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# TURBINE T2

USER MANUAL



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## User Manual Turbine T2

### Intended use

The T2 turbine, a member of the new generation of Corroventa turbines is developed and intended for construction drying and water damage restoration where it is used for suction and pressure drying in combination with adsorption dryers.

The T2 provides an adjustable speed which, in combination with a very low weight makes it flexible and easy to operate. Installation is also further improved with a very practical, foldable carrying handle with integrated cable parking. Durable yet flexible feet protect floor surfaces while also allowing stacking of two machines during storage and transportation. The turbine is naturally as robust in its design as its predecessors, a prerequisite for a long service life. Thanks to the very low noise, it can be used for both construction drying and water damage restoration without the occupants having to evacuate.

Features:

• High Capacity	• Låg vikt –enkel att bära och transportera
• Energy efficient	• Tid/kWh-räknare
• Robust	• Servicevänlig
• Very low noise level	

### Delivery inspection

T2 is delivered with the following items included:

Turbine T2	1 pc
Spare cooling air filters	4 pcs

### Manufacturing Directive

T2 is CE approved.

### Waiver of Liability

- Faulty, incorrect installations and/or incorrect use can cause damage to property and human injury.
- The manufacturer assumes no responsibility or liability for damages or injuries caused by non-compliance with the instructions herein, use for other purposes than the intended, or failure to observe its warnings. Such damage, injuries or liabilities are not covered by the product warranty.
- The product warranty does not cover consumables or normal wear and tear.
- It is the responsibility of the buyer to inspect the product at time of delivery and before use to ensure its good function. The product warranty does not cover damage resulting from use of faulty products.
- Changes or modifications to the equipment must not be made without written consent by Corroventa Avfuktning AB.
- The product, technical data and/or installation and operation instructions can be changed without prior notice.

- This manual contains information that is protected by the Intellectual Property laws. No part of this manual may be copied, stored in an information system or transferred in any form or in any way without the written consent of Corroventa Avfuktning AB.

Any comments on the contents of this document shall be sent or addressed to:

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## Safety information

This equipment is not intended to be used by individuals with physical or mental disabilities impeding their operation or understanding of it or by individuals lacking required knowledge or experience unless they are supervised and instructed by another person with responsibility for their safety.

Children must only use this equipment under supervision of an adult to ensure that it is not used as a toy, something that it is not designed for.

Electrical installations made in connection with the installation of the turbine shall be made by authorized personnel in accordance with local and national regulations.

Furthermore, the following warnings and instructions shall be read and observed:

1. The turbine is intended for indoor use only.
2. The turbine must not be powered until the installation is finished in accordance with this manual.
3. The powered turbine must not be covered as this can lead to overheating and fire hazard.
4. The turbine must not be used as table, trestle, pallet or stool.
5. The turbine must not be used to step or stand on.
6. Never use the turbine without the filter installed as this can cause damage to it. Ensure that the filter is clean. A cluttered filter can cause the turbine to overheat.
7. Oil, fat, solvents, Boracol or similar substances must not be drawn into the turbine.
8. The turbine must not be used in spaces where explosive gases can be present.
9. Do not stick objects into the air outlets or intakes as this can cause damage to the machinery as well as human injury.
10. Install the turbine steadily and leveled so that it cannot fall over.
11. Keep children, animals and spectators away from the work place while installation is undertaken.
12. If the turbine is broken, if the power connector or the cable is damaged, contact the retailer. Do not repair the equipment if you have not received specific training by the manufacturer.
13. Be careful not to damage the power cable. The cable must not go through water or pass sharp edges.
14. Never carry or tow the turbine by its cable.
15. To use electrical equipment in humid or wet environment can be dangerous. Never power the turbine if it is standing in water.
16. The dryer must only be connected to grounded power outlet with voltage and frequency in accordance with turbine nameplate.
17. A residual-current device / ground fault circuit interrupter should be used to minimize the risk of electric shocks.

18. Water must not come in contact with the electrical components of the equipment. If this has happened, ensure that the equipment is dry before it is used again.
19. The power must always be disconnected before the turbine is opened.
20. Air hoses/pipes that are used with the turbine must be corrosion-resistant, able to withstand 80°C heat and have sufficient structural strength not to collapse or break from the under- and overpressures generated.
21. Repairs and maintenance of the electronics and the electrical system of the turbine must only be made by qualified electrician.
22. The turbine must never be used with any other accessories than those listed in this manual or those specifically approved by Corroventa Avfuktning AB.
23. Since the turbine is used together with a Corroventa water separator, it always must be powered via the power outlet of the water separator.

For further advice on product safety and use, please contact the supplier.

### **Relative humidity and its effect on substances**

All air contains moisture, but the naked eye cannot see it until it condenses in small droplets on for instance a metal or glass surface. Already before it is visible however, the moisture affects substances and production processes, causes corrosion and microorganism growth.

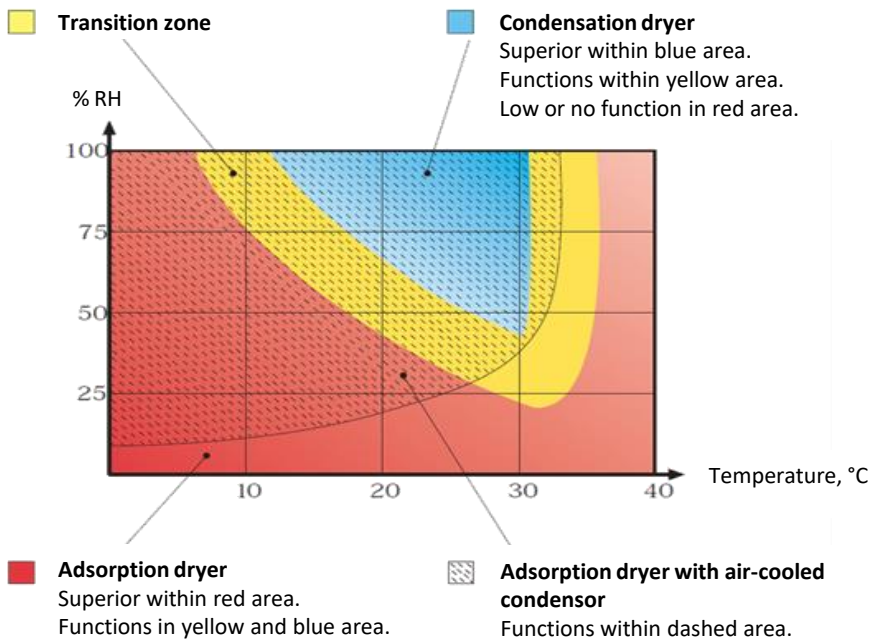
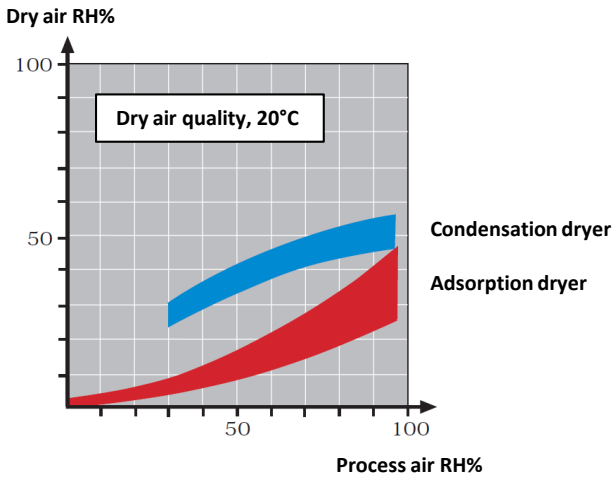
Air humidity is measured and referred to in terms of relative humidity (%RH) which is a measure how much water it contains relative how much it can contain at given temperature and pressure. The higher the temperature, the more water the air can contain but it is still the Relative Humidity that is important and that needs to be controlled if one wants to prevent corrosion or mould growth.

At RH 100% the air is saturated – there is fog and the moisture condensates in small droplets. Already at RH 60% steel corrodes and at 70% there is a risk for mould growth. As a rule of thumb, RH 50% is a good climate for most substances.

### **How to select dryer type**

The adsorption principal has, compared to condensation drying, the advantage of a lower ambient temperature dependency. Adsorption functions even well below the freezing point while the capacity of a condensation dryer inevitably decreases rapidly with falling temperature, something that is depicted in the diagram on the next page.

As a rule of thumb, a general aid in the selection of type, it can be said that adsorption is the primary choice for drying of unheated spaces or when material is to be dried. The latter is motivated by the fact that the adsorption dryer produces dryer air, generates a greater reduction of water content measured in grams per kilogram ( $\Delta X$ ), easily deduced from the diagram below to the right and something that is directly correlated to the drying speed. Drying of layered constructions such as floor structures are, with advantage, dried with combined use of turbines, high pressure fans, installed for either suction or pressure drying.



Condensation dryers are, in accordance with the diagram above, used in hot and humid conditions provided the goal and aim is drying of rooms, ambient air.

**Product Overview**

Below pictures present T2 with all its external features and controls.



## Drying methods

The turbine T2 is, in combination with adsorption dryer, used for suction and pressure drying. The reason for the use of an adsorption dryer is that both suction and pressure drying are all about drying material and the speed of that process is dependent of the difference in water contents ( $\Delta X$ ), measured in grams per kilogram, between the material and its environment. Adsorption dryers produce dryer air, generates a greater reduction of water contents measured in grams per kilogram) which increases the speed of the drying process. With pressure drying, warm and dry air is pressed down into the construction making the construction temperature rise which increases the speed even further and is the reason for it being faster than suction drying.

### Suction drying

For suction drying the turbine is installed so that it draws air from the construction through hose, water separator and filter and then evacuates this, normally outdoors. Use of water separator is critical to prevent water from being sucked into the turbine and damage its motor. The dryer is installed for normal drying of room.



Suction drying. The dryer dries the ambient air and the turbine draws and evacuates air from the construction. The resulting underpressure in the construction draws dry air into it.

### Pressure drying

For pressure drying, the turbine is installed so that it is fed with dry air from the dryer and then presses this down into the construction. This makes the construction temperature rise and the drying goes faster. Wet and cooled air leaks into the room through drilled holes or gaps between the floor and the walls and then returns to the dryer as process air.



Pressure drying. The turbine is fed with dry air from the dehumidifier and presses this air into the layered construction.

Before pressure drying is applied, suction drying shall be used to remove any free water from the construction and thus avoid pushing this into other parts of the building. The initial removal of free water also saves time.

Pressure drying might free particles/fibers from the construction and thus release them in the air. If this is a potential problem, another method should be applied.



## Installation

The T2 shall be placed and installed leveled and in a stable position so that it does not fall over and cause damage to the machine itself, person or property.

For suction drying, a water separator shall be used and connected to the hose prior to the turbine so that water is not sucked into the turbine as that will damage the motor.

For pressure drying it is important to verify that the capacity of the turbine does not exceed that of the dryer, that the latter's dry air volume matches the turbine's throughput. If not, too much air will be drawn through the dryer and its capacity will decrease dramatically. If using a dryer from the ES-series, this is verified by observing that the wet air volume is correct.

Verify that the cooling air and process filters are clean and not clogged by dirt. If required, replace the filter before the work is commenced.

Contrary to its predecessors, the T2 is not equipped with a manually resettable overheating protection as this no longer is necessary. The turbine provides itself with cooling air and prevents overheating by automatically adjusting its speed if the temperature should still rise too high. For best drying performance, the user should however still verify that the airflow through the construction to be dried is correct.

### Installation in short, main points:

1. Put the turbine in a leveled and stable position so that it does not fall over and cause damage.
2. Connect the hoses configured for the drying to be undertaken. Always use Corrofilter or other similar external filter by the turbine inlet to prevent damage to the turbine. If free water might be present in the construction to be dried, use Water separator to prevent water from being sucked into the turbine.

For suction drying, connect the inlet to hose/hose system that lead into the construction. Water separator and filter shall be used to avoid water from being sucked into the turbine.

To the turbine outlet, a hose for evacuation leading outdoors, optionally equipped with muffler, is connected

For pressure drying, connect the inlet to the dry air outlet of the dryer. Verify that the capacity of the latter is enough, that the dry air volume produced is not smaller than the turbine throughput.

The turbine outlet is connected to hose/hose system that leads into the construction.

3. Connect the cable to a 1-phase, 230 VAC socket with a 10A or maximum 16A fuse. As the machine is normally used in humid or wet spaces, the use of a ground fault circuit interrupter is strongly recommended.
4. Start the turbine and listen to its operation. No scratching, other such sounds or vibrations shall be heard.
5. Adjust the speed control to obtain desired air flow. When applicable, verify the airflow in the construction.

## Maintenance and service

The cooling air and process air filters shall be replaced regularly, suitably for each new job. In very dirty environments even more frequent replacements can be necessary.

1. Turn the knob anti-clockwise to remove the filter holder.
2. Remove and discard the old filters, install the new ones.
3. Put the filter holder back in position.

Turn knob anti-clockwise to remove filter holder.



Turn knob anti-clockwise to remove filter hatch



## Accessories and consumables

The following articles are available as accessories and consumables to the T2:

Article number	Name
1001238	Cooling air filter
6000371	Process air filter

## Troubleshooting

Symptom	Probable cause	Action
Turbine speed varies, it shuts down and restarts again	The turbine is too heavily loaded, the resistance through the construction or the hoses is too high due to too few suction/pressure points, squeezed or clogged hoses, and/or clogged filter.	<p>Inspect the installation and all filters, both that of the turbine itself and the others in the system. Verify that they are clean and are not stopping the flow. Verify that no hoses are squeezed or clogged with dirt.</p> <p>Make and install additional suction or pressure points depending on installation. Drill further holes and connect additional hoses or whatever is appropriate and feasible to decrease the resistance and increase the flow.</p>
The turbine makes noise, does not sound the way it normally does.	Bearing in motor is worn and/or damaged.	Please contact your retailer for repair.
The turbine has stopped/ does not start.	<p>No mains power.</p> <p>Built-in overheating protection triggered.</p> <p>Turbine failure.</p>	<p>Check that power cable is connected and that the power outlet is live, that the fuse and, if present, the ground fault circuit breaker are in order.</p> <p>Disconnect power by pulling the cable from the socket and let the turbine cool down for 15 minutes. Reconnect the power and start the turbine.</p> <p>If the above does not rectify the operation, please contact your retailer for repair.</p>

## Technical data

Air volume (m <sup>3</sup> /h)	Up to 180 (continuously variable)
Pressure (mbar)	Up to 260 (continuously variable)
Noise, dBA (3m)	<i>approx. 48 *</i>
Voltage	230 VAC / 50 Hz
Rated power (W)	1100
Height x width x length (mm)	430 x 295 x 370
Weight, kg	13

*\*Noise level varies with installation.*



## DO YOU HAVE QUESTIONS OR NEED HELP?

*Visit [www.corroventa.com](http://www.corroventa.com) or call us to speak with an expert.  
We have the knowledge and the equipment to find a solution as efficiently as possible.*

*Corroventa develops, manufactures, sells and rents high quality products for dealing with water damage, moisture, odours and radon. We are one of the market leaders and specialists in innovation within the industry. Our products are compact, effective, ergonomic and energy efficient. In emergency situations and during flooding, Corroventa's customers have access to one of the largest rental parks in Europe. All our products are manufactured in Bankeryd, Sweden.*

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