EN

Turbinex

Dust Removal System

TURBINEX COLLET

USER AND MAINTENANCE MANUAL

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1. GENERAL INFORMATION

Turbinex Collet is a system consisting of two main elements: a special chuck (1) and a 10-blade bell (2).

It is designed to suck up dust and fine pieces of debris that are small enough to be ejected through the bell blades (3).
See Fig. A

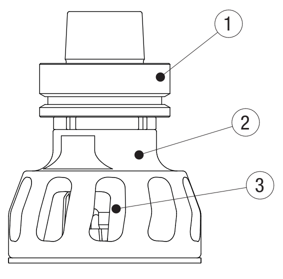


Fig. A

Can only be used with tools with a cylindrical shank.

For the technical specifications, refer to the technical data table.
The tool used on the Turbinex Collet must comply with the **UNI EN-847** Standard, or the similar reference Standard in your own country.

Turbinex Collet is designed exclusively for tools with right-hand rotation (RH).

Before handling and using the Turbinex Collet system, read the instructions in this document carefully.

2. TURBINEX COLLET ASSEMBLY INSTRUCTIONS

Turbinex Collet is supplied by Wirutex with the bell (2) already assembled on the chuck (1). **See Fig. A.** The bell can be fitted with a flange **(Fig. B)** or grille **(Fig. B1)**.

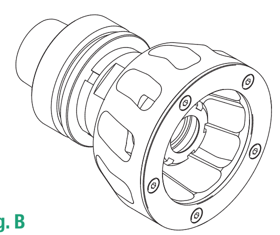


Fig. B

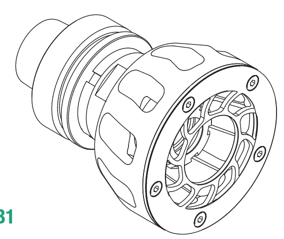


Fig. B1

2.1 REPLACING THE FLANGE AND GRILLE

⚠ The flange and grille must be replaced exactly according to the instructions below.

Failure to respect the instructions causes an unacceptable reduction in machining safety, and increases the risk of injury.

The flange (Fig. B) and grille (Fig. B1) are secured to the bell by means of 5 TSPEI UNI 5933/DIN 7991 M4x8 screws.

IMPORTANT: the tightening torque of the screws must be equal to 2.2Nm

Wirutex recommends the use of a torque screwdriver for tightening the screws.

Removing the flange/grille
1. Begin by loosening the 5 screws. **See Fig. C**

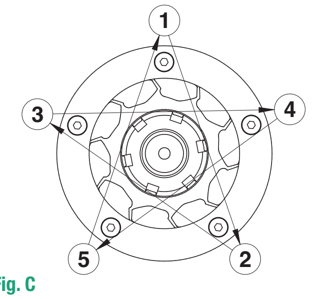


Fig. C

Make sure the surface is perfectly clean before installing the new flange or grille.

3. Complete the assembly by tightening the 5 screws, following the order indicated in Fig. C

3. MOUNTING THE TOOL ON TURBINEX COLLET

The tool mounted on the Turbinex Collet must have a shank tolerance in class “h” with a grade of “7” or lower.

Using non-conforming tools may cause difficulties during the assembly on the Turbinex Collet, along with safety issues such as tool protrusion during machining.

To ensure the correct and secure mounting of the tool, it is recommended that you carry out this step using a specific vertically positioned assembly device.

Before mounting the tool on the Turbinex Collet, make sure the assembly device is firmly attached to the workbench.

During assembly, you are advised to always use safety gloves to avoid injuries caused by the sharp parts of the tool, and to protect the Turbinex Collet from corrosion due to the moisture in your hands.

Insert the Turbinex Collet in the assembly device from the chuck coupling side. **See Fig. D**

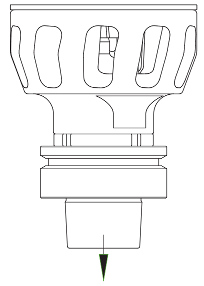


Fig. D

2. Take the collet ring nut out of the bell. **See Fig. E**

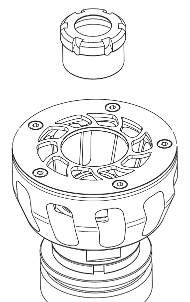


Fig. E

3. Insert the EOC16 collet in the collet ring nut, pressing lightly until you hear a click.

4. Now screw the collet ring nut onto the Turbinex Collet, making two full rotations.

5. Insert the tool in the collet, making sure you do not exceed the minimum tightening length mark (>|) engraved on the tool shank. **See Fig. i**

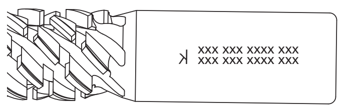


Fig. i

6. Tighten the collet ring nut using the wrench (**see Fig. F**), turning it clockwise until the tool is fully locked.

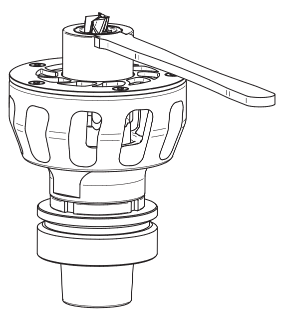


Fig. F

7. Remove the wrench, taking care not to knock the cutting edges of the tool.

The wrench contains a plastic insert that is purposely designed to prevent damage to the tool.

8. Now adjust the bell until it reaches a height that maintains a distance of about 3 mm between the Turbinex Collet and the panel during machining. **See Fig. G**

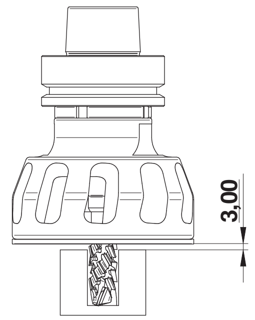


Fig. G

9. Bring the ring nut into contact with the bell, tightening it with a hook wrench. The Turbinex Collet is now ready for use.

ATTENTION: never exceed the recommended operating height. See Fig. G

Watch the video showing how to assemble the tool on the Turbinex Collet

4. MOUNTING ON THE MACHINE

- The Turbinex Collet system is available with the following machine interfaces: HSK63F - ISO30 -ISO30 toothed.

- Before using the Turbinex Collet, check the correct condition of the screws and locking elements.

- The Turbinex Collet must be mounted, clamped and used on the machine in accordance with the machine manufacturer’s instructions.

- All clamping surfaces must be perfectly clean and free of dust, grease, oil and water.

- It is forbidden to start the machine while assembling or disassembling the Turbinex Collet.

Note: If the machine is fitted with nozzles for directing compressed air onto the tool during machining, it is advisable to disable them as they may jeopardise the performance of the Turbinex Collet.

5. USE

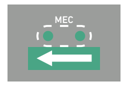
All Turbinex models can be used on CNC machining centres. It is recommended that you do not use the Turbinex Collet at an operating height of less than 3 mm, to prevent the system from coming into contact with the panel/processed material due to tension, deformation or movement of the parts during cutting operations. An operating height lower than the recommended minimum would reduce the air flow generated by the Turbinex Collet, thus limiting its ability to extract dust.

“Operating height” means the distance between the top face of the panel and the flange or grille of the Turbinex Collet.

- The maximum speed (max rpm) must never be exceeded.

- Always respect the rotation direction indicated. The rotation direction of the Turbinex Collet system is right-hand (RH).

- Can only be used on machines with mechanical feed (MEC).



Initial set-up
Run the first machining operation using the recommended operating parameters.

If necessary, adjust the machining parameters in small increments until the required result is obtained.

Save these parameters for future reference.

⚠ Do not exceed the maximum rotation speed of 24,000 rpm

If you notice any change in the sound produced by the Turbinex Collet, stop machining immediately and make an inspection for any scrap material or excessive dust build-up.

If dust or chips are present, clean the Turbinex Collet thoroughly before resuming the machining operation.

Minimum RPM: 14,000 (a rotation speed of less than 14,000 rpm may not be sufficient to generate adequate air flow for complete dust extraction).

Maximum RPM: the lowest speed (of the one indicated on the Turbinex Collet and the one indicated on the tool being used) must be adopted as the maximum speed.

5.1 RECOMMENDED WORKING PARAMETERS

The efficiency of the Turbinex Collet is based on several factors, including the number of revolutions and the feed speed.

The speed of the air generated by the centralised extraction system, and the type of suction hood of the machine, play a decisive role in terms of dust removal efficiency.

The maximum recommended parameters for proper dust extraction are:

Nesting
18,000 rpm – feed ~14m/min
20,000 rpm – feed ~16m/min
22,000 rpm – feed ~18m/min
24,000 rpm – feed ~20m/min

Pantografatura
16,000 rpm - feed ~12 m/min
18,000 rpm – feed ~14m/min
20,000 rpm – feed ~16m/min
22,000 rpm – feed ~18m/min

The recommended machining parameters are purely indicative and may vary according to the height of the panel being processed, the type of material being processed, the type of CNC machine, the extraction system air speed, and so on.

Programming
The Turbinex Collet is designed to vacuum dust and fine pieces of debris.

ATTENTION: Avoid programming toolpaths that generate excessively large pieces of material waste.

These might get jammed in the bell infeed area, creating imbalance and noise, and jeopardising system efficiency to the point of danger.

Small material scraps can be sucked up, while larger scraps are retained, preventing them from entering the device and causing the problems described above.

6. CARE, MAINTENANCE AND STORAGE

- It is important to keep the Turbinex Collet clean and free of impurities at all times. Material waste blocked at the bell infeed or outfeed, or in the grille, can significantly reduce the effectiveness of the Turbinex Collet system. It must therefore be removed, taking care not to damage the Turbinex Collet and/or the tool on it.

- Make a check whenever you notice a change in the sound emitted by the Turbinex Collet during the machining process. In addition, you are advised to make a visual inspection at the end of every work shift. A visual inspection of the Turbinex Collet should reveal any signs of premature wear on the impeller blades and/or the grille, especially when machining abrasive materials.

- Wear is a normal condition caused by the abrasive effect of dust coming into contact with the blades during machining. The more abrasive the processed material, the greater the wear. If you note a thinning of the blades due to this phenomenon, it is advisable to contact Wirutex Technical Support immediately.

- When the Turbinex Collet is not in use, store it (along with the various components) in a safe, dry place, protecting its steel parts with a light coat of protective anti-oxidation oil.

7. WARNINGS

⚠ Failure to follow this procedure may result in serious injury or death!

- Before each use, check the Turbinex Collet to make sure it is intact and perfectly clean, with all the screws and ring nuts firmly tightened.

- Once the Turbinex Collet has started to rotate, never put your hands or objects of any kind near its working area.

- The vortex effect created by the Turbinex Collet in its working area can generate air flows with speeds of more than 80 m/sec, which have a strong suction effect.

- The noise level will vary depending on the working environment, the position of the machine and the sound insulation offered by the machine itself.

- Always check that the Turbinex Collet, ring nut, precision collet and tool are free of dust, debris and rust.
If dust, debris or rust is found, it is essential that it is completel removed before any further use.

The cleanliness of all the clamping interface surfaces affects:
I) the finish of the machined surfaces
II) vibration & noise
III) the lifespan of the tool and the Turbinex Collet
IV) overall performance

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Technical data table

CLAMPING SYSTEM	Mechanical with EOC-16 precision collets
TURBINE	10 blades
MACHINE INTERFACE	HSK63F - ISO30 - TOOTHED ISO30
TOOL INTERFACE	Cylindrical shank
TOOL COUPLING	6-16 mm
MAX. TOOL DIAMETER	16 mm
TURBINEX COLLET DIAMETER	93 mm
RPM	max 24,000
BALANCING	G6.3