use a tool holder that is the right size for the shank diameter of this product.**
- **Make sure to use the product on a machine tool that can control the rotational speed.**

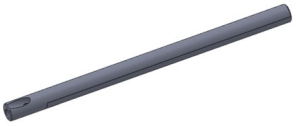
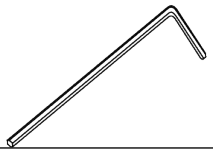
Features

- **Removes burrs (root thickness: 0.1 mm or less) from the workpiece after cutting on a turning machine without live tooling. Press the Brush against the rotating workpiece to remove burrs.**

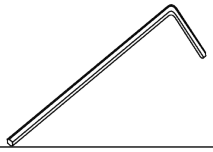
Parts and Tool Included in the Product

The followings are included in XEBEC Brush Turning Machine Round Shank Type. Make sure that all the parts and tool mentioned below are included when you purchased the product.

TM-SH-06

	Name	Quantity
Parts	Shank 	1
	M2.6-6 set screw 	1
Tool	Hex key for M2.6 screws 	1

TM-SH-12

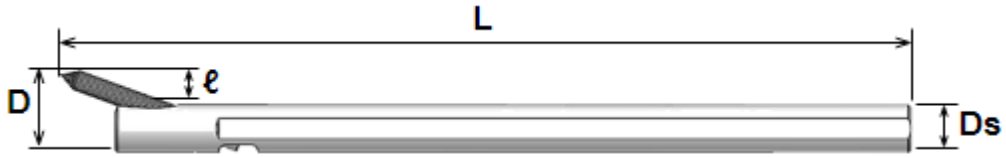
	Name	Quantity
Parts	Shank 	1
	M2.6-10 set screw 	1
Tool	Hex key for M2.6 screws 	1

Product Specifications

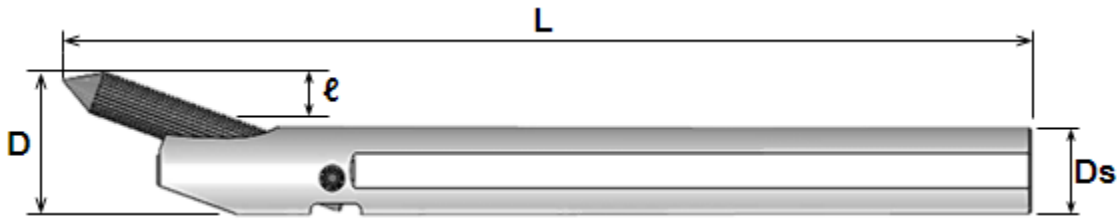
Holder Product Code	Matching Brush	Overall Length L (mm)	Shank Diameter Ds (Φ mm)	Usable Bristle height ℓ (mm)	Overall height (Minimum hole diameter to insert the Brush) D (mm)	Minimum main bore diameter that can be processed (Φ mm)	Maximum cross hole diameter that can be processed (Φ mm)
TM-SH-06	A11-TB025 	107	6	3	11	12	3
TM-SH-12	A11-TB06 A21-TB06 A32-TB06 	133	12	5.5	20	21	Not specified

*Overall length is the length of the product when the Brush is brand new.

TM-SH-06



TM-SH-12

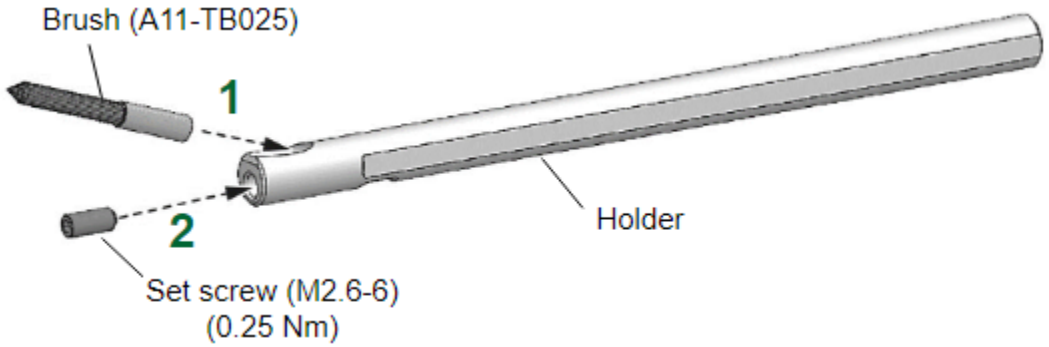


How to Assemble the Product

TM-SH-06

1 Inset the Brush (A11-TB025) into the Holder.

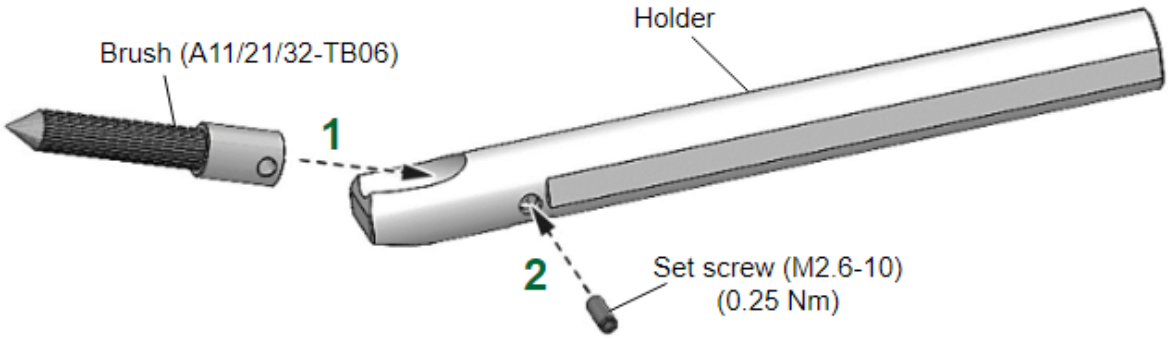
2 Insert the set screw (M2.6-6) into the hole at the tip of the Holder and tighten the screw using the hex key (torque: 0.25 Nm).



TM-SH-12

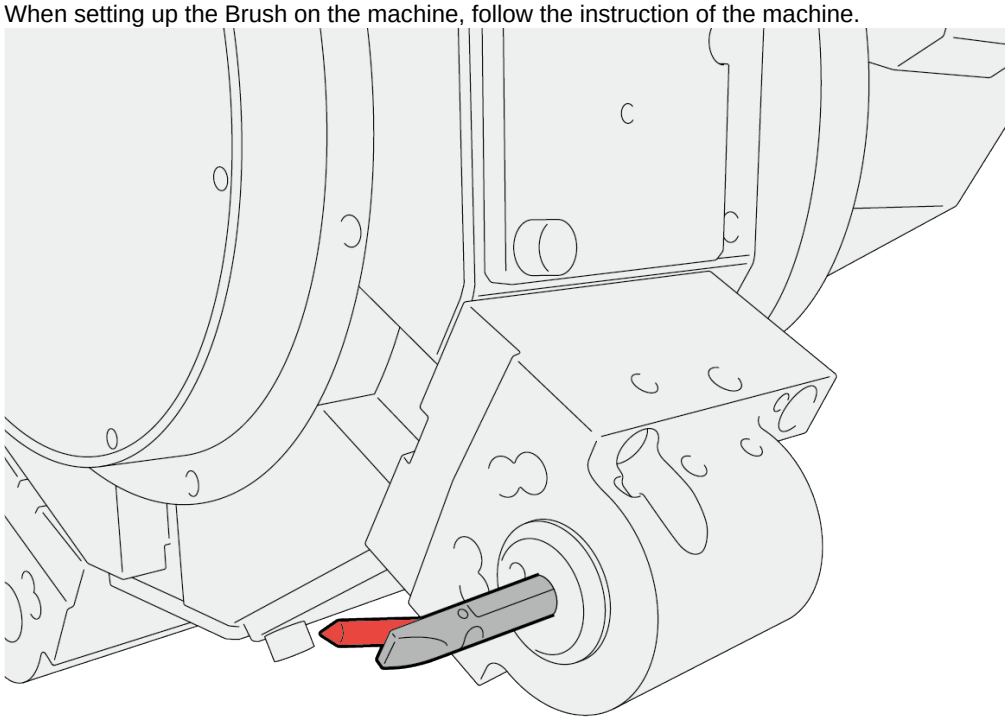
1 Insert the Brush (A11/21/32-TB06) into the Holder.

2 Insert the set screw (M2.6-10) into the hole at the side of the Holder and tighten the screw using the hex key (torque: 0.25 Nm).



How to Set up the Brush on the Machine

The figure below shows an example of the Brush on the machine.
When setting up the Brush on the machine, follow the instruction of the machine.

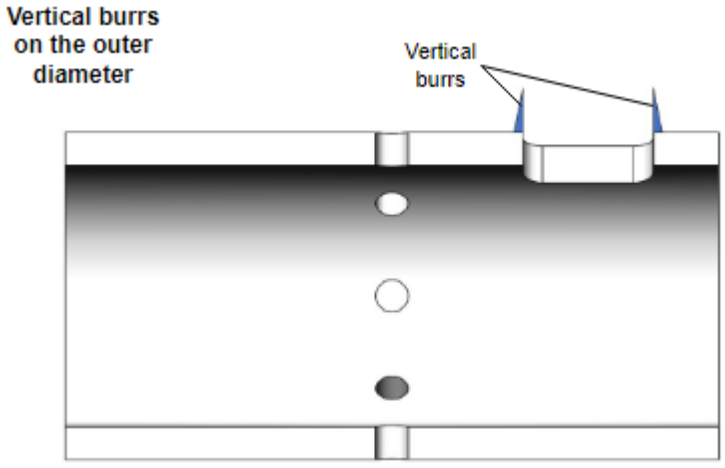


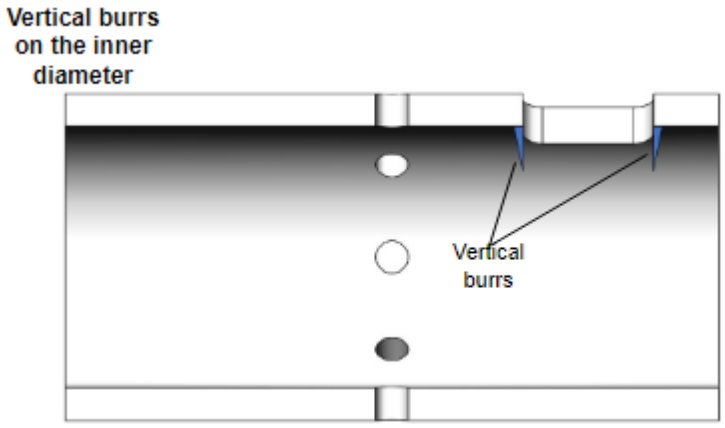
Machining Parameters

	Standard machining parameters	Starting machining parameters
Cutting speed (m/min)	60 - 250	150
Feed per revolution (mm/rev)	0.1 - 0.5	0.3
Depth of cut (mm)	0.5 - 2.0	1.0

Adjust the depth of cut depending on the burr size (Burr root thickness needs to be 0.1 mm or less). If burrs are too large, the Brush may be damaged even if the depth of cut is less than the maximum (2 mm) listed in the table.

- **<u>If the Brush is used beyond the usable bristle height (ℓ), the Holder may interfere with the workpiece and the tool may be damaged.</u>**
- **Uniform deburring and edge quality can be achieved by rotating the workpiece in both clockwise and counter-clockwise directions. Rotate the workpiece in both directions as needed.**
- **Reduce the size of large burrs as much as possible before using the product. If burrs are too large, the tool wear will be quick and the tool life may be shortened.**
- **It is easier to remove burrs if their directions are vertical rather than horizontal.**





- **If burrs remain, try the followings:**

- Decrease the feed per revolution
- Increase the number of passes

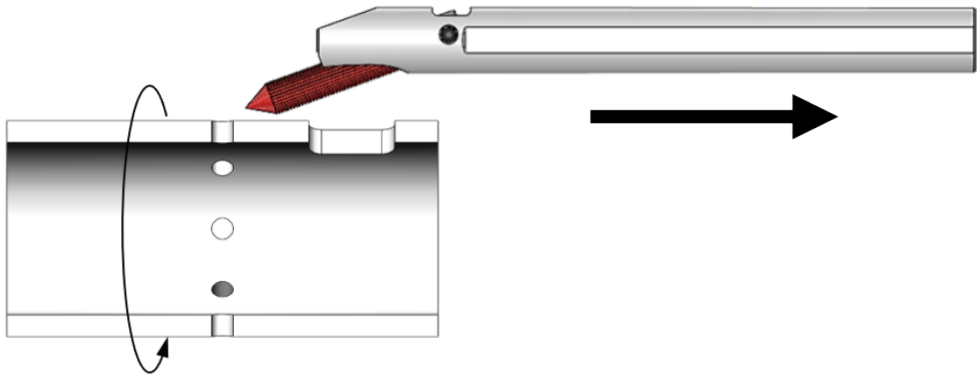
How to Use

Fix the product on the machine and press the Brush against the rotating workpiece to remove burrs.
The Brush must be applied in the reverse feed direction, in the direction towards the end face of the Holder, regardless of whether it is applied for external turning or internal turning as shown in the figure below.

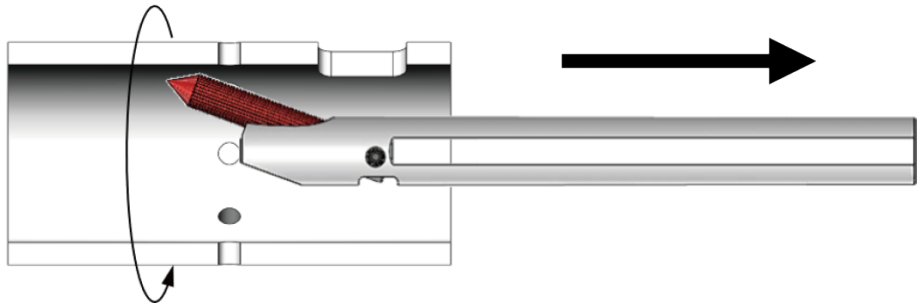
Applying this product in the forward feed direction may cause damages, resulting in operator injuries or loss of sight.
The Brush must be applied in the reverse feed direction, in the direction towards the end face of the Holder, regardless of whether it is applied for external turning or internal turning as shown in the video below.

*The figures below show A11-TB06 attached to TM-SH-12.

External turning



Internal turning



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http://www.xebec-tech.com/

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