



# User manual

## High speed Turbine

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# High speed Turbine

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# 1. Health and Safety Instructions

## 1.1. Precautions for Use

This document contains information that all operators should be aware of and understand before using the **High Speed Turbine**. This information highlights situations that could result in serious damage and indicates the precautions that should be taken to avoid them..

## 1.2. Warnings



**WARNING** : Equipment performance is only guaranteed if original spare parts distributed by SAMES KREMLIN are used.



**WARNING** : Safety may be jeopardized if this equipment is not operated, disassembled and reassembled in compliance with the instructions given in this manual and in any European Standard or national safety regulations in force.

## 1.3. Important Recommendations

### 1.3.1. Compressed Air Quality

The air must be filtered to a level that will guarantee a long life time and prevent any pollution during painting.

The filter must be installed as close as possible to the facility. The filter cartridges must be changed regularly to ensure that the air is clean.

The guarantee does not cover faults caused by unclean, unfiltered bearing air resulting from disregard of the previous recommendations.



**WARNING** : If the air is not correctly filtered, the bearing may become fouled resulting in a turbine operating fault. The filtering system used must prevent particles greater than 0.1  $\mu\text{m}$  in diameter from reaching the bearing.

### 1.3.2. Bearing Safety

The compressed air connection to the air bearing must be made directly to the supply circuit without the use of an isolating valve.

A sudden cut in the air supply could destroy the air bearing of the turbine. .

In addition, a 25-liter air reserve should be available so that the turbine brakes gradually if the main air supply is cut off suddenly.

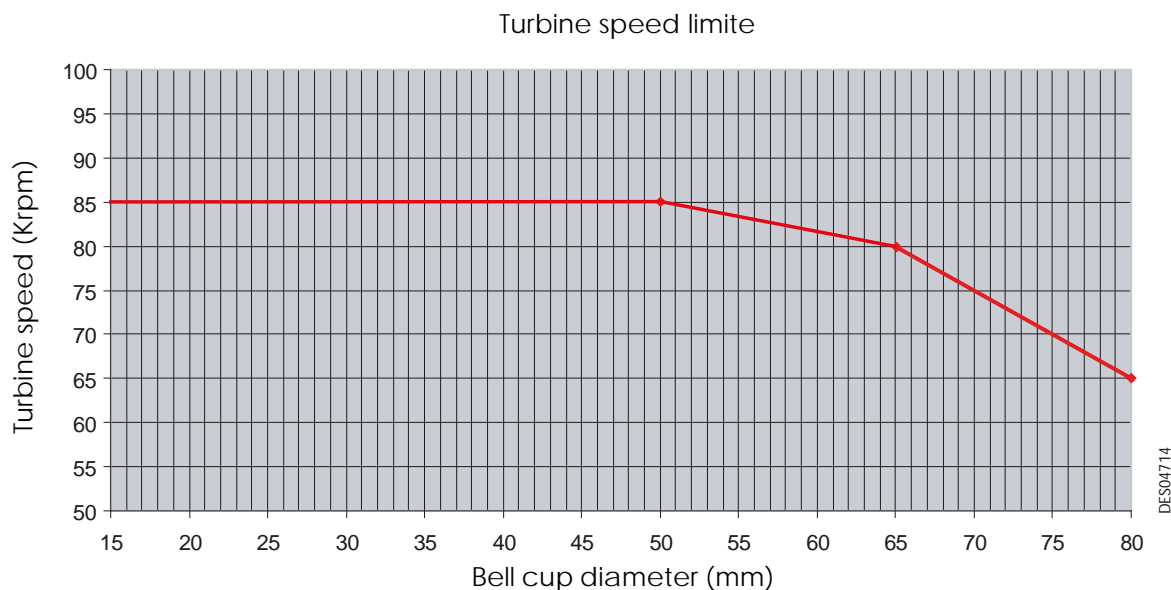


**WARNING** : The guarantee does not cover faults that occur if the turbine is operated with insufficient bearing air pressure.

Turbine drive air supply should not be possible if there is no bearing air, put in place a material safety, but if not, the destruction of the air bearing of the turbine is possible.

### 1.3.3. Maximum Speed

Excessive turbine speed can cause considerable damage to the turbine. Do not exceed the maximal speed according to the diameter of the bell cup used.



Bell cup diameter	Turbine speed limite
35 mm	85 krpm
50 mm	85 krpm
65 mm	80 krpm
80 mm	65 krpm

### 1.3.4. Vibrations

If the atomizer vibrates abnormally, this generally means the rotating parts are unbalanced. In the case, because of out of balance cup, the bearing air will be damaged when rotating high speed. Reasons for unbalanced rotating parts are dry paints deposits in bell cup or shaft, physical damage to the bell cup or shaft, dry and paint located between the bell cup and shaft during maintenance activates. If an indication of severe vibration is present, the problem must be corrected. Significant unbalance conditions greater than G 0,4 (1/1000 gr x 1 cm radius) inevitably damage the turbine.



**WARNING :** The guarantee does not cover damage caused by unbalance of the rotating parts.

### 1.3.5. Ambient Temperature

The sprayer is designed to work normally under room temperature between 0°C and + 40°C.

In order to optimise application quality, it is advised to work under room temperature between + 15°C and + 28°C.

The storage temperature will never exceed +60°C.

#### 1.4. Guarantee

Under the guarantee, which applies only to the buyer, SAMES KREMLIN agrees to repair operating faults resulting from a design fault, materials or manufacture, under the conditions set out below.

The guarantee claim must define, in writing, the exact nature of the fault concerned. The SAMES KREMLIN guarantee only covers equipment that has been serviced and cleaned according to standard procedures and our own instructions, that has been fitted with parts approved by SAMES or that has not been modified by the customer

More precisely, the guarantee does not cover damage resulting from:

- the customer's negligence or inattentiveness,
- incorrect use,
- failure to follow the procedure
- use of a control system not designed by SAMES KREMLIN or a SAMES KREMLIN control system modified by a third party without written permission from an authorized SAMES KREMLIN technical agent,
- accidents such as: collision with external objects, or similar events,
- flooding, earthquake, fire or similar events,
- inadequately filtered bearing air (solid particles more than 0.1 µm in diameter),
- inadequately filtered paint and solvent,
- use of seals not complying with SAMES KREMLIN recommendations,
- starting up turbine rotation without minimum bearing air pressure (5.5 bar),
- exceeding the maximum speed under load ([see § 1.3.3 page 5](#)),
- starting up rotating parts that are unbalanced,
- pollution of air circuits by fluids or substances other than air.

Under no circumstances, either in the context of this guarantee or in other contexts, will SAMES KREMLIN be held responsible for physical injury or intangible damage, damage to brand image and loss of production resulting directly from its products.

## 2. Presentation - Operation Principle

The turbine contains an air bearing which separates the main shaft and the drive wheel from the turbine main body. Therefore, there is no friction between the different components; both long life and high turbine speeds are then possible.

The air directed onto the turbine wheels allows the drive or the turbine brake.

Turbine drives bellcup in rotation. The bellcup is attached to the turbine thanks to a magnetic principle.

Bearing air pressure has to be adjusted to 5.5 bar (82.5 psi) minimum before any turbine driving (measured at the level of the quick disconnect plate). Any air to the turbine has to be clean and dry to prevent premature wear.

## 3. Characteristics

The guarantee of this turbine is applicable only if the following technical specifications are respected:

### Pressure

Description	Values
Bearing air	mini 5 bar (75 psi) maxi 7 bar (105 psi) under 130 l/min to 180 l/min (measured at the level of the quick disconnect plate)
Microphone supply air	mini 0,5 bar 1 bar maxi under 20 l/min to 40 l/min

### Air quality

Filtered air (bearing air) must be dry and free of oil and dust as per DIN ISO 8573-1	
Maximum dewpoint at 5.5 bar (80 psi)	Class 2 i.e - 40°C (-40°F)
Maximum particle size of solid contaminant (Bearing air)	Class 0 i.e Ø 0,1 µm
Maximum particle size of solid contaminant (Turbine rotation)	Class 1 i.e Ø 1 µm
Maximum particle of solid contaminants (Others)	Class 3 i.e Ø 5 µm
Maximum concentration of oil	Class 1 i.e 0,01 mg / m <sub>0</sub> <sup>3</sup> *
Maximum concentration of solid contaminants	1 mg / m <sub>0</sub> <sup>3</sup> *

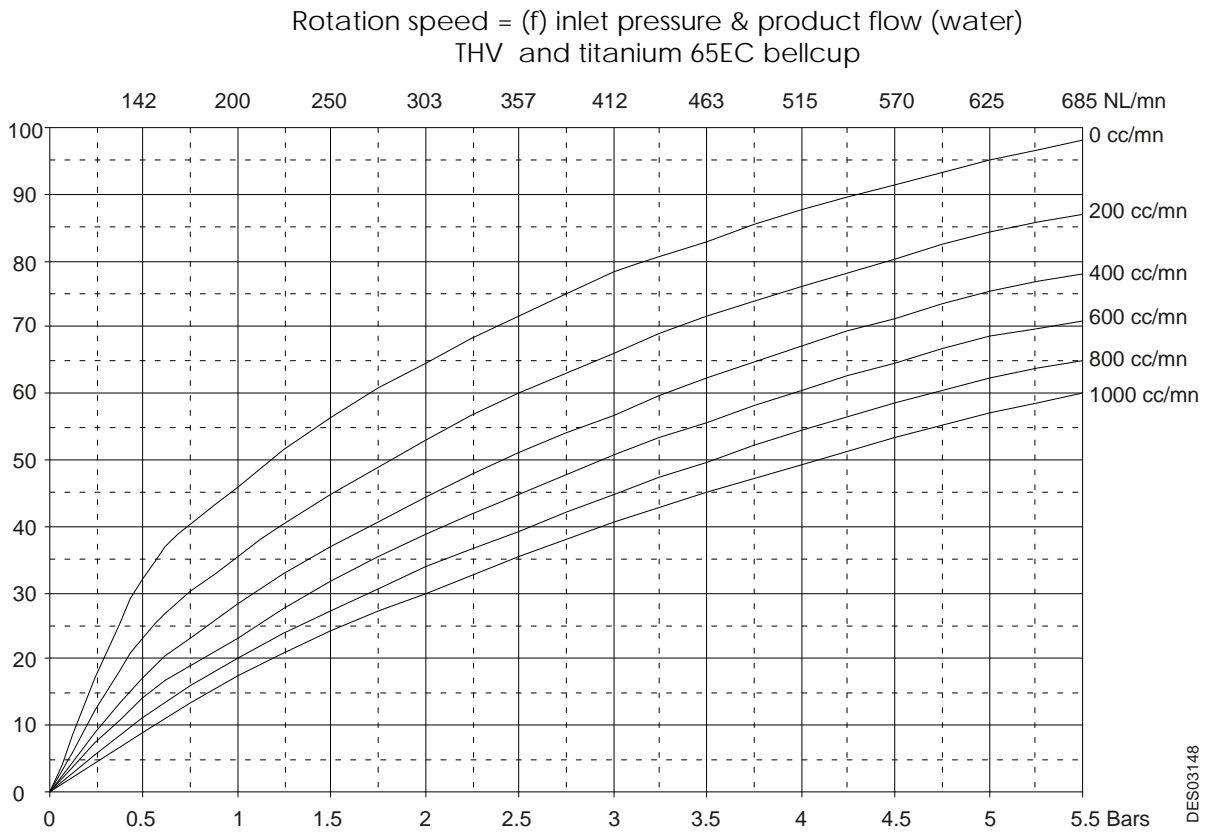
\*m<sub>0</sub><sup>3</sup> values given for a temperature of 20 °C (68°F) and an atmospheric pressure of 1,013 mbar.

### General

Weight	810 g
Dimensions	L: 96 mm Ø : 75 mm

### 3.1. Turbine characteristics

Pressure measured at the turbine holder input.  
Flow measured at the Booster output.



DES03148

Pressure (bar)	Air flow NL/mn	Flow 0 cc/mn	Flow 200 cc/mn	Flow 400 cc/mn	Flow 600 cc/mn	Flow 800 cc/mn	Flow 1000 cc/mn
0	0	0	0	0	0	0	0
0.5	135	32	23	17.2	14.3	11.3	9
1	200	46	35.4	28.5	23.3	20	17.5
1.5	250	56.5	44.6	36.8	31.6	27.2	24.1
2	303	64.7	53	44.5	38.7	33.8	30
2.5	357	71.7	60	51	44.8	39.2	35.4
3	412	78.5	66	56.8	50.6	44.8	40.5
3.5	463	82.9	71.5	62.2	55.7	49.7	45
4	515	87.8	76.3	67.1	60.5	54.3	49.2
4.5	570	91.5	80.2	71.3	64.5	58.4	53.2
5	625	95	84.2	75.3	68.6	62.2	57.1
5.5	685	98	87	78	71	65	60



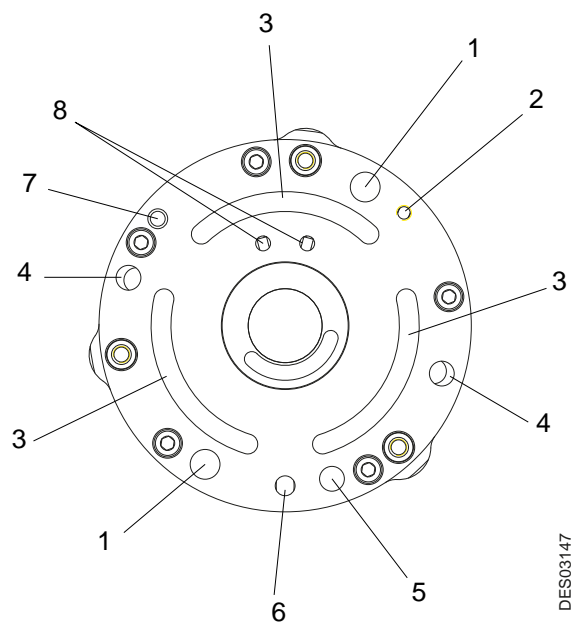
## 4. Description

Three elements constitute the external part of the "High speed turbine".

Item	Description
1	Magnetic holder
2	Body
3	Bearing back plate



Item	Description
1	Turbine drive
2	Remote bell cup
3	Exhaust
4	Compensation air outlet
5	Turbine brake
6	Bearing air
7	Alignment pin
8	Microphone Air



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## 5. Cleaning

- Clean the turbine interior with a soft and not abrasive cylindrical brush.



**WARNING :** Check the absence of foreign matters (residues of dry painting, filings) in the shaft cone of the turbine as well as on all the surface of the magnet.



Cone

- Clean the turbine exterior with a soft, non-fluffy cloth.



Magnet



## 6. Spare parts



**WARNING :** Don't put in rotation the turbine without bearing air.  
Don't put in rotation the turbine with a bellcup and / or a shaft not balanced.

### 6.1. Standard version



Item	Part number	Description	Qty	Sale unit
	1525849	High speed turbine	1	1
1	910026074	Equipped screw (included items 2 and 3)	3	1
2	640910	Seal	3	1
3	160000094	O-ring - viton	3	1

### 6.2. Version dedicated to external charge sprayers



Item	Part number	Description	Qty	Sale unit
	910025098	High speed turbine for external charge	1	1
1	910026074	Equipped screw (included items 2 and 3)	2	1
2	640910	Seal	3	1
3	160000094	O-ring - viton	3	1
4	900016677	Equipped screw, HVT for external charge (included items 2 and 3)	1	1



**WARNING :** The equipped screw (Item 4) is located on the opposite side of the turbine from the red mark (triangle).