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Camposampiero, 24-11-2021

## OBJECT:

## INSTRUCTIONS FOR FIXING AND REMOVING FAN-WHEELS IN CONVECTION OVENS

### ➤ FAN-WHEEL HANDLING INSTRUCTIONS

A fan-wheels is a very delicate object which, if handled incorrectly, may lose some of its features. To prevent this, always take it by the hub. Proceeding in this way we will avoid that it loses its balancing or gets deformed.

### ➤ TUTORIAL HOW TO FIX AND EXTRACT A FAN-WHEEL

#### Technical description:

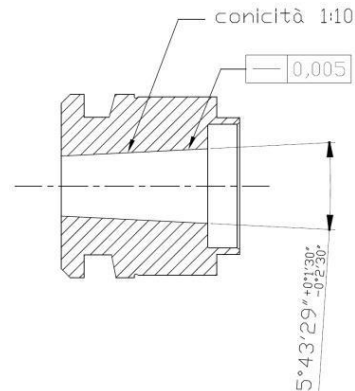
Shaft:  $5^{\circ} 43'29'' \pm 1'44''$

Roughness:  $0,8 \mu\text{m}$

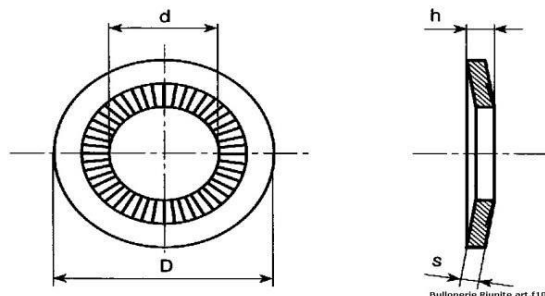
Hub:  $5^{\circ} 43'29'' +1'30''/-2'30''$

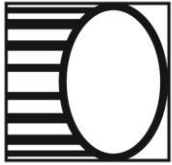
Roughness'  $0,8\mu\text{m}-1,6$

Hub AISI 304



### ➤ Toothed washer UNI 7065 material A2 (please see the picture below)





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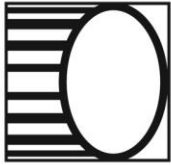
➤ Tutorial how to assembly the fan-wheel inside an induction oven

As shown in the picture below, it is important to handle the fan from the hub side



As you will see in the following picture, this wrong grip may cause deformation inconveniences during the assembly phase, should the coupling hub-shaft result to be difficult.





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➤ **Fixing tutorial:**

**Use a torque wrench to fix the bolt.**

A torque wrench ranges must be the correct one to fix the screw, set the proper tightening torque strength indicated in the technical description of the screw.

Consider that fixing a bolt without sufficient strength is a problem, but fixing the bolt with too much strength, therefore risking to extend the crests of the screw, may be even worse.

It is suggested to give an extra fixing to the bolt after a period of warming- up of the oven at 80-90 °C

Standard torque for screw available are:

**INOX A2**

- M5 = 5,7 Nm
- M6 = 10 Nm
- M8 = 24 Nm
- M10 = 47 Nm
- M12 = 82 Nm

**CLASSE 8.8**

- M5 = 6,4 Nm
- M6 = 11,1 Nm
- M8 = 27 Nm
- M10 = 53 Nm
- M12 = 92 Nm



It is heartily recommended that you contact your motor/screw supplier in order to have confirmation of the above values or of the appropriate tightening values between the motor/screw components to avoid any possible inconvenience.

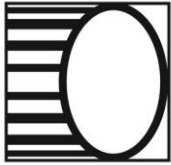
➤ **Tutorial for fan-wheel removal:**

Prepare the puller ready to use.

Heat the oven until it reaches 90 -100 °C and wait until the hub and the shaft get warm. If the oven is not working, heat the hub with a flame but do not use a blowpipe, it would be better a camping lighter. Be careful not to heat any of the blades or the back of the fan wheel with the flame, this would compromise its stability.

After the warming up, use an air compressor and inject the cold air in the thread of the shaft: this will cause a faster narrowing compared to the fanwheel hub and it will make the removal easier. If you don' t have an air compressor you could use a water sprayer for cooling down the shaft. As latest step, use the puller to pull out the fan wheel, after the heating and cooling process it will be much easier.





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➤ **Use of the puller:**

In order to be able to use the puller, first you need to slightly unscrew the screw that fixes the fan to the motor shaft as shown in the picture below. Once done this you can affix the puller to separate the fan-wheel from the motor shaft.

